

**CLIMATE CHANGE AND CONFLICT IN NIGERIA: A  
THEORETICAL AND EMPIRICAL EXAMINATION OF THE  
WORSENING INCIDENCE OF CONFLICT BETWEEN FULANI  
HERDSMEN AND FARMERS IN NORTHERN NIGERIA**

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## **ABSTRACT**

Climate change in recent time has acquired global currency as never before. In fact, its ramifications, as well as its problems and consequences are well known, relatively unknown is its tendency to precipitate violent conflict. This paper examined, at the theoretical and empirical levels the nexus between climate change and conflict in Nigeria. More fundamentally, it showed how climate change accounts for the worsening incidence of conflict between Fulani herdsmen and farmers in northern Nigeria. Anchoring analysis on the eco-violence theory, we argued that much as we believe that the immediate cause of Fulani herdsmen and farmer conflict in northern Nigeria is natural resource scarcity that the remote cause is climate change which has through drought and desertification led to the worsening incidence of natural resource scarcity and worsen conflict between the two. Our position is that since climate change has come to stay, it is important for government to put more machinery on ground particularly in the north because over 70 percent of the nation's food crop comes from the region by encouraging climate change mitigation and adaptation. Further, climatologic research should be enhanced to combat desert encroachment, and in the long run reduce inherent conflicts.

Keywords: Climate, climate change, conflict, resource scarcity.

## INTRODUCTION

Climate is the average weather-including temperature variances, precipitation and wind over a select period or time. The earth's climate system evolves due to natural occurrences and human influences called anthropogenic. An example of this has led to climate change caused by increasing concentration of greenhouse gases, GHGs, in the atmosphere. GHG is a gas in atmosphere that absorbs and emits infrared radiation or heat through the use of fossil fuels. The *Fourth Assessment Report, AR4*, issued in installments by the Intergovernmental Panel on Climate Change, IPCC, from February to November, 2007, noted that if greenhouse gases continue to be emitted unchecked, the climate system will change significantly in the 21<sup>st</sup> century and that extreme climate phenomena and increasing sea levels will have adverse effects on natural and human systems.<sup>1</sup>

With climate change leaving no room for doubt, the year 2007 became the watershed in terms of study on the security implications of climate change in Africa. It was the year that both African Union, AU, and the Security Council of the United Nations, held their first ever debate on the security implications of climate change. Further, at Durban, South Africa, the issue occupied the front burner during the 17<sup>th</sup> meeting of the Conference of the parties to the Kyoto Protocol in November, 2011. There is no doubt that the world has invested resources in combating climatic hazards yet, the world is experiencing and recovering from a series of climate and environmental-related disasters, such as the Japanese tsunami and nuclear crisis, the Haiti earthquake, the Indian Ocean tsunami, Hurricane Katrina, the Lagos and Ibadan flood, among others, which have killed, displaced millions, and destroyed properties worth millions of dollars.

The subtle nature of climate change usually blurs its paroxysm to the extent that it is not usually seen as a major security threat. Ezirim and Onuoha observed this when they noted that: Climate change does not fit into the mode of traditional threats to national security such as war, terrorism, insurgency, espionage or sabotage. Yet its non-violent and gradual dynamics of manifestation serve only to disguise its impact on livelihoods, social order, peace and stability.<sup>2</sup>

The Intergovernmental Panel on Climate Change, IPCC observed that in the 20th century, there have been consistent patterns indicative of climate change. For example, since the 1950s, average global temperature rose by about 0.1 °C per decade, winter snow covers declined by 10%, Northern ice thickness fell by 40%, the frequencies and intensities of droughts, storms, and warm periods rose, glaciers retreated, and the sea level rose by 20 cm. The Panel attributed these changes to increased carbon emissions from fossil fuel burning. Assuming business as usual, these problems are expected to intensify.<sup>3</sup>

Unfortunately, Nigeria as a part and parcel of the world is not immune to climate change hazards. Climate change in Nigeria has over time disrupted the normal functioning of the ecosystem that interacts with humans, and affects how they access certain vital resources for their survival. When climate change hazards such as heavy droughts and famine, erratic weather seasons and, in some areas like in the north, prolonged dry spells occur in Nigeria, it is normally viewed in relation to environmental degradation, natural resource scarcity, migration and food shortage. Little or no attention is paid to how climate change can induce conflicts.

The term '*conflict*' has been variously conceptualized. However, the multiplicity of definitions has always pointed at one fact: that conflict is an enduring aspect of social existence. It is believed that wherever a community of individuals is found, conflict is basically a part of their experiences. Thus, most conflicts are social in character and usually arise as human beings pursue their different survival and security needs. However, whenever there is conflict between sedentary farmers and Fulani herdsmen or pastorals, it is normally viewed by scholars such as Adekunle and Adisa, Onuoha,<sup>4</sup> among others within the context of resource scarcity. Much as we believe that it is lack of natural resources that can cause this kind of conflict, it is our position that resource scarcity is the immediate cause of conflict between these two groups while climate change creates resource scarcity and reinforces the conflict.

Mostly, conflict in Nigeria arises from religious, ethnic and political differences, poverty, resource scarcity or combination of all. However, no serious attempt has been made by scholars to interrogate how climate change precipitates conflict between Fulani herdsmen and farmers in northern Nigeria at the conceptual and empirical levels.

Hence, the study investigates the link between climate change and conflict in Nigeria. It examines the role that climate change play in most conflicts involving Fulani herdsmen and farmers in northern Nigeria.

## **THE PROBLEM**

Conflict between nomad and the settled farmer goes back to the earliest written records and is mythically symbolized in many cultures.<sup>5</sup> Cain slew Abel, the Chinese emperors built the Great Wall to keep out the marauding hordes. In West Africa, farmers formerly are associated pastoral peoples with large-scale military conquest.<sup>6</sup> But with the coming of the colonial regimes and the collapse of indigenous states, conflict between farmers and herders took on a different colouring, becoming more associated with competition for natural resources. Descriptions of such conflict abound in the pastoral literature.<sup>7</sup>

Nigeria, however, presents a very special situation quite unlike other West African countries, for two reasons; most notably the ambiguous prestige of pastoral culture particular to Fulani pastoralists but also because of its large and comparatively wealthy population. Nigeria has a restricted inventory of pastoral peoples, the Fulani, the Kanuri-related groups, the Shuwa, the Yedina and the Uled Suleiman. The most numerous and widespread are the Fulani who have expanded eastwards from the Gambia river over the last thousand years and probably entered Nigeria in the fourteenth century.<sup>8</sup> The cattle-based pastoralism of the Fulani has thus been the most significant focus of herder/farmer conflict in Nigeria. For a long period, the Fulani were confined to the edge of the desert. During the twentieth century, Fulani herders began to migrate through and settle in whole zones that were previously inaccessible to pastoralists, bringing them into contact with previously unknown peoples, cultures and production systems. The consequences of this were a raft of untested interactions between all parties and considerable space for misunderstandings and conflict.

However, if Fulani herders are unable to build up exchange relations with their host communities, particularly farmers, they can only survive either by settling, by flexible movement patterns that involve encountering new arable communities every year, or by intimidation of the farmers. All of these strategies occur in Nigeria, sometimes practiced simultaneously by different Fulani herdsman group.

Unfortunately, increased competition of pastoralists for a dwindling 'stock' of grazing land has pitched them (Fulani herders) against farmers. Conflict between farmers and Fulani herdsman has become so rampant. For instance, violence erupted on 18 December, 2009, between these two groups when pastoralists attacked the farming village of Udeni Gida - two weeks after a clash with farmers on 6 December, when herdsman led their cattle into rice fields resulting in the death of a farmer.<sup>9</sup> Clashes between these two, made local authorities in Borno and Plateau state to expel 700 pastoralists from Borno state in the northeast in May 2009, and some 2,000 from Plateau in April 2009, respectively.<sup>10</sup>

In recent time, armed conflict between herdsman and their host communities had been reported to have taken place in over 20 villages in Nigeria, including, Ago Nla, Ago Kekere, Idi Ope Kekere, Olukore, Olokuta, Apena, Jaramosan, Akeeran, Alagigo, Aaaro, Temidire, Iya Ibadan, Ideto, Apapa, Akele, Agwo, Bodija, Olufayo, Oko Teku, Moniya, Oke Ogun, Shaki, Egbedore. Ilobu, Efon Alaye, Alu, and Iya moye.<sup>11</sup>

In a study carried out by Sulaiman and Ja' afar to ascertain the economic effects of this type of conflict in Bauchi state from 2003 to 2007, they discovered that:

Livestock that were lost through the farmers-pastoralists conflict included 34 cattle and 11 sheep/goats, valued about 1.8 million Naira and N66, 000.00 for cattle and sheep/goat, respectively. Six persons lost their lives during the period with anticipated economic contribution valued at N2, 844,000.00. The number of persons injured in the farmer-pastoralists conflict as revealed by the study was 45 among whom 15 persons were incapacitated that they could not perform their economic activities during the period of treatment. The cost implication due to the body injuries of those affected in this respect was about N2.64 million.<sup>12</sup>

However, this conflict is usually attributed to environmental resource scarcity. Saidu, a pastoralist from Wase District of neighbouring Plateau state had this to say:

Our herd is our life because to every nomad life is worthless without his cattle. What do you expect from us when our source of existence is threatened? The encroachment of grazing fields and routes by farmers is a call to war... Wherever we turn we find the land reserved for our cattle to feast, taken over by farmers... It becomes difficult for our herd to move and graze without veering into crop fields... Once that happens, the farmers confront us and we have no option but to fight back.<sup>13</sup>

From Said's statement above, it can be deciphered that at the heart of farmer-herdsmen conflict is resource scarcity. The question is what brings about this type of resource scarcity if not climate change that adversely affects environmental resources through drought and desertification. According to Nasiru, Nigeria is experiencing adverse climate change condition:

Nigeria is experiencing adverse climate conditions with negative impacts on the welfare of millions of people. Persistent droughts and flooding, off season rains and dry spells have sent growing seasons out of orbit, on a country dependent on a rain fed agriculture. Alarm bells are ringing with lakes drying up and a reduction in river flow in the arid and semi arid region. The result is fewer water supplies for use in agriculture, hydro power generation and other users. The main suspect for all this havoc is Climate Change. Scientific studies show snows are disappearing rapidly.<sup>14</sup>

Thus, while scholars have seriously looked at farmer-herdsmen conflict in Nigeria through the prism of resource scarcity and the quantity and quality of resources available to these two groups, they are yet to see the role that climate change play in this type of conflict. Further, the history and ramifications of conflict between Fulani herdsmen and farmers in Nigeria, as well as its consequences, are well-known. Relatively unknown is how climate change precipitates conflict in Nigeria between these two groups. This is because studies focus on the immediate cause(s) with little or no thought to the remote cause(s).

#### **THEORETICAL PERSPECTIVE**

A conscious effort will be made to adopt a theoretical framework that will best explain and guide us in understanding the linkage between climate change and conflict in Nigeria.

The link between environmental resources and conflicts has engaged the minds of scholars as Baechler; Percival and Homer- Dixon; and Gleditsch.<sup>15</sup> Against this background, Homer-Dixon articulated the theory of eco-violence which we shall usefully adopt here. Homer-Dixon and Blitt<sup>16</sup> argue that large populations in many developing countries are highly dependent on four key environmental resources that are very fundamental to crop production: fresh water, cropland, forests and fish. Scarcity or shrinking of these resources as a result of misuse, over-use or degradation under certain circumstances will trigger off conflicts.

According to Homer-Dixon:

Decreases in the quality and quantity of renewable resources, population growth, and unequal 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.<sup>17</sup>

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 as a result of environmental hazards that forces some sector of a society into a condition of deprivation and violence. These four sources of scarcity are in turn caused by variables such as population growth, economic development, pollution and obviously climate change. Thus, environmental resource scarcity will constrain agricultural and economic productivity, further inducing the disruption of economic livelihoods, poverty and migration. Migration can occur either because the environmental quality of a habitat has become unlivable or, more commonly, because the migrant's economic outcome is likely to be better in areas with greater resource availability. Both constrained productivity and migration are likely to strengthen the segmentation around already existing religious, class, ethnic or linguistic cleavages in a society<sup>18</sup> and thus precipitate conflicts.

It is fundamental to state that one basic feature of Fulani herdsmen is migration and at the heart of migration is climate change. Within the context of Fulani herdsmen and farmer conflict, the eco-violence theory is analytically fecund to capture, and explicate the intricate linkages that can develop between climate change and conflict. This is because the four environmental resources (fresh water, cropland, forests and fish) are resources that climate change affects. As a result of climate change, seas have dried up leading to shortage of fish and fresh water. Drought and desertification have also eaten up crop lands and forest thereby making these environmental resources that trigger violence in short supply.

To avert these situations, individuals especially herdsmen stray to where they will get moderate weather, market opportunity, green –vegetation, forage and food, thereby threatening the means of production and reproduction of some other people who would not brook such encroachment. This in itself engenders conflict. And when they are accepted, the long run effect will be pressure on land, food shortage, conflict of interests, cultural differences, over population, social disorganization, religious, social, and cultural intolerance which are in themselves conflict triggers.

Further, most of the impact of climate change is directly on agriculture, the theory help us to explain the link between climate change and conflict. That agriculture has been neglected in Nigeria is no longer news. This situation has worsened considerably over the years as a result of government insensitivity to climate adaptation and mitigation and puts more pressure on the populace who suffer more as a result of climate change. As a result of low yield, farmers cultivate more lands now than they hitherto do, living little land for grazing of cattle. It is within this context that the link between climate change and conflict in northern Nigeria can be understood.

## **UNDERSTANDING CLIMATE CHANGE AND CONFLICT**

The term *Climate* originated from the Ancient Greek word, *Klima*, meaning *inclination*. It is commonly defined as the weather averaged over a long period. The standard averaging period is 30 years, but other periods may be used depending on the purpose. Climate also includes statistics other than the average, such as the magnitudes of day-to-day or year-to-year variations. The Intergovernmental Panel on Climate Change, IPCC, defines climate in a narrow and wider sense as:

In a narrow sense is usually defined as the "average weather," or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period ranging from months to thousands or millions of years. The classical period is 30 years, as defined by the World Meteorological Organization, WMO. These quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system.<sup>19</sup>

The Fourth Assessment Report, AR4, released by IPCC noted that climate encompasses the statistics of temperature, humidity, atmospheric pressure, wind, rainfall, atmospheric particle count and other meteorological elemental measurements in a given region over long periods. It goes further to state that climate can be contrasted to weather, which is the present condition of these elements and their variations over shorter periods. The difference can further be gleaned from the popular phrase: *Climate is what you expect, weather is what you get*. A region's climate is generated by the climate system, which has five components: Atmosphere, hydrosphere, cryosphere, land surface, and biosphere. An alteration in the quantity of atmospheric greenhouse gases determines the amount of solar energy retained by the planet, leading to global warming or global cooling.<sup>20</sup>

On the other hand, climate change is the variation in global or regional climates over time. It reflects changes in the variability or average state of the atmosphere over time scales ranging from decades to millions of years. These changes can be caused by processes internal to the earth, external forces (e.g. variations in sunlight intensity) or, more recently, human activities. In recent usage, especially in the context of environmental policy, the term *climate change* often refers only to changes in modern climate, including the rise in average surface temperature known as global warming. In some cases, the term is also used with a presumption of human causation, as in the United Nations Framework Convention on Climate Change, UNFCCC. The UNFCCC uses *climate variability* for non-human caused variations.

The Intergovernmental Panel on Climate Change, IPCC, Third Assessment Report, AR3, defines climate change as:

Climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use.<sup>21</sup>

According to Ezirim and Onuoha:

Climate change is caused by increasing concentration of greenhouse gases (GHG) in the atmosphere. Greenhouse gases include any gas in the atmosphere that is capable, as a result of its particular molecular structure, of absorbing infrared radiation or heat. They are (sic) called greenhouse gases because they display effects similar to that in a “greenhouse”. The glass in a “greenhouse” allows the sunlight to pass through but trapping the heat formed and preventing it from escaping, thereby causing a rise in temperature.<sup>22</sup>

The United Nations Intergovernmental Panel on Climate Change (IPCC), the leading forum for climate analysis, in its Fourth Assessment Report of the IPCC, presented in *Climate Change 2007* observed as follows:

- warming of the climate system is now unequivocal;
- the rate of warming in the last century is historically high;
- the net effect of human activities since 1750 has been one of warming, due primarily to fossil fuel use, land-use change and agriculture;
- most of the observed increase in globally averaged temperatures since the mid-20th century is very likely (greater than 90 per cent) due to the observed increase in anthropogenic (i.e., caused by human activity) greenhouse gas concentrations;
- long-term changes in climate have already been observed, including changes in Arctic temperature and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns and aspects of extreme weather including droughts, heavy precipitation, heat waves and intensity of tropical cyclones;
- from 1900 to 2005, drying has been observed in the Sahel, the Mediterranean, southern Africa and parts of southern Asia;
- more intense and longer droughts have been observed over wider areas since the 1970s, particularly in the tropics and subtropics;
- continued greenhouse gas emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21st century that would very likely be larger than those of the 20th century;
- projections for the 21st century include a greater chance that more areas will be affected by drought, that intense tropical cyclone activity will increase, that the incidence of extreme high sea levels will increase, and that heat waves and heavy precipitation events will be more frequent; and
- even if greenhouse gas concentrations were to be stabilized, anthropogenic warming and sea-level rise would continue for centuries due to the timescales associated with climate processes and feedbacks.<sup>23</sup>

The IPCC and other influential scientific assessments reflect important advances in the understanding of global warming and climate change. Perhaps most critically they demonstrate the historic magnitude of the pace and nature of these changes and underlines the urgency of efforts to reduce carbon emissions and to develop mechanisms to cope with climate impacts that cannot be avoided.

On the other hand, attempts at giving a broad based definition of conflict has led to the development of two schools of thought. The first school of thought believes that conflict is associated with negative developments. Scholars who hold this view include Coser; Park and Burgess<sup>24</sup> among others.

Coser gave one of the most celebrated definitions of conflict when he sees the phenomenon as a struggle over values and claims to scarce status, power and resources in which the aims of the opponents are to neutralize, injure or eliminate their rivals.<sup>25</sup> When one views conflict from this standpoint, it depicts conflict as a means of settling problems arising from opposing interests of groups. Park and Burgess lend credence to this conceptualization when they stated that conflict is designed to resolve divergent dualism (and achieve) some kind of unity even if it is through annihilation of one of the conflict parties.<sup>26</sup> This viewpoint places parties to conflict at antagonistic positions that each is prepared to go to war to achieve their goals.

In the same vein, Nwoli defines conflicts as a clash, confrontation, battle or struggle.<sup>27</sup> Also in this line of thought, Kriesberg sees conflict as a relationship between two or more parties who believe they have

incompatible goals.<sup>28</sup> Little wonder Edede refers to it as “a fight, a quarrel, a struggle, a bitter argument, opposition, difference in opinion, desire, etc”.<sup>29</sup>

The above definitions by the various scholars tend to point to the realities that conflict gives rise to consequences that are negative in nature. These views are however incompatible with the postulation of the second school of thought who believe that mankind can draw some positives from conflict.

The second school of thought does not see conflict always as a negative development. Scholars here contend that for every manifest or psychological conflict situations, there are bound to be indicators and conflict triggers and that, it is only insensitivity to conflict indicators that creates a situation of conflict.<sup>30</sup>

This School of thought in conflict studies is championed by Wilson and Hanna; Francis<sup>31</sup> among others.

In their conceptualization of conflict, Wilson and Hanna stated that:

Conflict is a conscious act involving personal or group contact and communication, together with, though distinct from competition, struggle, and contest etc, conflict is a normal process of interaction particularly in complex societies in which resources are usually scarce.<sup>32</sup>

Francis sees conflict as an intrinsic and inevitable part of human existence.<sup>33</sup> These groups of scholars see conflict as necessary and inevitable in human existence. To them conflict as conceived from the negativist perspective does not reflect contemporary happenings among groups in the society as in most cases, conflict in a group usually bring about self appraisal which more often than not leads to positive development. It is in this kind of situation that conflict is said to be functional or constructive which brings about improvement in the quality of decisions, stimulates creativity and innovation, encourages interest and curiosity among group members, provides the medium through which problems can be aired and tension released while at the same time fostering an environment for self evaluation and improvement.<sup>34</sup>

The position of scholars as to the meaning of conflict clearly sees some conflict situations as dysfunctional to human society and some as functional or constructive.

#### **THEORETICAL AND EMPIRICAL EXAMINATION OF CLIMATE CHANGE AND CONFLICT BETWEEN FULANI HERDSMEN AND FARMERS IN NOTHERN NIGERIA**

Drawing lines of causation between climate change and conflict requires caution. Every conflict has many causes, and people do not automatically start fighting when the weather heats up, and drought and desertification ensues. However, Homer-Dixon noted that climate change:

may well represent a challenge to international security just as dangerous—and more intractable—than the arms race between the United States and the Soviet Union during the Cold War or the proliferation of nuclear weapons among rogue states today.<sup>35</sup>

It is a known fact that an area be it a region, population, or sector sees some climatic shifts; poor responses to the shifts lead to resource shortages and poor responses to the resource shortages heighten one or more structural conflict risks. A basic causal mechanism links climate change with violence in Nigeria. Climate change in Nigeria has led to growing shifts in temperature, rainfall, storms, and sea levels. These climatic challenges, left unaddressed, had thrown already stressed resources such as land and water into even shorter supply.<sup>36</sup> Moreover, poor responses to resource shortages could have serious negative secondary effects, including more sickness and hunger, fewer jobs, and poor economic growth, which in turn could open the door to more violence. Indeed, in a few conflict-prone states in the arid north, this sequence is probably playing out already.

More heat and less rain, as well as drought as presently experienced in the north have implications for climate conflict, but they will first lead to factors that will trigger climate conflict such as, first, land scarcity. According to Aaron, the combination of more heat plus less rain raises the specter of widespread desertification, especially in northern Nigeria.<sup>37</sup> According to some estimates, fully two-thirds of Bauchi, Borno, Gombe, Jigawa, Kano, Kaduna, Katsina, Kebbi, Sokoto, Yobe, and Zamfara states could turn desert or semi-desert in the twenty-first century.<sup>38</sup> Already the Sahel creeps south by approximately 1,400 square miles a year, swallowing whole villages; government geological data show a 400 percent increase in sand dunes over twenty years.<sup>39</sup>

Second factor is water shortage and scarcity. Usable water is already at a premium for much of Nigeria. Poor management and government supply failures, not limited availability, are likely the biggest causes today.



The UN Food and Agriculture Organization (FAO) and the National Bureau of Statistics (NBS) rates Nigeria's water use and conservation practices "poor" by international and African standards, and only 8 percent of homes nationwide have treated pipe-borne water.<sup>40</sup> Yet climatic shifts could also factor into some shortages. More heat plus less rain is already creating drought conditions in parts of northern Nigeria. This is troubling when government data show rural households harvest rain for more than half their total water consumption and northern groundwater tables have dropped sharply over the last half century, owing partly to less rain.<sup>41</sup>

In Nigeria, many communal clashes (often mis-interpreted or mis-represented as ethnic and religious clashes) are actually struggle over either the control of land or mineral resources or both. In the northern and middle parts of the country, the cereal-productive Sudan savannah ecology is transiting to pure Sahel and the influence of the Sahara is increasing southwards. In the same vein, the root and tuber productive ecology of the Guinea Savannah is giving way to Sudan Savannah grassland. The predominant Fulani herdsman of the lower Sahel and Sudan savannah ecologies is now moving south to northern states (Nasarawa, Kogi, Abuja, Kwara, Plateau, Benue) who are close to the Guinea Savannah and Forest belt of the South - to find greener pasture for his herds. This is not acceptable to the root and tuber farmers of these northern states who are close to the Guinea Savannah that is already farming close to the climatic margin of cultivation.

He has the fears that Fulani herds will destroy his farmlands. The natural result is clash over right to the lands, a pattern seen across the Sahel that experiences drought, feed and water shortages caused partly by desertification and drought which have sent nomadic pastoralists, most of them ethnic Fulanis, wandering south to some northern states close to the Guinea Savannah, outside their normal grazing routes. At the same time, a mix of weather-related factors has pushed farmers to cultivate more land each year, leaving wanderers fewer places to water and graze their stock.

The economic effects of Fulani herdsman-farmer conflict in Bauchi state from 2003 to 2007 is as follows:

**Table 1: Showing Cost of the farmer-pastoralist conflict in Bauchi State between 2003 and 2007**

: e farmer-pastoralist conflict in Bauchi State between 2003 and 2007				
	No./Qty	Source of costs	Mean value of cost (N)	Total value of loss/cost (N)
ots	6	Annual earnings from:		
		Primary source	397,000	2,386,000
		Secondary source	77,000	462,000
ms	45	cost of treatment	43,000	1,935,000
	15	Expected earning during treatment	47,000	705,000
ie)	6	Depreciated value	730,000	4,380,000
	5	Cost of repairs	240,000	1,200,000
	3	Cost of using alternative Accommodation	113,470	340,410
roduce	200	Expected output value	351,235	70,247,000
:: Cattle	34	Market value of animal	53,059	1,804,006
at	11	Market value of animal	6,000	66,000
l/wash bore	230	Depreciated value	6,500	1,495,000
ss	103	Cost of repairs	2,700	278,100
	71	Expected earnings during Period of repairs	20,000	1,420,000
s	10	Depreciated value	15,320	153,200
ss	3	Cost of repairs	5,405	16,215
	1	Expected earnings during Period of repairs	7,000	7,000
nsportation	7	Depreciated value	53,451	374,157
	9	Cost of repairs	21,233	191,097
		Grand total		N87,456,185

Source: Sulaiman and Ja'afar.<sup>42</sup>

Below are cases of conflict between pastorals and farmers in northern Nigeria.

- January 8, 2002: dozens of people died and hundreds were displaced in clashes between local farming communities and nomadic Fulani herders in Mambilla plateau, Northeastern Nigeria. The fight broke out in Tonga Maina village following a dispute over grazing land.
- February 22, 2002: at least 23,000 Fulani herders fled Nigeria's Eastern Taraba State to Cameroon to escape clashes which broke out between several communities in Mambilla Plateau.
- May 30, 2002: at least 10 people died in clashes between nomadic Fulani herdsman and local people in parts of central Nigeria's Plateau State. These fights were part of an emerging pattern since a major upheaval in 2001 in the state capital, Jos, in which more than 500 people died.
- June 20, 2002: at least 30 people were killed in clashes between farmers and herders in Barkin Ladi local council area of Nigeria's central region Plateau State. The clashes were sparked by a dispute over grazing land in the village of Kassa.
- July 15, 2002: at least 12 people were killed in an outbreak of ethnic and religious violence between Fulani herders and agricultural people in the Plateau State, central Nigeria. Farmers blame some of the attacks on Fulani herdsman who, would have been seeking to avenge the death of one of their chiefs in the September 2001 Jos conflict. The herdsman in turn accused the indigenes of giving them ultimatums to leave land which, for decades, had been their traditional grazing areas.
- March 4, 2003: more than 100 people were killed in clashes between ethnic groups living side-by-side and competing for limited resources in the Northeastern state of Adamawa.<sup>43</sup>

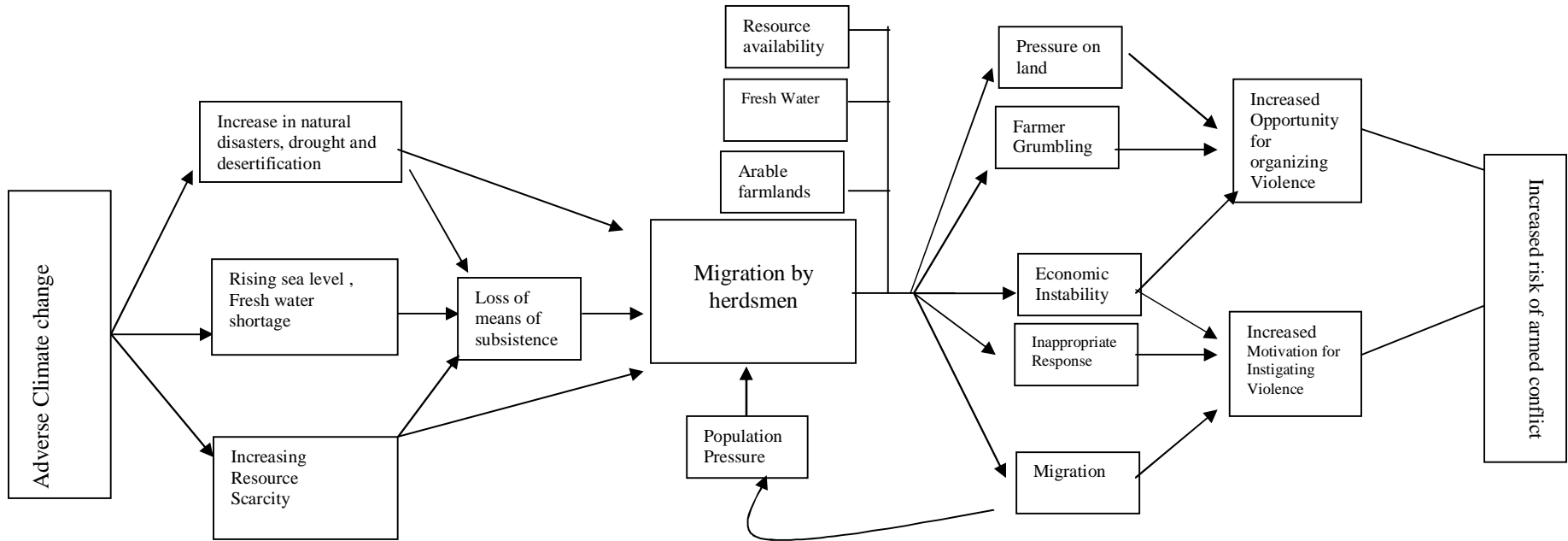
Reports from the information agencies found connections between these conflicts and the environmental changes happening in the arid lands of Nigeria. We are all aware that this worsening environmental condition has to do with climate change. It is obvious that Nigerian population is under desertification threat or in desert-like condition.

A nomad Chief Alhaji Jebbe had this to say:

We settled in Damboa [in Borno state] like many other Fulani nomads, running away from desertification and drought in the far north where we have little food for our herd.<sup>44</sup>

A climatic and environmental consultant known Kabiru Yammama is of the view that the effects of climate change are partly to blame for the disputes. Northern nomadic communities are increasingly moving southwards as climate change turns their grazing land into desert. He further noted that about 35 percent of land that was cultivable 50 years ago is now desert in 11 of Nigeria's northernmost states: Borno, Bauchi, Gombe, Adamawa, Jigawa, Kano, Katsina, Yobe, Zamfara, Sokoto and Kebbi, and the livelihoods of some 15 million pastoralists in northern Nigeria are threatened by decreasing access to water and pasture -- shortages linked to climate change. One is not surprised because according to a 2008 National Meteorological Agency study, the rainy season in northern Nigeria has dropped to an average of 120 days down from 150 days 30 years ago, cutting crop yields by 20 percent.<sup>45</sup>

**Diagram: Showing Pathways to Climate Conflict.**



**Source:** Designed by the authors to show pathways to climate conflict

Buttressing further the impact of climate change in the region, one official in Tureta Local Council in Sokoto State stated as follows:

In the past the migration use to be more in the middle of the dry season and after harvest but nowadays it is throughout the year. Worst of all during planting season, they (Fulani herdsmen) walk on seeds planted, and in most cases a lot of the seeds fail to germinate. This has caused huge loss to us. The damage is usually the cause of our conflicts with the Fulani herdsmen. It is a yearly battle between us.<sup>46</sup>

Only recently Nigerian Television Authority weather forecast reported that for the first time in the history of Nigeria, Maiduguri, the capital city of Borno state had a temperature of 47oC, which was also linked to ailing health of the people and low crop yields.<sup>47</sup>

From the preceding analysis, we validate our theoretical and empirical assumption that there is a relationship between climate change and most conflicts between Fulani herdsmen and farmers in northern Nigeria.

## **CONCLUSION**

Our central thesis in this paper is that much as we believe that the immediate cause of Fulani herdsmen and farmer conflict is resource scarcity; that the remote cause is climate change which has through drought and desertification led to natural resource scarcity and therefore intensified the conflict between the two. After all, whenever, a panel or committee is set up to ascertain the cause of a particular conflict, they are charged to identify the remote and immediate causes of the conflict. Natural resource scarcity is the immediate cause of Fulani herdsmen-farmer conflict while climate change constitutes the remote cause. This is because drought, feed and water shortages caused partly by desertification and drought have sent nomadic pastoralists, most of them ethnic Fulanis, wandering outside their normal grazing routes.

At the same time, a mix of weather-related factors has pushed farmers to cultivate more land each year, leaving wanderers fewer places to water and graze their stock. The resulting contests have been responsible for the deaths of several hundred Nigerians. This calls for urgent attention. It is therefore, important for government at all levels to put more machinery on ground particularly in the north because over 70 percent of the nation's food crop comes from the region to encourage climate change adaptation and mitigation. Also, Nigeria as a country should invest more in combating climate change; climate adaptability; agricultural and climatologic research should be enhanced to combat desert encroachment, and in the long run reduce inherent conflicts.

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