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THE ROLE OF CLIMATIC AND ENVIRONMENTAL CHANGE IN FARMERS-PASTORALISTS' CONFLICTS IN DRYLANDS OF NIGERIA AND NIGER REPUBLIC

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Abstract: *Understanding the fundamental causes of West Africa's farmers-pastoralists-conflicts' (F-P-C) in ameliorating the menace is crucial. However, most of F-P-C researches in dry lands of Nigeria and Niger republic could not see the primacy of looking into these conflicts from the perspective of climatic and environmental change in the dry lands of Nigeria and Niger; two climatic continuum and ecologically complementing neighbors. There is need for a holistic approach in conducting research on conflicts essentially the one that focuses on the conflicts causality, generalizability and prediction which will help in proffering effective mitigation measures. The aim of this paper is to review and synthesize fragmented F-P-C works in dry lands of Nigeria and Niger with a view of establishing trends in climate change, ecological marginalization and F-P-Cs as-well-as causality, generalizability and prediction of F-P-Cs. The review has established an evidence of climate change (specifically droughts) in the study area from 1970s to 1980s and 1990s. These trends coupled with ecological degradation and helped by political and socio-economic systems decay culminated into ecological marginalization which threaten the survival of pastoralists and to some extent farmers who prior co-existed in a symbiotic living. These factors were responsible for the increasing trend in F-P-Cs as a mal-adaptive strategy from farmers and pastoralists to deteriorating environment. Finally we recommend that addressing ecological marginalization; increasing pastoralists' access to land, empowerment rural dwellers enhancing their participation and curbing corruption are some strategies of ameliorating the F-P-Cs in the study area.*

Key words: Climate change; ecological degradation; ecological marginalization; pastoralist

Background of Study

Climate change and ecological degradation are major threats to the livelihoods and survival of millions of people in Africa especially in the dry land zones (Cline 2007; Lobell *et al*., 2008). Since the middle of the 20th century, extreme weather events have been more frequent and their frequency wills likely increase throughout the 21st century in the Sub-Saharan Africa which is generally agreed to be one of the regions that are most vulnerable to such climate impacts (IPCC, 2012). Droughts are the most common environmental challenge in the continent, and have affected millions of people in the last three decades (UNEP, 2012). These droughts have resulted in the loss of lives and livelihoods, the erosion of assets, mass migration and conflict. The West-African dry lands from Latitude 10 to 18 (figure 1), a transition zone between the Sahara desert and the humid zone, have been a major farming and pastoral production zone in Africa for centuries (Dong et al, 2011) and together with the humid West Africa, is one of the dominating regions for livestock rearing on the continent, corresponding to 25 per cent of the cattle, 33 per cent of the sheep and 40 per

cent of the goats in all sub-Saharan Africa (SWAC-OECD, 2007). Animal production system in the region is characterised by seasonal and cyclical migration of varying degrees between complementary ecological areas. Though farmers and pastoralists in the Northern Nigeria and Niger republic had a long term coexistence of symbiotic relationships, climatic and environmental change combine threaten the livelihood of pastoralists more than that of the farmers (Challinor et al. 2007).

This bio-physical vulnerability of the region combines with population growth and socio-economic/political challenges culminate into ecological marginalization which threatens the survival of both pastoralists and farmers and precipitates into so many conflicts and civil strife. Clashes between the two groups are becoming more frequent (Moritz, 2010) corroborating the thesis that diminishing resources and unequal resource access resulting from climate and environmental degradation act in various combinations to increase the scarcity for certain population groups, of vital resources such as: cropland, water, forests, and fish which manifest as deprivation conflicts (Homer-Dixon and Blitt, 1998).

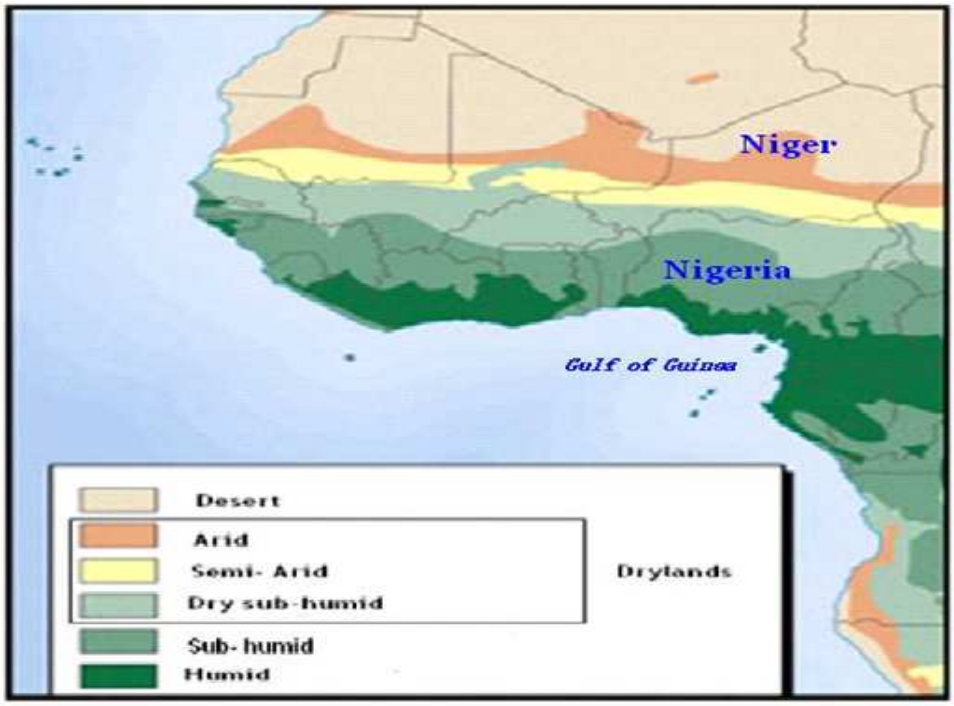
Studies (such as Homer-Dixon and Blitt, 1998; Campbell et al, 2007; Boko et al, 2007; Obioha, 2009) have confirmed the role of climate change in creation of ecological marginalization conditions and subsequently leading to violent conflicts globally particularly in developing countries who have less capacity to prepare for and adapt to climate change, where hazards such as drought are capable of causing instability and unrest. It is also documented how this environmental change coupled with decay in political and socio-economic systems enhanced pastoralists and farmers clashes in Nigeria and Niger. There is paucity of research that look at this problem from the organic (or systemic) inter-linkage of dry lands of Northern Nigeria with that of its neighboring Niger republic. This study posit that viewing farmers-pastoralists diminishing environmental resources induced conflicts in Nigeria or Niger separately without taking into cognizance of the background and linkage of its other neighbour is not an holistic approach.

Annan, (2014) emphasized the relevance of understanding of the fundamental causes of West Africa's violent conflicts and civil strife in ameliorating the menace. Therefore, the aim of this paper is to (through a literature review) synthesize and establish the nexus that exist between climate change, environmental change and farmers-pastoralists conflicts (F-P-C) in the dry lands of Nigeria and Niger; two areas that are climatically continuum and ecologically complementary. The objectives of the paper are:

a) To provide updated information on environmental change in the dry lands of Northern Nigeria and Southern Niger with the view of establishing trends in climate change and ecological degradation in the area;
b) To review most relevant existing literature on socio-economic and political profile of farmers-pastoralists livelihoods in the study areas;
c) To synthesize findings from the reviewed studies to establish causality, and generalization on F-P-C in the study area;
d) To offer possible suggestions on how F-P-C could be tackled.

But the paper does not attempt to give a complete exhaustive literature review on climate / environmental change or F-P-C in the study area.

Figure 1 West African Dry lands (Modified after Robison and Brooks. 2010)



Nigeria-Niger Ecological Background

In both Nigeria and Niger, rural livelihoods in the countries are dominated by smallholder crop cultivation and transhumance pastoralism. Though Nigeria has a variety of ecosystems ranging from forests in the south through moist savannas in the central parts to dry land savannas in the north (figure 1), Niger republic is a land locked country with the Sahara zone (<150 mm of rainfall per year) occupying 74% of country's total area (table 1) and the Sudanian zone (> 600 mm) covering only around 1% of the country's area. 80% of Niger's total population is settled in the Sahelian and Sudanian zone representing 11% of the total area of the country. These conditions have push and pull effects on transhumant livestock herders especially in the arid and semi-arid dry lands of Niger republic and some part of Northern Nigeria to move several hundred kms toward the more humid south each year following the rains and the grazing pasture.

Table 1 Ecological Background of Nigeria and Niger

Ecological Background	Nigeria	Niger
Swamps and the rain forest	10% of the total land	0%
Woodland	10% of the total land	0%
Guinea Savanna	50% of the total land	0%
Sudan Savanna	25% of the surface area	8% of the country's area
Sahel	5 - 10% of the surface area	8 % of the total land
Saharo-Sahel	0%	10%
Sahara zone	0%	74% of total surface area

Source: FMENV, 2001, CIPSDR, 2004

CONCEPTUAL FRAMEWORK

Dry landas hotspots for Conflicts

Dry lands are arid, semi-arid and dry sub-humid areas where rainfall is scarce, highly variable or confined to short seasons of the year (Mortimore, et al., 2008). These areas are characterized with inter-annual coefficient variation of 25 to 35 %. It is however estimated that globally only 10% of the dry lands surface suffered ecological degradation (Lepers, 2003; Mortimore, et al., 2008). Also despite this challenge, dry lands agro-ecosystems possess a diverse mix of food, fodder and fiber crops; vegetables, rangeland and pasture species; fruit and fuel-wood trees; medicinal plants; livestock and fish (CGIAR, 2011). As will be explained in a while, being an environmentally constrained area where competitions for scarce environmental resources take place, dry lands of Nigeria and Niger are poised to be conflicts hotspots especially they are one of the World hotspot for degradation from 1982-2006 (UNEP, 2012).

Environmental Resources-Conflicts Conceptualizations

This work is guided by a conceptual framework selected from two schools of thought that hinge on the environmental resources conflicts namely: (i) the Neo-Malthusians School and (ii) the Cornucopians School (Gleditsch, 2003, Kolmannskog, 2009). Thomas Homer-Dixon, who championed the Neo-Malthusians, posited that population growth and resource scarcities result in violent competition (Homer-Dixon, 1991, 1994, Homer-Dixon and Blitt, 1998). The Cornucopians, on the other hand who among them are: Gleditsch (1998); Ross, (1999);Gleditsch and Urdal, (2002); Gausset, Whyte and Torben, (2005); Halvor, Moene and Torvik, (2006) hold the "resource curse" thesis which claims that it is abundance rather than scarcity of resources that often leads to conflict – because according to Gleditsch, (1998) rebel groups draw funding from the exploitation of natural resources and/or it is a conflict about the control of valuable resources. They believe that conflicts arise because their perpetrators wants reach the procambial "*honey pot".*

The notion of "*eco-violence* "maxim put forward by the Neo-Malthusian scholars views *"shrinking resource pie"* as a trigger of violent civil conflict through irritating strained social relationships among different groups competing common natural resources is very apt in explaining the plight of both pastoralists and farmers who experience ecological marginalization due to climatic and environmental change. Thus this theory forms the conceptual framework of this study. The marginality we are referring here has been described as a phenomena that occur at biophysical limits of any kind which may be geophysical boundaries, environmental thresholds, or habitats that are not (or threaten to be) well suited for particular species or populations (Leimgruber 2004). Pastoralists and some farmers in the study area are increasingly being marginalized due to their lack of access to resources as a result of unfavorable (geographical) location (as for instance pastoralists in arid part of Niger) or generally restrictive local biophysical conditions (pastoralists and farmers in Nigeria) (Gatzweiler et al. 2011).

Causality and Generalization of F-P- Cs

F-P-Cs has persisted since early beginning of agriculture in Africa and climate change and ecological degradation have been implicated as the principal causes in majority of studies. These "*climate-conflict alarmists*" such as Burke *et al,* (2009) would argue that if

temperatures continue to rise, we can expect an additional 393,000 battle deaths by the year 2030 in sub-Saharan Africa. Such scholars(Burke, et al, 2009; Hendrix and Salehyan 2012; Raleigh and Kniveton 2012) reported that there is some agreement that either increased rainfall or decreased rainfall in resource-dependent economies enhances the risk of localized violent conflict, particularly in pastoral societies in Africa. However, it is pertinent to point that that the relationship between climate change / ecological degradation and conflicts is complex and depends on the social characteristics of the regional settings or that the relationship is nonlinear across multiple regions and livelihood zones (O'Loughlin et al., 2012, Raleigh and Kniveton, 2012, Sterzel, et al. 2014).

Wide body of scientific literature on Sub-Saharan Africa including the study area has consistently acknowledged the historical symbiotic co-existence of farmers and herders (Ingawa, *et al,* 1999; Blench, 2010). Other works (such as Fratkin, 1997, Seddon and Sumberg 1997, Abbass, 2011) acknowledge the long historical record of fluctuating conflicts, competition and co-operation between settled farmers and pastoral or transhumant herders in the continent. The most convincing explanations on the causes of F-P-C in the study area had been primarily linked to utilization of environmental resources- range lands, water points etc.(Ingawa, *et al.* 1999; Blench, 2003; Nyong and Fiki (2005); Blench, 2010; Abbass, 2011, farmers encroachment into marginal lands that had been the traditional pasture routes for the cattle blocking of transhumant corridors (*labi* or*burtali*) and obstruction of traditional access rights to communal grazing and water resources by the individual tenureship of arable farmers (Blench, 2010; Tukur, 2013).Intensification of agriculture in riparian areas known as *fadama* cultivation, increase in crop production to meet increasing demand, damage to crops of farmers by the pastoralists have been cited by some works (Watkinson and Ormerod 2001; de Haan, 2002; Adisa, 2011; Olabode and Ajibade, 2010; Blench, 2010; Bello, 2013). Other causes are: increasing commercialization of the crop-residues and poor management of the existing grazing reserves which result into a significant reduction in available livestock feed resources, migration and spread of cattle infectious diseases to host communities (Blench, 2010).

Climate Change and Ecological Degradation as a Cause of F-P-C

Since more than 60% of the reported cases of conflicts in the study area occurred during the dry season and the conflicts, more often than not, are concentrated around the resource-endowed locations like the fertile flood plains, river valleys and other water points (Tukur, 2013), the role of climatic and environmental change has been the major cause especially that all the causes cited in section 3.0 are directly or directly associated with climate change and ecological degradation. This has been confirmed by (Watkinson and Ormerod 2001; Marshall and Hildebrand, 2002) who highlighted these threats that pastoralism faced in the Sahel despite its well adaptability to the ecological and sociological conditions that characterize the region.

The Sahelian zone of the study area is characterized with recurrent drought episodes throughout history with early records to the 1640s (UNEP, 2012). Annual rainfall across this region fell by between 20 and 30 per cent between 1930s -1950s and 1970s -1990s (Hulme, 2001), or according to Nicholson et al. (2000) 15% to 40% lower than during the period 1931–60. McCarthy *et al.,* (2001); IPCC (2001); Claussen et al. (2003) also reported that a rainfall decrease of 29 to 49 percent have been observed in the 1968 to 1997 period compared to the 1931 to 1960 base line period within the region. The magnitude and

intensity of these droughts were on the increase towards the end of the last century (Batterbury and Warren, 2001; Hulme, 2001, Nnoli, 2004 and Nnaji, 2001, Masih et al, 2014).

According to UNEP, (2012) over the period 1930 to 2006, there has been adecline (brown to red colour in figure 3) in rainfall over the Sahel, and large parts of the coastal regions of West Africa and that despite the recovery in rainfall sincethose droughts, rains over the Sahel have not yet reached the levels of the 1950s.Climate in Northern Nigeria and Southern and central Niger has been reported to display considerable temporal and spatial shifts in its variability and change. So many researches (Hulme, 2001, Fasona and Omojola, 2005; Niasse, 2005; Obioha, 2005, Adefolalu, 2007; Ikhile, 2007; Podesta and Ogden, 2007; Iliya and Opponkumi, 2011; Abdulkadir *et al.,* 2013) acknowledged the area suffers from climate change -induced drought, and desertification. It is observed that the decreasing rainfall and intensity of the droughts in the West African Sahel from the 1970s to the 1990s, and the extent of the downward trend in rainfall (see figure 3), are the most significant recent climate change recognised by climatologists (Dai et al. 2004, Batter bury and Mortimore, 2013).

The declining rainfall trend in the study area couple with resource degradation such as: over-grazing, human induced soil degradation, bush burning, soil compaction, over-cultivation, deforestation, and excessive use of chemical fertilizers combine uncomfortably with delicate climate conditions in creating ecological degradation with its great consequences on the people and their livelihoods (FAO, 2000; Abdulkadir *et al.,* 2013). Gonzalez (2001) reported that long term decrease in rainfall from 1970s has caused a 25 to 30 km southward shift in the Sahel, Sudan and Guinean ecological zones of West Africa. This according to ECF and Postdan Institute, (2004) has resulted in the loss of grassland (acacia wood) and shifting sand dunes in the Sahel. The FGN, (2006) asserted that the recurrent droughts took place at a time the ecological degradation or desertification slowly changed northern fringe of the Guinea savanna into the drier Sudan Savanna and the drier fringes of the Sudan savanna suffered the effects of deforestation and changed the structure and composition into Sahel.

The threat of trend of desertification in the study area is at a very fast rate occasioned by fast reduction in the amount of surface water, flora and fauna resources on land (FME, 2004; Obioha, 2008), that exacerbate soil and biodiversity degradation. Figure 4 shows land degradation hotspots between 1982 and 2006 using Advanced Very High Resolution Radar (AVHRR) image. This has corroborated that the study area was the area under the highest form of ecological degradation throughout the Sahel. This is why Murray (2007) laments the encroachment of the desert as a threat to the region. Findings showed that approximately 3,500 square kilometers of Northern Nigerian land turns to desert each year, forcing both farmers and herdsmen to abandon their lands (Campbell et al., 2007). This concurred with Oyetade (2007) who reported that in 10 northern states of Nigeria, each year the desert advances another 600 meters further south. According to him, this has resulted in displacing thousands of both farmers and pastoralists from their communities. Fasona and Omojola, (2005) also reported that in Nigeria 42.5% increase in the extent of sand dunes/Aeolian deposit between 1976 and 1995 around the northern axis of the Country and that desert now cover about 35% of Nigeria's land mass.

The surface and underground water resources have not been spared by this change. The rate of hydrological changes in Chad basin (a Basin shared by countries among which include Nigeria and Niger) is unprecedented. Between 1960 and 2000, the Chad basin region experienced one of the most substantial and sustained reduction in rainfall events recorded anywhere in the world (IPCC, 2001). In 2003, the Lake region was classified among the ten most water impoverished locations in the world (UNEP, 2003). In the 1960s Lake Chad had an area of more than 26,000 km2 which shrunk from 25,000 km^2 to less than 1,500 km^2 between 1966 and 1997(Coe and Foley 2001). And between 1994 and 2004, the lake receded further dramatically, covering just an area of some 532 km^2. In essence, the lake has shrunk by about 90% of its size in 1960 (Onouha, 2006).

In Niger, in the east of the country the Komadougou Yobé River is a tributary of Lake Chad and forms the border with Nigeria. This river used to flow ten months per year, but in the mid 1990's it only flowed for six months per year. This was due to a prolonged period of decline in rainfall (MHE-Niger, 1991). Lake Chad consists of two major basins. In its very south-east Niger borders on the northern basin, which receives its water primarily from the Komadougou Yobé and from overflow from the southern basin. Partly as a result of greatly diminished flow in the Komadougou Yobé, the Niger part of Lake Chad was dry from about 1988-1998. The desiccation caused very large parts of it to be invaded by Prosopis juliflora shrubs (MHE-Niger, 1991; Mullié, 1994).

Socioeconomic/ Political Causal Factors of F-P-C

The foregoing review is pointing to the fact that ecological deterioration of study area has been worsening and highly capable of endangering conflicts going by the postulates of our conceptual framework of the "*eco-violence* "maxim which states that *"shrinking resource pie"* fuels violent civil conflicts by aggravating strained social relationships among different groups sharing common natural resources. Thus, Blench and Dendo, (2003) observed that ecological degradation as well as decay in political and socio-economic systems enhanced pastoralists and farmers clashes which become the most frequent conflicts in Nigeria and Niger.

It has been acknowledged that during the pre-colonial era in Niger Republic, the connections between pastoralists and farmers and production systems meant that farmers and herders each had a stake in the well-being of the opposite group. Glantz (1996) and Thébaud and Batterby (2001) stated that one of the socioeconomic/political causal factors of F-P-C in Niger is the northward expansion of agriculture into historically marginal areas of the Sahel set aside for pastoral usage. Other factors responsible for F-P-C include declining productivity, rising population and the removal of lands from domestic production of grain to the commodity production of groundnuts and cotton in Niger has resulted in a northward movement of cultivation, beyond the "agronomic dry boundary". In addition pastoralists themselves have begun to cultivate as a way of securing livelihoods and trying to combat poverty (Moutari, and Tan, 2008). Other factors include the official bias against pastoralism especially transhumance pastoralism (that constitute the most predominant livestock agricultural system in the area) which has been viewed as anachronistic and counter-productive. All these factors led to farmers to successfully challenge herders' land rights, and having those challenges supported by the authorities.

Colonial agricultural policy in both Nigeria and Niger discriminated pastoralism and favored crop cultivation farmers (Hoffman, 2004). After gaining political independence, nationalization and privatization of land, sedentarisation of nomads (the desire of the new independent governments to prevent herders from travelling over national borders), the establishment of plantations and encouragement of cash crop production together with factors such as urbanisation, demographic pressure, and increased influence of a global market economy continued decreasing available pasture land and increasing competition for natural resources. These undermined farmer-herder complementarities and supported the conditions that conflicts require to evolve and grow.

In Niger, in an effort to attain self-sufficiency in food production, the customary land-use rights of pastoralist given to them by the Articles 23 and 25 of Niger Code Rural and other regulations were disregarded and there were encroachment of farmers on key sites of pastoralists. There was conversion of million hectares of forest wetlands and rangelands to farmlands (Cleaver and Schereiber, 1994). 63.000 ha of floodplain along the river in Niger, i.e. on average an inundation zone 570 m wide on either bank; approximately 10.800 ha of floodplain have been converted to irrigation area, mostly for growing rice (MAE-DEP, 1991; MHE-DFPP, 1991). In Pesse, Gaya region of Niger 11 people were killed in a conflict between herders and farmers about pasturelands occupied by farmers (AREN, 2005).

Pastoralists' situation in Nigeria is even the worst. The Nigerian 1965 Grazing Reserve Law, only aimed to settle herders in northern Nigeria (and discourage their centaury old transhumance mobility) through the acquisition of 'native land' for gazing and defined and demarcated specified grazing areas but has not successfully defended pastoralists land rights and pastoralists are still at the mercy of their host communities (Hoffman, 2004; PASSEL, 2005; Sayre, 2010;). Poor demarcation and getting had made most of the grazing areas to fizzle out. Despite the government's effort in demarcating 415 grazing reserves or routes, up to the present day, few attempts have been made to develop the reserve into rangelands with watering points, veterinary services and other facilities. Also out of this number, only one third is put in use, whereas 270 grazing reserves have been put into cultivation (IRIN, 2009, Abbass, 2011).

The Nigerian National Livestock Development Project (NLDP), had undertaken a survey of the transhumant stock routes in Nigeria, including international routes from and into neighbouring countries like Niger, Chad, Cameroon and Benin Republics and found that some of the routes had been beaconed but demarcation had not been easy (CIEL, 2006).This happened despite the ECOWAS Transhumance Protocol which granted herders permit to move freely across borders in search of pasture in the member states. The resultant effect of this lapse and insensitivity to the right of pastoralists has been frequent violent clashes (Abbass, 2011).

Generalizability and Prediction of F-P-C

The US Institute of Peace, (1999) predicted that the climate of the study area is likely to see growing shifts in temperature and rainfall throughout the 21st century and that poor adaptive responses to the shifts could help fuel violent conflicts. Alsoas explained earlier, some climate alarmists such as Burke et al, (2009) assert that if temperatures continue to rise, conflict will skyrocketed by the year 2030.Change in rainfall and environmental degradation have been established to have high toll on conflicts particularly at lower level of violence(Hauge and Ellingston, 1998;Hendrix and Sarah, 2005; Buhaug, and Theisen,

2012). Because of this, scholars of agricultural systems in West Africa are equally pessimistic about the future of pastoral systems (Bruijin and Dijk, 1995; Nori, et'al, 2005; Warren 2005). And this by itself means astronomical increase in the rate of F-P-C as the environmental change makes rain-fed farmers to expand their farms into designated grazing land/ routes allocated to pastoralists, which brings about displacement of pastoralists and culminates into violence (Catterson, 1990; Sayre, 2010). Indeed the trend in F-P-C has assumed unprecedented dimensions in recent years (Fasona and Omojala, 2005, Abbass, 2011, Tukur, 2013).

However, it is pertinent to point out that climate anomalies and environment degradation on their own do not cause conflicts but they combine with other vulnerabilities to precipitate into to environmental scarcity or ecological marginalization. It is observed that resources scarcity acts in conjunction with a complex blend of economic, social, political and institutional factors that eventually breed violence (Martins, 2009, O'Brien et al., 2007, Buhaget et al, 2008,Benjaminsen et al 2012; Koubi et al, 2012, O'Loughlin et al., 2012; Raleigh and Kniveton, 2012; and Sterzel, et al. 2014).Studies were able to make generalization that socio-economic and ecological context interacts with many contextual factors to contribute to violence in the study area. The relationships between farmers and herders have always been multi-dimensional and like most social relationships they have involved both cooperation and conflict (Turner, 2004). These relationships have been characterized by ups and downs or increase and decrease in intensity and frequency (of violent conflicts) dictated by prevailing ecological conditions of the environment and socio-economic/political situations (Assal, 2006, Abbass, 2011).

This complexity in the causal relationship between F-P-C and ecological marginalization is evident in the pastoralists-farmers relationships in the study area which from time immemorial had been predominantly cordial and symbiotic. The farmers-pastoralists interactions in area have been interactions that in most of the time involve cooperation; complementarities and healthy competition over diminishing resources and threatening environment. In recent decades farmer-herder conflicts in the study area have escalated into widespread violence, loss of property, massive displacement of people and loss of lives (Abbass, 2011). Though so many times the relationships spontaneously changed from that of complementarily and trust to hostility, violence and wars, however, there is an increasing understanding among scholars that the above relationships cannot be generalized and depicted as dichotomous "polarized opposition" (Abduljalil, 2008).

This has been demonstrated by efforts of some Fulbe pastoralists' groups who have created social structures geared towards minimizing conflicts with farmers and preserving the overall harmony between these groups that was necessary for their production symbiosis. An example is the role of the Ruga in Niger and Nigeria. The Ruga is an elected official who regulates the grazing and pasture use of his group. He is in charge of selecting migration routes and deciding where specific animals will graze. The Ruga is also considered responsible for internal and external dispute management and settling conflicts between farmers and his group (Ellwood 1995**).** Also in a comparative analysis of seven case studies Moritz *et al*. (2009) found that West African pastoral systems were not in a crisis, despite the explained challenges there is not only an evidence of its successful adaptation but also increases in agro-pastoral production and market value of these products. The adaptations that the pastoralists were reported to exhibit took several forms such as: their cyclic movement to and from sub-humid zones (Boutrais 1996; Bassett &

Turner 2007), intensification (Adriansen 2006), and an intensification of livestock production and its integration into agricultural systems (Moritz, 2010). Also based on a comparative study of four villages in Northeast Nigeria, Mortimore and Adams, (1998) have buy-in the idea of intensification of the production of livestock and to integrate it into agricultural systems by feeding cattle with farm-produced fodder. However, the researchers lamented that the intensification and integration route is available only to agro-pastoralists who already have title to lands; mobile pastoralists without land titles will have to move elsewhere to increasingly scarce pastoral areas (Mortimore & Adams 1998).

Conclusion and Recommendations

This review has established evidence of increasing trend in climatic and environmental change in the study area generally especially from 1970s to 1980s and 1990s. This declined in rainfall coupled with human mismanagement of environmental resources and helped by political and socio-economic systems decay and etc. has culminated into ecological marginalization which seriously affects the livelihoods of pastoralists and in some extent farmers, as well, who prior to these changes co-existed in a co-operative symbiotic living. These factors were responsible for the increasing trend in violent conflicts of farmers and pastoralists as mal-adaptive survival strategies to deteriorating environment. Unless this menace is tackled the F-P-C trend will continue to be on the increase. Thus, this review suggest as follow:

i. Efforts should be exerted in addressing drought and ecological degradation as strategies of ameliorating the F-P-C in the study area. For instance rejuvenating of lake Chad through inter-basin water transfer will immensely enhance Chad Basin communities livelihoods which will curb environmental scarcity and deprivation;
ii. The Nigerian Federal Government National Agricultural Policy of 1988 which offer a regulation that twenty percent (20%) of the *fadama* flood plains would need to be set aside for grazing should be enforced;
iii. Grazing Land Reserve and Cattle Routes (labi or burtali) should be gazette and protected in every state of the federation and urgent efforts should be put in place for developing them with up-to-date facilities;
iv. Access to grazing rights to the pastoralists from the ECOWAS member's states should be respected as it has been guaranteed by the *ECOWAS* Transhumance Protocol of 1998 and the ECOWAS Protocol of Free Movement of Goods and Persons in West Africa.
v. Modernizing the pastoralist system, through empowering herders to adopt sedentary lifestyle and developing a private niche and habitat for their livestock which will curtail their frequent mobility searching for pasture that precipitate into conflicts;
vi. The government should address socio-economic deprivation, which is most severe in the north.
vii. Corruption, nepotism and mismanagement should be strictly discouraged and culprits punished as this will improve public's confidence and hope for the government and therefore be loyal citizens not agitators or rebels.

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