



Commentary

Climate change crisis in low resource countries: Implication for Nigeria's recurrent flooding

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Abstract

Climate change poses a significant threat to low-resource countries, exacerbating and increasing the risk of extreme weather events. Nigeria, with its dense population and inadequate infrastructure, is particularly susceptible to the impacts of climate change, including recurrent flooding. This paper examines the implications of climate change in Nigeria's flooding, with a focus on the human, economic, and environmental consequences. Using a review of existing literature and case studies, we identified key drivers of flooding in Nigeria and assessed the country's preparedness and response to these events. The paper concludes by highlighting the urgent need for climate-resilient infrastructure, climate-smart agriculture, and enhanced early warning systems to mitigate the impacts of climate change on Nigeria's recurrent flooding.

Keywords: *climate change, low-resource countries, Nigeria, recurrent flooding, vulnerability, resilience*



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Introduction

Over the last 65 years, the global community has observed significant climatic changes and global warming, which have stood as an inter-governmental complex challenge with its impact spanning across different components of the world, including the ecological, environmental, socio-political, and socio-economic aspects. On December 12, 2015, the United Nations Framework Convention on Climate Change (UNFCCC) at the Conference of the Parties (COP-21) held in Paris reached a consensus to take on the issue of climate change head-on and further intensify efforts towards ensuring a sustainable low-carbon future.^[1] It was such a historical moment as the different nations of the world assembled for the first time to collectively establish ambitious measures to prevent climate change and adapt the world systems to its looming impacts.^[2-4] The African community remains one of the topmost continents plagued by the drastic impacts of global warming and climate scenarios above 1.5⁰ C, although they have comparatively contributed little to the anthropogenic emissions. According to the African Development Bank Group, Africa is currently experiencing incremental collateral damage, posing an inherent risk to its economies, infrastructure investments, food and water systems, public health, agriculture, and livelihoods, endangering its meager economic progress and pushing it deeper into abject poverty.^[5]

Nigeria is currently challenged with adverse climatic conditions, which have significantly affected the livelihood and welfare of millions of people amidst increasing vulnerability.^[6] The effects have been evident considering the increasing occurrence of its related risks, including high temperature, erratic rainfall, rising sea level, drought, and flooding.^[7] According to the World Bank, Nigeria is recognized among the top ten most vulnerable countries to the negative impacts of climate change, wherein approximately 6% of its land area is highly susceptible to extreme weather events.^[8] With rising sea levels due to global warming, low-lying coastal areas are likely to be prone to flooding, flood damage, and erosion. Climate-induced flooding in Nigeria has become a major humanitarian crisis severely impacting the built environment, leading to erosion of beaches, inundation of coastal lands, surface runoffs, destruction of buildings and other infrastructures, high ocean surges, water supply scarcity, and internal conflicts among community members.^[9] Between June and November 2022, Nigeria witnessed the worst flooding in at least a decade leading to approximately 600 deaths, more than 1,500 injured persons, and over 100,000 people being displaced from their homes creating a humanitarian

crisis with increased risk of waterborne diseases, drowning, and malnutrition.^[10] As of 25 September 2024, the flood situation in Nigeria has affected more than 1 million people across thirty-one states. In particular, over 641,598 persons and 285 deaths have been reported in Bauchi, Borno, Sokoto, Zamfara, and Jigawa states. This has become a recurrent perennial public health and food security issue requiring long term and permanent measures.^[11]

Implications of COP27 for Africa and Nigeria

Egypt hosted the 27th session of the Conference of the Parties to the UNFCCC (COP27) in Sharm El-Sheikh from 6th to 18th November 2022, to share knowledge, solutions and innovative projects targeted at effective climate action.^[12] The COP27 commonly referred to as “the African COP” created a level-playing field for Africa to bring their peculiar needs, circumstances, and opportunities to the spotlight given that the continent has suffered significant losses and destruction due to drastic climate changes, although it produces less than 4% of greenhouse gas emissions.^[13,14] There is an urgent need among these developing nations for climate finance, which is about \$580bn a year, particularly for North and Sub-Saharan Africa.^[15] Countries such as Nigeria are galvanizing action plans for the continent to clamor for positive climate funding action from the developed countries.^[16] Also, considering the expected population growth of Africa and Asia's population by 2050, this conference is strategic toward addressing critical needs, such as food, housing, resource management, and so on.^[15] Lastly, the issues associated with climate change are predicted to displace over 113 million Africans from their homes by 2050.

Sustainable solutions for Nigeria's flooding

Research has shown that adaptation strategies are crucial to mitigating climate change and reducing its impact.^[17] Integrated River basin management, soil management and vegetation cover, sustainable (re-)use of water, and vertical farming are effective over time and are worth considering in the Nigerian context. For coastal regions in Nigeria such as the Lekki Peninsula, flood-resistant redevelopment of the affected existing low-lying developed areas to effectively raise the levels to the recommended design flood elevation (DFE) may be extremely expensive and difficult, especially for excised villages with ancestral homes. Another option is to use an advocacy approach with a phased implementation of sand filling.^[18] Also, the Ministry of Environment should develop a Risk Assessment Unit that is adequately equipped to conduct vulnerability assessments of the potential impacts of floods and other extreme weather



events throughout the country. Spatial maps demonstrating the potential consequences of sea level rise on key urban areas, particularly in coastal areas, should be established.^[19] All relevant authorities should strictly enforce land use regulations to prevent the construction of houses/buildings along wetlands and in flood-prone areas. Furthermore, city planning is required to guarantee that adequate spaces within housing areas are maintained to allow for easy infiltration of surface runoff during rainfall. Increasing the spatial density of urban development could significantly reduce energy consumption and carbon dioxide emissions in cities.^[20]

Recommendations and conclusion

Through concerted efforts at both national and international levels, the issue of climate change can be effectively tackled in Nigeria. The Nigerian government can deploy all necessary technology and techniques available for mitigating the impact of climate change such as development and implementation of flood-risk management plans, investing in climate-resilient infrastructure (including flood defenses, drainage systems, and green infrastructure), promotion of climate-smart agriculture and support farmers by adopting resilient agricultural practices, enhancement of early warning systems and emergency preparedness to reduce the impact of flooding events, and supporting climate change research and development to better understand and address the impacts of climate change on flooding in Nigeria. The Nigerian government can also tackle this global health issue from the policy level, particularly by revisiting and implementing the climate change Act. The Nigeria climate change Act establishes a framework for Nigeria to ensure low greenhouse gas emissions (GHG) through inclusive green growth and sustainable economic development, as well as the implementation of Nigeria's pledge to achieve net zero emissions at COP26 in 2021. The National Council on Climate Change will be in charge of carrying out the country's climate Action Plan.^[18] The provisions of the Act apply broadly to all Ministries, Departments, and Agencies of the Federal Government, as well as public and private entities in Nigeria. It directs them to formulate and develop mechanisms aimed at fostering an environmentally sustainable and climate-resilient society.^[19]

Conclusion

The climate change crisis poses a significant threat to low-resource settings, particularly in Nigeria where recurrent flooding has become a recurring nightmare with far-reaching implications that includes loss of life

and livelihoods, to economic devastation and environmental degradation. Urgent collaborative action is needed by the Nigerian government, international organizations, and local communities to mitigate the effects of climate change in Nigeria in order to ensure a safer, more sustainable future for generations to come.

Declarations

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