AN ANALYSIS OF THE ROLE OF THE STATE IN NATURAL DISASTER MANAGEMENT IN NIGERIA: A STUDY OF KOGI STATE FLOODING

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ABSTRACT
Floods occur naturally, but human activities may contribute to the magnitude of the impact, damage, and losses. Floods are the most common hazard, and they can occur as a result of unusually heavy rainfall, Climate change, tropical cyclone storm surges, dam breaks, quick snow melts, or even broken water mains. The broad objective of the paper is to evaluate the impact of human activities on flooding in Kogi state, and to ascertain the flood disaster management role of the disaster management bodies in the state. The paper adopted the Maslow's Basic Need theory as its theoretical framework. Both secondary and primary means of data collection. As drawn from the findings, it is evident that human activities such as; building on water channels, indiscriminate dumping of refuse, contributes to flooding in Kogi State. There is a low disaster management by NEMA which is visible in a flood disaster in Kogi State. The paper recommends; legislations should be made to tackle all Human activities that contributes to flooding as a punishable offense by law. As well, the Government should prepare a Flood Emergency Management Plan for Kogi State as a matter of urgency and lastly.

Keywords: Flooding, Natural Disaster, Human Factors, Climate Change, Government Polices.
JEL CODE: Q25, H84, J70, Q54, Q28

1. INTRODUCTION
Floods have become Nigeria's most common natural disaster, frequently resulting in the loss of lives, property, and croplands (Okpara, 2013), and they have a negative impact on people's livelihoods, health, production, communication systems, ecosystems, and the political economy of the entire country. Floods occur naturally, but human activities contribute to the magnitude of the impact, damage, and losses (Action Aid, 2006). Flooding has become an annual event in many Nigerian cities and rural areas, threatening lives and property (Olanrewaju and Fadiro 2013). When surface water covers territory that is ordinarily dry or when water transcends its customary confines, a flood occurs. Climate change drives extreme weather events such as floods, drought losses in crop yield all of which affect economic sector to some degree. (Park, Moradeyo and Augutine, 2024).
According to data from the National Bureau of Statistics, the floods caused more than 1.4 million people to be displaced, over 603 deaths, and more than 2,400 injuries. 332,327 hectares of land have also been impacted in addition to the 82,035 dwellings that had been damaged. Although regular flooding is common in Nigeria, the year's floods were the worst since those of 2012 (Oguntola, 2022). In August, 79 settlements in 16 local government units in the state of Adamawa were affected by flooding. According to the Adamawa State Emergency Management Agency (ADSEMA), 150 farms and about 66 homes were damaged, seven people died and approximately 74,713 others were relocated and made homeless. Due to the flood incidents in 2020, 68 people died and 129,000 people were forced to flee their homes. According to Muhammadu Muhammed, the director-general of NEMA. Central Nigeria saw the 2017 Benue State flooding in September of that year. Benue State saw flash floods, discharges, and river flow as a result of weeks of rain. Around 2,000 homes were damaged,

and it forced 100,000 people to relocate (Maclean, Ruth 2022). Early in July 2012, the Nigeria floods of that year began. As of November 5, 2012, it had killed 363 people and displaced more than 2.1 million others. The National Emergency Management Agency (NEMA) reports that the floods have hit 30 of Nigeria's 36 states. The floods, which were dubbed the worst in forty years, reportedly affected seven million people in total. It was estimated that the floods cost N2.6 trillion in losses and damages. The Ogun River was further aggravated by the discharge of water from the Oyan Dam, which led to the displacement of about 1000 residents of the Lagos and Ogun states region of Nigeria. In 2016, the flooding affected almost 250,000 Nigerians, while 92,000 were impacted in 2017. Temperature rise has had adverse effects on the environment, this in turn has drastic social and economic impact on the Country. (Imandojemu, Iwayemi, and Oyedele, 2024).

Acquiring a better understanding of drought impacts becomes increasingly vital under a warming climate. Traditional drought indices describe mainly biophysical variables and not impacts on social, economic, and environmental systems. Floods are often destructive to humans (Etuonovbe 2011); nevertheless, floods can give benefits without causing calamity and are required to maintain most river ecosystems. Floods replenish soil fertility, provide water for agriculture life. Flooding is a natural occurrence that can be exacerbated or even caused by human activity in the majority of cases. Flooding has been recognized as one of the primary issues preventing Africa's expanding population of city residents from escaping poverty and preventing the UN's 2020 target of considerable improvement in the lives of urban slum dwellers from being met (Action Aid, 2006). This is due to the fact that many African cities lack the infrastructure to endure severe weather. Poor urban design, combined with other issues in urban administration, puts African urban slum people at risk (Adelekan 2009). It is an unplanned event that causes significant damage to people and property. Due to their often unexpected nature, natural and man-made disasters are difficult to monitor and detect for journalists and disaster management response teams. Journalists are increasingly relying on signals from social media to detect such stories in their early stage of development. Twitter, which features a vast network of local news outlets, is a major source of early signal for disaster detection.

In Nigeria, floods have become a common and recurring occurrence that can have severe consequences for human livelihoods and infrastructure development (Agbonkhese, 2014). In recent years, the biggest floods in Nigeria appear to have occurred in 2011 and 2012, with numerous reports revealing how the flood threat decimated afflicted parts of the country when water from the Lagdo Dam in Cameroon was released. Despite the fact that the Nigerian Meteorological Agency (NIMET) had warned that there would be above-normal rainfall in crucial sections of the country, which might lead to floods in 12 states of the federation, no one heeded the warning (Adekunle, 2014).

1.2 Flood Experience in Nigeria

The first devastating flood events in Nigeria occurred in Ibadan city in 1963, when the Ogunpa River overflowed, resulting in the loss of lives and property; these hazardous events recurred in 1978, 1980, and 2011, causing estimated damages and deaths of over 30 billion naira and 100 people, respectively, making the Ogunpa River nationally and internationally famous (Adegbola,2012). Between 2011 and 2012, Lagos state had at least eight catastrophic floods, resulting in the deaths of over 30 persons and significant property damage (Komolafe 2014). Apart from the Ogunpa Stream in Ibadan, which killed several people and halted socio-economic operations in 1980, Nigeria has a long history of natural disasters (Emeribeole, 2015).

Residents of Makurdi were evicted from their homes and their farmlands were left desolate following two days of torrential rain in August 2008. It was described as "devastating" (Taiwo, 2008). Nigeria is not an exception to the effects of climate change which can lead to Drought and reduced rainfall, combined with rising air temperatures, inhibit the country's hydropower systems, and hinder agricultural production and fishing, reducing food security and negatively impacting health and nutrition. (Zayyana. & Ahmed, 2024). Climate change remains a threat to the effective achievement of the global Sustainable Development Goals in Nigeria (particularly SDGs 1 and 2). (Osaretin and Olotu, 2022). Despite the Nigerian Meteorological Agency's (NIMET) earlier warnings in March 2012 that there would be above-normal rainfall, potentially leading to floods in 12 of Nigeria's 36 states, it's difficult to forget the devastation caused by the floods of July-September 2012 in Nigeria, which claimed 363 lives and displaced 2.1 million people (NEMA, 2012). Furthermore, according to a 2012 report by the National Emergency Management Agency (NEMA), floods impacted 256 out of 774 local government councils in 2012, with Kogi and Adamawa states having the highest casualty figures. Because of its important location at the confluence of the Niger and Benue rivers, Kogi State was severely impacted by the 2012 floods. Apart from the country's weak drainage infrastructure, the floods of 2012 in Nigeria were linked to the discharge of water from Cameroon's Lagdo Dam, as well as excessive rainfall and the climate change phenomena (Agbonkhese, 2014).

1.3 Review of Government Policy on Flood Control

The goals of the 1999 National Policy on the Environment, which has been implemented by succeeding governments, are

a. to promote sustainable development in Nigeria, with a focus on: a. ensuring a healthy and well-being environment.

b. Protect the environment and national resources for the benefit of current and future generations.

c. Preserve biological variety and the principle of optimum sustainable yield in the utilization of living natural resources and ecosystems by restoring, maintaining, and improving ecological processes fundamental to the biosphere's functioning.

d. Increase public awareness and understanding of the critical connections between the environment, resources, and development, as well as individual and community participation in environmental improvement activities; and

e. Cooperate with other countries, international organizations, and agencies in good faith to achieve the best possible use of transboundary environmental degradation.

2. LITERATURE REVIEW

2.1 Conceptual Literature

Floods are the most common hazard, and they can occur as a result of unusually heavy rainfall, tropical cyclone storm surges, dam breaks, quick snow melts, or even broken water mains. This has a devastating and economic impact both on the government and citizens.

2.2 Theoretical Literature

The theories recommended for this study are;

a. **The hierarchy of Needs Theory and disaster Resilience**: Maslow's hierarchy of needs is a psychological theory proposed by Abraham Maslow in his 1943. Maslow's hierarchy of wants is used to investigate how humans are innately motivated to behave in certain ways. To

illustrate the pattern through which human drives normally go, Maslow used the terms "physiological," "safety," "belonging and love," or "social needs," "esteem," "safety", and "self-actualization." This indicates that in order for motivation to progress to the next level, each level within the individual must be satisfied. Physiological demands are considered the most important physical requirements for human survival, according to the Hierarchy theory. Homeostasis, Food, Water, Sleep, Shelter, and Sex are among them. Flooding infringes on human psychological need.

b. **Protection Motivation Theory:** R.W. Rogers developed protection motivation theory in 1975 to better understand fear appeals and how people deal with them. Today, the protective motive theory is mostly applied to health and safety issues, as well as how people react to health and life-threatening situations. People react to flooding in Nigeria with fear and anxiety as flooding has devastating effect on people.

c. **Structural Functionalism:** Emile Durkheim, Talcott Pearson, Merton, and others are structural functionalism scholars. Structural Functionalism was a theory that originated in sociology and was later incorporated by Gabriel Almond into political science. The basic tenet of structural functionalism is that it views society and the political system as a biological system, based on Charles Darwin's postulates, in which the biological being is seen as a being with structures performing different structures. The structural functionalist theory tends to suffice in analyzing the influence of flood disaster in Nigeria's political economy, notably in Kogi State, in relation to the study. This is because those structures that should be performing functions to mitigate, protect, and manage the consequences of flood disasters are failing to do so, resulting in the disaster's occurrence.

2.3 Empirical Literature

Major flood disasters weren't common in Nigeria until lately. In Nigeria, floods have been documented since 1963 when the Ogunpa River flooded Ibadan, killing people and destroying property. Further floods occurred in 1978, 1980, and 2011. (Adegbola, & Jolayemi, 2021). The 1980 flood, which resulted in significant loss of life and property, raised awareness of the river's potential for disaster and prompted a flurry of Flood Risk Management (FRM) responses, including the launch of the Ogunpa channelization project, educational radio and television jingles on FRM practices, and the relocation of buildings and properties from flood plains (Sangodoyin, & Essein, 1996).

Agbola et al. (2021) observed that although the amount of rain on August 26, 2011, was not the most in the city's recorded history, the financial cost of property destruction as a result of the storm was by far the biggest. The 1980 single flood episode rainfall of 274.0 mm was assessed to have caused losses and damages of N300 million ($1.9 million), while the 2011 rainfall of 187.5 mm was estimated to have cost N2.1 billion ($13.3 million). The extreme level of destruction that followed the 2011 Ibadan flood was attributed to about twelve manmade sources. Also, the 2011 flood catastrophe prompted the Nigerian government to seek funding from the World Bank for a long-term, significant FRM project in the city of Ibadan. The Ibadan Urban Flood Management Project (IUFMP) recognizes the necessity of a long-term integrated approach to FRM for the city, in contrast to previous responses to flooding events that have been piecemeal and primarily focused on relieving immediate and short-term needs, such as rebuilding of destroyed assets (Salim, 2015).

Meanwhile, stakeholders frequently forget the lessons from the "previous" flood disaster and start to relax until another flood occurs since the interval between floods can be unpredictable and deceptively long. While the UK's flood risk management (FRM) is characterized by a

strong flood insurance program and cutting-edge flood warning system, which make up for the country's lack of solid resilience measures, Nigeria's flood warning systems and flood insurance program are both subpar (Adelekan 2007 & Odufuwa, 2012). Hence, strengthening resilience capacity to handle rising climate variability is still the most practical FRM strategy in Nigeria.

After a thorough review of the existing literature on flooding and human security, we discovered that Jamie and Balance (2016) studied the effects of climate change on children's health, development, and survival. However, as can be seen from the preceding review, none of the researchers directly addressed how changes in precipitation as a result of climate change affect children's rights in Nigeria. Temperature changes, variability in the climatic conditions of Nigeria is putting agriculture under serious food security and production under serious treat in Nigeria. (Agu, & Obodoechi, 2021). Not just agricultural products are under threat as a result of temperature change in Nigeria but rather the entire segment of the country. It causes flooding and as well flood wash off farmlands and leads to food scarcity.

2.4 Gaps in Literature and Value Addition

Many scholars have written extensively on flooding from many angles. For example, Agbonkhese et al. (2013) wrote about inadequate drainage and its effects on road conditions in Nigeria, while Ayoade (1983) investigated flooding in Ibadan, Nigeria. In addition, Olaniran, O.I. (1983), focused specifically on Ilorin in Nigeria and the impact of floods in a few chosen areas of that state. However, the existing research has yet to show a link between the country's broad frequency of population displacement and forced migration and the National Emergency Management Agency's flood disaster management methods (NEMA). In other words, the relationship between changes in temperature and violations of children's rights in the country; the occurrence of inter-group conflict and adverse effects of droughts; and widespread population displacement/forced migration as a result of the NEMA's unsystematic, uncoordinated, and non-proactive flood management were not adequately addressed in the reviewed body of extant literature. As a result, it is critical that we analyze the role of the state in flood disaster management, notably in Kogi State, as well as NEMA's flood disaster management response. Both a result, these concerns serve as the study's starting point as well as the vacuum it seeks to fill. The study has successfully added to knowledge and will serve as reference material for further research on the subject matter. The study also serves as a policy guild to the legislators and the executive in curbing the menace of flood disaster.

3. METHODOLOGY AND THEORETICAL FRAMEWORK

This paper adopted the Secondary means of data collection. Secondary data collection involves retrieving already available data from sources other than the target audience. The paper derived sources from the internet, published and unpublished works on flood disasters and flood disaster management in Nigeria.

The adopted theory for this study is Basic Needs theory. The fundamental and basic layer of the pyramid in the theory contains what Maslow called "deficiency needs" or "d-needs": esteem, friendship and love, security, and physical needs. If these "deficiency needs" are not met – with the exception of the most fundamental (physiological) need – there may not be a physical indication, but the individual will feel anxious and tense. Maslow's theory suggests that the most basic level of needs must be met before the individual will strongly desire (or focus motivation upon) the secondary or higher level needs.

In the context of the study, the impact of floods on Kogi State's political economy infringes on the need for security and physical necessities, as well as socio-economic rights. The flood catastrophe has deprived a flood disaster displaced individual in Kogi State of his social and political rights, as his social, economic, and political activities and requirements have been suspended. The applicability of this idea cannot be overstated. It is relevant to Maslow's thesis that man's basic needs should be met and achieved, hence man should be more proactive in addressing an incident that threatens his basic requirements.

4. Factors responsible for flooding in Kogi State?

An examination of the rivers Niger and Benue and the flooding of 2006 – 2015. The River Niger runs from Guinea through Mali, Benin, and Niger and empties into the ocean through Nigeria. The rainy season in West Africa where the River Niger exists is the same, spreading mainly between April and November. The peak of the rainy season is July / August. This peak flow implies that the River Niger runs full all across its length for the rainy season. But the flow also takes time to travel. The peak flow coming from Fouta Djalon Mountain where the River Niger takes its source travels all the way until it arrives in Nigeria. The time it floods Nigeria is, therefore, different from the time the rains fall upstream of its basin. This explains why the River Niger floods Nigeria yearly starting September and at its peak in November but receding to its lowest discharge of about 500m3/s in May.

In order to ensure proper impoundment, the officials in charge of the Kainji and Shiroro dams would generally open the flood gates only when the River Niger's peak flow comes in September. When the opening of such flood gates occurs during a period of excessive precipitation in Nigeria, flooding of downstream communities is unavoidable. Flooding is exacerbated when such openings coincide with discharges caused by the opening of flood gates on the Lagdo dam on the River Benue. That was the case in both the 2012 and 2019 large-scale flooding events.

The opening of the flood gates at the Kainji, Shiroro, and Lagdo dams, as well as the discharge of surplus flows that resulted, coincided with severe rainfall, resulting in the worst flooding in Nigerian history in 2012. The level of flooding would have been mitigated if the flood gates of these dams had been opened at different times so that the flows did not arrive at the confluence in Lokoja at the same time.

Human actions such as blocking drainages, waterways, and building on drainages and waterways also contribute significantly to flooding. Floods have occurred all around the world as a result of the occurrence and reoccurrence of prolonged heavy rain showers (Pilgrim and Cordery, 1993; Christopherson, 1997; ActionAid, 2006; Adeaga, 2008; Wright, 2011; Aderogba, and 2012). Flooding can be caused by convective precipitation (strong thunderstorms) or the abrupt release of water from an upstream impoundment formed behind a dam (landslide) (Thompson, 1964).

a. Natural causes of Flooding

a. Heavy rainfall: When the ground cannot absorb a significant amount of rain, flash floods happen. They can also happen when streams or creeks that are usually dry are filled with water, or when enough water builds up for streams to overflow their banks, creating quick elevations in the level of the water. Although the earth`s climate is constantly changing and global climate change occurs naturally, the rate of future climate change may be more rapid than at any time in the last 10, 000 years (Park O., Moradeyo A. and Augutine U 2024).

b. Lack of Lakes: Lakeshore flooding refers to the inundation of land regions close to one of the Great Lakes as a result of lake water levels rising above normal. Lakeshore flooding affects the nearby lakeshore, bays, and the points where lakes and other connected waterways, including rivers, converge. The floods in Hyderabad demonstrated that, in addition to climate change, cities are also suffering from poor design and lake encroachment. The capacity of Hyderabad's lakes has diminished as a result of encroachment, siltation, and the dumping of solid waste.

c. Silting: The silt raises the level of the riverbed. As a result, the river's normally longitudinal (straight) course is distorted. As a result, the river looks for a lateral path to take (to the left or right).

b. Human causes of Flooding

While other human causes of flooding in Nigeria maybe due to one of the following factors;

a. Burst water from main pipes: when pipes get busted, flooding can occur especially when the pipe is not fixed immediately. Pipe waters can burst as a result of water pressure, weak pipes, blockages, tree roots, freezing, poor installation of pipes.

b. Dam failures: Levee breaches or dam failures can occur suddenly and without much warning, leading to catastrophic flash floods in the vicinity that can cause property damage and even fatalities.

c. Population pressure: Rapid population development causes metropolitan areas to significantly expand, and agricultural and floodplain areas have been rapidly depleted. Increased human activity near river banks contributes to river expansion, which causes flooding and other risks.

d. Deforestation: it reduces the soil's ability to hold water. After the trees are cut down, their roots become dried out. Water moves more slowly through trees and into the soil. Floods are caused when the surface water from rainfall builds up.

4.2 Implication of flooding in Kogi State

The impact of flooding in Kogi State can be categories into the following sub heading:

Housing & Shelter

Houses and food supplies were washed away or seriously destroyed during the flood. As of November 15, 2012, according to the OCHA flood situation report, 1842 dwellings had been damaged or destroyed by floods, and 15,329 people had been internally displaced. In 2012, the government provided clusters of villages or camps as the only means of surviving. Emergency shelter and recovery, basic household items, provision of water and sanitation facilities in camps, household water purification tablets in certain identified areas, first aid, sensitization on flood-related health risks, and water, sanitation, and hygiene promotion activities, among other things, were all supported, according to Musa (2012). Flooding destroyed approximately 1,567 homes between 2012 and 2019, according to the National Bureau of Statistics.

Education

In the impacted districts of Lokoja metropolis, educational activities are also taking place. In 2012, there was a flood. The closure of schools impacted about 823 students at approximately 7 schools in the area. Punch Nigeria Limited (Punch Nigeria Limited, 2012). According to the

Commissioner of Education, the flood would have an impact on the performance of some of the students who are qualified to take the West African Senior Secondary Certificate Examinations. As a result, pupils in flooded areas will continue to be disadvantaged until 2019.

Safety and security:

Communities and families are put at risk by natural disasters. Often, community structures that serve to maintain peace and safety are jeopardized. Looting, bribery, or victim exploitation, theft, and physical (sexual) assaults or rape cases have all been reported in some of the flooded areas (Odiegwu, 2012).

Mental Health.

Flooding, like other natural disasters, has an emotional impact on those who are affected. Losses of lives, homes, property, and means of subsistence frequently result in despair and an overwhelming sense of hopelessness. Natural disasters such as the floods that have afflicted most of Nigeria, either directly or indirectly, cause depression, frustration, and wrath.

5. CONCLUSION

When the ground cannot absorb a significant amount of rain, flash floods happen. They can also happen when streams or creeks that are usually dry are filled with water, or when enough water builds up for streams to overflow their banks, creating quick elevations in the level of the water. The floods in Hyderabad demonstrated that, in addition to climate change, cities are also suffering from poor design and lake encroachment. The capacity of Hyderabad's lakes has diminished as a result of encroachment, siltation, and the dumping of solid waste. Rapid population development causes metropolitan areas to significantly expand, and agricultural and floodplain areas have been rapidly depleted. Increased human activity near river banks contributes to river expansion, which causes flooding and other risks. Deforestation: it reduces the soil's ability to hold water. After the trees are cut down, their roots become dried out. Water moves more slowly through trees and into the soil. Floods are caused when the surface water from rainfall builds up. The Federal and State governments in collaboration with NEMA, SEMA NIMET, has initiated policies to curb flooding in Nigeria. However, flooding has been a continuous recurrence in Nigeria causing loss of life, property and devastation to the citizens and the Government.

6. RECOMMENDATIONS

From the foregoing therefore the following recommendations are hereby suggested:

1. Human activities contribute to flooding, thus legislation should be made by the Federal Government through the Nigerian Legislators, to tackle all human activities such as; building on waterways, illegal dumping of refuse, and destruction of manholes as a punishable offense by law.

2. Kogi State should engage community leaders in the communities in which people are prone to flood through the media, National Orientation Agency, even town criers and local chief, to enlighten their community members to detest indiscriminate human activities that then to trend flood disasters in Kogi State.

3. NEMA through its response measures should improve on its flood disaster management modus operandi in Kogi State.

4. Government should establish sustainable integrated flood management and emergency response system as a new reform in Kogi State.

5. Government in collaboration with NEMA, SEMA and LEMA should prepare a Flood Emergency Management Plan for Kogi State as a matter of urgency

6. The Kogi State Government through its agency on drainage services should de-silt and dredge all the major rivers and their tributaries prior to the onset of the rainy season.

REFERENCES

Action Aid (2013). Africa/Nigeria - 120 000 homeless, houses, hospitals, schools, churches and buildings destroyed or damaged by the worst flooding in40years*http://www.actionaid.org/aree/news/newsdet.php?idnews=32410&lan=eng Accessed April 2024*

Adeaga, O. (2008). Flood Hazard Mapping and Risk Management in parts of Lagos N.E, Department of Geography, faculty of Environmental Sciences, University of Lagos. Akoka, Nigeria.

Adelekan O. (2009). Vulnerability assessment of an urban flood in Nigeria: Abeokuta flood 2007. *Journal of Natural Hazards. Vol 56, pp 215-231.* Springer Netherlands Publication, 2011. http://dx.doi.org/10.1007/s11069-010-9564-z.

Agbonkhese, O., Yisa, G. L., Daudu P.I. (2013). Bad Drainage and its Effects on Road Pavement Conditions in Nigeria. *Journal of Ecology Studies* Vol 3, No 10.

Agu, C. S., & Obodoechi, D. N. (2021). Co2 Emissions, Temperature Changes, Productivity And Labour Supply: New Empirical Evidence From Farmers In Nigeria. Journal Of Economics And Allied Research, 6(1), 295–304. Retrieved From Https://Jearecons.Com/Index.Php/Jearecons/Article/View/80

Ajayi, O., Agbola, S.B., Olokesusi, B.F., Wahab, B., Taiwo, O.J., Gbadegesin, M., Taiwo, D.O., Kolawole, O., Muili, A., Adeola, M.A., Olutade, O.G., Shiji, F. & Abiola, N.A., (2016). Flood management in an urban setting: a case study of ibadan metropolis. Special Publication of the Nigerian Association of Hydrological Sciences, pp. 65–81, 2012.

Agbonkhese, A., (2014). Flood Menace in Nigeria: Impacts, Remedial and Management Strategies. Journal of Geoscience and Environment Protection, Vol.4 No.7, July 25, 2016.

Armineh N., Quanzhi L., Xiaomo L., and Sameena S. (2017), Breaking Disasters: Predicting and Characterizing the Global News Value of Natural and Man-made Disasters. *KDD Workshop on Data Science + Journalism, 2017 retrieved from* https://www.thomsonreuters.com/en/artificial-intelligence/publications.html#twenty-seventeen on 14/05/2024

Ayoade, A.O. Vol. II. No. 4 (1981) "Note on the recent Flood in Ibadan, Nigeria" Savanna.

Bariweni P. (2012). Some Environmental Effects of Flooding in the Niger Delta Region of Nigeria. Published 2012 by Environmental Science. Retrieved from: https://www.semanticscholar.org/paper/Some-Environmental-Effects-of-Flooding-in-the-Niger-Bariweni Tawari/4b680ee69836d25e03b08925a4ee703df355833c#citing-papers on March, 2024.

Christopherson, W. (1997): Community Involvement in Flood and Floodplain management: the Australian Scene. Retrieved from: *http: //www.unescap.esd/water/disaster/australia.html Accessed March 2024*

ECHO. (2009). Flood Mitigation in Lagos, Nigeria through Wise Management of Solid Waste: a case of Ikoyi and Victoria Islands; Nigerian, Paper presented at the UNESCO-CSI workshop, Maputo 19-23 November 2009.

Egbenta, I.R. (2004)" The cause and Consequence of Deforestation of The Rain Forest Belt of Nigeria" in H.C.

Esu. S. P. (2008).―Flood inundation hazard modeling of the River Kaduna using remote sensing and geographic information systems‖, *Journal of Applied Sciences Research, 4 (12), pp 1822 -1833*.

Imandojemu K., Iwayemi A. Oyedele O. (2024). Temperature Shocks and Agricultural Output in Nigeria: A Dynamic Computable General Equilibrium Approach. Journal of Economics and Allied Research, 9(1), 279–291. Retrieved from https://jearecons.com/index.php/jearecons/issue/view/29/2

NEMA (2012). The Nigeria worse flood kills 363, displaces 2.1 million people-NEMA. NEMA in Channels Television: Nov 5th, 2012. *http://www.channelstv.com/home/2012/11/05/nigerias-worse-flood-kills-363displaces-2-1-million-people-nema/ Accessed January 2024*

NEMA (2012). Lagdo Dam Disaster: New Babies Delivered, 57 Pregnant Women in IDP Camps. Press Release.*http://www.nema.gov.ng/media-room/press-release.aspx?viewpr=77 Accessed March 17, 2024*

Nigeria, Guardian (2018-09-23). "Abuja earth tremor as warning signal". The Guardian Nigeria News - Nigeria and World News. Retrieved 2024-04-21.

Nwankwoala, H. O.; Orji, O. M. (12 December 2018). "An Overview of Earthquakes and Tremors in Nigeria: Occurrences, Distributions and Implications for Monitoring". International Journal of Geology and Earth Sciences. 4 (4): 56. doi:10.32937/IJGES.4.4.2018.56-76. S2CID 187570345.

Osaretin E., Olotu E. (2022). Climate Change Mitigation and Gender Inequality Nexus: Evidence from Sub-Sahara Africa. Journal of Economics and Allied Research Vol. 7, Issue 1 retrieved from https://jearecons.com/index.php/jearecons/article/view/103/102.

Park O., Moradeyo A. and Augutine U. (2024). The Long Run Relationship of Climate Change and Sugarcane Production in Nigeria. Journal of Economics and Allied Research, 9(1), 279–291. Retrieved from https://jearecons.com/index.php/jearecons/issue/view/29/2

Zayyana, H., & Ahmed, M. H. (2024). Revisiting the Environmental Kuznets Curve Hypothesis with the Role of the Shadow Economy in Nigeria. Journal of Economics and Allied Research, 8(4), 1–13. Retrieved from https://jearecons.com/index.php/jearecons/article/view/339

Zhang B., Frank S., Kelly S., Michael H., Sherri H., and Tsegaye T. (2021). TweetDrought: A Deep-Learning Drought Impacts Recognizer Based on Twitter Data. In Proceedings of the ICML 2021 Workshop on Tackling Climate Change with Machine Learning. Retrieved from https://www.thomsonreuters.com/en/artificial-intelligence/publications.html#twenty-seventeen on 14/05/2024.