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Interrogating the Links between Climate Change, Farmer-Herder Conflict and Security Challenge in Benue State, Nigeria

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Abstract

Climate change has resulted in desertification and depletion of ecological resources such as land and water preciously needed for crop farming and herding purposes. Increase in dryness in northern region contrasts with seeming wetness in the southern region therefore stimulates transhumance of nomads to the southern region in order to exploit grazing opportunities for their livestock. Intensified migration of herders as a result of land and water resource scarcity results to violent confrontations with sedentary crop farmers with concomitant consequences of loss of human and animal lives, permanent disability of victims, forced internal displacement of victims and impaired farmer-herder relations. This paper therefore interrogates the nexus between climate change, farmer-herder conflict and security challenge in Benue State of Nigeria between 2015 and 2022. Methodologically, the paper employed primary and secondary methods of data collection while theoretically the paper deployed eco violence theory as its framework of analysis. Research hypotheses were tested using non-parametric statistics (chi-square) at 5% level of significance. Findings reveal a significant relationship between climate change and farmer-herder conflict. The study also found a significant relationship between farmer-herder conflict and security challenge. The paper therefore recommends a multi-dimensional approach in the management of farmer-herder conflict in Benue State.

Keywords: Climate change, farmer-herder conflict, security challenge, migration.

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Introduction

Climate change is a statistically significant variation in either mean state of the climate or in its variability, persisting for an extended period which could be decades or longer period (Intergovernmental Panel on Climate Change-IPCC, 2007).In the same vein, the United States Environmental Protection Agency (USEPA, 2020) views climate change as any long-term significant change in the expected average weather of any place over an appropriate period of time. Put differently, climate change refers to abnormal variations in the climatic conditions of a region. Climate change has become a global issue in recent times manifesting in variations of different climate parameters including cloud cover, precipitation, temperature ranges, sea levels and vapour pressure (Ministry of Environment of the Federal Republic of Nigeria-MOEFRN, 2003)

Climate change has over the years disrupted the normal functioning of the ecosystem that interacts with human beings and this affects how people access certain vital resources for their sustenance. It is already having significant impact on Nigeria and this impact is expected to intensify in the near future. Climate change is the root cause of most conflicts in Nigeria's North-Central Region, especially farmer-herder conflicts as they exacerbate ecological resource scarcity for both crop farmers and cattle herders. As Ogoh (2019, p.6) citing McCarty (2009) rightly pointed out, the lesser the rainfall, the more severe the drought and the more the intensification and contestation for scarce resources in future.

Climate change has made life unbearable for cattle herders in the far Northern parts of Nigeria and this has necessitated a number of coping strategies, prominent among which is migration to other more favourable locations. Climate change has thus contributed to massive migration of herders from the Sahel down to North-Central Region, especially the Benue valley, and this has led to further dwindling of the already shrinking resources on the one hand and intensified contestation for these resources by groups on the other hand (Akuva &Yusufu, 2020).The farmers around this region who focus on shifting cultivation and rotation of land for fallowing reasons and good output of farm input see the invasion of fallowing grounds and other farmlands by the herders' cattle as direct incursion on their livelihood (Abass, 2012). The ensuing conflicts between both groups have resulted to colossal loss of human lives, destruction of property, forced internal displacement of people, permanent disability of people and emotional trauma among other debilitating consequences (Yusufu, Audu&Akuva, 2020).

Climate change can no longer be considered as merely an environmental problem or an energy problem. It has also constitutes a huge developmental challenge because it is redrawing our coastlines; altering where we grow food; changing where we can find water; exposing us to fiercer storms or more severe droughts and forcing large numbers of people to move from their homelands (Ogoh, 2019, p.10). Climate change affects the livelihoods of agricultural land user groups and has the potentials to exacerbate existing tensions and also engendering new ones. Cederman *et al* (2013) were of the opinion that grievances due to climate-induced adverse economic conditions could lead to low-level conflict, such as protests when food prices rise as well as to civil conflicts when a certain group is particularly affected by such conditions and is excluded. Azare *et al* (2020) explained that the combined effect of dam development, desert encroachment, and deforestation has caused a series of violent conflicts, induced by resource scarcity and growing social and economic misery. Burke *et al* (2009) found a relationship between past internal conflicts in Sub-Saharan Africa and variations in temperature (but not precipitation) and that there are substantial increases in conflicts during warmer years. According to Notaras (2009), a 1% increase in temperature leads to a 4.5% increase in civil war in the same year and a 0.9% increase in the following year.

Farmer-herder conflicts are disagreements and disputes over access to, and control and use of ecological resources such as land and water sources (Yusufu, Audu&Akuva, 2020). These conflicts often emerge because people have different uses for these resources and would want to manage them in different ways (Abugu, *et al*, 2021). Disagreements also arise when these interests and needs are incompatible, or when the priorities of some user groups are not considered in policies, programmes and projects. Such conflicts of interest are an inevitable feature of all societies, especially those divided along ethnic and religious lines like Nigeria. Farmer-herder conflict has remained the most preponderant resource-use conflict in Nigeria (Adisa, 2012).

It is against this backdrop that this paper examines the nexus between climate change, farmer-herder conflict and security challenge in Benue State Nigeria between 2015 and 2022. The paper is divided into seven sections. Section one is the introduction followed by research hypotheses in section two. Literature review forms the thrust of section three while theoretical framework is the focus of section four. Research methodology is the crux of

section five while the discussion of results is done in section six. And in section seven, the paper draws conclusions and makes some useful recommendations.

Research Hypotheses

H_O: There is no significant relationship between climate change and farmer-herder conflict in Benue State.

H_1: There is significant relationship between climate change and farmer-herder conflict in Benue State

H_O: There is no significant relationship between farmer-herder conflict and security challenge in Benue State

H_1: There is significant relationship between farmer-herder conflict and security challenge in Benue State

Literature Review

Environmental concerns as a result of climate change and attendant migrations are not a new phenomenon. In human history, people have devised ways and means of survival when faced with unfriendly environmental situations. Studies carried out by Meze-Hausken (2000) and Audu (2015) among others reveal that migration, either within or across borders, has being a consistent coping response to environmental degradation and environmental resource scarcity. The most devastating impacts of climate change in Nigeria and other sub-tropical countries according to Ogoh (2019, p.31) citing Agbaje (2008), includes:

> Frequent drought, increased environmental damage, increased infestation of crops by pests and diseases, depletion of wildlife and other natural resources base, increased biodiversity loss, increased rural-urban migration, depletion of household assets, changes in the vegetation type, decline in forest resources, decline in soil conditions, increased health risks, and the spread of infectious diseases and changing livelihood system.

Studies by Abbass (2012), Odoh andChigozie (2012),Ibrahim, Abdulrahman and Umar (2015), Ogoh (2019) and Akuva andAudu (2020) suggest that climate change-induced migration can lead to conflicts in the receiving areas because of stiff contestation for scarce resources and economic opportunities. In a study conducted by Ogoh (2019) on climate change and farmer-herder conflicts in Plateau State of North-Central Nigeria, it was found that increase in drought/desertification in the Sahel region made migration of herders towards

Plateau State of North-Central Nigeria irregular in the last seventeen years thereby making the herdsmen to wander outside their normal grazing routes and in the process, bringing them into violent conflicts with sedentary crop farmers in areas migrated to. If the migrants are from different ethnic groups, it may also create ethnic tensions. The Fulani herdsmen have different cultural values from those of their host communities, especially in the Benue valley and the southern region of Nigeria. This explains why there are incidences of ethnic tensions whenever nomadic herders comedown to these areas to compete for the scarce available ecological resource with the host communities. The impacts of climate change take four dimensions, which include: killing of people, displacing of people internally, turning of youths into destroyers, and threatening of the evolution, growth, and consolidation of credible civic culture in the society (Ogoh, 2019). As regard the nexus between climate change and farmer-herder conflict, Efetobor and Chinonso (2019) have this to say:

> Climate change and its underlying implications are the root causes of violent conflicts between sedentary crop farmers and nomadic cattle herders in Nigeria. Also, scarcity of resources has an unequal influence on those susceptible as the struggle for source of living and increasing food insecurity often fuels migration and inter-communal violence, which is further strengthened by the presence of a weak institutional mechanism to avert or resolve these conflicts.

Audu (2015, p. 15) citing the Crisis Group Africa Report (CGAR, 2010) explained that the Sahelian drought of the 1970s-1980s and subsequent desertification have diminished grazing lands, ruined pastoral livelihoods and aggravated food and other insecurities. They displaced many people from the far North of Nigeria and from neighbouring countries like Chad and Niger. The report indicated that in a country like Nigeria, most violent conflicts feature in the North-Central region that has a relatively higher rainfall and good grass for cattle grazing. Climate change, Ogoh (2019) maintains, is at the root of most conflicts in the North-Central geopolitical zone of the country especially farmer-herders' conflicts as they exacerbate resource scarcity for both groups.

There seems to be a consensus at this point on the links between climate change and conflict. However, opinions vary depending on the scholars. Barnett (2003, p.4) for instance, argues that while environmental change can be linked to violent conflict, "it has not been shown or established that environmental factors are the only or important factors leading to conflict." According to him, the existing environmental conflict research simply do not present sufficient evidence and exhibit too much uncertainty to make anything other than highly

speculative claims about the effects of climate change on violent conflict (Barnett, 2003). In his view, the likelihood of violent conflicts arising from migration is untenable. People rarely migrate for environmental reasons alone, but much more for economic opportunities elsewhere. This explains why cattle herders usually migrate from places of dwindling economic fortunes to places of better economic fortunes such as the Benue valley which boasts of green pastures and water sources all year round. In the course of satisfying their needs as human beings they face competition with crop farmers which eventually results to violent confrontations with its concomitant loss of human/animal lives and valuable property on the side of both groups.

While migration can result in violent resource conflict, there are numerous examples of large scale migrations with no such outcome. Raleigh and Urdal (2009) analyzed the relationship between environment and violent conflict in areas that have already experienced the types of environmental changes that are predicted to increase with climate change. They found that environmental and demographic factors have a moderate impact, both directly and indirectly, on the risk of civil war. Akuva and Yusufu (2020) on their part, found that climate change has resulted in mass exodus of people including cattle herders from neighbouring African countries down to Nasarawa State of North-Central Nigeria and this consequently threatens the peace and security of the State in particular and the country at large. They concluded that failure to adequately protect the environment by both the government and all stakeholders will adversely impact on the climate, which in the end will induce more migrations and more resource conflicts.

Yusufu (2021) citing Reuvency (2007) examines the impact of environmental problems on migration and conflict in a study of 38 migration cases in Asia, Africa and Latin America over the past few decades. The study found that environmental migration does not necessarily induce violent behaviour yet, when it does, environmentally motivated migration seems to intensify intra-state and inter- state dispute alike. Suhrke (1993) as cited in Yusufu (2021) on the other hand contends that whether or not environmentally induced migration leads to violent conflicts in receiving areas, depends on the capacity of the State to accommodate the needs and alleviate the grievances of the migrants and locals alike.

Furthermore, Phil-Eze (2009) believes strongly that there are certain factors in the environment that cause violent conflicts in Nigeria, namely climate, water, flood, soil

erosion, mining, renewable natural resources, agricultural activities, animal husbandry, environmental refuges and environmental pollution. These factors combine to trigger environmental conflicts. According to Phil-Eze (2009, p.394), environmental conflicts are:

> Conflict induced by environmental degradation which manifests as political, social, economic, ethnic, religious, territorial conflicts or conflicts over resource use, resource control, resource allocation, or national interests in which the physical structures or the two parties to the conflict fail to respect one another, observe good judgment in the exploitation, control or development of an environmentally based activity.

Phil-Eze (2009) cites the following examples to buttress his view point: For Africa, we have conflicts in the Nile Basin over the use of River Nile water; in the Horn of Africa we have conflict over the use of pasture/grazing land; in the Democratic Republic of Congo (DRC) we have conflict over minerals and natural resources; in Liberia we have conflict over diamond and timber, in Sierra-Leone we have conflict over natural resources and minerals; in Zambia we have conflict over the use of fertile land; in East Africa there is conflict between the Massai in Kenya and Tanzania, and the Turkana tribe over pasture/grazing lands, farmlands and protected zones, and in Sudan's Darfur region there is conflict between the government and local communities over oil resource sharing, access to land, minerals and desertification.

In Nigeria where many people still depend on land for survival, land and other land-based resources have been identified as the major source of violent conflicts, especially in the North-Central Nigeria over water and grazing fields, and in the South-South region over mineral resources and resource control. The resultant consequence of the ensuring conflicts is that peace is sacrificed on the altar of greed, grievance, looting and separatist incentive regardless of the abundance or scarcity of the resources under contention (Yusufu, 2021)

Eco-Violence Theory: A Framework of Analysis

This paper is anchored of the theory of Eco violence as its framework of analysis. The theory was propounded by Homer Dixon in 1999. The theory seeks to explain the relationship between environmental factors and exploitation of scarce resources and violent conflict (Okoli & Atelhe, 2014).The theory assumes that resource scarcity is the product of an insufficient supply, too much demand or an unequal distribution of resources as a result of environmental hazards that forces some sectors of a society into a condition of deprivation,

which leads to frustration and consequent violence. Contested resources commonly include land, water, forests, wildlife in protected areas and minerals. The assumptions of this theory are summarized by Homer Dixon (1999, p.30) as follows:

> Decrease in the quality and quantity of renewable resources, population growth, and resource access, act singly or in various combinations to increase the scarcity, for certain population groups, of cropland, water, forests, and fish. This can reduce economic productivity, both for the local groups experiencing the scarcity and for the larger regional and national economies. The affected people may migrate or be expelled to new lands. Migrating groups often trigger ethnic conflicts when they move to new areas, while decreases in wealth can cause deprivation conflicts.

Put differently, eco-violence theory sees conflict as a product of scarcity or the fear of natural resources depletion that may occur in at least two primary ways as illustrated by its proponents: (1) "the environmental effects of human activities in a given ecological zone, which is in itself a function of the total population of the region and the physical activity per capita as defined by the level of available physical resources (whether non-renewable resources, renewable or ideational such as institutions, belief systems, social relations and preferences), and(2) the level to which the ecosystem in that region is vulnerable (Isiugo & Obioha, 2015).What this implies by implication is that competition over scarce ecological resources can possibly engender violent conflict. This competition has become very stiff in recent years as a result of the impacts of climate change, which has consequently worsen ecological resource scarcity across the World (Blench, 2006, Onuoha, 2007,Fajonyomi et al, 2018). Consequently, scarcity of ecological resources therefore raises the competitive stakes and premium that the various competing societal groups place on available ecological resources (Okoli & Atelhe, 2014). This condition tends to hasten the occurrence of violent conflicts.

In relation to this study, it should be noted that climate change, human actions, and human population growth have contributed to the necessity of migration. For the nomadic cattle herders, the most rational response to the situation is to move southwards into the North-Central Nigeria, especially Benue State where ecological conditions are more favourable (Yusufu, 2021). In the process of relocating, they collide with indigenous cultivators whose economy and culture are different from that of the Fulani nomadic herders (Ortserga, 2014). The migration of these herders to the North-Central, results to increase in the population of their new locations (i.e. host communities); and increase in the demand for scarce available

land and water resources. Okoli and Atelhe (2014) carry this viewpoint further when they observe that:

> The conflicts have been driven by the desperation of the affected groups to protect and advance their livelihood interests in the context of an ever shrinking ecological space, characterized by resource-scarcity, livelihood crisis, population explosion and resource depletion.

The ultimate cause of violent conflicts between cattle herders and sedentary crop farmers lie in the general degradation of resources and the increased competition for access and resources capture (Tonah, 2006). Critics have argued that scarcity of resources is neither always natural nor does it automatically lead to violent conflicts between resources users (Baechler, 1999). The focus on scarcity, according to Peluso and Watts (2002) does not lead us to a useful understanding of the relationship between resources and conflicts. They maintained that, the emphasis on the so-called resources excludes the real sources of such conflicts, and in so doing makes them more difficult to resolve.

Also, scholars like Lomborg (2001) have criticized the theory on three grounds: Firstly, that most of the renewable resources are not scarce at the global level, and markets, technological developments, and resource substitution are likely to help nations or societies adapt to situations of local scarcity. Secondly, the high population pressure and resource scarcity may be a vehicle for development. High population and increasing scarcity of resources, in a way, has the capacity to provide incentives for finding ways to curtail scarcity by means of technological development and resource substitution. Thirdly, it has been argued that it is resource abundance that causes conflict and not scarcity, citing the case of Nigeria's Niger Delta wherein violent conflicts emanate from agitations over resource control. These criticisms notwithstanding, the theory is still very relevant in explaining and understanding the links between climate change, farmer-herder conflict and security challenge in Benue State in particular and Nigeria in general.

The relevance of the eco-violence theory in examining the dynamics of resource contestations in Nigeria derives from the balance of variables captured inthe framework. The eco-violence framework as described by Gleditsch and Urdal (2002) as far removed from the simplifications which characterize some other analysis of the environment-conflict discourse as represented bythe sensationalism of Kaplan (1994). Thus, Homer-Dixonavoids the tendency for definitive claims presenting population pressure and environmental degradation

as sole sources of violent environmental conflict and instead emphasizes the close interrelationship between demographic/environmental, social, and political factors in the generation of violent conflicts (Adigun, 2019)

Research Methods

The study was carried out in Benue State of North-Central Nigeria. A multi-stage sampling procedure was used to consummate the study. The sample size was determined using Yamani (1967) statistical formula. Purposive sampling technique was used to select 3 LGAs in the State, namely Agatu, Guma and Logo. Convenience sampling technique was used to administer questionnaire to target respondents. Research hypotheses were tested using non-parametric statistics (chi-square) at 5% level of significance. Yamane (1967) statistical formula was employed to get the exact sample size for the study as shown below:

$$n = N/1+N\,(e)^2$$

Where N represents population size

n represents minimum sample size

e represents the degree of error expected (0.05)

$n=479{,}331/1+479{,}331(0.05)^2$

n is approximately=**400**

Table 1: Projected Population Size of Sampled LGAs in Benue State

Sampled LGAs	Population, 2006	Sample Size
Agatu	115,597	96
Guma	194,164	162
Logo	169,570	142
Total	**479,331**	**400**

Source: Field Work, 2022

Results and Discussion

This section presents the results of the study by way of testing the research hypotheses and thereafter discussing the concomitant results.

Test of Research Hypothesis 1

The research hypotheses stated below were tested with the aid of non-parametric statistical tool known as chi-square (X^2) at 5% (0.05) level of significance.

$$X^2 = \sum \frac{(fo - fe)^2}{fe}$$

α = 5% (0.05)

df= (c-1) (r-1)

H_O: There is no significant relationship between climate change and farmer-herder conflict in Benue State

H_1: There is significant relationship between climate change and farmer-herder conflict in Benue State

General Decision Rule

The decision rule for statistical significance states that whenever the calculated chi-square is greater than the table value, the alternate hypothesis should be accepted, while the null hypothesis should be rejected. On the other hand, whenever the table value is greater than the calculated value, the null hypothesis should be accepted, while the alternate hypothesis should be rejected (Spiegel, Schiller & Srinivasan, 2004).

Table 2.1: Test of Hypothesis Table

VARIABLE	SA (5)	A (4)	U (3)	D (2)	SD (1)	TOTAL
1	179	177	26	12	06	**400**
2	165	162	27	24	22	**400**
TOTAL	**344**	**339**	**53**	**36**	**28**	**800**

Source: Authors' Computation, 2022

df= (c-1) (r-1)

df= (5-1) (2-1)

df= (4) (1)

df= 4

α = 5% (0.05)

$f_e = \frac{\text{Column Total} \times \text{Row Total}}{\text{Grand Total}}$

Table 2.2: Observed Frequency (F_0) & Expected Frequency (F_e) Table

F_0	F_e	(F_0-F_e)	$(F_0-F_e)^2$	$\frac{(F_0-F_e)^2}{F_e}$
179	172	07	49	0.28
177	169.5	7.5	56.25	0.33
26	26.5	-0.5	0.25	0.01
12	18	-06	36	02
06	14	-08	64	4.57
165	172	-07	49	0.28
162	169.5	-7.5	56.25	0.33
27	26.5	0.5	0.25	0.01
24	18	06	36	02
22	14	08	64	4.57
TOTAL				**14.38**

Source: Authors' Computation, 2022

$X^2_{c} = 14.38$

$X^2_{t} = 9.49$

df= 4

Decision

Since the calculated chi-square is greater than the table value (X^2 cal. = 14.38> X^2 tab. = 9.49), the alternate hypothesis (H1) is accepted while the null hypothesis (H0) is rejected. Therefore, the test of hypothesis suggests that there is a significant relationship between climate change and farmer-herder conflict. Migration of herders to other locations as a result of shrinking ecological resources such as land and water sources consequent upon change in climatic conditions engenders conflict as held by eco violence theory. This result is in tandem with the results of similar study conducted by Ogoh (2019) who found a significant relationship between climate change and farmer-herder conflict in Plateau State of North-Central Nigeria.

Test of Research Hypothesis 2

H_O: There is no significant relationship between farmer-herder conflict and security challenge in Benue State

H_1: There is significant relationship between farmer-herder conflict and security challenge in Benue State

Table 3.1: Test of Hypothesis Table

OPTION	SA (5)	A (4)	U (3)	D (2)	SD (1)	TOTAL
1	169	167	14	23	27	**400**
2	158	151	09	47	35	**400**
TOTAL	**327**	**318**	**23**	**70**	**62**	**800**

Source: Authors' Computation, 2022

df= (c-1) (r-1)

df= (5-1) (2-1)

df= (4) (1)

df= 4

α = 0.05 (5%)

$$F_e = \frac{\text{Column Total} \times \text{Row Total}}{\text{Grand Total}}$$

Table 3.2: Observed Frequency (F_0) & Expected Frequency (F_e) Table

F_0	F_e	(F_0-F_e)	$(F_0-F_e)^2$	$\frac{(F_0-F_e)^2}{F_e}$
169	163.5	5.5	30.25	0.19
167	159	8	64	0.40
14	11.5	2.5	6.25	0.54
23	35	-12	144	4.11
27	31	-4	16	0.52
158	163.5	-5.5	30.25	0.19
151	159	-8	64	0.40
09	11.5	-2.5	6.25	0.54
47	35	12	144	4.11
35	31	4	16	0.52
TOTAL				**11.52**

Source: Authors' Computation, 2022

X^2_c =**11.52**

X^2_t =**9.49**

df= **4**

The results of the analysis in table 2 reveal that X^2_cvalue is **11.52** and it is greater than X^2_t value which is **9.49**. Thus, the study concludes by rejecting the null hypothesis and states that, there is significant relationship between farmer-herder conflict and security challenge. This result is in consonance with the results of similar study conducted by Akuva and Yusufu (2020) who found that farmer-herder conflict has negative implications on peace and security in Nasarawa State of North-Central Nigeria.

Conclusion and Recommendations

The paper interrogated the nexus between climate change, farmer-herder conflict and security challenge in Benue State of North-Central Nigeria from the perspective of eco violence theory. Data for the study were generated from both primary and secondary sources. The test of research hypotheses showed significant relationship between climate change and farmer-herder conflicts. Further findings revealed a significant relationship between farmer-herder conflict and security challenge in Benue State. On the basis of these findings, the paper recommends a multi-dimensional approach in the management of farmer-herder conflict anchored on the following:

1. Regulation of both crop farming and cattle breeding activities through the implementation of effective land use laws
2. Sensitization of all stakeholders on the need to protect the environment so as to prevent further deterioration of the ecosystem due to human actions such as indiscriminate felling of economic trees
3. Planting of economic trees by the government on a regular basis to guard against soil erosion.
4. Encouraging nomadic cattle herders to embrace modern method of animal husbandry such as ranching while jettisoning open grazing as this has become anachronistic.

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