Reflections on the Nexus between Climate Change, Food Security and Violent Conflicts: A Tour through the Nigeria Experience

Article *in* Ecological Safety and Balanced Use of Resources · July 2022

DOI: 10.31471/2415-3184-2022-1(25)-22-30

CITATIONS
0

READS
117

5 authors, including:

Koleayo O. Omoyajowo
University of Lagos
42 PUBLICATIONS **46** CITATIONS
SEE PROFILE

Kolawole Omoyajowo
Mountain & Hill Attorneys, Lagos Nigeria
12 PUBLICATIONS **1** CITATION
SEE PROFILE

Tolulope Bakare
Global Health Mentorships
3 PUBLICATIONS **2** CITATIONS
SEE PROFILE

Amos Ogunyebi
University of Lagos
29 PUBLICATIONS **49** CITATIONS
SEE PROFILE

UDC 502.14(100):339.726.5
DOI: 10.31471/2415-3184-2022-1(25)-22-30

K. O. Omoyajowo[1], K. A. Omoyajowo[2],
T. I. Bakare[3], A. L. Ogunyebi[1], S. Ukoh[1]
[1]University of Lagos, Akoka, Nigeria,
[2]Ekiti State University, Ado-Ekiti, Nigeria,
[3]Obafemi Awolowo University, Ile-Ife, Nigeria

REFLECTIONS ON THE NEXUS BETWEEN CLIMATE CHANGE, FOOD SECURITY AND VIOLENT CONFLICTS: A TOUR THROUGH THE NIGERIA EXPERIENCE

Climate change has been adjudged as the most treacherous threat to global sustainability, having its deteriorating effects on the ecosystems in the form of increase in temperature, heat waves, haphazard changes in the pattern of rainfall, rising of the sea level etc. We believe that the consequential impacts of climate change on food, biodiversity, health, and the overall economy have been of great concern in Nigeria and to Africa as a whole. Because of this, in this study we will try to demonstrate the intricate relationship between climate change, food security and violent conflicts in Nigeria, especially the root causes of famers-Fulani herdsmen clashes, the goal being a provision of sustainable conflict management strategy to the crisis. A mixed method research design (basically a mix of research papers' syntheses, causal loop diagram, interviews/focused group discussions and the social progress index data) was analysed and adopted to achieve the study's specific objectives. The causal loop diagram demonstrated the interconnectivity of climate change, food security and violent conflicts. Interestingly, most respondents (70%) ranked "resource scarcity due to increased desertification" as the top-rated cause for farmers-Fulani's herdsmen clashes while less than one-quarter (21%) emphasised that urbanisation and social vices propelling the conflict. Considering these findings, we reasoned that there is a critical need to increase the capacity of local communities to take on key governance roles around resource management while remediation and appropriate management measures of affected and vulnerable regions must commence without further delay. The Government should strengthen police capacity to curb rustling and banditry, improving livestock tracking.

Key words: Climate Change; Conflict; Water, Food security; Nigeria.

Introduction. Climate change has been adjudged as the most treacherous threat to the sustainability of nature and is considered as one of the most exigent concerns of the 21st century, threatening both anthropic and natural systems with long-term consequences [1]. Its deteriorating effects on the ecosystems in the form of increases in temperature, haphazard changes in the pattern of rainfall, rising of the sea level and indeed, the increasing rate of extreme weather conditions have the adverse potency to exacerbate the debilitating threats to environmental sustainability. Hence, the consequential impacts of climate change on food, biodiversity, health, and the overall economy have been of grave concern in Africa [2]. In the same measure of disruptive tendencies, the average surface temperature in coastal cities of Nigeria such as Lagos, Rivers, Bayelsa etc. is projected to increase from 1.1°C–2.8°C by the year 2099 [3]. This will result in the depletion of water resources leading to a decline in agricultural production by causing a shift in production seasons, the alkalinity and acidity of soil, the festering of pest and disease etc. [4]. Moreover, Nigeria's climate, as reported, is likely to spur growing shifts in temperature, rainfall, storms, and sea levels throughout the twenty-first century and typical of Nigeria, which has poor adaptive responses and adjustment measures to these shifts. This makes the disastrous environmental occurrences in some parts of the country unabated [5]. Poor adaptive responses to climate shifts are however evident in the several reports on the ugly incidence of floods, dreadful thunderstorms, windstorm, desertification etc. in many parts of the country [6–8]. Not only are there cases of environmental degradation, but equally significant is the decline in the production of food crops resulting from reduction in rainfall, relative humidity and increased temperature have dealt a blow on the rising agro-economic prospects of the country [9]. Furthermore, health problems like asthma, cholera, cancer, chronic bronchitis, blood disorders and other diseases [10] and even resource-based conflicts (e.g., clashes between Fulani herdsmen and farmers in Benue State) are distasteful social impacts of climate change.

Moreover, rapid global change has not only increased the demand for water, energy, food, and other resources but has also been responsible for fuelling violent conflicts in a country like Nigeria.

Violent conflicts between nomadic herders (mostly Fulani) from northern Nigeria and sedentary agrarian communities in the central and southern zones have escalated in recent years and are spreading southward, threatening the country's security and stability; with an estimated death toll of approximately 2,500 people in 2016. Limited studies on how climate change precipitates conflict between Fulani herdsmen and farmers across Nigeria might have been responsible for a policy that has spurred negative feedback from several stakeholders, hence, the need for this study. Whilst the central objective of this study is to show the relationship between climate change, food security and violent conflicts in Nigeria, the other part is to provide the knowledge, awareness and guidance for sector reforms, academia, and the public on climate change issues and to identify the areas of vulnerability to national security resulting from climate change.

Methodology. The complex cause-and-effect relationship that exists between climate change and the environment is shown in the causal loop diagram below (Fig. 1). Causal loop diagrams represent feedback structures of complex systems, showing interaction between the variables [11]. The arrowheads show a negative or positive sign, indicating the effect of variables on each other. For example, increase in pollution increasingly contributes to climate change while increase in crop productivity reduces migration. A causal loop diagram gives us a better picture of the system.

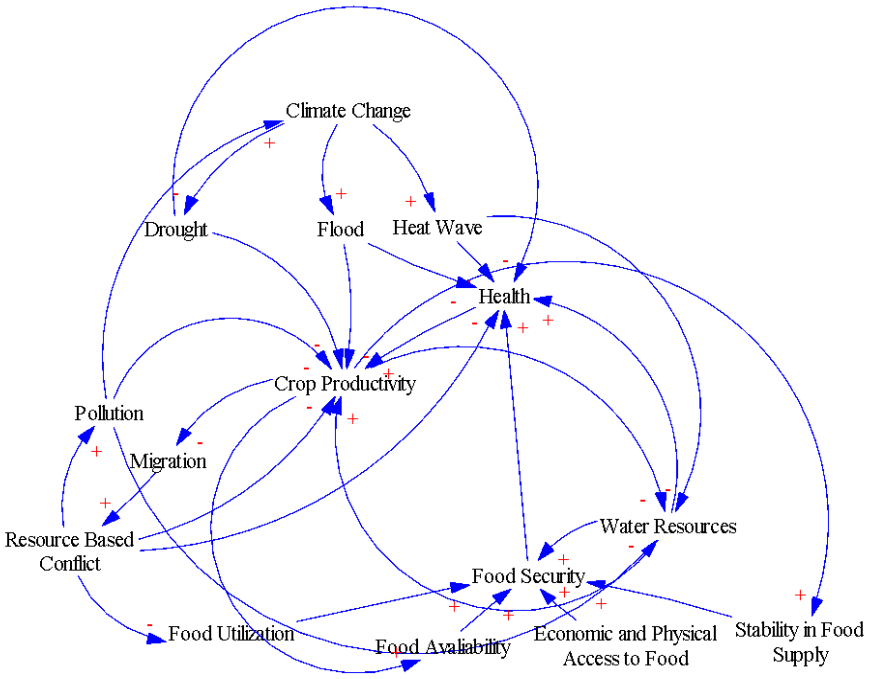

Fig. 1. Causal Loop Diagram showing the interrelationship between climate change, food security and violent conflicts in Nigeria

Data Collection and Analysis. The study adopted a mixed methods research design. The data was systematically collected using primary and secondary sources. The primary source includes focused group discussions, oral interviews via face-to-face interaction as well as personal conversations via phone calls between March-June 2018. Forty (40) key participants in total were recruited for focused group discussions based on their literacy, ethnicity, extensive public sector involvement and experiences to achieve three tasks, (i) Discuss the critical nexus between climate change, human conflict, and food security; (ii) Identify and articulate the causes of Fulani-herdsmen clashes and, (iii) to suggest an efficient mechanism for conflict-dispute resolutions among the two contending parties. The participants include instructors, policy researchers and postgraduate diploma students at National Centre Technology Management, Lagos Study Centre and the six geopolitical zones in Nigeria (South-West, South-East, South-South, North Central, North-West, and North-East) were equally represented. The session lasted for only 45 minutes on the subject matter. Forty (40) people were also interviewed via face-to-face interaction and through phone calls on the same subject matter in Ekiti, Benue, Kaduna, and Adamawa being the states that have experienced attacks from the dreaded herdsmen in the past. These respondents were basically farmers, traders, and residents of the states. In overall, primary data was obtained from a total of eighty (80) participants/respondents. As *par* secondary sources, we make use of peer-reviewed

journal articles, textbooks, newspapers, and other internet materials. Content and discourse analysis was systematically employed as a reference tool to properly understand text linguistics (i.e., the tone, phonology, style, and structure) of research papers that were retrieved from academia search engines such as Google, Google Scholar, Scopus, ResearchGate, PubMed, and Academia.edu (to mention a few). In summary, the mixed methods approach enabled us to make a qualitative analysis which was appropriate in understanding the critical nexus between climate change, human conflict, and food security in Nigeria, within the context of her socio-cultural and the changing political economies

Results and Discussions. The result and analysis of our findings are presented under the following sub-headings.

Relationship between Climate change and food security in Nigeria. To gain an understanding of the intricacies between climate change and food security in Nigeria, it is vital to also examine the scope of food security, *viz-a-viz* food production system in Nigeria.

How does climate change influence food production and the food security system in Nigeria? Increase in greenhouse gas emissions in the atmosphere is well-known as the primary cause of the worsening global climate change. Studies have observed an increase in greenhouse gases in the atmosphere in the last century [12]. This relationship i.e., the interrelation of climate and food production has been documented in previous studies [13; 14].

However, Lal [15] averred that having knowledge of the interrelations among the essential components of food production (such as soil, water, and crops) will further help in understanding the relationship between climate change and the food production system. With extreme weather events such as long periods of drought, as it is often experienced in Nigeria, crops are likely to be more susceptible to pest infestation and diseases which may wipe out the economic gains of farmers or increased reliance on the use of chemical pesticides. On the other hand, increased flooding and saltwater intrusion into soil, groundwater and freshwater bodies may possibly submerge crops and consequently result in crop failure due to low soil aeration. This relationship has also been adduced by some studies [16] as a serious impact of climate change on the food production system. Nonetheless, the growing desertification of the Northern part of Nigeria, a region noted for ‘major food supply of the nation’ is alarming. When crops fail due to climate-related disasters, farmers are unable to sell their crops to earn money to support their families, which translates to poverty. In Nigeria and many other countries, the ratio of “cost of a minimum daily food basket” to “average daily income” is often used as a measurement of poverty [17]. When this ratio falls below a certain threshold, it signifies that food is affordable and people are not impoverished; when it exceeds the established threshold, food is not affordable, and people are having difficulty obtaining enough to eat. Local food prices in Nigeria and most parts of the world are strongly influenced by global market conditions, but there may be short-term fluctuations linked to variation in national yields, which are influenced by climate, among other factors. When crops fail due to climate-related disasters, farmers are unable to sell their crops to earn money to support their families. This may ultimately lead to food insecurity.

How does the food production system contribute to climate change? Traditional Agricultural practises such as open-space bush-burning being currently in practice in Nigeria and most other developing countries contributes largely to emission of greenhouse gases. Agricultural activities particularly mechanised farming often results in deforestation. Deforestation contributes largely to climate change because trees are natural air purifiers; they help absorb carbon dioxide via photosynthesis, stores carbon within their leaves, stems, roots, and releases oxygen back into the atmosphere of the Earth and the tree’s transpiration and canopy helps shield plants and other living organisms from excess radiation, heat, and wind [18]. Nigeria’s agriculture utilises a large bulk of these synthetic chemicals.

Also, the transport and distribution of food to designated destinations where it will be utilised may even contribute to GHG emissions. The transport of food commodities especially from the Northern part where the bulk of food being produced in Nigeria comes from to other states would equate to greater GHG emissions as more fossil fuels are required to be combusted for transportation purposes. Whilst the reliance on fossil fuel via burning of fossil fuels for energy releases carbon and other toxic substances into the atmosphere directly contributing to climate change, land degradation may also occur as more ores are extracted from the ground.

Livestock rearing especially in the Northern and Middle-belt Nigeria can lead to soil erosion and desertification due to overgrazing, soil erosion would affect the soil health which in turn affects the quality and quantity of produce and hence food security. In addition, soil erosion and desertification affect the soil carbon sequestration and reduces the soil’s ability to remove atmospheric carbon dioxide that

helps mitigate climate change. This is because the soil naturally holds more organic carbon than atmospheric CO_2. Poor soil health would possibly affect the ability of soil to act as a sink to remove atmospheric carbon and thus result in higher levels of carbon dioxide concentration in the atmosphere, exacerbating climate change. Hence, the need for effective and sustainable strategies to ensure the sustainability of the ecosystems becomes more than ever before.

How does climate change influence human conflicts in Nigeria? Indeed, conflict may be regarded as an enduring aspect of human social existence. This is however premised on the belief that wherever a community of individuals is found, conflict becomes an inevitable incidence of social interaction which forms part of their experience. Based on the "Ecological Law of the Optimum" as explained in Fatile and Adejobi [19] that states that "no species in any given habitat or environment encounters the optimum conditions for all its functions", humans are perceived to have the responsibility, freedom, and motivation to modify their environment to satisfy their needs and desires. Although the process of doing this implies an encroachment on the constituents of the ecological balance and in most cases, it results to conflict

With credence to Abraham Maslow's Pyramid of Human Needs, each human being is trying to meet a certain level of needs at every time and the quest of competing for the same needs may often trigger conflicts. Though on the base of the pyramid, he placed food, water, and shelter; a second level, he placed the need for safety and security, followed by belonging or love; the need for self-esteem is found on a fourth level; and finally on a fifth and final level is personal fulfilment [20]. In Nigeria where poverty is on the high side, the competition for food, water and shelter is equally high. The connection between environment and conflict is deeply rooted in the scarcity or abundance of natural resources within and between states as well as the unequal access to these resources [21].

According to Homer-Dixon [22], a decline in the quality and quantity of renewable natural resources, population growth, and unequal access to resources act solely or in various combinations to increase the scarcity, for certain population groups, of cropland, water, forests, and fish. The scarcity of natural resources as a result of climate change or climate-related disasters for instance reduces economic productivity of the local groups experiencing the scarcity but on the other hand, migrating groups often trigger ethnic conflicts when they move to new areas, while decrease in wealth can cause deprivation conflicts [22].The crux of this philosophy or assumption is that when the conflict becomes violent, it can have dramatic consequences on human wellbeing and the environment as a whole. This is a vivid picture of what happens in Nigeria's ecosystem. As presented in Figure 2, the major drive for conflict (massacre) is resource scarcity due to increased desertification in the Northern part of Nigeria. Many studies have also corroborated the influence of Climate change on human conflicts [19; 23; 24]. For instance, in the northern and middle parts of Nigeria, the cereal-productive Sudan savannah ecology is transiting to pure Sahel and the influence of the Sahara is increasing southwards due to increasing rate of desertification and other climate-related conditions. In the same vein, the root and tuber productive ecology of the Guinea Savannah is giving way to Sudan Savanna grassland probably due to severe incidences of coastal and soil erosion which is very rampant. Increased competition or the gradual unsuitability of pastoralists for a dwindling 'stock' of grazing land and the drying up of important water bodies has pitched Fulani herders against farmers [5].

The studies have observed that climate change is responsible for the clashes between the Fulani herdsmen and agrarian communities since the incidence of climate change has further exacerbated the dry condition of the region of the Fulani herdsmen whose major cultural occupations is dependent on the grasses and hay for livestock rearing, they are forced to move to the south and middle belt of Nigeria for greener pasture where they mostly infiltrate and infringes on the farmlands belonging to the south and middle belt of Nigeria. Hence, the scarcity of natural resources becomes a subject of conflict between the farmers who make use of their farmlands for large scale agriculture and the herdsmen who need the vegetation on those farmlands for feeding their livestock.

These conflicts have led to the massive loss of lives, community crises, damage to properties and indeed, national insecurity as presented in Figure 1. Some aggrieved farmers with the intent to cause the death of those cattle trespassing into their farmlands, they spray their farmlands with chemicals. This seed of conflict did not only cause the death of cattle worth millions of naira but when rain falls, the residue of the chemicals are washed to rivers which affects the lives of organisms in the aquatic ecosystem. This may also lead to decline in crop production because the soil on the farmland loses their nutrients and thus, food availability is affected. Also, the crops on the farmland are affected by the chemicals and the consumption of the same food resources become unhealthy and unsafe for consumers. This results in poor

food utilisation or lack of food safety. However, it is important to note that when conflict becomes violent, it can have dramatic consequences on human wellbeing and the environment.

The fundamental theoretical assumption of the theory is that resource scarcity is the product of an insufficient supply, too much demand or an unequal distribution of a resource because of environmental hazards that forces some sector of a society into conditions of deprivation and violence. Because human conflict may be complex with many dimensions, it could be fuelled by either single or combination of other factors. In the case of Nigeria, climate change may interact with other features of their social, economic, and political landscape, due to religious, ethnic and political differences, poverty, resource scarcity or combination of all. Hsiang et al. [24] reported strong causal evidence linking climatic events to human conflict across a range of spatial and temporal scales and across all major regions of the world. A substantial number of literatures on this relationship however regards climate change as exacerbating resource scarcities and generating new conflicts and security challenges resulting from reduced crop yields; increased competition over scarce water resources; and increased likelihood of drought and disasters related to climate extremes [25; 26] and this explains why Nigeria is not socially progressive. Social Progress is defined as the capacity of a society to meet the basic needs of its citizens. The Social progress index of Nigeria as present in the table measures the extent to which countries provide for the social and environmental needs of their citizens [27].

Studies have revealed that most of the highway robberies were committed by the herdsmen who were forced to migrate to Nigeria because of the effects of climate change in their country [28]. Many of the countries predicted to be affected by climate change face pre-existing challenges of poor governance and social and political instability [29]. Like in the case of Nigeria where there is weak capacity to provide security and basic services, non-state armed groups (e.g., Boko Haram) operate more freely while using the weakness of the state to undermine it further. Climate change can also aggravate problems associated with growing populations, inadequate supplies of freshwater, strained agricultural resources, weak land tenure security, poor health services, economic decline, and weak political institutions [30].

Fig. 2 shows knowledge and perception of respondents about Fulani herdsmen conflicts. This present study found out that about two-thirds (70%) of the respondents agreed that “resource scarcity” was the major reason for the conflicts. Less than one-quarter (21%) emphasised that urbanisation and social vices propelled the conflict. While approximately one-tenth (9%) of them associated Fulani herdsmen conflict to political and ethnic undertone.

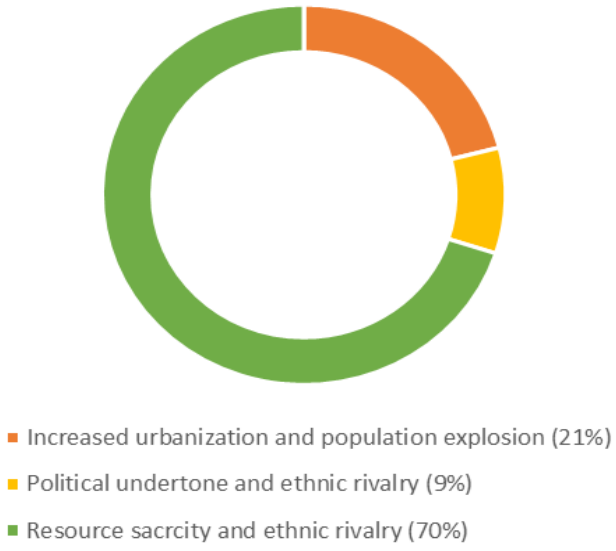

Fig. 2. Causes of the Farmers -Fulani’s Herdsmen Clashes in Nigeria

The data presented in Fig. 3 undergirds the conflicts as the biggest security threat to Nigeria. This conflict is posing more threat than the dreaded boko haram sect [31].

Table 1 shows the social progress index (SPI) of Nigeria in 2018. The SPI basically measures country performance on many aspects of social and environmental performance which are critical for countries at all levels of economic development. A previous study opined that the poor level of social and economic development in Nigeria tends to exacerbate social vices including the farmers-Fulani herdsmen’s crisis [32]. It was evident that from the social progress index report which surveyed 146 countries, Nigeria ranked 77th, 122nd and 114th in terms of nutrition, access to drinking water and

electricity respectively (Table). More so, deaths from infectious diseases, political killings and torture, outdoor air pollution, property crime rate etc. was prevalently high in Nigeria (Table).

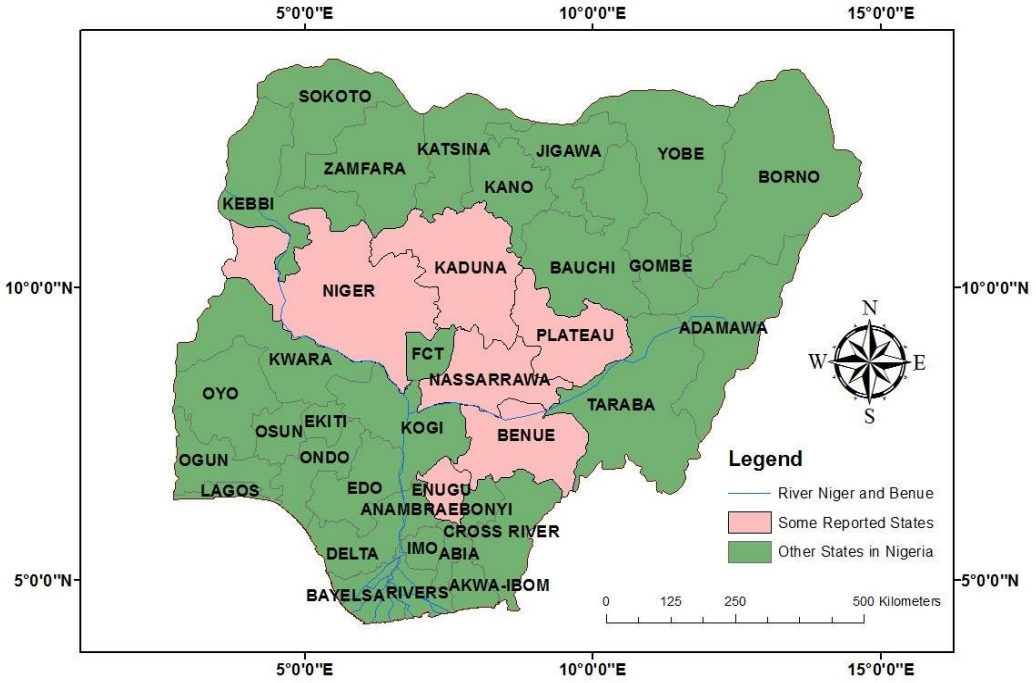

Fig. 3. Map indicating the areas with the prevalence of agro-nomadic violence in Nigeria

Table

2018 Social Progress Index for Nigeria

Dimensions/Indicators	Social progress index Score/Value	Rank (out of 146 Countries)
Undernourishment (% of population; 2.5 equals≤2.5)	7.90	77
Deaths from infectious diseases (deaths/100,000)	484.49	127
Access to at least basic drinking water (% of population)	67.35	122
Access to pipe water (% of population)	10.18	143
Access to electricity	59.30	114
Household air pollution attributable deaths	87.77	103
Property crime rate (per 100,000 populations five years average)	9.79	120
Political Killings and torture	0.61	107
Perceived criminality	5.00	127
Traffic deaths (deaths/100,000)	14.42	58
Outdoor air pollution deaths	93.49	116
Greenhouse gas emission (CO_2 equivalents per GDP; capped at 1955.52)	303.82	48
Biome protection	13.35	72
Discrimination and violence against minorities	9.30	137
Equality of political power by socioeconomic position	1.36	119

Source: SPI 2018

This report undeniably shows that Nigeria is ranked low in terms of social and environmental performance. In other words, it implies that Nigeria lacks the capacity to meet the basic human needs of its citizens or enhance and sustain the quality of their lives and as such may engender activities that may even contribute to climate change. We believed that efforts stimulated towards meeting the growing needs of the overwhelming population (mainly agriculture and industrialisation) especially in developing countries is often juxtaposed with the consequential effects of deforestation. Deforestation gradually causes the escape of greenhouse gases to the atmosphere, hence, contributing to global climate warming.

Nonetheless, we reasoned that the prevalence of droughts and other unfavourable weather events, puts pressure on available food, water, and other natural resources in the country which has results to competition (e.g., farmers-Fulani herdsmen's clashes) and increased food and energy prices and devaluation of legal tender through the nation. Addressing these climate change impacts, demands that government should provide an inclusive education on the impacts of climate change especially on how local communities can respond to crisis, while also providing basic social infrastructure, strengthening security agencies, and investing more in climate projects.

How violent conflicts in Nigeria contributes to climate change. Nigeria society since its independence in 1960 to 2021 has undergone extremely violent civil war, tensed election-related crisis, deadly religious turbulence, inter-tribal crisis, violent community agitations and the relatively recent terrorist maiming. Conflicts especially when it involves violence have disastrous consequences for the country. For instance, the civil war of 1967, the insurgency of the Niger Delta militants and indeed, the Boko haram terrorism and military engagements in the North-East of Nigeria present vivid illustrations of how violent conflicts have seriously degraded and still posing threats to the respective environments. The civil war which lasted for 3 years, the Niger Delta militancy which shook the nation for about a decade and the insurgency in the North-East which has been on-going for a decade too, have heavily destroyed the ecosystems of those regions. The states in the North-East where this insurgency chiefly occurs are within the Sudan Savannah with little forests and vegetation. The use of bomb by the terrorist to ground villages and use of same by the Nigeria Military to dislocate and kill the terrorists from their hideouts (Sambisa Forest) further fuels deforestation and desertification in those areas. The cost, effects, impact, and consequences of violent conflicts and warfare on human persons, social life, political arena, and economy in Nigeria are not well documented. In order the resources that ought to be expended on building social and economic infrastructures are rather devoted to resolving the conflicts since destruction of human buildings and social infrastructure means that more wood from trees, cement from rock, petroleum from crude oil, and water from the rivers must be harvested to meet more needs that would not have arisen but for the conflicts. On the other hand, massive destruction of human lives and that of livestock for instance during Agrarian and Fulani herdsmen attack especially when people are wounded during conflicts, the blood released could possibly pollute the streams and the land if washed by rain. Another example is the case of Niger Delta, oil pipes are frequently being vandalised by the militants and when the government enforcement agencies attempt to recoup militants, their actions often escalate to a cease fire attack, causing oil and gas flaring, oil spills etc, posing a serious threat to the aquatic ecosystems in the region.

It is therefore submitted that the interrelation between conflicts and climate change is intertwined such that the effect of one on another continues to pose unending threats to environmental sustainability. In the same breath, the relationship between food security and climate change continues to raise the acute concerns of environmentalists, food nutritionists and indeed, the health practitioners.

Conclusions and Policy Recommendations. Climate change, human conflict, water, and food security are all interlinked, intertwined and this interconnectedness calls for integrated environmental sustainability measure. A shift or change in one factor might have negative consequences on the other factors. Climate change should be factored into Nigeria's economic recovery growth plan, the coal-to green power initiative reducing GHGs emissions through improved efficiency of energy use, reduced deforestation, a switch to non-fossil fuels, and/or capture of GHGs emissions underground and in oceans, vegetation and soils will help to reduce the effects of climate change. To this end, the government must creatively align its industrialisation plan with environmental considerations by ensuring those industries which are majorly foreign companies are kept within the bounds of environmental standards. Also, strengthening security arrangements for herders and farmers communities especially in the north-central zone. This can be achieved by strengthening police capacity to curb rustling and banditry, improving livestock tracking.

References

1 Yigitcanlar T and Teriman S. Rethinking sustainable urban development: towards an integrated planning and development process. International Journal of Environmental Science and Technology 2015; 12, 341–352.

2 Intergovernmental Panel on Climate Change. Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth

Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, United Kingdom and New York, NY, USA, 2014. Cambridge University Press.

3 Ekanade O, Ayanlade A and Orimoogunje O. Climate change impacts on coastal urban settlements in Nigeria. Interdisciplinary Environmental 2011; Review 12(1):48-61

4 Edame, GE, Ekpenyong, AB, Fonta, WM, et al. Climate change, Food Security and Agricultural Productivity in Africa: Issues and Policy Directions. Int'l Journal of Humanities and Social Science 2011; 1(21): 205-223.

5 Sayne A. Climate Change Adaptation and Conflict in Nigeria. United States Institute of Peace Special report 274 2011; 16pp

6 Adeaga O. Flood Hazard mapping and risk management in part of Lagos. North-East. Africa Newsletter 2008; 7(4):1-7.

7 Adeyinka SA. A Review of Physical Planning Law in Nigeria. In: 11th annual national Conference on Environmental Sustainability in a Democratic Government (ed Adekunle et al), Federal University of technology Akure, Nigeria; 2012

8 Olaniran. Regulating Flood Plain Development in Lagos State. Government Press; 2003.

9 Agbola T and Ojeleye D. Climate Change and Food Production in Ibadan, Nigeria. Afr. Crop Sci. Confer. Proc., 2007; 8: 1423-1433.

10 Imhonopi, D and Urim, UM. Impact of Global Climate Change on Nigeria's Evolving Democracy. Journal of Humanities, Social Sciences and Creative Arts 2011; 6(1):110-123.

11 Sterman JD. Fine-Tuning Your Causal Loop Diagrams- Part II. Causal Loop Diagram, CLD, Delays, Loops 2018; Volume 12

12 Adesina FA, Aina IO and Adejuwon JO. Existent coping strategies in adverse environmental conditions as an analogue for adapting to climate change in Rural Southwestern Nigeria'. AIACC Report of Workshop for Africa and Indian Ocean Island, pp.23–24, Dakar, Senegal, 2004.

13 Gould KA and Lewis TL. An Introduction to Environmental sociology. In Twenty Lessons in Environmental Sociology, 1st ed: Oxford University Press: New York, NY, USA, 2009 pp. 1–8.

14 Ibrahim, YE (2014). Climate change and food security in Nigeria. In: International Conference on Possible impacts of climate change on Africa, Institute of African Research and Studies, Cairo Univeristy, Cairo, Egypt, 2014.

15 Lal, R (2015). Climate Change and Agriculture. Obs. Impacts Planet Earth 2016; 2, 465–489.

16 Kang Y, Khan S and Ma X. Climate Change Impacts on crop Yield, Crop Water Productivity and Food Security—A Review. Prog. Nat. Sci. 2009; 19, 1665–1674.

17 Ivanic M and Martin W. Implications of higher global food prices for poverty in low-income countries. 2008 The World Bank.

18 Nowak, DJ. The Effects of Urban Trees on Air Quality. Online Referencing, http://www.nrs.fs.fed.us/units (2015 accessed 12 October 2019).

19 Fatile JO and Adejobi OS. Climate Change, Environment and Conflicts in Nigeria. British Journal of Arts and Social Sciences 2012; 6(1) 11-20.

20 Marker, S. What Human Needs Are. In: Beyond Intractability, Retrieved from http://www.beyondintractability.org/m/human_needs.jsp (2003, accessed 10 October 2019)

21 Eckstein G. Water Scarcity, Conflict, and Security in a Climate Change World: Challenges and Opportunities for International Law and Policy. Wisconsin International Law Journal 2010; 27 (3): 409-461.

22 Homer-Dixon TF and Blitt J. Ecoviolence: Links among Environment, Population and Security 1998. Lanham: Rowman and Littlefield.

23 Intergovernmental Panel on Climate Change (2012). Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)], 2012. Cambridge University Press, Cambridge, UK, and New York, NY, USA, 582 pp., at http://ipcc-wg2.gov/SREX/report/

24 Hsiang SM, Burke M and Miguel E. Quantifying the Influence of Climate on Human Conflict. Sciencexplore 2013; 1:1-21.

25 CNA 2007. National Security and the Threat of Climate Change.

26 Evans A. Resource Scarcity, Climate Change, and the Risk of Violent Conflict. World Development Report 2011 – Background Paper. New York: New York University/Center on International Cooperation.

27 The Social Progress Imperative (SPI). 2018. 2018 Social progress Index for Nigeria. https://www..socialprogress.org (2018, accessed 10 October 2019)

28 Folami OM and Folami AO. Climate change and inter-ethnic conflict in Nigeria. Peace Review. 2013 Jan 1;25(1):104-10.

29 Smith D and Vivekananda J. Climate Change, Conflict and Fragility, 2009. London: International Alert.

30 Saha S. Security implications of climate refugees in urban slums: a case study from Dhaka, Bangladesh. In Climate Change, Human Security and Violent Conflict 2012 (pp. 595-611). Springer, Berlin, Heidelberg.

31 Orji S. The Daily Dose: The Nigerian Conflicts is Proving Deadlier than Boko Haram, https://www.ozy.com (2019, accessed 10 October 2019)

32 Ajibefun MB. Social and Economic Effects of the Menace of Fulani Herdsmen Crisis in Nigeria. Journal of Educational and Social Research 2017; 8(2)

***К. О. Омояджово*[1], *К. А. Омояджово*[2],**
***Т. І. Бакаре*[3], *А. Л. Огуньєбі*[1], *С. Уко*[1]**
[1]*Університет Лагосу, Акока, Нігерія,*
[2]*Державний університет Екіті, Адо-Екіті, Нігерія,*
[3]*Університет Обафемі Аволово, Іле-Іфе, Нігерія*

ЗВ'ЯЗОК МІЖ ЗМІНОЮ КЛІМАТУ, ПРОДОВОЛЬЧОЮ БЕЗПЕКОЮ ТА НАСИЛЬНИЦЬКИМИ КОНФЛІКТАМИ: ДОСВІД НІГЕРІЇ

Зміна клімату була визнана найбільш підступною загрозою глобальному сталому розвитку, що має негативний вплив на екосистеми у вигляді підвищення температури, теплових хвиль, випадкових змін у структурі опадів, підвищення рівня моря тощо. Ми вважаємо, що наслідки впливу зміни клімату на продукти харчування, біорізноманіття, здоров'я та загальну економіку викликають велике занепокоєння в Нігерії та в Африці в цілому. Через це в цьому дослідженні продемонстровано складний зв'язок між зміною клімату, продовольчою безпекою та насильницькими конфліктами в Нігерії. Проаналізовано першопричини зіткнень між фермерами та пастухами фулані з метою забезпечення стійкої стратегії управління конфліктами під час кризових періодів. Для досягнення конкретних цілей дослідження було проаналізовано методи досліджень та обґрунтовано застосування у дослідженні змішаного методу (поєднання синтезу наукових робіт, діаграм причинно-наслідкового зв'язку, інтерв'ю/обговорення фокусних груп та даних індексу соціального прогресу). Діаграма причинно-наслідкової петлі продемонструвала взаємозв'язок зміни клімату, продовольчої безпеки та насильницьких конфліктів. Цікаво, що більшість респондентів (70%) назвали «дефіцит ресурсів через посилення опустелювання» найпопулярнішою причиною зіткнень фермерів і пастухів, тоді як менше однієї чверті (21%) підкреслили, що урбанізація та соціальні вади провокують конфлікт. Беручи до уваги отримані результати, ми прийшли до висновку, що існує критична потреба у підвищенні спроможності місцевих громад взяти на себе ключові керівні ролі в управлінні ресурсами. Відновлення та відповідні управлінські заходи в постраждалих та вразливих регіонах мають розпочатися без подальших затримок. Уряд повинен зміцнити потенціал поліції, щоб приборкати бандитизм.

Ключові слова: зміна клімату; насильницькі конфлікти; вода, продовольча безпека; Нігерія.

Надійшла до редакції 20 лютого 2022 р.