

POVERTY, WEALTH AND ECO-CATASTROPHE IN NIGERIA

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Abstract

The dangers of climate change stretching to catastrophic proportions have made it an issue of global concern and a reason for the clamour for strategies and result-oriented measures to curb, ameliorate or avert the horrendous consequences of climate change. The huge toll on lives and property attributed to eco-catastrophe is evident in the floods, earthquakes, wildfires and the like which have ravaged many cities around the world. It has disrupted economic activities, displaced millions of people, punctuated developmental efforts and placed a huge financial burden on the government and people who have to battle with poverty and the impoverishment of national resources. This paper employed the critical analysis method to investigate the connection between poverty and climate change in Nigeria. The study discovered that the devastating effects of drought, flooding, erosion, desertification, rising sea levels, heat stress, pests and diseases, erratic rainfall patterns, etc. are what lead to the impacts of climate change on livelihoods. In addition, the paper emphasized the necessity of Nigeria having a climate policy, the establishment of the Nigerian Climate Change Commission (NCCC), the development of a national framework for adapting to climate change, and the adoption of emerging technologies. The paper also emphasized the new function of agricultural extension in the context of managing climate risk. Additionally, the paper advocates awareness creation and sharing of successfully initiated and adaptable measures of addressing eco-catastrophe in prone areas in Nigeria

Keywords: Poverty, Ecocatastrophe, climate change, Climate Policy, Climate risk

Introduction

Climate change has in recent times become a matter of global concern because of the catastrophic and cataclysmic consequence that trails its wake. Several parts of the world have been devastated by the devastating result of climate change ranging from floods, earthquakes, wildfires, drought, rising atmospheric temperatures and heat waves, melting polar ice, rising sea levels, and rainfall from tropical cyclones amongst others. These natural catastrophes, which are harmful to society, have a significant impact on the world economy. According to Mo (2018), between 2000 and 2017, natural disasters caused an estimated \$3 trillion in economic losses worldwide. Category 1 Hurricane Florence made landfall in the Carolinas and Virginia on September 14, resulting in approximately one million power outages, 40 fatalities, and an estimated \$40 billion in damage along with an additional \$4 billion in lost economic output. At around the same time, Typhoon Mangkhut, a Category 5 storm, made landfall in the Philippines, Hong Kong, and southern China. Damage estimates for the Philippines alone range from \$16 billion to \$20 billion. From June to October of 2022, Pakistan was hit by a monsoon. During which heavy rainfall caused flooding and landslides at a rate nearly ten times the national 30-year average. The floods affected nearly 33 million people, damaged 4.4 million acres of agricultural land and killed 800,000 livestock. In Africa, Southern Sudan, Somalia, Chad and Madagascar suffered heavily from either drought, cyclone or floods (UNWFP 2023). Nigeria has experienced a variety of natural disasters, including landslides, flooding, oil spills, sandstorms, tidal waves, coastal erosion, and other man-made calamities.[7] and [8] One could argue that the vast and poorly

protected country's environment made its citizens particularly susceptible to these calamities. Other risks include sand storms, which typically move from northern to southern states of Nigeria and produce significant amounts of dust and dirt that harm property. Another factor that can cause damage to properties and crops is hail, which is a rare occurrence in some parts of Nigeria. These natural disasters come with devastating effects on the socio-economic life of many nations. Ecocatastrophe, in whatever form it happens, greatly impacts the livelihood of the citizens (Church 2004). They have resulted in wanton loss of lives and property and displacement of the populace of an entire community. Destruction of economic activities, destruction of flora and fauna in addition to the destructive impact on global food security and infrastructures, loss of jobs and livelihood of many citizens in affected areas (Aljazeera 2023). Added to the above is the destructive impact on human health. The resultant effect is that it occasions increased poverty level that leaves the populace impoverished.

Climate change has been intrinsically linked to poverty and wealth. The quest for a better economic mainstay has made man engage in exploration and other industrial activities that have impacted negatively on the climate which over time culminated in some kind of natural disaster or the other. While mitigating ecocatastrophe is crucial, the ability to confront it is intrinsically related to the economic capability of the affected areas. It is logical to say that the huge toll of climate change is harder on poorer countries than the wealthier countries. Its impacts have resulted in further impoverishment of the populace in affected areas. This paper therefore investigates the relationship between ecocatastrophes, poverty and wealth to find how well ecocatastrophes can be mitigated to ensure the safety of lives and property and maintain an eco-friendly environment. The paper will look at the concept of climate change or ecocatastrophe, the nature and consequence of ecocatastrophe and how its impact and mitigation are related to poverty and wealth.

Poverty Conceptualised

United Nations' definition of poverty states that "Poverty is the lack of basic capacity to effectively function in the society. It means not having enough to feed, clothes, not having a school or clinic to go to, no land to grow food on, a job to earn a living or access to credit. It means often living in a marginal or fragile environment without access to clean water or sanitation" United Nations (1998). Internationally, the basic standard of poverty is when you earn less than \$1 a day (Amna 2014). Perpetual hunger, living in substandard housing without access to water, kitchens, or restrooms, low income, malnourishment, lack of social and political standing, and the inability to engage in society with dignity are all considered indicators of poverty Osinubi (2003a). Chukwu (2008, p. 1) goes on to say that a country is considered impoverished if its economy is unable to meet its citizens' basic needs, such as food. This is the norm for most African countries. Approximately 70% of people in Nigeria live below the poverty line in a country that is rich in mineral resources but fails the provision a sufficient Medicare delivery system and the provision of basic amenities such as electricity, housing and education.

The high level of illiterate population also contributes to the poverty index. The quest for survival in a poverty-ridden nation with high inflation makes the poor masses engage in activities that are injurious to the ecosystem. There are numerous ways in which poverty impacts the environment, particularly in developing nations. Inclusive is the quest for survival which results in migration to urban centres resulting in a population explosion in such centres. The poor also engage in several economic activities that impact the environment such as bush burning, deforestation, and bunkering amongst others. Other human activities borne out of poverty include the blocking of waterways and the promotion of urbanization in the quest for survival also worsen the casualty rate in times of disasters like floods.

Concept of Climate Change, Nature and Effects

Climate change has been described as a statistical variation that persists for an extended period, typically for a decade or longer (Egbuabor and Egwuchukwu 2017 p217). It includes a shift in the frequency and magnitude of sporadic weather events as well as the slow but continuous rise in global average surface temperature (Intergovernmental Panel on Climate Change [IPCC, 2001]).

Climate change, according to Crimmins (2022), is responsible for so many natural disasters defined as “a sudden and terrible event in nature that usually results in serious damage and many deaths.” The World Health Organization maintains that climate change poses a fundamental threat to human health because it affects the physical environment as well as all aspects of both natural and human systems, including social and economic conditions and the operation of health systems. Increasingly frequent and intense weather-related events, such as storms, extreme heat, floods, droughts, and wildfires, are also signs of the changing climate. These weather-related hazards have an impact on health both directly and indirectly, increasing the risk of deaths, noncommunicable diseases, the emergence and spread of infectious diseases, and health emergencies.

Types and Effects of Climate Change-induced Natural Disasters in Nigeria.

The experience of Ecocatastrophe in Nigeria manifests majorly as drought, desertification, flooding and environmental pollution. An examination of these catastrophes will reveal the interrelationship between ecocatastrophe, poverty and wealth.

Drought and Desertification: Drought typically results from inadequate seasonal precipitation, an extended dry season, or a sequence of below-average rainy periods (Sheikh and Soomro 2006). The defining feature of drought is a substantial reduction in water availability within a particular time frame and geographic area. Drought is defined as a naturally occurring phenomenon by the United Nations Convention to Combat Desertification (UNCCD) (1994) as it arises when precipitation significantly falls below the recorded normal levels, leading to significant hydrological imbalances that negatively impact land resource systems. Land degradation is made worse by persistently mismanaging the land during a drought. Insufficient rainfall and extended drought can have detrimental effects on water management and use, influencing a range of areas including contamination of rivers, ecological issues, reservoir design and management, irrigation, small-scale power production, and drinking water supply.

Water demand is particularly critical during severe and widespread drought (Olagunju 2015) Drought has been a persistent problematic issue in West Africa which attracted serious attention with the occurrence of the severe Sahelian droughts of 1970s (Abdullahi, Fullen & Oloke. 2016). In recent years the consequences have increased in scale and complexity. The regions most severely affected by drought and desertification in Nigeria are concentrated in the north-eastern part of Nigeria (Olagunju 2015; Elijah, Kusemoran, Nyanganji & Mshelia 2017) Rain-dependant agriculture serves as the primary source of food production and livelihood for many impoverished rural farmers in Sub-Saharan Africa, including Nigeria (Cooper, Dimes, Rao, Shapiro, & Twolmlow 2008)). Many subsistence farmers in north-eastern Nigeria, primarily rely on agriculture for their sustenance and have been grappling with recurrent droughts since the 1970s. Where is insufficient rainfall, leads to desertification which impacts food production and it occasions famine and consequent migration. This is one way poverty impacts on climate change and vice-versa

Floods

According to Crimmins (2022), Floods are the most frequent natural disasters and have impacted nearly every country in the world. A flood can refer to an overflow or eruption of water mass over land not susceptible to being submerged (Daniel and Udo, 2019).

Floods and climate change are related because of the ways water is affected by climate change. Increased temperature causes more evaporation, which produces denser clouds that can hold more water. This ultimately results in more precipitation, which raises the possibility of flooding. Flooding along the coast can also result from rising sea levels brought on by glaciers melting. Flooding can occur as a result of heavy rains or when high tides cause rivers and seas to overflow their regular boundaries, submerging lands. This happens when there is more water than can be absorbed by lakes, ponds, riverbeds, soil, and vegetation. The excess water then overflows the land, filling stream channels, or filling lakes, natural ponds, or artificial reservoirs.

Floods are extreme weather events brought on by global warming, which raises temperatures and produces heavy rainfall, ocean thermal expansion, and glacier melt. These factors also raise sea levels, which inundate coastal areas with water (Mfon, Oguike, Eteng, Etim 2022 p1778). Inundation brought on by flooding harms people, property, and infrastructure in addition to plants and animals (Ujene and Oguike, 2020). Flooding is a worldwide natural hazard that has claimed lives, destroyed property, and driven some species out of the ecosystem. More impermeable surfaces and natural disasters like wildfires or deforestation reduce the amount of vegetation available to absorb rainfall which exacerbates the situation (Ayooso 2012). Flooding may also result from dam or other water-retention structure failures. Flooding has been significantly exacerbated in recent years by climate change and global warming. (Well-known 2012)

Frequent flooding in various regions of Nigeria has resulted in significant harm to the economy, resulting in huge casualties, and fatalities. The death toll from floods, along with the destruction of homes, businesses, power infrastructure, livestock, and crops are some of the consequences (Womboh, Ajumobi, Ezem, 2023). A look at the causes of ecocatastrophe will point to its interrelatedness to poverty and wealth

Causes of Eco Catastrophe

Several activities engaged in by man have adverse effects on the overall ecosystem. Ibimelua (2011) concurs by stating that the various developmental activities of man have greatly interfered with the natural environment; thereby degrading it. She further categorises such human activities which include:

- i. Deforestation i.e. destruction of the natural vegetation through
 - a. farming, road construction and lumbering
- ii. Oil exploration, that leads to oil spillage thereby damaging farmlands, vegetation and aquatic life.
- iii. Agricultural practices such as overgrazing, bush burning, application of fertilizer, pesticides and herbicides
- iv. Damming rivers thereby interrupting their natural flow
- v. Industrialization which leads to air, land and water pollution
- vi. Hunting which has greatly contributed to bio-diversity loss or extinction of some animals

Chukwu (2008) catalogues some of these causes which he links to poverty. They include the following: **Deforestation:** Poverty engenders tree-cutting, which contributes to issues with erosion, flooding, and global warming. This activity also has an impact on the state of water bodies, the ozone layer being destroyed, the removal of valuable tree species etc. The quest for arable land to farm for survival has further exacerbated the issue of deforestation.

Excavation and Quarrying and Exploration Activities: Exploration, Quarrying, and Excavation are vocations that are undertaken for survival's sake. The quest to tap natural resources for societal survival without commensurate intervention mechanism is the reason for people to engage in activities related to exploration, quarrying, and excavation, which exacerbates edaphic disturbance, fragile crust, edaphic microorganism and vegetation destruction, dust pollution of the atmosphere, and increased erosion and flooding. Water pollution from oil spills and gas flaring that affect the climate are included.

Hunting and Bush Burning. Hunting and bush burning, which harms the environment by destroying the world's animal and plant species, in addition to making some go extinct is a contributory factor to

ecocatastrophe. This can also contribute to pollution by raising the atmospheric carbon content. (Avwiri and Ebeniro, 1998)

Air Pollution: Fumes from heavy machinery, industrial processes, generators, cars, and other inevitable sources harm the environment. Given that the fumes contain harmful gases such as carbon monoxide, hydrogen sulphide, and sulphur dioxide, it is clear that the air we breathe in is contaminated. A person's daily expenses will increase in an attempt to lessen this threat, further depleting their bank account. If not properly managed, material waste can contribute to environmental abuse.

Oil Spillage and Pollution: Nigeria, being an oil and gas-dependent economy depends largely on the proceeds from oil and gas. The exploration of oil in Nigeria has left some devastation to the ecosystem as oil spills have polluted the rivers and streams thereby contaminating the source of drinking water, the oil spills not only destroyed the vegetation with the dearth of food and cash crops it has also affected aquaculture in an area where fishing is the main vocation and source of livelihood for the people in the affected areas. This is aside from wiping out the mangrove forest of the Niger Delta region. It has an impact on soil fertility. Pollution resulting from Oil and gas exploration has occasioned acid rainfall which increases the corrosion rates of metal oil pipes which emits pollutants into the atmosphere which in turn pollutes the environment. People in the area cannot assuage the consequence of these ecocatastrophes that have further impoverished and pauperised them due to the loss of jobs and their economic mainstay. From the foregoing, it is clear that ecocatastrophe has a tie to poverty and wealth.

Relationship between Poverty, Wealth and Ecocatastrophe

The understanding of the linkage of the concepts of ecocatastrophe or Disaster, vulnerability, poverty and wealth is important in the effort to elevate the standard of living of the world. Coping with the unexpected losses from ecocatastrophe is a herculean task for the poor. Most often, people from developing countries are mostly prone to many of these disasters due to their levels of development and poverty. According to the Centre for Research on the Epidemiology of Disasters (CRED) (2017), developing countries suffer more severely from the effects of disasters than industrialized countries, owing to their geographical location and higher vulnerability. Similarly, losses resulting from natural disasters according to Stephane et al. (2017), do not have the same meaning for the rich and the poor, Because their livelihoods depend on fewer assets, their consumption is closer to subsistence levels, they cannot rely on savings to lessen the effects, their health and education are more at risk, and it may take them longer to recover and rebuild, the poor and marginalized people are more affected.

Consequently in the event of ecocatastrophe, the poor can be seen to be vulnerable where vulnerability represents the physical, economic, political or social susceptibility or predisposition of a community to damage in the case of a destabilizing phenomenon of natural or anthropogenic origin (Sapam et.al. 2014 cited in Ogunleye, Arohunsor & Ibitoye 2023)

Globally, the cases of ecocatastrophe and losses be they natural or man-made are escalating. Since 1970, more than 5 billion people have been impacted by natural disasters, resulting in over \$1 trillion in financial losses. Poor communities and slum areas are more susceptible to ecocatastrophes due to their overpopulation and other economic factors like the state of the infrastructure (Megan et al 2011).

In the same vein the International Federation of Red Cross, IFRC (2019), sees vulnerability as the “diminished capacity of an individual or group to anticipate, cope with, resist and recover from the impact of a natural or man-made hazards”. The impact of ecocatastrophe is disastrous to vulnerable poor people who lack the capacity for mitigation, preparedness and socio-economic factors influencing the losses and the capacity to recover (Ogunleye, Arohunsor & Ibitoye 2023)

People are often fatalistic about natural phenomena and lack of knowledge keeps them from taking the necessary safety precautions. Epidemics, homelessness, and malnutrition are the outcomes of a devastating event. After a disaster, poverty, suffering, and desperation can also fuel armed conflict. Because there are insufficient social and economic resources, this creates a deadly downward spiral effect that increases a nation's susceptibility to the next disaster. Natural disasters frequently impede social and economic

advancement for a considerable amount of time because they require limited resources for recovery (Eschborn 2005; Damas et al., 2004).

Caroline (2019) stated that most rural communities in the coastal region are highly susceptible to floods and outbreaks of waterborne diseases because of their proximity to water bodies, their' large population and their small land mass. Consequently, they were highly devastated by the 2012 flood disaster in Nigeria described by the World Health Organisation as the worst flood to have hit the country in the past 50 years.

From the foregoing it is clear that ecocatastrophe is inextricably linked to poverty in that poverty enhances ecocatastrophe which in turn induces poverty.

Mitigating Ecocatastrophe

Nigeria has already experienced the catastrophic effects of climate change, particularly in the south, as evidenced by the enormous flood that occurred there in 2012. Huge floods that resembled the ones that occurred in 2012 struck large portions of the states of Niger and Kano. Mitigating ecocatastrophe further explicates the linkage between ecocatastrophe and wealth. The cost of preventing ecocatastrophe is high. For this reason, the developing nations with fewer resources to combat climate change are worse hit. Negligence and failure to tackle the issue of climate change by successive governments due to scarce resources have contributed to ecocatastrophe in the country. To prevent further disasters, appropriate preventive action and timely implementation of adaptation measures are required. The strategies for dealing with ecocatastrophe that Beyioku, (2016) advocated are listed below.

To overcome this disastrous impasse, a significant intersection between development and climate change adaptation and remediation—both of which aim to reduce the underlying causes of vulnerability—must be provided. Adding policies to be a crucial part of government initiatives and mainstreaming climate change into state, local, and federal development plans are two more ways to address the issue.

The solution also includes effective waste management, flood and coastal erosion control, tree planting to stop desertification, land reclamation, landscaping and beautification, campaign against desertification through the Desert Warriors, and control of land, water, noise, and air pollution. Other measures include raising awareness of climate change issues, which are currently at a low ebb, especially among vulnerable groups like women and children, even at the grassroots, especially rural dwellers.

Social Sensitization and Activation through bolstering advocacy initiatives with public speaking engagements, workshops, conferences, media campaigns, and summits on flood, and climate change is another way to mitigate the effect of climate change

The advancement of alternative energy sources, alternative livelihoods, dry land agricultural technology, and alternative water sources for use by people, plants, and animals. Adopting the right technologies is necessary to lessen the problem at all levels, but infrastructure and human capacity should also be strengthened to mainstream climate change into national development. Additionally, appropriate technologies for mitigation and adaptation should be implemented at all levels, and infrastructure and human capacity for mainstreaming climate change in national development should be strengthened. There is a need for cutting-edge research to contribute to workable solutions, university lecturers should also be financially motivated to conduct research in a variety of domains of knowledge related to climate change. Additionally, it is currently being argued that insufficient data exist to mainstream climate change in development issues and that it is urgently necessary to produce a large volume of data and statistics to improve the use of key performance indicators for the goal of efficiently monitoring and evaluating climate change.

Summary Conclusion and the Way Forward

The goal of the paper is to discuss the risks associated with an ecological disaster that results from climate change and how it relates to both wealth and poverty. The nature and effects of climate change are discussed. Climate change defines, as variations in the global temperature that are additional to natural variability recorded over similar periods and that are caused by human activity that modifies the composition of the

atmosphere (IPCC, 2007). Global warming is the temperature rise caused by terrestrial radiations that are trapped by earthly gasses and reradiate the heat back to the planet. The study went on to discuss other consequences of climate change, such as irregular rainfall patterns, pests and diseases, heat stress, sea level rise, erosion, desertification, and flooding. The paper further described the effects of climate change including flooding, drought, erosion, desertification, sea level rise, heat stress, pests and diseases, and erratic rainfall patterns among others. These consequences no doubt impact negatively on national development in the following ways; low agricultural productivity, food insecurity, resource conflicts, poverty, unemployment, environmentally-induced migration, health issues and livelihood problems. The paper further states that poverty is one limiting factor in mitigating ecocatastrophe and the poor suffer the most from such disasters. The paper then suggests appropriate climate policy at national and local levels as the first step towards dealing with climate change problems. Similarly, the paper underpinned the new role of agricultural extension in the transfer of improved knowledge and practices aimed at climate risk management.

RECOMMENDATIONS

The paper recommends the following measures to enhance better understanding and capability in dealing with climate change issues in Nigeria.

1. The pursuit of economic development must not be at the risk of the environment as ecocatastrophe will neutralise the gains of economic development. Because the sustainability of economic progress made will be problematic.
2. Nigerian government agencies at all levels should step up their advocacy for climate change and implement broad-based community education programs. The effort to modify lifestyles and protect the environment should be spearheaded by communities.
3. There should be a bill for the establishment of a National Climate Change Commission (NCCC) in Nigeria with the mandate to deal with all climate change issues
4. Commission a National Benchmark Survey (NBS) to identify the remote and immediate causes of climate change, its effects, local knowledge and practices across our six geopolitical zones.
5. Collaborations between governments and other relevant parties, such as NGOs, CBOs, farmers, the private sector, and local communities, to guarantee a mutually beneficial outcome in the face of climate hazards
6. Develop a National Adaptation Framework for all the geopolitical zones in Nigeria. This will include plans for resettlement of victims of environmentally induced migration, resource conflicts, and crime and violence associated with climate risks.
7. Taking a greener approach. This suggests using machinery, infrastructure, equipment, and technology that is less harmful to the environment and produces fewer greenhouse gases. Improved rail transportation, the use of biofuels, and energy-saving gadgets are a few examples.

It is believed that the above recommendation, if implemented will go a long way in solving the consequence of ecocatastrophe in Nigeria

References

- Abdullahi, H.G.,M.A. Fullen, D. Oloke. (2017)Socio-economic effects of drought in the semi-arid Sahel: a review” *International Journal of Advances in Science Engineering and Technology*, 1 (2016),pp.95-99
- Aljazeera (2023) “Natural disasters that plagued the world in 2023” Retrieved From <https://www.aljazeera.com/gallery/2023/12/27/natural-disasters-that-plagued-the-world-in-2023>
- Ayooso, S. (2012). How to Check Floods in Nigeria, The Tide [Online] Available: <http://www.thetidenewsonline.com/2012/07/05/how-to-check-floods-in-nigeria/>
- Beyioku, Jumoke (2016) Climate change in Nigeria: A brief review of causes, effects and Solution” Federal ministry of information and national orientation. Retrieved from <https://fmino.gov.ng/climate-change-nigeria-brief-review-causes-effects-solution>
- Centre for Research on the Epidemiology of Disasters (CRED) (20 17) Economic, Losses, Poverty &Disasters 1998-2017. United Nations Office for Disaster Reduction
- Chukwu, Godwill. (2008). Poverty-driven causes and effects of environmental degradation in Nigeria. *Pacific Journal of Science and Technology*. 9. 608 - 611.
- Church Deirdre L. (2004) "Major factors affecting the emergence and re-emergence of infectious diseases” *Clin Lab Med*. 2004 Sep; 24(3): 559–586.
- Cooper, P.J.M., J. Dimes, K.P.C. Rao, B. Shapiro, S. Twolmlow (2008) “Coping better with current climatic variability in the rain-fed farming systems of sub-Saharan Africa: An essential first step in adapting to future climate change” *Agric. Ecosyst. Environ.*, 126 (1-2) (2008), pp. 24-35
- Crimmins, Megan (2022) “How Climate Change Impacts Each Type of Natural Disaster” Retrieved from <https://www.pbs.org/wnet/peril-and-promise/2022/09/how-climate-change-impacts-each-type-of-natural-disaster/> Assessed 29/3/2024
- Daniel, E. E. and Udo, R. (2019). “Human-environment interactions”. In Ibok, E., Daniel, E., and Atakpa, O. (eds). *The Politics of Global Environmental Policies*. Calabar: University of Calabar Press.
- Elijah, E, M.Ikesumoran, K.J. Nyanganji, H.U. Mshelia (2017) “Detecting and monitoring desertification indicators in Yobe State, Nigeria”. *Journal of Environmental Issues and Agriculture in Developing Countries*, 9 (1) (2017), pp.22-34
- " Emerging Infectious Diseases" (<https://www.hopkinsmedicine.org/health/conditions-and-diseases/emerging-infectious-diseases>).*www.hopkinsmedicine.org*. 2019-11-19. Retrieved 2024-03-28.

- Famous, FO. (2012). Mitigating the impact of flood disasters in Nigeria. Pointblank News. [Online] Available: <http://pointblanknews.com/pbn/articles-opinions/mitigating-the-impact-of-flood-disasters-in-nigeria/>
- Ibimilua, Foyeke Omoboye (2011) "Linkages between Poverty and Environmental Degradation" An *International Multi-Disciplinary Journal, Ethiopia Vol. 5 (1), Serial No. 18, January, 2011*(Pp. 475-484)
- Intergovernmental Panel on Climate Change (IPCC) (2007). Impact, Adaptation and Vulnerability. Contribution of Working Group I of the Intergovernmental Panel on Climate Change to the Third Assessment Report of IPCC. London: Cambridge University Press.
- IFRC. (2019). International Federation of Red Cross and Red Crescent Societies) <http://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/what-is-vulnerability/>.
- IPCC. (2001). *Impact, Adaptation and Vulnerability. Contribution of Working Group II of the Intergovernmental Panel on Climate Change to the Third Assessment Report of IPCC*. London: Cambridge University Press.
- "Katsina residents panic over two-day hailstone" (2022-) (<https://punchng.com/katsina-residents-panic-over-two-day-hailstone/> - *Punch Newspapers*. 2022-09-12. Retrieved 2023-02-26.
- "Man-made disasters in nigeria - Google Search" (<https://www.google.com/search?q=man-made+disasters+in+nigeria> - *www.google.com*. Retrieved 2023-07-11.
- Mfon, Ifiok Enobong, Michael Chukwumeka Oguike, Salvation Ubi Eteng, Ndifreke Moses Etim. Causes and Effects of Flooding in Nigeria: A Review. *East Asian Journal of Multidisciplinary Research (EAJMR)* Vol. 1, No. 9, 2022: 1777-1792
- Mo, Jiachen. (2018) "Natural Disasters' Effect on the Global Economy" *Globaledge*. Retrieved from <https://globaledge.msu.edu/blog/post>. Assessed 29/3/2024
- Newsline, Church of the Brethren (2022-09-29). The Nigerian communities suffer natural and man-made disasters – News (<https://www.brethren.org/news/2022/nigerian-communities-suffer-disasters/>). Retrieved 2023-07-11.
- "Nigeria has encountered several forms of disaster, which range from flooding, soil and coastal erosion
"Nigeria has encountered several forms of disaster, which range from flooding, soil and coastal erosion
- Ogbuabor, Jonathan E. and Egwuchukwu Emmanuel I. (2017) "The Impact of Climate Change on the Nigerian Economy" *International Journal of Energy Economics and Policy*, 2017, 7(2), 217-223.
- Ogunleye, Arohunsor & Ibitoye (2023) "International Journal for Disaster and Development Interface" Volume 3, Issue 2, October 2023, pp. 17 - 34

- Olagunju, T.E.(2015) “Drought, desertification and the Nigerian environment: A review. *J. Ecol.Nat. Environ.*, 7 (7) (2015), pp.196-2091
- Pulse.ng. "It's raining ice in Abuja and residents are over the moon (<https://www.pulse.ng/news/local/its-raining-ice-in-abuja-and-residents-are-over-the-moon/6r41c01>). *Pulse.ng*.
- Sapam, R. S. Mohammad, R. E. and Sarbjeet, S. (2014). The Concept of Social Vulnerability: A Review from Disasters Perspectives. *International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)*, Vol. 1, No.6, 71-82.
- Stephane, H., Adrien, V., Mook, B., Julie, R., (2017). Building the Resilience of the Poor in the Face of Natural Disasters. *International Bank for Reconstruction and Development / The World Bank*. Pp 8-
- Ujene, A.O. and Oguike, M. C (2020). “Mitigating buildings flood hazards through environmental sustainable road design and construction” In Umoren, V. and Atser, J. (eds), *Land Use Management & Environmental Sustainability in Nigeria*. Uyo: Parvenu Technologies.
- United Nations International Strategy for Disaster Reduction ISDR (2009). Relationship between Natural Disasters and Poverty: A Fiji Case Study. *SOPAC Miscellaneous Report 678*. PP 29-30
- United Nations/ International Strategy for Disaster Reduction (UN/ISDR). *Living with risk: a global review of disaster reduction initiatives*. Geneva: United Nations; 2004.
- WFP (2023) “The 8 Countries mostly affected by climate change” World Food Programme USA. Retrieved from <https://www.wfpusa.org/articles/countries-most-affected-by-climate-change>.
- WHO. (2023) Climate Change” Retrieved from www.who.int/news-room/fact-sheet/details/climate-and-health Assessed 29/3/202.