

**EVALUATING THE IMPACT OF LAND DEGRADATION ON
CONFLICTS BETWEEN FARMERS AND HERDSMEN IN KONDUGA
LGA, BORNO STATE, NIGERIA**

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ABSTRACT

The 21st century heralded an upsurge of violent conflict between farmers and herdsmen in Northern, Nigeria. Borno state has been one of the battlefields for these recent incessant conflicts. This study examined the impact of land degradation on conflicts between the farmers and herdsmen in Konduga LGA in Borno State, Nigeria. The objectives of this study were to; (a) examine the causes of conflicts between the farmers and herdsmen in Konduga LGA in Borno State, (b) to identify the impacts of land degradation on the persistent conflicts between the farmers and the herdsmen, (c) to examine the impact of climate change on the increasing violent conflicts amongst the farmers and herdsmen in Konduga LGA in Borno State. The population of the study was thirteen thousand four hundred (13,400) Farmers and Herdsmen in Konduga LGA in Borno State. A purposive sampling technique was used to select the respondents for the study. The sample size for this study was six hundred and seventy (670) respondents; this figure was (5%) of population of the study which agreed with Nworgu (2006), that 5% of a population of study is appropriate for this study. The two hypotheses stated are; (a) there is no significant relationship between land degradation and causes of conflicts between farmers and herdsmen in Borno State. (b) There is no significant relationship between climate change and land degradation in Borno State. The study was a survey-based research and the data used for the study were collected from primary and secondary sources. Techniques used for the primary data collection include structured questionnaires and oral/key-informant interview and direct observation. In all, a total of six hundred and seventy (670) copies of questionnaire were administered in the ten communities of konduga local Government of Borno State. Analysis of Variance (ANOVA) was used to test the hypotheses at 0.05 level of Significance. The result reveals that the Fcal calculated value ($f= 4.2$; Critical value of 3.89) which implies that there is a significant relationship between land degradation and causes of conflicts between farmers and herdsmen similarly, testing of hypotheses two reveals that the Fcal calculated value ($f=4.1$;

critical value of 3.89) which implies that there is a significant relationship between climate change and Land degradation in Borno state. It is against this background, that this study recommends the need for cattle ranches for herdsmen to avoid future conflicts between farmers and herdsmen in the study area and a periodic environmental evaluation of land degradation of the study area among others were also recommendations.

Keywords: Land degradation, Climate, Agriculture, Demographic, Grazing

INTRODUCTION

Violent conflicts over grazing field and water point are not a recent phenomenon in Northern Africa (Janpeter, Jurgen and Michael, 2010). For many centuries, the relationship between farmers and herders has been shaped by both cooperation and violence (Blench, 2004; Moritz, 2006; Shettima and Tar, 2008). Strong population growth, wide-spread food insecurity and a recent series of drought events have increasingly challenged traditional resource sharing mechanisms while conflicts over scarce grazing space and water point have intensified (Tuner 2004; Frantki, and Ruth 2005). Janpeter *et al.*, (2010) cite that, there are growing indications that land degradation due to climate change in Africa could become a significant factor of violent in the coming decades.

According to Ajadike (2017) the conflicts between crop farmers and nomadic herdsmen have claimed thousands of lives and destroyed property worth billions of naira. The conflicts have been sometimes mis-interpreted or mis- represented as ethnic and religious because of the occupations and religious inclinations of the people in the conflicts. The farmers are mainly Christians but the herdsmen are Muslims. However, Mayowa and Omojo (2015) discuss that, the conflicts are actually struggle over land and water resources. In the pursuit of long-lasting solutions to the crisis in many parts of Nigeria, many attempts to understand the underlying social and, economic, cultural and political factors for the conflicts and their ensuring dynamics have been made. Yet, the crisis persists. A review of scholarly work on the farmer-herder conflicts in the West African sub-region reveals an abysmal void in the establishment of the nexus between important variables in the region. In many instances such linkages are left to conjectures without substantial empirical argument. This apparent lack of analytical input has contributed to undermining both sub-regional and international endeavour to formulate holistic and sustainable intervention strategies that comprehensively engage the underlying causes of the conflicts in Northern Nigeria. Rather than leave such linkages to conjectures and refutations, this thesis statement seeks to establish the nexus between the complex and multiple inter-linkages between climate change and outbreak of violence farmer-herder conflicts in Borno State. In trying to situate the phenomenon of farmer-herder conflict in Konduga Local Governmetn Area in Borno State, a number of theories are employed in chapter two; these include the theory of the

tragedy of the commons, the neo- Malthusian theory, the Eco-violence and Eco-Suvivalism among others.

In the Sudan-Sahelian States of Northern Nigeria, covering the North central and North West zones, the major sources of the conflicts are ecological, degradation-induced by climate change and desertification (Philip-Eze 2009). The Intergovernmental Panel on Climate Change (IPCC, 2007) states that climate change has seriously affected the Sudano-Sahelian region of Nigeria. Ala (2008) cites that, the great Sahelian drought of 1969 to 1973 created massive shift of population to the southern and wetter latitude. Alao, describes the desertification as a problem in the northern States of Nigeria as the Sudano-Sahelian belt of Nigeria has been seriously degraded by combination of natural factors such as drought, deforestation and overgrazing. Desertification creates badland (barren land) that is useless for growth of crops and the grazing of livestock.

Northern Nigeria is a region of vast arable land hitherto capable of feeding the entire nation with enough left over for export , a large part of the productive fields are now barren and unfit for human cultivation and livestock production. This is due to desert encroachment. Borno State is the most affected in the North east with about 55 percent of its landmass under threat by desert encroachment (Nigerian Common Country Assessment, 2001).

Nigeria with a population of over 180 million people is grossly underprovided with essential food components like protein which is important for the realization and development of human potentials both mentally and physically as well as infinitesimal contribution to gross domestic product of the country (FAO, 2014, cited in Ojiya, Ajie, and Mamman, 2017). The 22 million cattle in Nigeria is an instrument of socioeconomic change to improve income and quality of life (Malcolm and Adeleke, 2016). According to Ojiya, *et al.*, (2017) cattle contribute over 50% of the national meat supply while the remaining 40-50% is contributed by other classes of livestock and other domesticated animals. According to Jerome and Are (2012) the livestock industry constitutes a very important national with a great deal of untapped potentials. The protein intake in Nigeria is below the minimum requirement (FAO, 2011). There is a large gap between demand and supply of meat products and indications are that the situation is worsening (Jerome and Are, 2012). This may be attributed by low number of cattle production which is concentrated in the northern region of the country than the southern region. This challenge of cattle production is compounded by farmers and herdsman crises in the country basically over grazing.

In Nigeria, grazing lands are barely been demarcated, and makes the nomadic Fulani herdsmen in regular conflicts with sedentary farmers. Pastoralists usually graze over areas outside farmlands to gain access to pasture and water resources in a pattern that varies seasonally. Increased in population, land use changes, drying of waterholes, shifting in rainfall pattern leading to drought as well as climate change and land degradation affects both sectors of

agriculture causing persistent conflicts between the farmers and herdsman. Past conflicts were solely due to overlap of farmlands with cattle routes, where farmers grow crops on the routes. But recently the conflict has escalated, taking another dimension of ethnic and religious differences with little effort from the government or community leaders aimed at addressing them (Ojiya, *et al.*, 2017).

In recent times the conflict between the sedentary crop farmers and nomadic Fulani herdsman in many parts of Sub-Saharan Africa have escalated into widespread violence, loss of property, massive displacement of people and loss of lives (Hussein, Sumberg and Seddon, 2000; Ahmadu, 2011). For the purpose of this study the theoretical framework that are directly related to Land degradation on conflict between farmers and Herdsman in Konduga LGA in Borno State are emphasized. These include conflict theory; frustration-aggression theory; theory of the Tragedy of the Commons; The neo-Malthusian theory; the Eco-violence Theory; Betwixt Eco-survivalism and Eco-violence; Environment Degradation: The Climate Change Connection; Understanding Environmental Degradation and Conflict; Conflict and Controversies in the Conception of Environmental Degradation as a National Security threat; and Cause of Herdsman-Farmers Conflict in Nigeria.

This situation has been caused by increasing pressure on resources and decreasing efficiency of traditional conflict-management mechanisms (Thebaud and Battebury, 2001).

Factors such as inadequate grazing reserve and stock routes; expansion in agricultural policies; economic factors and change in land tenure system; insufficient legislature; pastoralism; climate change; cattle rustling have been identified as the long term causes of conflicts (Davis, 2015; Davidheiser, and Luna, 2008) also cite that factors such as international development projects, demographic changes, and environmental degradation have contributed to the conflicts. In Northern Africa the relationships between the farmers and herders have been shaped by both cooperation and violence (Shettima and Tar, 2008). Recently however, strong population growth, wide-spread food insecurity and a recent series of drought events have increasingly challenged traditional resource sharing mechanisms while fights for scarce land and water resources have intensified (Fratkin and Roth, 2005; Herrero, 2006; ILRI, 2006).

Conflict and Controversies in the Conception of Environmental Degradation as a National Security threat

This paper argues farmer-herder conflicts persist in different part of Nigeria because policymakers and environmentalists who debate the connection between national security and environmental degradation agree that there are important connections between a nation's vital security interests and environmental issues that deteriorate environment and human conditions.

Yet, incessant violent conflicts of farmers and Fulani herdsmen that have been claiming several lives with destructions of property, arising from environmental degradations are considered “low politics” without national priority. Olanrewaju (2010) supports that the value and absolute necessity for human life of functioning ecosystem necessitates that environmental protection and national security must be inseparable. He argues that environmental damage constitutes a security risk, and environmental degradation will imperil a nation’s natural support systems on which all human activity depends. For example, when soil is depleted due to bad farming practices, result in low crop yields and consequently low rain. Sedentary crop farmers are forced to struggle with nomadic herdsmen over scarce water and land resources. Conflict ensued, property destroyed, people killed and displaced. Conflict is not limited to negative development. To Nwolis (2017) Conflict is a struggle, clash or battle 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. Conflict from this point of view is associated with battle or war. But when the aim of the opponent is quarrel over differences of opinion, conflict is an intrinsic and inevitable part of human existence (Francis, 2006).

Major causes of Herdsmen-Farmers Conflict in Nigeria

Empirically, evidences have shown various causes for the persistent conflict between herdsmen and farmers in Nigeria. Some of the causes of the conflict include;

- **Changing Climatic Conditions:** Climate change is a serious threat to African Sudan because of decreasing rainfall and increasing duration of drought (Ajadike, 2017). Drought has a devastating impact on lives as well as on the means of production especially on fields and livestock (IPCC, 2014) while rainfall variability is the main driver of desertification (Heidelberg, 2017). The encroaching desert to the traditional abode of the pastoralists in the Sahel region has been identified as a factor for the continued clash as herders migrate southward where the grass is much lush and often intrude into spaces cultivated by settled farmers (Olaniyan *et al*, 2015). In Borno State, the farmer-herder conflict has been exacerbated by the of changing climate conditions which have been aggravating natural resource conflicts across the region due to aridity and water stress (Okoli and Atelhe, 2014). Climate change and desert encroachment have made southward migration of herders inevitable and confrontations with farming communities more frequent due to deteriorating pastures (Nwosu, 2017; Ajadike, 2017). British Foreign Secretary Margaret Beckett argues that fights over water, changing patterns of rainfall, and fights over food production and land use are the major causes of farmers and nomadic Fulani herdsmen (Spencer, 2007) and that the trigger of this violence conflict is climate change. Hendrix and Glaser (2007) in their study on rainfall

predictability in Africa concluded that erratic rainfall triggers violent conflict. Climate change clearly puts pressure on the herders to move into other regions leading to localized conflicts and tensions. The aggressive behaviour of contemporary herders and farmers in Borno state are due to high level of frustration. The herders are fleeing their traditional arid zones towards wetter places and frustrated by dwindling pastures that sustain their means of livelihood. When cattle consume the crops of farmers, who in frustration respond by attempting to kill off the destructive animals or drive away the herders. The root cause of this frustration and conflict is traceable to climate change (Azeez and Ufo, 2015). The findings of Okoli et al., (2014); Abbass (2012); Odoh and Chigozie (2012) link global climate change – induced rainfall shifting patterns and desertification reduces crop lands forcing farmers overlap on grazing lands. Also the vanishing grass is forcing the herders with no options than to migrate from their traditional grazing zones to wetter latitude.

- **Damaging or Grazing on Crops:** The damaging or intentional grazing on crops has been pointed out as the most predominant cause of conflict between farmers and herdsmen (Adebayo and Olaniyi, 2008; Oyama, 2014). In a recent study, Adeoye (2017) found deliberate grazing of cattle on crops, farmers' encroachment on grazing reserves, water holes and cattle paths and indiscriminate bush burning by herders as notable causes of conflict between the groups in parts of Kano, Yobe and Borno States of Nigeria. According to Ahmadu and Yusof (2012) resource scarcity and environmental decadence is not always natural because it is caused by manmade actions like bush burning, overgrazing and over cultivation. In another study by Adetakun, Adurogbangba and Akinbile (2015) in Oyo State, about 34.2% of the farmers and 6.7% of the pastoralists indicated that crop damage always triggers conflict between them.
- **Long-Standing Disagreements:** Burton (2016) noted that many of the recent attacks perpetrated by the Fulani have stemmed from long-standing disagreements with various communities. For instance, Mayah et al (2016) reported that a Fulani leader alleged that the massacre of Agatu people by Fulani was a reprisal attack against the killing of their prominent son by the people of Agatu in April 2013 who stole his cows. Mostly in the middle-belt, the conflict was found to have stemmed from a long history of feud over farm lands and herding. Preexisting communal conflicts have sustained the violence as herdsmen turned militants in the face of urbanization, desertification and the indifference of the Nigerian government to their plight (Burton, 2016). Another cause of the conflict is the breakdown of law and order (Rasak, 2011) and the decline of social cohesion, ethnocentric and religious intolerance as well as conflict of cultures (Bello, 2013). Ethnic jingoists and politicians have taken advantage in creating a divide between not only the

farmers and the herders but also the Muslims-north and the Christians-south (Ojiya, et al., (2017).

- **Scarcity of Fresh Water:** Fresh water scarcity seems to be an under-estimated and under-discussed resource issue facing the world today. Over the past century, while the world's population tripled, water usage increased six-fold, causing a shortage in the availability of freshwater supplies (Calzolaio, 2008). In 2008, consumption reached 3840 km³. Though current available water supplies for domestic, agriculture, and industrial use range between 9000-12,000 km³ (Qasem, 2010) they are unequally distributed, with arid regions experiencing increasing lower supplies and quality of water, especially Sub-Saharan Africa. It is obvious that the world's water demand grows every year in order to meet up with increasing population. According (Calzolaio, 2008) Water scarcity is defined as a situation where water availability in a country or in a region is below 1000 m³ per person per year. However, many regions in the world experience much more severe scarcity, living with less than 500m³ per person per year. Water scarcity occurs when water withdrawals from lakes, rivers or groundwater exceed water supplies, resulting in inadequate quantity and quality of water to satisfy human and ecosystem requirements. In turn this leads to increased competition among potential demands. This may happen due to shortage of water flows (physical water scarcity) or due to restricted access to water as a result of financial interests or institutional barriers (economic water scarcity).
- **Overgrazing:** Nigeria does not have functional grazing reserves and absence of grazing reserves force herdsmen to graze on any available pasture with increasing pressure from increasing number of livestock (Ajadike, 2017). The article also cites that, the compaction of the soil by animals depletes the pasture land and this accompanied deforestation, drought and desertification which finally result to land degradation. According to Dogara (2008) cited in Ajadike (2017) the livestock economy of Nigeria is concentrated in the nine Desertification Frontline states of Bauchi, Borno, Jigawa, Kano, Katsina, Kebbi, Sokoto, Yobe and Zamfara. The livestock in this state were estimated to include 16 million cattle, 13.5 million sheep and 26 million goats. These numbers of animals in Nigeria and others from neighbouring countries of Cameroon, Chad and Niger has not only pressures on the pastoral land of Nigeria but also contribute to land degradation as well as southward migration of herdsmen that cause the persistent conflicts with farming communities.
- **Cattle Rustling:** Cattle rustling indirectly contribute to farmers and herdsmen conflicts. In cattle rustling the gap between minor violence and full-scale war is very narrow. As

the author of “No Retreats No Surrender” describes the pastoralism as a way of life – “what do you expect from us when our source of livelihood is threatened?” The recent killing of over 100 people by herdsmen in Plateau State on 24 Sunday June 2018 is contributed by cattle rustling (*Punch, Tuesday, June 2018*). Who are the cattle owners? And who are the cattle rustlers? Surely, the herdsmen carrying AK-47 rifles and following the cows through the highways, villages and farmlands are not the owners of the cows. They are hired by the cattle owners to ensure that the cattle are well fed and defended against rustling and other dangers. The Sultan of Sokoto, Mohammadu Sa’ad Abubakar III speaking at the General Assembling of Interfaith Dialogue Forum for peace on January 18, 2018, reveals the Miyetti Allah Cattle Breeders Association of Nigeria was established over 32 years ago to cater for the welfare of its members and advances the growth of Fulani business. MACBAN has a branch in each of the six geo-political zones of Nigeria, which promptly intervenes on matters concerning the herdsmen within it zone. According to Ajadike, (2017) most of these cattle rustlers are foreigners. As the herdsmen migrate to escape climate change and the evil plots of rustlers they come in contact with sedentary farmers who blamed them for crop damage and series of conflicts.

SOCIO-ECONOMIC EFFECTS OF HERDSMEN-FARMERS CONFLICTS IN NIGERIA

Clashes between cattle herders and crop farmers have been a major cause of increasing violence and general insecurity in Nigeria. There has been increasing economic adverse effects and social or relational implications such as;

- **Loss of Human and Animal Lives:** In most of these encounters, human and animal lives were regularly lost (Aliyu, 2015). According to Burton (2016), on April 5th, 2016 Fulani militants killed four individuals in Benue State. Again, between 10 and 11th of the same month they killed about 17 persons in Taraba and 40 people were massacred in Enugu State on the 25th of that same month. Following a rivalry between the Tiv and Fulani ethnic groups, a total of 853 people have lost their lives since June 2014. While the Fulani herdsmen claimed to have lost 214 people in addition to 3,200 cows, the Tiv people reportedly killed are estimated to be 633 excluding children and women who died in ramshackle camps in 2014. More so, six soldiers attached to the 72 battalion in Makurdi were said to be killed in the cross-fire that ensued between the two groups during the period (Abdulbarkindo & Alupse, 2015). They emphasized that five of the soldiers were killed in Agatu in January 2015 while one, a captain, was beheaded in Guma LGA of Benue State. So far, the Tiv people in Guma, Gwer-West, Makurdi and other towns at the border with Taraba state have recorded about 458 deaths and over 350

communities have been sacked and are now living in Internally Displaced Persons (IDP) camps.

- **Destruction of Crops:** According to Ofuoku and Isife (2009), more than 40 million worth of crops are usually lost annually due to invasion of cattle in the South-South region of Nigeria, especially Delta and Edo States. This has not only created an impediment to the survival of the host communities but has forced many crop-farmers to abandon farming for lesser occupations like Okada (commercial motor- cycling) riding and other artisan work. Aliyu (2015) argued that the conflict has continued to lead to destruction or loss of properties and crops in Katsina State leaving an already endangered populace even poorer. The food security welfare of urban dwellers especially residents of Calabar that depend on these farmers for food supply has been negatively affected since the incessant clashes in Yakurr, which is predominantly a farming community and prices of available food supply skyrocketed (Ofem & Inyang, 2014). A study conducted by Umeh and Chukwu (2016) in Ebonyi State indicated that the economic loss on both conflicting parties was huge and that the herders seemed to have incurred more in monetary terms than the farmers. While the farmers lost lots of crops and farms to the conflicts herdsmen lost several cattle and sheep. The reverse was the case in Oyo State, as Adelakun, Adurogbangba and Akinbile (2015) found that farmers were worst hit by the conflicts as it affects their family farming and has led to reduction in farm output, loss of properties and scarcity of food.
- **Reprisal Attacks:** Due to the failure of security agencies to control the excesses of the herdsmen, the youth in various communities of Ekiti State have on several occasions launched reprisal attacks on the cattle rearers' abodes ("Gaa"), sacking them and destroying their properties (Olugbenga, 2013). There are similar reports in various places in the country. Reports equally indicate similar reprisals in different farming communities of Benue, Taraba, Nasarawa and Kogi states
- **Displacement of Persons and Animals:** There were reports of displaced farmers and herdsmen alike. In the host communities, nomadic herdsmen relocate as a result of conflict. Host farmers especially women who stayed behind stop going to distant farms for fear of attack by nomads in the bush (Ofuoku & Isife, 2009). Such displaced farmers have become a source of liability to other farmers whom they have to beg for food for themselves and their families. This has created a vicious cycle of poverty in such communities. In Yakurr, Cross River State, Ofem and Inyang (2014) observed that herdsman- farmers conflict has not only resulted to internal displacement of herdsman and farmers, especially women; but also led to reduction in income/savings and crops

output.

- **Distrust between Herdsmen and Farmers:** Burton (2016) noted that majority of the members of the expansive Fulani ethnic group are solely pastoralists without connection to militant violence. Even these peaceful ones, however, are largely viewed with suspicion and anger by the sedentary communities on whose land they take their cattle, largely as a result of the actions of the violent group. This has created distrust and altered the mutual relationship that has existed between them and most of their host communities.

THE STUDY AREA

Description of the Study Area

Borno State lies in the extreme north-east corner of Nigeria between latitudes 10°30'N and 13°50'E and longitudes 11°30'00"N and 13°45'00"E (Fig.2). It occupies an area of 69.435 sq km sharing border with three States, Adamawa to the south, Gombe to the south west and Yobe to the west as well as three countries, namely, Republic of Niger, Chad and Cameroon to the north, north-east and east respectively (Mohammed, Abba, Abubakar, 2009). Konduga LGA is a community in Borno State which lies between longitude 11° 39' 6" N and latitude 13° 25' 10" E and it is the centre of a Local Government Area of the same name about 25 km to the southeast of Maiduguri, situated on the north bank of the Ngadda River. Borno State has a population of 4,171,104 people and with an estimated projected population of 5,572,594 in 2018 (NPC, 2006). The 2006 population census figure of Konduga Local Government Area was 157,322 and with an estimated projected population of 210,182 in 2018 (NPC, 2006), With a growth rate of 2.8% per annum this number will likely double in the next 20-30 years. In most national statistics, Borno State is classified as sparsely populated with an average of 59 persons per square Kilometres. Borno State is connected to other parts of the federation by air, road and rail. Maiduguri the State capital is the main hub about which roads radiate in all directions connecting the State to other parts of the country and to neighbouring countries. The State has a total of 2,449 km of all season roads and 755km of seasonal linking various parts of the State. However, most of the existing roads are in a deplorable condition.

METHOD OF DATA COLLECTION AND ANALYSIS

The study adopted survey design to source information through questionnaires administered to selected farmers and herdsmen purposively for this study. Purposive sampling was used in selecting respondents for this study who possessed special information or attribute that are needed for this study (Adam & Kamuzora, 2008).

The population of Konduga Local Government Area was 157,322 in 2006 with an estimated projected population of 210,182 in 2018 (NPC, 2006). The population for this study consists of (13,400) farmers and herdsmen which make up of Bazamri 1080, Dalwa 1400, Malari 800, yaleri 720, Wanori 780, kawuri 1220, Dalori 1,120, yale Garu 1160, Ngalimari 2240 and Konduga, 2880 from the data record available in Konduga Local Government Secretariat Council make up of farmers and herdsmen in Konduga Local Government area of Borno State (Konduga Local Government Secretariat Council, 2018)

Purposive sampling technique was used to select the farmers and herdsmen based on their communities where they are resides. This choice of decision was adopted because it allows researcher to select respondents who can provide needed information for this study and each members of the group selected for sampling was on purpose to ensure only those elements that are relevant to this study are included (Adam and Kamuzora, 2008).

The sample size for this study comprised of 670 farmers and herdsmen selected proportionately from the population of the study of 13,400 farmers and herdsmen from across the 10 communities that make up of Konduga Local Government of Borno State; Bazamri 54, Dalwa 40, Malari 40, yaleri 36, Wanori 39, kawuri 61, Dalori 56, yale Garu 58, Ngalimari 112 and Konduga, 144 farmers and herdsmen that make up the sample size of 670. A sample size of about 5% of the farmers and herdsmen population was therefore considered appropriate for this study (Nworgu, 2006). Thus, the questionnaires were purposefully administered to each of the 670 population sampled.

The data for this study were analysed using both descriptive and inferential statistics. Response options from the questionnaire were presented in tables and columns.

Research questions were evaluated using the mean scores earned to make decision. Likert scale was used in evaluating the impact of land degradation on conflicts between the farmers and herdsmen in the study area. To access the level of response, option of Very Great Extent (VGE), Great Extent (GE), Low extent (LE) and Very Low extent (VLE) were weighted as; 4,3,2 and 1 respectively. The weighted scores were used to derive the Mean score item by item; this method was used to evaluate the responses from the respondents on the impact of land degradation on between farmers and herdsmen conflicts in Konduga LGA of Borno State. The limits of means adopted and interpreted. Thus:

Very Great extent (VGE) [4] = 3.50 - above

Great extent (GE) [3] = 2.50 - 3.49

Low extent (LE) [2] = 1.50 - 2.49

Very low extent (VLE) [1] = 1.00 - 1.49

Mean expression

$$\frac{\sum \bar{X}}{N}$$

\sum = represents the summation.

\bar{X} = represents sample mean scores

N = represents the number of items in the sample.

ANOVA was used to test the hypothesis at 0.05 level of significance; the decision rule for hypothesis is if the Fcal value is less than the Ftab value, the null hypothesis will be accepted, but where the Fcal value is equal to or greater than the Ftab value, the null hypothesis will be rejected.

RESULTS

Table 1: What are the causes of conflicts between the farmers and herdsmen in Konduga LGA in Borno State?

S/N	Item	√ GE (4)	GE (3)	LE (2)	VLE (1)	Score Earned	x	DECISION
1	Have you experienced any conflicts between the farmers and herdsmen in the recent times?	0	215	407	48	1507	2.6	GE
2	Do land degradations trigger farmers and herdsmen conflicts?	0	444	188	38	1746	2.6	GE
3	Do farmers in our community engage in bush burning?	0	367	252	51	1656	2.5	GE
4	Does lack of provision of cattle ranches cause farmers and herdsmen conflicts?	0	393	244	33	1696	2.5	GE
6605							10.4	
Cluster Mean							2.6	

SOURCE: (Fieldwork, 2018).

Data result on table 5.4; shows that the respondent’s independently rated all item on this table to a great extent as they were strongly of opinion that all the items enlisted on this table are causes of conflicts between the farmers and herdsmen in Konduga LGA in Borno State.

The cluster mean of **(2.6)** in the four ration scale, implies that all items listed on this table are causes of conflicts between the farmers and herdsmen in Konduga LGA in Borno State.

Table 2: What are the impacts of land degradation on the conflicts between the farmers and herdsmen in Konduga LGA in Borno State?

S/N	Item	\bar{V} GE (4)	GE (3)	LE (2)	VL E (1)	Score Earned	x	DECISION
1	Have you experienced any conflicts between the farmers and herdsmen in the recent times?	52	352	241	25	1771	2.6	GE
2	Do land degradations trigger farmers and herdsmen conflicts?	42	324	227	77	1671	2.5	GE
3	Do farmers in our community engage in bush burning?	36	335	197	102	1645	2.5	GE
4	Does lack of provision of cattle ranches causes farmers and herdsmen conflicts?	74	339	205	52	1775	2.6	GE
5	Does inadequate water resource causes conflicts between farmers and herdsmen?	98	335	180	57	1814	2.7	GE
8,676							12.9	
Cluster Mean							2.6	

SOURCE: (Fieldwork, 2018).

Data result on table 5.5; shows that the respondents independently rated all item on this table to a great extent as they were strongly of opinion that all the items enlisted on this table are impacts of land degradation on the conflicts between the farmers and herdsmen in Konduga LGA in Borno State.

The cluster mean of **(2.6)** in the four ration scale, implies that all items listed on this table were impacts of land degradation on the conflicts between the farmers and herdsmen in Konduga LGA in Borno State.

Table 3: How has climate change contributes to the conflicts between the farmers and herdsman in Konduga LGA in Borno State?

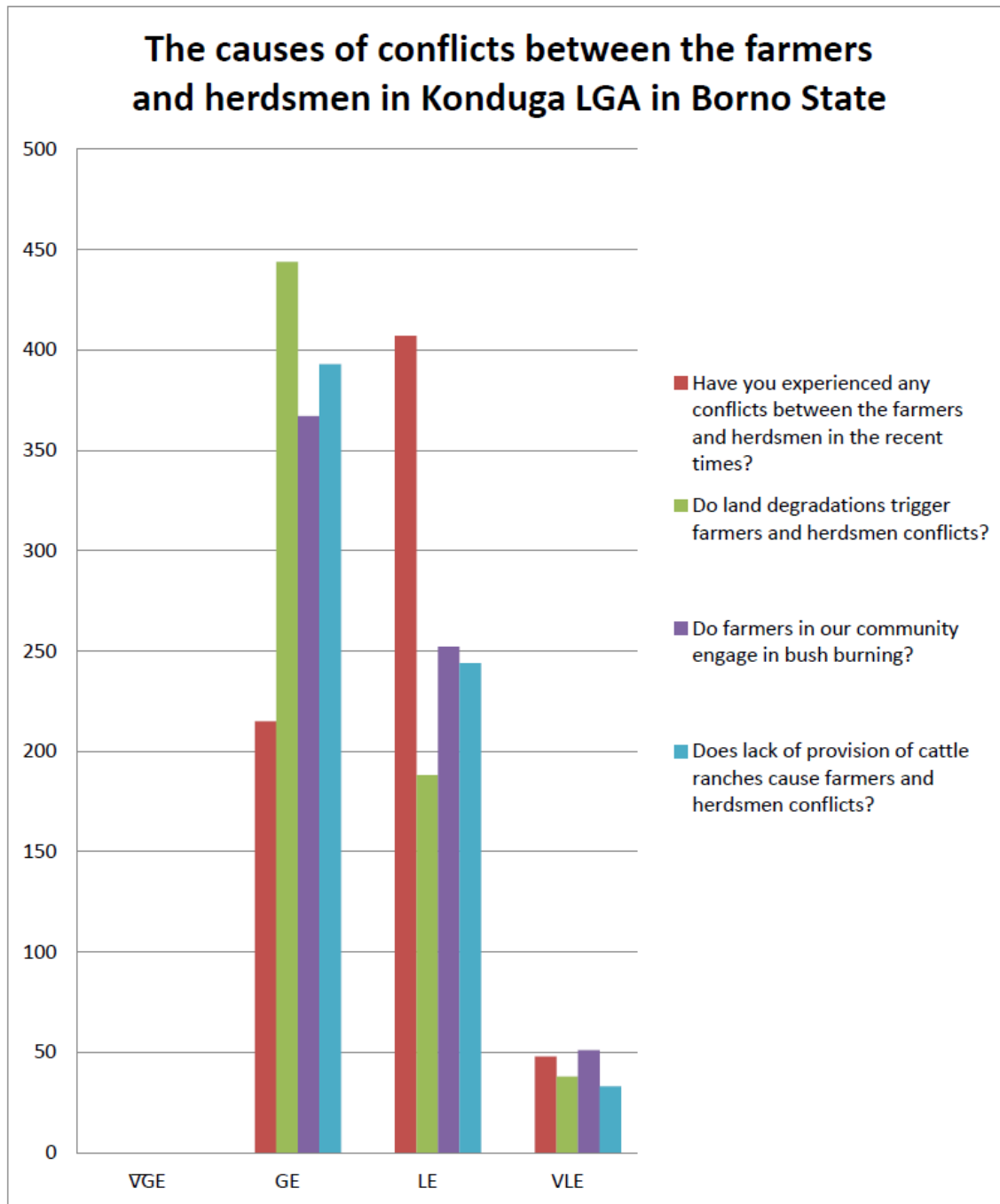
S/N	Item	\bar{V} GE (4)	GE (3)	LE (2)	VLE (1)	Score Earned	x	DECISION
1	Have you experienced any changes in your community as a result of climate change?	92	291	214	73	1742	2.6	GE
2	Has climate change lead to crop infestation and diseases in your community?	60	308	180	122	1646	2.5	GE
3	Has climate change lead to decline of forest resources in your community?	125	248	216	81	1757	2.6	GE
4	Do inadequate rainfall leads competition of available water and grazing land resources between the farmers and herdsman in our community?	107	289	198	76	1767	2.6	GE
5	Do the changes in land uses affect both farmers and herdsman's activities in your community?	152	265	199	54	1855	2.8	GE
						8,767	10.3	
Cluster Mean							2.6	

SOURCE: (Fieldwork, 2018)

Data result on table 5.6; shows that the respondent's independently rated all item on this table to a great extent as they were strongly of opinion that all the items enlisted on this table are how has climate change contributes to the conflicts between the farmers and herdsman in Konduga LGA in Borno State.

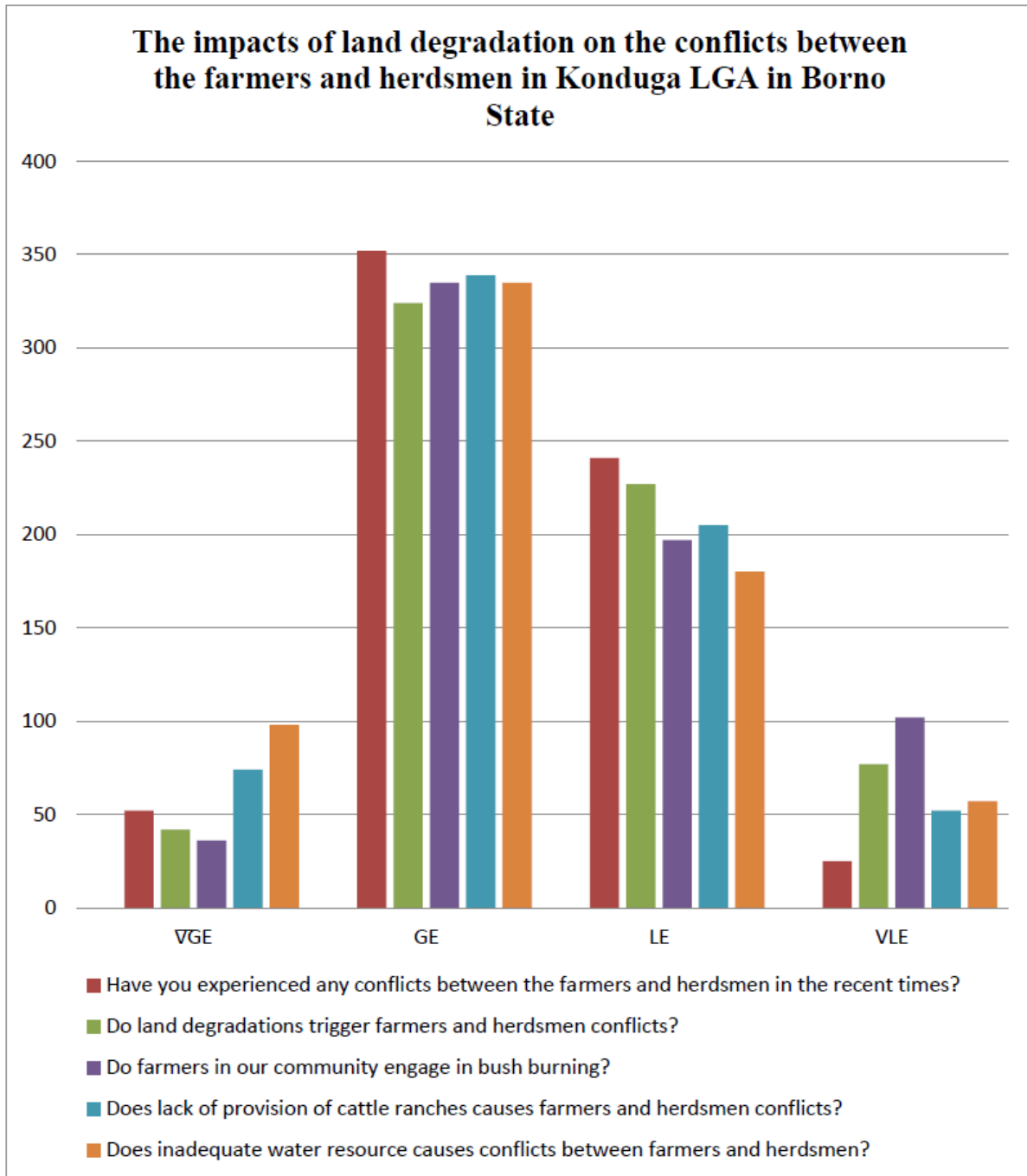
The cluster mean of **(2.6)** in the four ration scale, implies that respondents all rated all items listed on this table to a great extent as how climate change contributes to the conflicts between the farmers and herdsman in Konduga LGA in Borno State.

Figure 1: Showing the causes of conflicts between the farmers and herdsmen in Konduga LGA in Borno State



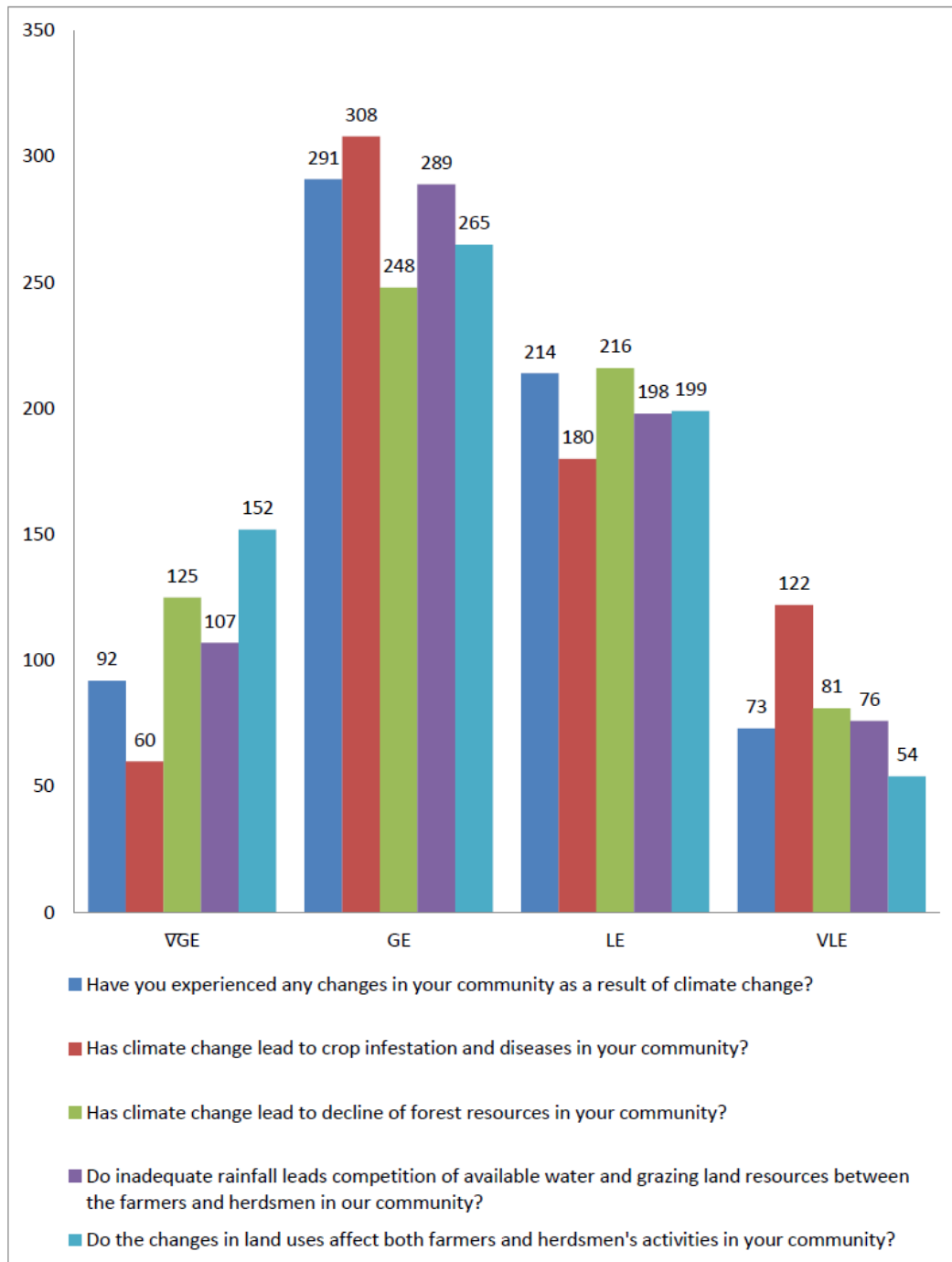
Source: (fieldwork, 2018)

Figure 2: Showing the impacts of land degradation on the conflicts between the farmers and herdsmen in Konduga LGA in Borno State



Source: (fieldwork, 2018)

Figure 3: Showing how climate change has contributed to the conflicts between the farmers and herdsmen in Konduga LGA in Borno State



Source: (fieldwork, 2018)

INTERFERENCE STATISTICS HYPOTHESIS ONE

Decision: From the F- ratio distribution tables, the critical value of F with 2 and 12 degrees of freedom at 0.05 level of significance is 3.89. Since the F calculated value of 4.2 is greater than the critical value of 3.89. Therefore, there is a significant relationship between land degradation and causes of conflicts between farmers and herdsmen in Borno State.

RESEARCH HYPOTHESIS TWO

Decision: From the F- ratio distribution tables, the critical value of F with 2 and 12 degrees of freedom at 0.05 level of significance is 3.89. Since the F calculated value of 4.1 is greater than the critical value of 3.89. Therefore, there is a significant relationship between climate change and land degradation in Borno State.

DISCUSSION OF RESULTS

Data result presented on table 5.4; shows that the respondent's independently rated all item on this table to a great extent as they were strongly of opinion that all the items enlisted on this table are causes of conflicts between the farmers and herdsmen in Konduga LGA in Borno State.

The cluster mean of **(2.6)** in the four ration scale, implies that all items listed on this table are causes of conflicts between the farmers and herdsmen in Konduga LGA in Borno State.

In a research done by Adebayo and Olaniyi, (2008) found out that the damaging or intentional grazing on crops has been pointed out as the most predominant cause of conflict between farmers and herdsmen. In a recent research done by Adeoye (2017) also found that deliberate grazing of cattle on crops, farmers' encroachment on grazing reserves, water holes and cattle paths and indiscriminate bush burning by herders as notable causes of conflict between the two groups in parts of Kano, Yobe and Borno States of Nigeria. In another study by Adelokun, Adurogbanga and Akinbile (2015) in Oyo State noted that about 34.2% of the farmers and 6.7% of the pastoralists indicated that crop damage always triggers conflict between them.

Data result presented on table 5.5; shows that the respondent's independently rated all item on this table to a great extent as they were strongly of opinion that all the items enlisted on this table are impacts of land degradation on the conflicts between the farmers and herdsmen in Konduga LGA in Borno State.

The cluster mean of **(2.6)** in the four ration scale, implies that all items listed on this table were impacts of land degradation on the conflicts between the farmers and herdsmen in Konduga LGA in Borno State.

According to Olarenwaju (2010) the reason why farmer-herder conflicts persist in different part of Nigeria claiming several lives with destructions of property is because policymakers and environmentalists do not take environmental issues seriously. He argues that the value and absolute necessity for human life of functioning ecosystem necessitates that environmental protection and national security must be inseparable. Kubis, (2006), reported that conflicts have multiple causes – the land degradation, depleting or mismanagement of natural resources linked to demographic change can harm local and international stability. The summary of Kubis position is that environmental degradation can cause people to lose faith in and become discontent with their leadership's ability to govern them, promote development, provide basic goods and service, and create a prosperous national economy.

Data result on table 5.6; shows that the respondent's independently rated all item on this table to a great extent as they were strongly of opinion that all the items enlisted on this table are how has climate change contributes to the conflicts between the farmers and herdsmen in Konduga LGA in Borno State. The cluster mean of **(2.6)** in the four rating scale, implies that respondents all rated all items listed on this table to a great extent as how climate change contributes to the conflicts between the farmers and herdsmen in Konduga LGA in Borno State.

Benjaminsen, (2009) reported that there is a close relationship between climate change and conflict and farmer – herder conflict in the Sahel is a typical this linkage. Nomadic and semi-nomadic herders such as the Fulbe have a long history of migrating and also of building relationships with various sedentary farming populations in West Africa. Herders and farmers of the dry lands of West Africa are indeed highly vulnerable to changes in the availability of CPRs (Moritz, 2006). Environmental issues as climate change; deforestation and loss of biodiversity have been found as capable of threatening a nation's security (Olarewaju, 2010). This agreed with the findings of Okoli et al., (2014).

RECOMMENDATION

- The research recommends the need for cattle ranches for herdsmen to avoid future conflicts between the farmers and herdsmen in the study area.
- Cattle routes must be well demarcated gazette and protected from encroachment of any sort.
- There is the need for a periodic environmental evaluation of this study area to ascertain the extent of land degradation.
- There is a need to empower the farmers with hybrid crops and orientate the farmers on modern method of farming in other to boost their crops production.
- Farmers in the study area should be encouraged to fence their farmlands.
- There is a need the for legislative law restraining indiscriminating of bush

burning in this study area.

- There is a need to restrain open land grazing by herdsmen on farmland to avoid farmers and herdsmen conflicts.

CONCLUSION

This study on the impact of land degradation on conflicts between farmers and herdsmen in Konduga LGA in Borno State, Nigeria has showed that lack of provision of cattle ranches was among the major identified causes of conflicts between farmers and herdsmen in Konduga LGA in Borno State.

Furthermore drought and desertification due to climate change have also contributed to the conflicts between the farmers and herdsmen in Konduga LGA in Borno State. The anthropogenic causes also identified includes; deforestation, overgrazing, bush burning all of which are driven by population growth, while rainfall variability is the main driver of desertification. There is a need to restrain bush burning and open land grazing on farmland to avoid future conflicts between the farmers and herdsmen in this study area.

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