

Research Article

Flood Disaster Management for Sustainable Economic Growth in Nigeria

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Abstract

The impacts of flooding which is as a result of climate change are felt profoundly on Nigeria's socio-economic, educational, environmental, health and agricultural sectors. The impacts of flooding in Nigeria which is one of the developing countries in Africa, imply that due considerations to flood risks and disaster management as part of climate change mitigation and adaptation efforts has become a pressing issue. Mitigation and adaptation strategies are therefore necessary for effective management of flood risks and disasters for sustainable development and economic growth in Nigeria. This study outlines the mitigation and adaptation strategies to flooding for building resilience and reducing vulnerability for a sustainable future. Through literature and participant observation, this study identifies that there is an urgent need to educate communities and institutions in Nigeria about the impacts of flooding and innovative solutions for flood risk and disaster management for sustainable economic growth in Nigeria. Innovative solutions include the use of climate change poetry to educate and motivate individuals, communities and institutions on flooding impacts and ways to adapt and mitigate for our sustainability. This paper is therefore very significant as it explores new opportunities, practices and policies for mitigation and adaptation to the impacts of flooding and flood disaster management in Nigeria.

Keywords: Climate Change, Flooding, Management, Sustainable Development, Nigeria



Introduction

Climate change has been described as an existential threat to human well-being. Globally, it affects the social and environmental determinants of health: clean air, safe drinking water, sufficient food, and secure shelter. The effects of flooding are far-reaching and include severe weather, deteriorated air quality, displacement, and migration of vectors increasing a range of diseases related to water and ecological factors. Increasing incidences of mental health issues are being recorded and identified as a consequence of environmental change (Lu, 2016; PAHO, 2013). Flooding can be referred to as the excess flow of water on the land surface as a result of heavy downpour which has been described as the outcome of climate change. Flooding has also been described as the presence of water in areas that are usually dry which significantly disrupts or interferes with human and social activity (Jonkman and Kelman, 2005; cited by Magami, Yahaya& Mohammed, 2014). In the recent past, Nigeria has witnessed series of climate-related disasters, ranging from increased health risk, declining agricultural productivity, biodiversity loss, drying lakes, famine, conflicts or social unrest, poverty, worsening food insecurity situation, heat stress, declining soil capacity for agricultural production, increased natural disaster, extreme weather events, among others. These have resulted in huge ecological and economical losses and efforts must be improved to stem the tide of its effects(Akpodiogaga-a & Odjugo, 2010; Lu, 2016). Flooding is one of the major environmental problems facing man within the century. Norwegian Refugee Council (NRC, 2012) considered floods as the most damaging climate-related hazard in the world. Adelaye and Rustum,(2011) pointed out that periodic floods occur in many rivers, forming a surrounding region known as the flood plain and that rivers overflow for reasons like excess rainfall and this has caused houses to collapse, washed away livestock, damaged bridges, and caused an overflow of dams, submergence of buildings, displacement of people from their homes, loss of people's valuables and in most severe cases death. According to United Nations International Strategy for Disaster Reduction (UNISDR, 2008), floods are a problem when the magnitude and impacts of their occurrence exceed the ability of affected communities to cope or they become a disaster when an event leads to a serious disruption of the functioning of a community or society causing widespread human, material, economic and environmental losses, which exceed the ability of the affected society to cope using their resources(UNISDR, 2008). Floods are a major disaster affecting many countries of the world including Nigeria. Following the year 2012, floods disaster in many Nigerian states christened as unprecedented in the history of Nigeria in the past 40 years, the loss of many lives and properties worth millions of naira were recorded (Action aid, 2012). Generally, this paper aimed to examine the impacts of flooding and flood disaster management for sustainability in Nigeria. This paper examined current trends of flooding which is a result of climate change in Nigeria through an existing literature review.



Methodology

Data used for this study is derived from published works including academic journal articles, conference papers, textbooks and internet materials. The researchers gathered a lot of materials for the research but summarized the characteristics of the papers that centered more on the impacts of flooding and flood disaster management for sustainable economic growth in Nigeria. This enabled the researchers to generate the synthesis of various researchers' views on the subject matter.

Results & Discussion

In Nigeria, flooding has become dangerous to human health in most urban and rural areas because of overcrowded slums, where drainage is poor or does not exist at all (Olajoke, Akeem & Ikotun, 2013). Floods are major disaster affecting many countries of the world including Nigeria. Following the year 2012, floods disaster in many Nigerian states christened as unprecedented in the history of Nigeria in the past 40 years, the loss of many lives and properties worth millions of naira were recorded (Action aid, 2012). Apart from the health of Nigerians affected by the recent floods that affected 12 states out of the 36 states according to National Emergency Management Agency (NEMA, 2013), the socio-economic sector has been affected profoundly as over 176,300 people were displaced, 150,000 hectares of farmland and 17,800 houses submerged and 321 roads and bridges destroyed as a result.

Flooding has far reaching impacts on people's health and its consequences include crisis of not having good drinking water, lack of shelter, sanitation problems which spread deadly communicable diseases like cholera, malaria, diarrhea, skin and soft-tissue infections with other air-borne infections. Similarly, when health facilities are submerged by heavy flooding, access to healthcare and drugs becomes an issue of concern to the victims of flooding and the government. Thus, many wells and boreholes are contaminated by continuing overflowing sewage and refuse dumps. Again, public water supplies are disrupted by floods which destroy electricity supply and affects water pipes. All these collectively and considerably have impacts on people's health. Specifically in Nigeria, numerous factors but not limited to the following, heavy rainfall, oceans storms and tidal waves usually along the coast, Silting, burst water from main pipes, dam failures, population pressure, deforestation, trespassing on water storm drains, unplanned urbanization, Poor Sewerage Management, Neglecting warnings from hydrological system data (major cause of 2012 flooding in Nigeria), Lack of flood control measures (especially by government) , have been observed as being responsible for floods (Etuonovbe, 2011 cited in Magami, Yahaya & Mohammed, 2014; p. 156-157).



Integrated Flood Risks and Disaster Management in Nigeria

Disaster management involves the coordination and integration of all activities necessary to build, sustain and improve the capabilities of communities to prepare for, protect against, respond to and recover from threats or actual natural or man-made disasters (NDMF 2010). Disaster management started in Nigeria in 1906 with the establishment of the Fire Brigade (now known as the Federal Fire Service), responsible for saving lives and property in addition to its primary function of firefighting and provision of humanitarian services during emergencies (Adelekan 2010) In March 1999, NEMA was established through Act 12 of 1999 as amended by Act 50 of 1999. NEMA was given the responsibility of coordinating disaster management activities for the country (Nigeria-Government 2010) .NEMA had roles and functions that were designed for a holistic approach to disaster management as stated in its mission statement. Their mission is: to coordinate and facilitate disaster management efforts aimed at reducing the loss of lives and property and protect lives from hazard by the leading and support of disaster management stakeholders in a comprehensive risk based emergency management program of mitigation, preparedness response and recovery. (NEMA n.d.b). The specific functions of NEMA include (1) disaster preparedness and mitigation activities; (2) notify, activate, mobilize and deploy staff as well as set up all necessary facilities for response; (3) evaluation and assessment of disaster damages; (4) management of funds for disaster; (5) inform and enlighten the public; (6) formulation of disaster management policies and guidelines in the country and (7) distribution of relief materials to disaster victims by liaising with State Emergency Management Committees, non-governmental organizations (NGOs), regional and international bodies (NEMA 2004a; Shaba 2009).

A major cause of local flooding due to heavy rainfall in many cities is the blocking of drainage facilities with garbage. Cleaning and maintenance of drainage facilities is essential to their operational reliability. Storm water retention measures are vital for mitigation of urban floods as well as for prevention of downstream floods. Storm water retention can be achieved by constructing basins or ponds that temporarily store surface runoff and release it at a controlled rate. The main aim of urban flood disaster management is to minimize human loss and economic damages. Flood risks cannot be entirely avoided, thus they have to be managed. Consequently, flood management does not strive to eliminate flood hazard but to mitigate them. The basic steps of flood risk and disaster management are:

- i) Risk assessment before and after implementing flood mitigation measures, In order to reduce flood risk and disaster, it is mandatory to evaluate the performance of implemented measures and to reassess residual risks.
- ii) Risk assessment has to be carried out in an integrated manner, i.e. identifying all the possible water related hazards.



- iii) A number of different scenarios should be modelled in order to factor in the consequences of likely future changes on urban floods. The results of such models provide information about the expected flood frequencies and magnitudes (extent, depth, duration and flow velocities), thereby marking those areas and subjects, which are exposed to floods.
- iv) Risk maps can be developed to enable the users to clearly identify risk areas. The advantage of such comprehensive risk assessments is that it is possible to compare the components of risk in quantitative terms.

Case Study 1

Poetry has been discovered as a valuable tool which can be used to educate communities, institutions and individuals in Nigeria on the impacts of flooding and ways to adapt and mitigate effectively to ensure our sustainable development. The Project Green Initiative which is an arm of the Benji Poetry And Music Global Concepts creatively uses the tool of poetry, music and educational blog which focuses on environmental sustainability to educate the communities and institutions in Nigeria on adaptation strategies to flooding in Nigeria.

The following innovative strategies could be deployed in educating communities and institutions towards adaptation and mitigation to the impacts of flooding in Nigeria:

A.Engagement of village town crier: Engaging village town criers through the collaboration of various community authorities in our local government could be one of the fastest avenues of reaching individuals in rural areas in Nigeria. The village town criers can vividly disseminate information about impending flood disasters and ways to adapt and mitigate flooding in their communities and institutions to ensure our sustainable future.

B. Non-governmental organizations (NGOs): Non-governmental organizations(NGOs) that are climate change professionals and educators can be used as valuable tools in reaching and educating the students and teachers in various educational institutions through their respective union in local governments and states in Nigeria. These NGOs can conduct seminars, symposiums, and workshops on adaptation and mitigation strategies to flooding impacts in Nigeria.

C. Religious institutions: Religious institutions can act as a crucial platform for reaching individuals in their various churches, mosques, and other traditional religious centers. This is because majority of Nigerians are religious. This avenue can also be used to educate the people about the impacts of flooding and the flood management strategies to ensure sustainable economic growth in Nigeria.



D. Use of radio and television jingles: This is a valuable tool which can be used in reaching many individuals, both young and old, in Nigeria through radio and television programs, jingles, adverts, etc. Through this platform, the effects of flooding on various institutions in Nigeria are show-cased and ways to adapt and mitigate flooding for our sustainable development in Nigeria are also highlighted.

E. Educational blogs: This is a tool which can be used to inform, enlighten, and educate students and teachers in various educational institutions in Nigeria about the impacts of flooding and ways to adapt effectively for sustainable development. These blogs which are meant to be highly interactive managed by climate change educators and professionals, also allow the teachers and students, farmers and fishermen, etc. to also contribute their ideas, suggestions, and feedback to the climate change educators and bloggers for sustainability.

Below is a poem advanced by the BENJY POETRY AND MUSIC GLOBAL CONCEPTS which further helps to illustrate how poetry can be used efficiently and effectively in educating communities and institutions across Nigeria about strategic tree planting which is one of the ways to adapt and mitigate flooding for global sustainability:

POEM: PLANT A TREE

Trees provide us with oxygen.
Trees help keep the environment clean.
Trees help to purify the air;
Increasing moisture as they transpire.

Trees help to prevent water pollution.
Trees help to prevent soil erosion.
Trees conserve energy.
It is so beautiful to plant a tree.

Trees absorb odors and pollutant gases.
Trees provide shade for the masses.
Trees cool the streets and the cities.
Trees create economic opportunities.



Trees are like the lungs of the planet.
Preserver and greener of the earth.
Trees matter beautifully and truly.
Be dutiful to plant a tree.

Trees provide a canopy.
A shade for the hungry.
A shade from the raging heat.
A beautiful place for retreat.

Trees provide food.
Trees provide wood.
Trees combat climate change.
When properly managed.

Trees slow run off and hold soil in place.
As beauty and bliss, they embrace.
Trees help us appreciate nature.
Plant a tree for the future(Anabaraonye.B, 2018).

Recommendations

We can adapt and mitigate the impacts of flooding and flood disaster management for sustainability in Nigeria by:

- *Effective town planning and avoiding building of residences in flood plains.
- * Expansive construction of roads culvert and drainages to accommodate the flow of water.
- *Government policy on urbanization in Nigeria should be revisited to discontinue the construction of houses, roads, bridges haphazardly.
- *Indiscriminate dumping of refuse, faeces in culvert and drainages should be stopped because, infectious diseases are contacted and transmitted to people from one state to the other.
- *Early warning signs and information about flooding should be communicated to Nigerians through radio, television, internet and numerous social media platforms in order to avoid casualties in the future.
- *Indiscriminate falling of trees should be avoided and planting of trees should be encouraged both by the government and individuals.
- *Keep drainages free of debris to enhance free flow of water of run-off water.



*In the event of flooding, the government and other donor agencies should come up with emergency relief measures and materials including adequate medical care to alleviate the suffering of families affected by flooding.

*Poetry with its therapeutic benefits should be used as a valuable tool to educate communities and institutions in Nigeria on the impacts of flooding and flood disaster management for sustainability in Nigeria.

Conclusion

In time of flood disaster, people need to know what to do, the safe places to evacuate to and if they have to, the roads that are open and safe to drive through, where to get treatment or food during such situation. Thus, the National Emergency Management Agency(NEMA) need to be well funded and equipped by the Federal Government to carry out their vital roles to mitigate flood risks and disasters in Nigeria. From this extensive literature review, it is concluded that globally, flood disasters is among the leading and significant natural disaster world-wide which is one of the impacts of climate change. Education is seen as a human right, a key to civilization and enlightenment and as source of wealth and power. It is the cornerstone of the growth and development of any country's social, economic and political institutions. There is an urgent need therefore for all stakeholders to seek strategies to solve the problems of the impacts of flooding and flood disaster management to ensure sustainable economic growth in Nigeria.

An urgent intervention from the Federal Government and other relevant NGOs and multilateral organizations will be needed to stop impending economic gloom and doom as a result of flooding in various states in Nigeria. Proper education from qualified health professionals and relevant disaster management agencies will go a long way to stop the spread of diseases, and loss of lives and properties associated with flooding thus helping communities to adapt and mitigate the impact of flooding on Nigeria's health sector. There is also need for the Federal Government of Nigeria to critically review and evaluate reports made by previous researches (especially of recent) on Floods Risk Management (FRM), Integrated Flood Management (IFM), Flood Control measures, causes of flood, consequences of floods, Flood Mitigation, Flood Evacuation Methods, whether those reports were made by NGOs, Environmental Agencies, Research Institutes or even individual researchers. Government can then look into the possibilities of implementing the necessary measures among them.



References

1. Action Aid (2012). Flood in Nigeria: Re-visiting States Accountability on Emergency Response/Preparedness and Disaster Risk Reduction in Nigeria. Policy brief. www.actionaid.org/nigeria pp 1-4 edited by Olugbenro Olajuyigbe and Ayodeji Ajayeoba
2. Adeloje, A. and Rustum, R. (2011). Flooding and Influence of Urban Planning. Kogi State:
3. Adelekan I., 2010, 'Vulnerability of poor urban coastal communities to flooding in Lagos, Nigeria', *Environment and Urbanization* 22, 433–450. [10.1177/0956247810380141](https://doi.org/10.1177/0956247810380141) [CrossRef] [Google Scholar]
4. Akpodiogaga-a, P., & Odjugo, O. (2010). General Overview of Climate Change Impacts in Nigeria. *Journal of Human Ecology*. <https://doi.org/10.1080/09709274.2010.11906248>
5. Anabaraonye.B,(2017) Climate change education for sustainable development in Nigeria. *Review of Education, Institute of Education Journal, University of Nigeria, Nsukka*. Volume 28:403-414
6. Anabaraonye.B.(2018) Plant A Tree. <https://projectgreeninitiative.wordpress.com/2018/02/19/plant-a-tree/>
7. Anabaraonye.B,Nji.A.I,Hope.J.(2018) Poetry as a valuable tool for climate change education for global sustainability. *International Journal of Scientific & Engineering Research*. Volume 9, Issue 9, September 2018. ISSN 2229-5518,81-85.
8. Lu, J. L. D. P. (2016). Impact of climate change on human health. *Acta Medica Philippina*. https://doi.org/10.1007/978-3-319-16751-0_53
9. Magami, I.M; Yahaya, S & Mohammed, K. (2014). Causes and Consequences of Flooding in Nigeria: A Review, *Biological and Environmental Sciences Journal for the Tropics*, 11(2), 154-162.
10. NEMA, editor. , 2004a, *Laws of the Federation of Nigeria, Cap 34, vol 10 Section 6 (1)*, 1st edn., Government of Nigeria, Abuja. [Google Scholar]
11. NEMA , 2004b, *Laws of the Federation of Nigeria, Section 4, Cap 34*, Government of Nigeria, Abuja. [Google Scholar]



12. NEMA , n.d.a, National disaster response plan, Nigeria, viewed 23 August 2018, from <https://www.preventionweb.net/files/21707nigeria.pdf>. [Google Scholar]
13. NEMA(2013) 2012 flood disaster cost Nigeria N2.6trn –NEMA <https://www.thenigerianvoice.com/movie/114732/2012-flood-disaster-cost-nigeria-n26tn-nema.html>
14. NDMF , 2010, Nigeria: National Disaster Framework, Government of Nigeria, Abuja, Nigeria. [Google Scholar]
15. Nigeria-Government , 2010, National disaster framework. Understanding the framework, viewed 2 February 2015 from <https://www.preventionweb.net/english/professional/policies/v.php?id=21708>.
16. Occupational Health and Safety Managers, OHSM (2017). Disaster Management Overview: Flood Risk. <http://www.ohsm.com.ng/disaster-management-overview-flood-risk/>
17. Olajoke, A; Akeem, B.M & Ikotun, S.A (2013). Impacts of flood disaster in Agege local government area Lagos, Nigeria. International Journal of Development and Sustainability, 2(4), 2354-2367
18. PAHO. (2013). Health, Environment and Sustainable Development: Towards the Future We Want A collection of texts based on the PAHO Seminar Series towards Rio+20 that occurred in the period between 8 February and. Washington, DC. Retrieved from <https://www.paho.org/hq/dmdocuments/2013/seminario-rio-20-eng.pdf>
19. Shaba H. A., 2009, National disaster management system in Nigeria, viewed 15 January 2014
20. UNISDR(2008). Towards National Resilience. Good Practices of National Platforms for Disaster Risk Reduction, United Nations Secretariat of the International Strategy for Disaster Reduction. Geneva, Switzerland. www.unisdr.org/ (Accessed 25/6/2013) (Accessed 13/6/2019).

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