Climate Change, Migration and Resource Contestations: A Case Study of North-South Migration in Nigeria

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DECLARATION

I, Temitope Edward Akinyemi (Student Number 213570643), declare that:

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Temitope Edward Akinyemi
July 2016.

Dr. Sagie Narsiah
Supervisor

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Signature

DEDICATION

This work is dedicated to the glory of God Almighty, my Alpha and Omega, my creator and strength, the one who brought me thus far, and the unfailing guide to my future.

To fond memories of my father: Late Pa. Gabriel Akinyemi and Late brother, Francis; and to my dear ones: my mother—Grace Akinyemi; my siblings—Kenny, Wale, Helen, and Taiwo; to my lovely daughter, Amanda and my prized wife—Tosin.

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ACRONYMS/ABREVATIONS

ACCES-Africa Climate Change Environment and Security

ADB-Asian Development Bank

BBC-British Broadcasting Corporation

CBN-Central Bank of Nigeria

CBN- Central Bank of Nigeria

CNA- Center for Naval Analyses

ECOWAS-Economic Community of West African States

EM-DAT-Emergency Event Database

ENCOP- Environment and Conflict Project

FCT-Federal Capital Territory

FGD-Focus Group Discussion

FGN-Federal Government of Nigeria

GDP- Gross Domestic Product

GHF- Global Humanitarian Forum

IASC- Inter-Agency Standing Committee

IFAD- International Fund for Agricultural Development

IIHR- Inter-American Institute of Human Rights

IOM-International Organisation on Migration

IPCC-Intergovernmental Panel on Climate change

LCFA- Local Council Farmers Associations

LDCs-Least developed Countries

LGA-Local Government Areas

LSE-London School of Economics

LSGN-Lagos State Government

MACBAN-Miyetti Allah Cattle Breeders Association of Nigeria

MDGs-Millennium Development Goals

MPI-Multidimensional Poverty Indicator

NASA- National Aeronautics and Space Administration

NBS-National Bureau of Statistics

NGO-Non-Governmental Organisations

NHC-Nigerian High Commission, London

NOAA- National Oceanic and Atmospheric Administration

NSG-Nasarawa State Government

RD-Relative Deprivation theory

SAP- Structural Adjustment Programmes

SEI0 Stockholm Environment Institute

SEMA-State Emergency Management Authority

SIDS-Small Island States

UK-United Kingdom

UN-United Nations

UN-CHS- United Nations Commission on Human Security

UNDP-United Nations Development Program

UNEP-United Nations Environment Program

UNESCO- United Nations Educational, Scientific and Cultural Organization

UNFCCC-United Nations Framework Convention on Climate Change

UNICEF- United Nations Children Emergency Fund

UN-ISDR- United Nations International Strategy for Disaster Reduction

UN-OHRLLS- United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States

UNU-EHS- United Nations University – Institute for Environment and Human Security

USAID-United States Agency for International Development

USDA-United States Department of Agriculture

WBGU- German Advisory Council on Global Change

WEF-World Economic Forum

ABSTRACT

As the global community grapples with the reality of climate change, the imperatives of mitigation and adaptation interventions have gained attention across policy circles. While stakeholders draw up policies for combating its effects, academic research on social and political implications of climate change remains controversial and inconclusive. Climate change-conflict linkages in particular, continue to divide pedagogy-driven theoreticians and policy-driven analysts, thereby hampering research-policy transition needed for effective interventions.

Despite lingering controversies however, studies on environment-security linkages in poor nations suggest climate-induced constriction as an important factor particularly in renewable natural resource-related conflicts. In Nigeria, increasing incidence of farmer-herder conflict in host communities has been linked to climate change-induced ecological declines especially in the country's arid northern region experiencing Sahelian drought and desertification that is identified as a major factor in environmental scarcity and migratory adaptation. The resulting competition for scarcer natural resources, studies suggest, often conflates with socio-contextual factors in compounding human security challenges especially in migrant host communities.

Current debate on the climate-conflict discourse consists of three contentious perspectives: rebuttal, association, and affirmation. Meta-theoretical critiques spurred by these contentions suggest contextualized analyses as panacea for evolving policy-relevant discourse. Adopting the contextualization paradigm, this study examined environmental and socio-contextual factors in farmer-herder conflict transformation in Nigeria. It relied on Nvivo-assisted qualitative analysis of 117 in-depth interviews; combined with 10 Focus Group Discussions (FGDs) conducted across host communities in Oyo, Ekiti, Kwara and Nasarawa states. The study found that climate change has aggravated livelihood constrictions and migratory adaptation thereby heightening agro-cultural, economic and social contestations which accounts for increasing incidence of resource competition and violent conflicts in Nigeria. It therefore recommends contextually-grounded impact assessment among other reform measures, towards enhancing conflict-sensitive climate change adaptation and policy interventions.

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CHAPTER ONE

INTRODUCTION AND BACKGROUND

> Recent scientific evidence has ... given us a picture of the physical impacts on our world that we can expect as our climate changes. And those impacts go far beyond the environmental. Their consequences reach to the very heart of the security agenda.
>
> —Margaret Beckett, UK Foreign Secretary UN Security Council Debate in New York, 17 April 2007.

1.1 Introduction and Background to the Study

Does climate change contribute to rising incidence of violent conflict in the developing world? This controversial question has increasingly engaged the attention of many analysts in recent times. Indeed, the phenomenon of climate change draws wide audience as a result of its diverse impacts globally. Stressing the centrality of human activities to climate change through global warming, the United Nations Framework Convention on Climate Change (UNFCCC) defined the phenomenon as "a change in the climate directly or indirectly attributable to human activity, which alters the composition of the global atmosphere, and which in addition to natural climatic variability, is observed over comparable period of time" (UNFCCC, 1992: 7).

As a result of its diverse impacts and their far-reaching consequences, climate change is now recognized across policy and academic circles as a major problem to human security. Mearns and Northon (2010: 1) for example, describe the phenomenon as "foremost among the most formidable challenges facing the international community in the 21st century". Not a few other analysts echo this position: while Mildner and Lauster (2011: 1) opine that climate change is "the security risk of the 21st century", some emphasize that it is "a truly global challenge" (Bausch and Mehling, 2011: 7; UNESCO, 2009: 2) because it is a "challenge which knows no frontiers, and so, requires a global response" (European Union, 2015: 3).

The global scope of climate change notwithstanding, the nature and scope of its impacts vary across regions, and are influenced by the varying socio-contextual and ecological specificities of each region. The Interdepartmental Climate Change Groups (2009: 3) noted that "while

climate changes are occurring over the entire planet, the impacts differ from one region to another". In addition to its broad regional impact differentials, climate change is also known to have varying levels of impact across sectors of social and ecological systems even within states. These variations are seen in sensitivity levels across such sectors as energy, biodiversity, health, and its broader impacts on issues of socioeconomic and political stability. It is in this context that the phenomenon is identified as a threat multiplier capable of aggravating existing challenges in affected societies (CNA, 2007; Conley, 2011). Consequent upon observed divergences in the contextual forms and scales of impact associated with the phenomenon, there is a shift in emphasis among researchers, from broad-ranging impact analysis to the understanding of how climatic/environmental changes converge with societal factors in particular social settings, how this convergence occurs over time or across spatial scales and how it shapes vulnerability among groups (see for example: O'Brien et al., 2004: Wolf, 2011).

Events in many parts of the developing world—including Nigeria, lend credence to calls for further contextualised research on the relevance of climate change to growing insecurity, particularly, in rising incidence of conflict among groups. Concerns on climate change-conflict linkages stem from the increasing incidence of violent conflict arising from contestations among groups over climate-related declines in the availability of renewable natural resources (Buseth, 2009; Coetzee, 2012; Evans, 2010; Folami, 2010; Homer-Dixon, 1991). In many developing countries where natural resources play a central role in populations' livelihood, availability, access to, and the control of essential natural resources often play a defining role in the social, economic and political interactions among groups (Alao, 2007). Under such circumstances, the conflict-inducing implications of climate change can be associated with its effects on the tangible or intangible but vital natural resources which sustain livelihood, as well as the changing forms, contexts and dynamics of social relations built around these resources (Wolf, 2011).

Although studies note that the climate change-conflict transformation process defies a linear causal explanation (Focus Migration, 2009; Homer-Dixon, 1990; Zhang et al. 2011), scholars agree that disruptions occasioned by such impacts as drought, desertification, flooding, etc often exert significant negative effects on the carrying capacity of the social and ecological systems. Scheffran et. al. (2012a: 100) observed for example, that "climate change generally reduces the carrying capacity and productivity of many natural resources". In addition to

these effects, climate change also has other less apparent and indirect consequences that may combine with, and aggravate other challenges thereby undermining security at a broader level (Barnett and Adger, 2007). This is particularly true in developing regions where states are already constrained by socioeconomic and political challenges and as such, have low capacity to guarantee resilience. It is in this context that studies highlight climate-induced declines in renewable natural resources, as an important angle to understanding security challenges in poor regions (See for example: Adano and Daudi, 2012; Forsyth and Schomerus, 2013; Olabode and Ajibade, 2010; Onuoha, 2011; Odoh and Chilaka, 2012).

Nigeria has been confronted with many security challenges in recent years, from the Boko Haram insurgency in the northeastern region, to youth restiveness in the Niger Delta region; increased incidence of ransom-targeted kidnapping and hostage taking across the south; recurrent ethno-religious clashes in the northern region, and other forms of security threat (Chinwokwu, 2013; Osakwe, 2013). In addition to these challenges, the country, which has a substantial parts of its northern region lying in the Sahel's climate hotspots known for its high vulnerability to the effects of climate change (UNEP, 2011), is also experiencing increasing social tension, violent conflicts, and threats to national stability exacerbated by the scarcity of renewable natural resources and resort to migratory adaptation observed to be induced largely by climate change (Majekodunmi et. al, 2014; Odoh and Chilaka, 2012; Olabode and Ajibade, 2010; Oladele and Oladele, 2011; Oladipo, 2008; Onuoha, 2011).[1]

Studies show that the northern part of Nigeria has experienced ecological degradation particularly drought and desertification, altering the viability of the traditional agricultural systems, particularly the large number of nomadic cattle farmers in the region, thereby forcing them to move southward in order to find greener pasture for their herds (Obioha, 2008; Odoh and Chilaka, 2012; Okunola and Ikuomola, 2010; Onuoha, 2010, 2011). Odoh and Chilaka (2012: 117) note for example, that "two-third 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". They note further that the Sahel is already creeping southward at a speed per year of about 1,400 square miles, covering whole villages. The high vulnerability of the northern part of Nigeria is heightened by the regions aridity which has

[1] The Sahel is the ecoclimatic and biogeographic zone of transition in Africa located between the Sahara Desert to the north and the Sudanian Savanna to the south. The Sahel has a semi-arid climate and stretches across the south-central latitudes of Northern Africa between the Atlantic Ocean and the Red Sea. Sahelisation is often used to describe the changes taking place in which regions outside of the Sahel take on the ecological attributes of the Sahel.

worsened with increases in temperature since the twentieth century (Sayne, 2011), thereby exposing the region to severe drought and propelling migration among rural farmers in search of greener pasture (Kasali, 2011).[2]

One of the results of heightened southward migration is incessant friction between the traditional arable farmers of the south and the growing number of herdsmen largely from the northern region (Olabode and Ajibade, 2010). The rising incidence of farmer-herder conflicts across Nigeria, as studies suggest, is associated with climate-induced migration and the consequent changes in both the patterns and scale of migratory adaptation as seen in increasing sedentarisation of nomadic herdsmen in the southern region (Folami, 2010; Lamidi and Ogunkunle, 2015; Ofem and Bassey, 2014). This has resulted in recurrent confrontation with their host communities due to conflicting resource use patterns (See for example: Adekunle and Adisa, 2010; Azuwike and Enwerem, 2010; Fabusoro, 2007; Fasona and Omojola, 2005).

Corroborating the above view, Fasona and Omojola (2005: 2) argue that "many communal clashes caused by struggle for the control of land and resources are often misinterpreted or misrepresented as ethnic or religious clashes". These confrontations are often amplified by contextual factors which point to complex but nonetheless discernible environment-security interactions. It also illustrates the potential remote influences environmental conditions can exert on broad issues of security in specific social, economic and political contexts, especially when conflated with migratory adaptation (Perramond, 2007).

Although it is described as a form of "avoidant maladaptation" (Smith et al., 2011: 187), migratory adaptation has become a natural coping strategy in the face of increasingly unsustainable environmental conditions, particularly where there is limited capacity for *in-situ* adaptation as obtains in most vulnerable developing countries. The IPCC in its First Assessment Report 1990 also identified human migration as possibly, the "greatest single impact of climate change" (Brown, 2008: 4). Given the prevalence of migration among the

[2] Sayne (2011) for example highlighted one of the three main types of climatic shifts that are likely to feed into conflict as the advent of increasing heat with less rain in the arid north where temperatures is already around 105 degrees Fahrenheit, and is likely to increase further. The regions lying in Nigeria's northern Sahel area (the transition zone between the Sahara desert to the north and the grasslands to the south) are already receiving less than 10 inches of rain a year—a full 25 percent less than thirty years ago. It has also been predicted by the IPCC, to experience 10 percent less rainfall by 2100. Other shifts are seen in increasing severity of weather such as torrential rains and windstorms common especially across Nigeria southern region where there has been a 20% rise in torrential rainfall and up to 160 inches of rain a year over the past forty years. Or shifts along the southern coastline where about one foot rise in sea level has been observed in the last fifty years.

effects of climate change, it has received considerable attention in the climate change-conflict discourse (Adekunle and Adisa, 2010; Buseth, 2009; Homer-Dixon, 1994; Kabanda and Munyati, 2010; Malone, 1996; Percival and Homer-Dixon, 1998).

Although migration is cultural to pastoral farmers, there have been noticeable changes in the nature, scale and timing of movement that has been associated with geo-ecological transformations in the semi-arid environments of pastoral lifestyles (Blench et al., 1998; de Bruijn et al., 2011). Hence, the resort to migration among the most vulnerable groups in Nigeria—the nomadic pastoral farmers, stems from a number of factors significant among which is environmental variability and the absence of an effective alternative coping strategy, or the requisite level of innovation needed to support adaptation to environmental variability (Adger et al, 2009; Nzeadibe et al., 2011; Sayne, 2011).[3]

Two patterns of pastoral movement often identified in the literature are applicable to the Nigerian context: (a) transitory migration, and (b) sedentary movement or relocation (see Azuwike and Enwerem, 2010; Kratli and Schareika 2010; Kratli 2008). While transitory migration refers to the continuous seasonal cycle of pastoral migration informed by both phonological changes, sedentary migration refers to a more permanent for of movement that can be short-term/temporary settlement or long-term/permanent re-settlement. Both forms, as studies show, have likelihoods of contributing to natural resource conflict in migrant host communities. On the one hand, increased volume of transitory migration has led to the extension of periods of southward nomadic grazing trips particularly into planting seasons in host communities especially in the south, resulting into encroachment into farmers' crops. On the other hand, increase in scale of sedentary migration has heightened competition for space particularly generating conflicts over access to land and water resources between hosts and migrants (Azuwike, and Enwerem, 2010).

Studies show that increasing incidence of encroachment into farmers' crops by herders also creates a triangle of suspicion and hostility between sedentary and transitory herders on one hand, and between herders and host communities on the other hand. For example, Umar (2002) observed that violence often erupted between sedentary farmers and their hosts due to

[3] Enhanced capacity for in-situ adaption (i.e. coping on the spot with the effects of climate change) comes with improved technological capacity, training and education for innovation, modernized systems of nature-sensitive operations like development of ranch system in pastoral farming, reduced population reliance on nature for survival, and effective institutional support for adaptation. In situations where these are low or unavailable, populations' adaptive capacity is constrained by economic, cultural, and institutional and other limitations which impede on-the-spot adaptation.

damages done by their transitory herder counterparts who often travel by night leaving destruction in their wake. In such cases, the herders often blame native farmers. It is against this backdrop that scholars view migratory adaptation as an aggravating factor in communal conflicts.

Communal conflicts are important to security because they have the potential to exacerbate other security challenges with far-reaching consequences especially where inter-group relations are fragile since they tend to rekindle longstanding fault-lines. For example, Homer-Dixon (1994) noted that conflicts associated with environmental pressures or resource scarcity are persistent and occur at sub-national levels rather than between states. Brosche and Elfversson (2012: 34) point out that "communal conflicts account for thousands of death especially in the developing world although they do not directly involve state parties".

In Nigeria, resources contestations have aggravated conflict among groups, stretching already tenuous state of relations among ethnic and religious groups. This has been rampant where grievances interface with ethnic, religious, cultural and political grievances. Climate-related scarcity in such situations, can spur social conflict, not only by triggering immediate violence, but also by setting the social space for other indirect security risks such as rural unemployment and out-migration. As a threat multiplying function, Raleigh (2011: 1) observed that "migration to urban areas creates new vulnerabilities for internal migrants, as [the] urban areas have a myriad of additional vulnerabilities including understudied ecological risks and exposure".

The threat multiplier and conflict aggravating effect of climate change is noted by Conley (2011), and many studies have sought to explain how this may be amplified by human migration (Barrios et al, 2006; Newland, 2011; Parnell and Walawege, 2011). In Nigeria, as Abah (2014: 163) points out that, "rural settlements face agricultural occupational loss, water shortages, flooding, land based conflicts, health hazards, erosion, and migration if climate change trends intensifies". This will no doubt, affect security in the urban and suburban areas through heightened risks of crime and militancy from the resulting marginal mass of rural-urban migrants mostly youths who become disillusioned by the harsh realities of city life and their inability to compete with the skills needed for gainful urban employment. Migratory adaptation is therefore important in understanding the dispersal of hitherto localized socioeconomic impacts of environment variability (Kunkeler (2011).

Spurred by increased awareness on its latent implications, research on social effects of climate change has increased in recent decades. Attention have also shifted substantially from traditional focus on primary geophysical impacts to socio-systemic impact analyses (see for example: Adger, 2003; Adger et al. 2009; Black et al., 2008; Hsiang and Burke, 2014; Lynn et al. 2011; Merchant, 1990). One of the most contentious of these social effects is the relevance of climate change to understanding violent conflicts especially those over renewable natural resources. Studies drawing this connection are often flawed by critics for reasons ranging from complexity of supposed causal-pathways, issues surrounding methodological approaches relied upon, or the inability of proponents to provide universally valid findings on the climate change-conflict causal propositions drawn (see for example: Barnett, 2000; 2003; Bauhaug, 2010; Hauge and Ellingsen, 1998; Nordas and Gleditsch, 2007; Raleigh et al. 2008; Urdal, 2007).

Some scholars have also questioned the significance of climate change since it is only one among several other factors which they argue, are likely to combine in escalating conflicts (see for example: Barnett and Adger, 2007; Bauhaug, Gleditsch and Theisen, 2008; Gleditsch, 2011; Henry, Boyle and Lambin, 2003; Meier, Bond and Bond, 2007). Little attempt has been made towards contextualizing the relevance of climatic factors and their significance *in-situ*, that is, how theoretical constructs apply in the actual contexts of vulnerability.

Exemplifying prevailing scepticism in the climate change-conflict nexus, Raleigh, Jordan and Salehyan (2008: 34) argue that "much of the available literature exaggerates the impact of environmental factors in causing or exacerbating conflict". This, they argue, is because "most prominent studies on environmental conflict suffer from prediction, a lack of evidence, and a reliance on conjecture" (ibid). Barnett (2000) similarly opined that the environment-conflict thesis is theoretically driven rather than motivated by any empirically facts. Hence he sees it as a conspiracy of dual dimensions: one as a product of the global north's attempt to foist a new security agenda on the international system, and two, as a strategy for the legitimation of that security agenda. In general, perspectives in the literature may be categorised into three standpoints, namely: rebuttal, affirmation and causal association.

In response to what may be described as a generalised analytical scepticism in the climate change-conflict nexus, an emerging line of research on the subject advocates the contextualisation of analyses in the discourse (see Ide, 2015; McLeman, 2011; Stjanov et al.,

2014). In highlighting the often contested influence of environmental factors on migration decision making for example, Stojanov et al. (2014; 508) argue that "environmentally induced population movement need to be understood in a contextualised manner in order to be useful", adding that contextualisation is needed if studies are to be relevant to policy and practice as against the focus on universal or absolute theories of environment-conflict analysis.

The aim of this study therefore, is to investigate the relationship between climate change, environmental scarcity, and the intensification of communal conflict in Nigeria's southern region. Environmental pressures on peripatetic pastoralists in northern Nigeria and the consequent changes in the patterns of pastoral transhumance southward most suitably illustrate the phenomenon of resource-induced migration with implications for host community livelihood and security in the regions. Simulating conceptual constructs from notable relevant discourse (see for example Gendron and Hoffman, 2009; Howard and Homer-Dixon, 1996; Kameri-Mbote, 2004; Percival and Homer-Dixon, 1998), this study contextualizes the effects of climate change through the analytical prisms of resource scarcity and migratory adaptation as amplifiers of volatilities and violent conflicts over renewable natural resources in Nigeria.[4]

1.2 Research Problem

Although the connection between the impacts of climate change and violent conflict has been a subject of public discourse since the 1990s (Bäechler, 1999; Blench et al. 1998; Gendron and Hoffman, 2009; Homer-Dixon, 1994), analysts are yet to reach an agreeable explanation on the linkage. Recent surge in environmental/ecological conflicts in Nigeria draws attention to this unresolved question: the connection between climate change, environmental decline, and violent conflicts. While policy reports call for conflict-sensitive interventions by highlighting the conflict-precipitating potentials of climate change (ACCES, 2010; CNA, 2007; Conley and Werz, 2012; Evans, 2010, 2012; Forsyth and Schomerus, 2013; Sayne, 2011), pedagogy-inclined analyses emphasize technical and methodological gaps in such

[4] Homer-Dixon identifies three forms of resource scarcity: demand-induced scarcity, supply-induced scarcity, and structural scarcities, relating to three trends in migratory adaptation: rural-rural migration, rural-urban migration, and cross border migration. These trends are observable in nomadic and related migrations. UNEP reports large scale herder migration from Niger Republic into Nigeria since 2004, as well as migration of more than 10,000 fishermen from Nigeria's Lake Hadejia-Jama-are area to Burkina Faso's Lake Bagre in 1994 (UNEP, 2011: 56-60). These movements have significant causal implications for observed volatilities: rural, urban, and cross-border violent conflict.

connections. In the midst of the continuing debate, events across Nigeria suggest that environmental deterioration and the attendant loss of livelihood supporting resources may underlie contestations among groups making it one of the challenges for security in Nigeria.

The significance of farmer-herder conflict to security and stability in Nigeria is not only evident in incessant carnage that has become a recurrent feature item in news and media reports in the country, it is also visible in its potential to aggravate existing ethno-religious, tribal and other tension precipitants in the country. The rising incidence of violence and its broader implication has therefore been a cause for public concern. According to a recent report, it is noted that while a total of 80 persons were killed in Fulani herdsmen related violence between 2010 and 2013, by 2014 the number of deaths caused by militant herdsmen had increased to 1,229 persons in a ddition to losses in properties and population displacement. The highest tolls have been felt in states like Benue, Taraba, Nassarawa, Plateau, Kaduna and Katsina.[5] Another report noted that over 2,000 people were killed in conflicts between herdsmen and their various host communities in the year 2015 alone. This figure, the report added, compares and competes with deaths from the Boko Haram insurgency which it notes, claims about 2,500 lives yearly. However, while the Boko Haram insurgency has held the attention of both the Nigerian government and the global community, little attention has been paid to herdsmen-related deaths.[6]

In December 2013, about 205 persosn were killed in Agatu local government area of Benue State following Fulani herdsmen attack (Muslim Worldwide, 2013). Since the attacking Fulani herders were Muslims while the natives killed were Christians, the onslaught acquired ethnoreligious colorations prompting reprisals among the various ethnic and religious groups and leaving the entire area in the tenterhooks of insecurity which remains till date. As recently as February 2016, Fulani herdsmen were reported to have attacked rural Agatu farmers and other native dwellers in Benue State. During the attack, 40 people were killed, scores were seriously injured, over 7,000 persons were displaced, and properties worth millions were lost.[7] This was followed in June by yet another attack in which rampaging herdsmen killed at least 59 residents, including a traditional ruler, at Turan Council Ward of

[5] Analysis: The Deadly Influx of Fulani Herdsmen in Nigeria <https://www.naij.com/814082-analysis-the-deadly-influx-of-the-fulani-herdsmen-in-nigeria.html>. Accessed: November 10, 2016.
[6] Ibid.
[7] Violence In Nigeria: Causes, Effects And Solutions By Olawale Rotimi, <http://www.theparadigmng.com/2016/04/26/violence-in-nigeria-causes-effects-and-solutions-by-olawale-rotimi/> Accessed: November 10, 2016.

Logo Local Government Area of the state over a weekend. Besides the dead, many victims escaped with varying degrees of injuries while many went missing after the attack.[8]

In the eastern and western parts of the country, similar scenarios have also been playing out. At Nimbo in Uzo-Uwani Local Government Area of Enugu State in February 2016, about 46 persons were reported killed by Fulani herdsmen barely 24 hours after reports of an influx of about 500 armed Fulani herdsmen circulated in the area. In the widely reported attack, seven villages in Nimbo (Nimbo Ngwoko, Ugwuijoro, Ekwuru, Ebor, Enugu Nimbo, Umuome and Ugwuachara) were raided, a church and ten residential houses alongside other properties were been burnt by the invaders (Esan, 2016).[9] In 2013, protests erupted in Ohaji Egbema council area of Imo state in response to increasing cases of herdsmen-community conflict. The protests bothered on the rising incidence of rape, theft, detruction of indigenous farmers' crops, and bloodletting. In 2010, seven persons had been reported killed in similar confrontations between the two groups in Imo State. Similar deaths were also reported recently the state with no less than seven dead in Akokwa community in Ideato North council in August 2016.

In what appeared to be reprisal attacks in Abia State in April 2016, shallow graves of Fulani herdsmen were reported by operatives of the Department of State Security (DSS) to have been discovered in one community, spurring tension across the country about possible counter-reprisals. More so, the reprisal killings were alleged to have been carried out by the Indigenous people of Biafra (IPOB), a pro-Igbo cesession group whose activities have heightened fears abour Nigeria's unity and national security, especially since the inception of the Muhammadu Buhari civilian administration in 2015.[10]

The south-south region of the country is also not left out. Although it is a known taboo to kidnap a king in Ubulu Ukwu kingdom of Aniocha South Local Government in Delta State, On January 5, 2016, in a series of herdsmen kidnapping which had become rampant at in the area at the time, herdsmen were reported to have kidnapped the monarch of the town. His

[8] Force and limits of Ekiti State's anti-grazing law, <http://punchng.com/force-limits-ekiti-states-anti-grazing-law/> Accessed: November 10, 2016.

[9] Fulani Herdsmen: Attacks threaten Nigeria's existence — NASS, <http://www.vanguardngr.com/2016/04/fulani-herdsmen-attacks-threaten-nigerias-existence-nass/. Accessed: November 10, 2016.

[10] Killing of Fulani herdsmen: Abia partners Imo to defeat kidnappers, http://wwwvanguardngr.com/2016/04/killings-fulani-herdsmen-abia-partner-imo-defeat-kidnappers/. Accessed: November 10, 2016.

body was found 15 days after the kidnap.[11] Such cases have become commonplace. In a satellite village—Okuke, at Amorji in Ndokwa Wesr Local government area of the state, three persons were reported killed and two others injured following violent hostilities between Fulani herdsmen and local residents.[12] Another incident in Ossissa community located in Ndokwa East Local Government Area of Delta State involved the killing of a 45 year old man in on his way from the farm in June 2016.[13]

Cases of violence, farm damage, kidnaps and rape are also pervasive in farmer-herder contacts in the southwest region. In 2000 Fulani herdsmen and farmers had a major clash in Oke-Ogun area of Oyo state prompting a visit by a northern delegation from the Arewa Consultative Forum (ACF) to the office of the then governor, the late Lam Adesina.[14] Series of violence have continued in the area notwithstanding efforts to ensure peace. Perhaps one of the most outrageous cases in recent times was the kidnap and torture in Ondo State, of a Former Minister of Finance, and one-time Secretary to the Government of the fedration, Chief Olu Falae, allegedly by six herdsmen who caught him on his way to his farm.[15] Although the alleged perpetrators were later arrested and paraded by law enforcement agents, not long did the victim suffer yet another attack during which his security guard was killed, even as the previous case was yet to be concluded in the court.[16]

In Ekiti State, incessant attack by herdsmen prompted the State Governor, Ayo Fayose to declare war against the assailing Fulani herders. This followed the killing of two persons in Oke-Ako, in Ikole local government area of the state in May, 2016.[17] In a meeting with local hunters in the area, the Governor called upon the hunters to be battle ready and to confront

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[11] How Fulani herdsmen abducted, killed Delta monarch, http://www.vaguardngr.com/2016/01/how-fulani-herdsmen-abducted-killed-delta-monarch/ Accessed: November 10, 2016.

[12] Fulani herdsmen kill three Ndokwa locals in Delta State in brutal reprisal attack, http://www.nigerianwatch.com/news/7683-fulani-herdsmen-kill-three-ndokwa-locals-in-delta-state-in-brutal-reprisal-attack-. Accessed: November 10, 2016.

[13] Cattle rearers on another killing rampage in Delta State , http://pulse.ng/gist/fulani-herdsmen-cattle-rearers-on-another-killing-rampage-in-delta-state-id5173121.html. Accessed: November 10, 2016.

[14]Analysis: The deadly influx of Fulani herdsmen in Nigeria, https://www.naij.com/814082-analysis-the-deadly-influx-of-the-fulani-herdsmen-in-nigeria.html Accessed: November 10, 2016.

[15] How I was abducted, tortured, released — Olu Falae, http://www.premiumtimesng.com/news/headlines/190728-how-i-was-abducted-tortured-released-olu-falae.html Accessed: November 10, 2016.

[16] Fulani Herdsmen Kidnap & Kill Olu Falae's Farm Security Guard In Akure, http://naijagists.com/fulani-herdsmen-kidnap-kill-olu-falaes-farm-security-guard-in-akure/ Accessed: November 10, 2016.

[17] Fayose vows to equip Ekiti hunters for war with Fulani herdsmen, http://www.premiumtimesng.com/news/top-news/203970-fayose-vows-equip-ekiti-hunters-war-fulani-herdsmen.html Accessed: November 10, 2016.

any Fulani herdsman found grazing cattle anywhere in the state while promising to raise funds and facilities for them to prepare for the coming war.[18] The later killing saw the prohibition of cattle grazing by herdsmen in the state.[19]

Given the political undertones which often compound tenuous ethnic and religious interactions in Nigeria, the implication of this security challenge for national integration and stability is more worrisome as the trail of violence moves southward. This explains why the rampancy of herdsmen violence in the southeastern parts of the country has produced a conspiracy theory in which popular sentiments hold that the northerner-led government of President Muhammadu Buhari turns a blind eye to the Fulani herdsmen's massacre of non-Fulani natives in host communities despite increasing casualty figures across the country.[20, 21]

In an attempt to unravel this controversy, this study investigated the significance of climate change in pastoral migration and farmer-herder conflicts in Nigeria. This problem is addressed through the contextual prisms of the redistribution of climate change vulnerabilities through migratory adaptation, and communal conflict as exemplified by farmer-herder conflicts. The study also explored links between dispersed vulnerabilities and secondary security issues including rural youth retention, urban over-population, increasing crime rate, and heightened potentials for insurgency. Primary focus is on the plight of the host communities experiencing increasing contestations over natural resources due to higher influx of, or increasing sedentarisation of nomadic herdsmen. The research also explores the process by which secondary effects may arise from climate-related migration, resource contestation and insecurity in migrants receiving communities as a possible track in tracing social extension of vulnerability in order to understand potential linkage to hitherto speculated secondary security threats such as rural-urban migration, youth unemployment, and increases in urban crime rates.

Increasing conflict between farmers and migrant pastoral herders in host communities fit into the population categories that are vulnerable to the effects of climate change. Priority

[18] Ibid.

[19] Ekiti Grazing Law: The Way to Go, http://www.thisdaylive.com/index.php/2016/09/05/ekiti-grazing-law-the-way-to-go/ Accessed: November 10, 2016.

[20] 710 Nigerians killed by Fulani herdsmen in 10 months —Igbo Youth Movement, http://www.vanguardngr.com/2016/04/710-nigerians-killed-fulani-herdsmen-10-months-igbo-youth-movement/ Accessed: November 10, 2016.

[21] Herdsmen Violence: South East Senators accuse Buhari of "ominous silence", call for summit, http://www.premiumtimesng.com/news/top-news/202571-herdsmen-violence-south-east-senators-accuse-buhari-ominous-silence-call-summit.html. Accessed: November 10, 2016.

attention is on primary host communities i.e. rural areas which receive environmentally vulnerable pastoralists, and which are experiencing recurrent farmer-herder contestation and violence along Nigeria's north-south migratory belt. The significance of climate change on secondary migrant destinations in urban and sub-urban areas as well as in cross-border migration is investigated through literature reviews and probed through interview with informants, particularly vulnerable youths. The implication for rural youth-retention also enables the study to address potential secondary consequences including rural-urban migration that is a factor in increased urban crime, insurgency and violent activities in the cities as captured in recent studies linking local youth displacement and foreign migration to in insurgency in Nigeria (Chayes, 2014; Ukwayi, Ogaboh, and Michael, 2013; Zenn, 2013).

1.3 Research Questions

This study addresses 5 questions. These are:

1. What is the linkage between climate change and natural resource contestation in Efon-Alaaye in Ekiti, Iseyin/ Shaki in Oyo, Udeni-Gida in Nasarawa, Nasarawa state, and Oke-Ero in Kwara, Nigeria?
2. Do socio-cultural, institutional or systemic factors influence climate-related conflict and insecurity in these communities, and Nigeria as a whole?
3. To what extent does migration serve as a conflict engendering intervening factor in the transformation of climate change-induced scarcity into security problems in the selected communities?
4. In what ways are the effects of climate change-induced scarcity dispersed to secondary host communities in cities and urban centres, and how are the resulting vulnerabilities as indicated in the selected case studies replicated in other parts of the country?
5. How can the impacts of climate change-induced scarcity be mitigated at both physically depleted environments and migrant host communities to prevent or reduce conflicts in order to enhance security?

1.4 Objectives of the Study

This study seeks to achieve the following objectives:

1. Establish the connection between climate change and resource contestation in Efon-Alaaye in Ekiti, Iseyin/Shaki in Oyo, Udeni-Gida in Nasarawa, Nasarawa state, and Oke-Ero in Kwara, Nigeria.
2. Examine the contributions of socio-contextual: cultural, institutional, economic, and systemic factors in the transformation of climate-related scarcity and contestations in these communities and its broader security implications in Nigeria.
3. Demonstrate the connection between climate change-induced scarcity, migration and insecurity using Efon-Alaaye in Ekiti, Iseyin/Shaki in Oyo, Udeni-Gida in Nasarawa, Nasarawa state, and Oke-Ero in Kwara, states in Nigeria.
4. Examine the transformation, dispersal, and broader security implications of climate-induced scarcity and migration in primary and secondary host communities.
5. Make policy recommendations towards reducing the impact of climate change in sending regions as well as increasing conflict-sensitive adaptation towards enhance security.

1.5 Principal Theories

The interdisciplinary outlook of this research required an eclectic theoretical approach in order to accommodate the combination of political, socio-economic, and psychological variables, which come to play in shaping the phenomenon under focus. Three theoretical persuasions serve as theoretical anchors. These are Eco-violence, Frustration-Aggression, and Relative Deprivation theories.

Eco-violence or “Shrinking Pie” theory has its roots in a series of studies led by environment-conflict specialists, Homer-Dixon, Blitt, and Gleditsch of the Toronto group and the Swiss (ENCOP) program. They maintain that high reliance of large populations in developing countries on critical natural resource such as cropland, freshwater and vegetation result in conflict arising from the shrinking of these resources as a result of degradation, population increase or overuse which, under certain circumstances (migration in this case) triggers off conflict. Homer-Dixon and Blitt (1998) identify migration and increases in the size of resource-dependent population as some of the intervening factors with potential conflict consequences, as climate threatened people migrate to new lands triggering resource or ethnic conflicts (Odoh and Chilaka, 2012).

The ecoviolence model also recognizes the scarcity-inducing roles of environmental changes including drought, erosion, and heat waves, as well as population growth, all of which often impose pressure on existing resources and makes for inequality in resource distribution by limiting access thereby resulting in resource capture (Dougherty and Pfaltzgraff Jr., 1997). On the inability of resource scarcity to have a deterministic conflict trigger effects, Homer-Dixon points to an intervening variable termed as "ingenuity gap" (Homer-Dixon, 1995: 589). Ingenuity gaps arises from negative socio-economic, cultural, and political/institutional factors which when present, as is often the case in less developed societies, tend to enhance conflict incidence as outcomes of environmental scarcity. Such factors include high poverty levels, low level of innovation in agricultural practice, volatile nature of ethnic, cultural, and religious relations, and low institutional capacity for ineffective governance, and other factors that may play intervening role. One of the criticisms of eco-violence theory is that it is has a low predictive strength, since it aims at general systems analysis. This study mitigated the error of over-inclusiveness identified in Homer-Dixon's system analysis by using specific cases that allow isolation of environment-related vulnerabilities relevant to conflict.

The frustration-Aggression theory has its root in a monograph published in 1939 by a group led by John Dollard, focusing on aggressive behavior. Its wide applicability derives from among other factors, its lucid presentation, and clarity. Its principal hypothesis is that "the occurrence of aggressive behavior always follows from a frustration-evoking impulse, and contrariwise, that the existence of frustration always leads to some form of aggression". Frustration in this case, refers to the thwarting of a goal response, and a goal response in turn taken to mean the reinforcing final operation in an ongoing behavior sequence.

According to proponents of this theory, the term 'frustration' is often applied in denoting, not only the process of blocking a subject from attaining a certain goal or reinforcement, but also to his or her reactions to such blocking. Used in this sense, 'frustrated' means both that one's access to a reinforcement is being thwarted by another party, or circumstances, and also that the reactions to such thwarting expresses annoyance (van der Dennen, 2005: 1). Berkowitz (1989) modified the theory since aggressive responses do not necessary follow all thwarting interference as argued by Dollard et.al. Berkowitz, in his cognitive-neoassociationist model, argued, that "frustration generates aggressive inclinations to the degree that they arouse negative effect like anger" (Berkowitz, 1989: 1). By this modification, the theory accommodates cases in which frustration do not engender aggressive response especially if it

does not arouse anger in victim. This may result from availability of other means of achieving the desired goal.

Lastly, the theory of relative deprivation derives some of its basic assumptions from frustration-aggression theorists like Dollard and Berkowitz and is applicable to political violence. Its main hypothesis is that popular satisfactions and discontents are of a relative nature, and that feelings of injustice are influenced by social contexts (van der Dennen, 2005: 16). It emphasizes the relevance of society and groups in evaluation and response to frustrations, mirroring the observation credited to Karl Marx that "Our desires and pleasures spring from society; we measure them, therefore, by society and not by the objects which serve for their satisfaction, because they are of a social nature, they are of a relative nature" (ibid: 17). Other scholars of this persuasion include (Davies, 1962; Gurr, 1970; Hirshleifer, 2001).

The relevance of these three theoretical spectacles is clearer considering the situation in both the northern and southern parts of Nigeria. Both are characterized by high reliance of the population on their natural environment as means of livelihood. The growing rate of scarcity resulting from declining environmental resource carrying capacity in relation to the population, as well as the contestation engendered by this decline aptly captures the context of the study. Poor technological innovation, near-absent political and social support and other negative social factors evident in the Nigerian context reflects the ingenuity gap described by Homer-Dixon (1995, 1996). The absence of systemic support amplifies the deprivation in the populations' condition of livelihood. This consequently increases the tendency among affected groups to ventilate anger against the system or against other groups believed to causes or contributors to the threat. Under Such circumstances, frustrated groups may target contenders for shared natural resources in their expression of aggressive behavior arising from their vulnerability. It is against this backdrop that one understands variations in populations' reactions corresponding more or less, to socio-cultural, economic, and political values ascribed to natural resources by the communities.

1.6 Research Methodology and Methods

The study used both primary and secondary data. It combined survey techniques involving the use of interviews, focus group discussions (FGDs) and spatial area studies with a comprehensive review of extant secondary data: literatures, journals, government gazettes,

and media reports. Primary data collection relied on personal face-to-face interviews due to the low educational level of most of the targeted informants, largely herdsmen and native farmers most of whom required language interpreters. Divergences in languages spoken among the host and migrant population, as well as the wide spatial distribution of study areas across ethno-geographic regions also informed the employment of interpreters.

The study used the area frame method in gathering data across the four identified rural host communities in 4 states across the two geographic regions as a representation of Nigeria. The farmers and peripatetic agro-pastoralists in those communities constituted the focal population of the study. A total of 30 respondents participated from each community, making up a total of 120 respondents or informants engaged in the study through face-to-face interviews. The composition of the respondents in each of the four selected communities were as follows: 10 farmers, 5 migrant pastoralists, 5 native youths (non-migrants), 2 community leaders (1 native, and 1 pastoralist), 1 traditional head each (Emir or Oba as the case may be), 1 top personnel from the corresponding office of the Nigeria Police and 1 top Local Government Authority official—making 2 government officials, 5 urban dwelling youths engaged in irregular jobs: this is sub-divided into 4 natives and 1 migrant. Youths in specific occupations, particularly commercial motorcycle riders, mobile shoe-repairers, or water vendors were targeted due to the prevalence of occupationally displaced persons in such jobs, their high propensity to engage in crimes, as well as their ready availability for violent political, ethnic, religious or other mobilizations (Ikot et.al, 2011; LSGN, 2011; Ukwayi et.al, 2013).

In selecting potential interviewees, a snowball sampling technique was used to identify farmers, agro-pastoralists in their camps, while purposive sampling was used in selecting key community leaders, government officials and traditional authorities in each of the communities or in proximate districts. A purposive sampling technique was used in selecting youths to be interviewed in urban centres. A purposive sampling technique was used where snowball technique did not lead to sufficient numbers of targeted agro-pastoralists. The service of an interpreter was engaged in each community to mitigate language barriers. Data analysis and presentation used statistical tables, charts, models, diagrams and summaries as was considered suitable for each data set. More sophisticated statistical tools and parametric estimates were employed where necessary.

Engaged host communities were categorized into two: primary host communities which includes the four rural communities namely: Efon-Alaaye in Ekiti, Iseyin/Shaki in Oyo, Udeni-Gida community, Nasarawa Local Government Area, Nasarawa, and Oke-Ero in Kwara states. Proximate cities which provide immediate haven for rural emigrants were used as secondary host destinations. These cases were selected in consideration of three important parameters which helped in streamlining the connectives drawn. Accordingly, preference was on (1) vulnerable locations with records of Farmer-herder conflicts, (2) those among parameter 1, in which, in the course of preliminary study, the researcher observed higher volumes of youth involvement in agriculture. This is important in order to unravel the secondary implications on youth retention and rural-urban migration, and (3) locations which conform with the substantial presence of the two forms of pastoral influx (i.e. transitory and sedentary forms of migration) and also reflect the north-south migratory routs as captured in literature, media reports, as well as researcher's preliminary investigations.[22] In selecting the cases, consideration were given for minimal interference from existing ethnic and religious disputes, in order to, as much as practicable, isolate environment-induced conflicts from other forms of violent conflict.

Uniquely, the research examined links between observed migratory adaptation trends and wider security threats in urban and sub-urban areas associated with the influx of large population of mainly youths from rural areas (Emeh, 2012). Both urban and suburban areas serve as secondary host destinations for vulnerable youth who often experience loss of livelihoods and become predisposed to violent crimes in urban areas. Preliminary study of the regions also shows that the selected locations reflect the ecological transition and migratory belt from north-central to the south on the western axis of the country. Two states: Nasarawa and Kwara are located in the north-central geopolitical axis, while Ekiti and Oyo are in the south-west. Secondary host communities are generally defined as urban and sub-urban township areas across the country, which receive both environmental migrants and rural population motivated to move as a result of livelihood constriction, poor socio-economic conditions, and insecurity in rural areas.

[22] The tension-prone interaction between nomadic and receiving communities, and a few address issues concerning the cases selected for this study. See for example: Iseyin/Shaki, Oyo State (Blench, 2003; Odoh and Chilaka, 2012), Oke-Ero in Kwara (Lamidi and Ogunkunle, 2015; Ofem and Bassey, 2014; Olabode and Ajibade, 2010); Efon-Alaaye, Ekiti State (Folami and Folami, 2013, Odoh and Chilaka, 2012; Taiwo, 2010); and Udeni-Gida in Nasarawa, Nasarawa state (Joseph, 2009; Odoh and Chilaka, 2012; Okoli and Atelhe, 2014).

Densely populated proximal towns to core rural areas significantly provide migratory adaptation options depending on availability of opportunities for alternative means of livelihood which are related to the levels of urbanization and infrastructural development. The proximal towns used are the nearest fairly urbanized areas to the rural study sites. They include: Efon Alaaye township, Oke-Ero township, Nasarawa township, and Saki township. The relevance of the secondary host communities to this research is derived from the security implications of urban drift arising from resource contestations, livelihood decline and infrastructural deficits in the rural interiors.

The population group engaged in the secondary host communities were purposively selected and interview method was used to source information since questions specifically targeted population engaged in irregular and unskilled jobs—a typical occupation of rural farming population and migrants into cities and township areas. Specifically, commercial motorcycle operators, mobile shoemakers and other low or non-skilled workers in urban areas constitute a large percentage of this drifting category. Tape recorders and cameras were used to capture information which were wholly transcribed and then subjected to critical and objective analysis. Relevant data were obtained from government records, relevant journal and newspaper publications to capture environment-related rural-urban drift, and its probable connections with social crime and violence in the urban areas.

Although the study was conducted in communities which serve as host locations to short, and or long term peripatetic herdsmen, and which continue to experience resource contestations among the host and migrant group, the researcher selected mostly communities where such contestations or violent conflicts were not on-going at the time of the study. This was put into consideration in order to avoid tension and volatilities that may interrupt the research process or hamper its success. As established through interaction with community members in some of the locations, although resource contestations have continued, threats of escalation into communal violence were being curtailed through traditional structures of mediation such as the Local Council Farmers Associations (LCFAs). Olabode and Ajibade (2010) offer a timeline of conflicts between the predominant Fulani pastoralist and their host communities with much of the large scale violence occurring between 1999 and 2005. Besides, in order to alleviate the possibility of ethnic suspicion and hostility towards the interviewer by the interviewer, the researcher employed native Research Assistants/Interpreters from each tribe thus avoiding misunderstandings between research team and respondents.

1.7 Scope of the Study

In scope, this study adopted a spatial dimension. It investigated the contribution of climate change to violent conflicts in Nigeria as a whole, using case studies in four spatial areas across two geopolitical zones. The two geopolitical zones selected were the south-west and the north-central comprising two states selected from each zone. Findings arrived at on the nexus being investigated were tested against documented critiques on the climate change-conflict discourse, namely rebuttal, affirmation and association. Although the phenomenon of climate change and its implication for violent conflicts have been on since the 70s, finding have remained controversial with emphasis on universal theory of climate change-conflict linkage. The study adopted an open-ended scope in its time dimension, examining wide ranging literature with a view to identifying historical and contemporary dynamics and discourse in the environment-conflict nexus.

1.8 Justification of the Study

The importance of this study derives from the inability of current pedagogic engagement with the climate change-conflict discourse to provide credible answers to empirical linkages drawn in policy and security circles. This gap between theory and practice necessitates the exploration of the significance of climatic variability and change to insecurity arising from natural resource conflict in Nigeria. Studies have noted that the implications of climate change transcend direct geophysical realms, and that it has implications for conflicts in low income, and natural resources-dependent regions of the world (Anderson and DeLisi, 2011; Goh, 2012; Mazwell and Reuveny, 2000).

It is also acknowledged that the impacts of climate change cut across many sectors crucial to the sustainability of both natural and social systems. Article 1 of the UNFCCC for example, corroborates the importance of social dimensions to climate change when it defined its adverse effects as including changes “that have significant deleterious effects on the operations of socioeconomic systems or on human health or welfare” (UNFCCC, 1992: 7). The IPCC further buttresses the linkage in stressing that impacts of climate change “cannot be considered independently of the broader issue of human security” (IPCC, 2007: 456).

By exploring the contextual underpinnings of climate change-conflict transformation in Nigeria, the study brings to the fore how the effects of climate change traverses spatial limits,

and shows how such effects are socially dispersed to precipitate or aggravate violent conflicts in particular, and broad human security problems in general. It also shows the mechanism through which climate change aggravates violent conflicts by shifting already tenuous social spaces in nature-dependent societies because its impacts affect the availability and distribution of critical resources which sustain livelihood in poor communities. It thus unearths contextually, the mechanisms through which climate change impacts are directly and indirectly linked to social problems. The study validates the proposition that research in this all-important area needs to move beyond universal scepticism to contextually robust exploration in order to be meaningful to security.

Beyond highlighting the significance of climate change to peace and security in Nigeria, the study also drew attention to the need for expanding internal security policy frameworks in vulnerable societies through the development of effective strategies capable of enhancing conflict-sensitive climate change adaptation. As has been observed in recent times, the myriad of security challenges confronting the Nigerian state has created a cluster of competing security concerns. Under such conditions, increased focus on one type of risk such as the country's ongoing counter-terrorism operations has the tendency to decrease, or shifting attention away from other equally threatening, but less dramatic security issues such as slow-onset climate-induced environmental degradation and its many associated risks (Adger*, et al.,* 2007*).* In attempting to resolve epistemic gaps which have hampered research-policy transition in this area of study, the study also provides a new direction towards addressing subsisting controversies between theory and contextual/problem driven narratives on the environment-conflict nexus.

In Nigeria, a contextualised examination of the dynamics of climate-conflict connectives, particularly its role in communal conflicts is timely. This is more so, given recent upswing in environment-related tension and violence in the country. The incumbent President, Mohammadu Buhari raised alarm on the subject in his inaugural speech on the 29th of May, 2015, when he situated farmer-herder conflict side-by-side with Boko Haram terror campaign as major security issues bedevilling Nigeria (Vanguard Newspaper, May 29, 2015). Against the backdrop of the increasing significance of environment-induced migration to internal security, a context-based exploration of underlying dynamics will provide useful information, data and policy direction to be considered by national security strategists, policy makers and

other stakeholders. This will enable them initiate conflict-sensitive adaptation plans that are empirically and contextually-grounded.

1.9 Structure of the Dissertation

This research is structured into seven chapters as follows:

Chapter One: Introduction. This chapter presents a background to the problem under study. It discusses the research problem, research questions, key assumptions, approaches, brief insight into the theoretical frameworks within which the study is situated, relevance of the study to the body of knowledge as well as possible limitations and mitigating measures.

Chapter Two—Literature review presents a comprehensive review of prior research, reports, articles, and other relevant textual resource as relates to the subject matter. The chapter begins with a definition of key concepts.

Chapter Three: Theoretical Framework. This chapter deals with the theories upon which the work is rooted, and the operational concepts and terminologies used in the research.

Chapter Four: Background to climate change, resource scarcity and conflicts in Nigeria. The chapter explores climatic dynamics across regions and the socio-contextual factors underpinning vulnerability-conflict connectives, highlighting national and regional contexts. Particular attention is paid to variability in the north and southern regions with a view to identifying the push factors and patterns of movement.

Chapter Five: Research methodology and data analysis. This chapter outlines in detail the method adopted in gathering data in the four spatial areas used as case studies. It also presents the interpretation of collected data, inferences, relationships, and divergences.

Chapter Six: Spatial background study of host communities: It provides a background into the environmental, social, economic and political information on each community used as case study.

Chapter Seven: Summary, Conclusion, and recommendation(s): this chapter summarizes the research, harmonizes deductions, and makes recommendations for individuals, governments, non-governmental actors, researchers and other stakeholders.

1.10 Conclusion

This introductory chapter has highlighted the thematic focus of the study. It presented an insight into the motivation for the work as well as the environment in which the study is conducted as well as the three theoretical prisms upon which analyses in the study will be anchored. It has also defined the basic structural design of the work. The methodology and sample frame has also been laid out as well as the organization of chapters. The next chapter will provide a background to concepts and a review of literature.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter, as a whole, took on two tasks: first it presents a clarification of concepts followed by a review of literature. While the first part—conceptual clarification, presents a background on key concepts in order to offer some insights into their operational relevance in the current study, the second part undertakes a review of literature. The literature review is divided into two sections in order to put in proper perspectives, important gaps between policy and theory in the climate change conflict discourse. The first section critiques dominant scholarly perspectives on the climate change-conflict linkages, namely: (1) climate change-conflict rebuttal, (2) causal affirmation, and (3) climate change-conflict association. The second section undertakes a thematic review of relevant literature highlighting policy driven research findings on various aspects of the climate change-conflict transition process. This section highlights three disparate but well founded linkages in the climate change-human security discourse, namely: (1) climate change and human vulnerability; (2) climate-related vulnerability and human migration; and (3) links between climate-induced migration and conflicts. This section also examines adjunct, but equally important issues emerging from these linkages such as international migration and gender-specific vulnerabilities.

2.2 Definition of Terms

Projections on the security implications of climate change have spurred enthusiasm on the subject from diverse perspectives and across disciplines. Consequently, a multidisciplinary convergence has evolved with scholars examining wide ranging issues on environment and human security. Greenberg and Park (1994: 1) describe one of these sub-fields—Political Ecology as a "historical outgrowth of the central questions asked by the social sciences about the relations between human society, viewed in its bio-cultural-political complexity, and a significantly humanized nature, a common ground where various disciplines intersect".

One of the results of the conflation of varying traditions is a pool of concepts and analytical frames bearing marks of different disciplines with often overlapping or conflicting

interpretations (Fussel and Klein, 2005). Brooks highlights this risk in stressing that researchers "bring their own conceptual models to the study...and often address similar problems and processes using different languages" (Brooks, 2003: 2). In addition to the widening pool of concepts, the emergence of multidisciplinary platforms in the environment-security subfield, according to Brooks, has opened new vistas for broader discourse and new linkages thus making it more imperative that concepts and their interpretations are defined coherently.

2.2.1 Climate Change

Generally, climate change has generated much attention in recent times that many studies take a clear definition of the term for granted. Most studies adopt conceptual models presented in a wide array of technical reports (see IPCC, 2001, 2007; NOAA, 2007; UN-ISDR, 2008; World Nuclear Association, 2014). The Intergovernmental Panel on Climate Change (IPCC) defines climate change as "any change in climate over time, whether due to natural variability, or as a result of human activity" (IPCC, 2007: 21). Put differently, it refers to "observable changes (e.g. using statistical tests) seen in the mean values or properties of the climate, persisting over an extended period of time (a decade or longer) whether caused by natural variability or anthropogenic effects".[23]

While the IPCC definition attributes causality to both natural and anthropogenic agencies, the United Nations Framework Convention on Climate Change (UNFCCC) emphasized anthropogenic causality, in defining climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere, and which is in addition to natural climate variability, observed over comparable time periods" (UNFCCC, 1992: 7). Building upon the anthropogenic focus of the UNFCCC conceptual model, the United Nations International Strategy for Disaster Reduction (UN-ISDR, 2008) defines the phenomenon as the alteration of the world's climate system which results from human activities including, but not limited to the burning of fossil fuel and the

[23] IPCC, Working Group II (2007) "Glossary of Terms", IPCC Fourth Assessment Report: Climate Change 2007, Working Group II: Impacts, Adaptation and Vulnerability. http://www.ipcc.ch/publications_and_data/ar4/wg2/en/annexessglossary-a-d.html

clearing of forests thereby causing an increase in atmospheric concentration of greenhouse gas (GHG).[24]

Some conceptual models highlight technical assessment standards. For example, the National Climate Data Centre (2007) defines climate change as a long term shift in the statistics of weather, including changes in measurable average values such as normal or expected temperature, or precipitation, in a particular place and time, across decadal frame. In the same vein, the United States Climate Change Information Resource centre (CCIR-NYC) describes global climate change as an indication of changes in either the mean measure of the climate or in its variability which persists for several decades or longer, including changes in average weather conditions on earth indicated in such averages as global temperature, regional frequency of heat wave experiences, the occurrence of droughts, floods, storms, and other extreme weather events (CCIR-NYC, 2005).

The World Nuclear Association (2014) attempts a quantitative assessment of climate change, highlighting changes in the composition of greenhouse gases in the lower atmosphere particularly, the steady increase of CO_2 levels to about 400 ppm.[25] The NOAA's Earth System Research Laboratory Global Monitoring Division (NOAA, 2015) puts this contextually in noting that from its May 2013 meteorological reading, daily mean concentration of carbon dioxide in the atmosphere of Mauna Loa, Hawaii[26] surpassed 400 ppm for the first time since data capture began in 1958.[27] Definitions in scholarly research have also borrowed, built upon, or adopted definitions from these technical reports. Hegerl et al. (2007) describe climate change as variations in the mean state of climate on temporal and spatial scales beyond those of individual weather events such as extended drought, floods and conditions that may result from El Nino and La Nina events.

A number of reports show evidence of long term climatic changes for specific locations monitored over time (see IPCC, 2001; Oechel et al., 1993; Parmesan and Galbraith, 2004).

[24] Greenhouse gases (GHGs) "are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds." The primary greenhouse gases include H2O, CO2, N2O, CH4 and O3. IPCC Fourth Assessment Report, Working Group I, Glossary of Terms: http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_Annexes.pdf

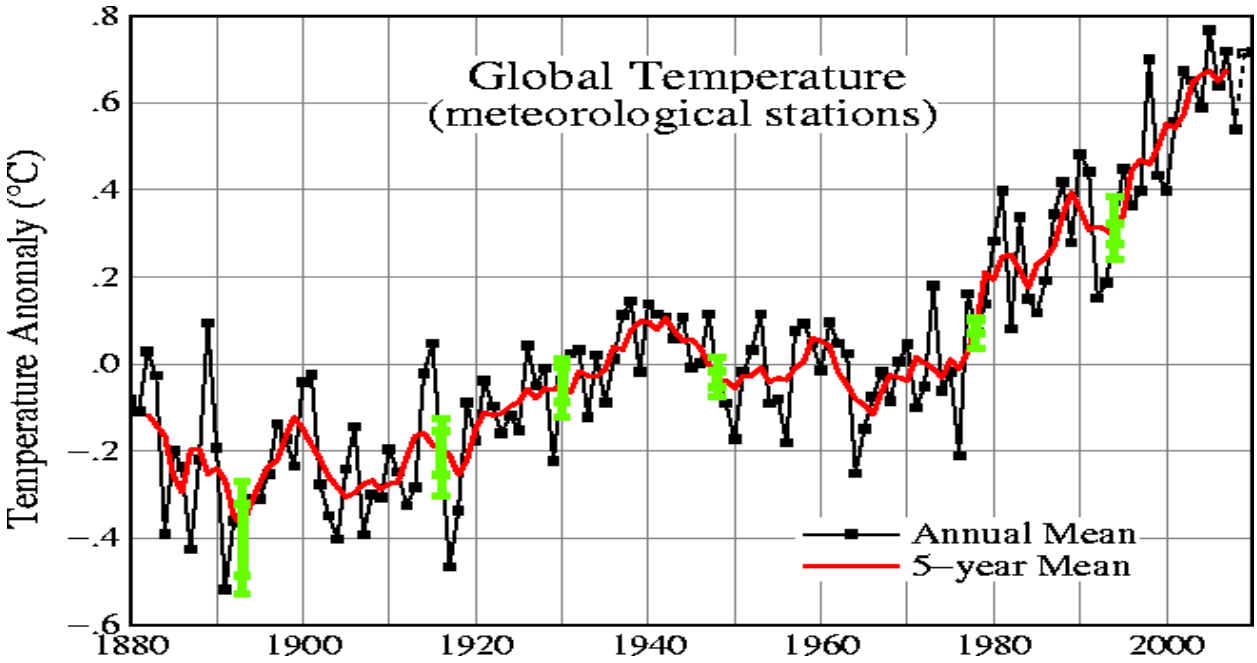
[25] PPM stands for 'parts per million'.

[26] Mauna Lao in Hawaii serves as a primary global benchmark site for meteorological data capture.

[27] The May 2013 reading marked a one-third increase in the last 200 years. Half the increase was recorded in the last 30 years, with ice core samples showing higher levels of carbon dioxide and methane than at any time in the past 650,000 years.

Parmesan and Galbraith (2004: 3) for example, observe that "the United States has warmed during the 20th century by 0.8°C overall, with the greatest increases in temperature occurring at higher latitudes in line with predictions from climate models in use by sources including the IPCC." In parts of Alaska, it is recorded that average annual temperatures have increased by 2-4°C (4-7°F) since 1900—a much higher increase than occurred in most contiguous areas in the United States (Oechel et al., 1993; IPCC, 2001; Parmesan and Galbraith, 2004).

Figure 1: Meteorological temperature data of annual mean and a five year mean indicating anomalies 1880-2010



Source: NASA (2015).

On a global scale, Toulmin (2009) highlights some evidences of climate change and points out that there has been an increase in the concentration of atmospheric CO_2 from a pre-industrial value of about 280 ppm in 1750 to 379 in 2005, as compared to a 20 ppm increase in about 8,000 years before the industrial revolution. While the current CO_2 levels stand at 430 ppm, there is the likelihood of it reaching a 550 level by 2035 with a 77-99 per cent possibility of global temperature exceeding 2ºC. Similarly, In its 2001 report—*The Science of Climate Change*, the Intergovernmental Panel on Climate Change (IPCC) corroborating earlier linkages between increases in the level of greenhouse gasses and global warming, notes that temperatures have risen by about 0.6°C (1.1°F) globally. The IPCC further notes that sea level rise has been occurring globally since the end of the last glaciations with the

current rate still projected to accelerate globally at the rate of 8-88 cm (3-35 in) by 2100 (IPCC, 2001. n. p).

Based on these observations and new scientific readings of the climate system, predictions have also been made on its future dynamics. The IPCC 2001 report noted that global temperature could witness an increase of between 1.4 and 5.8°C (2.5-10.4°F) over the next century (IPCC, 2001). Evans (2012, 3-8) similarly predicted that climate change will result in temperature increases of 1.1-3.1°C by the year 2060, and the changes will impact social and environmental systems through hazards such as excessive heat and the melting of glaciers which will result in secondary impacts including desertification, coastal flooding, land degradation, reduced crop yield, low water availability and food insecurity among others.

2.2.2 Anthropogenic Agency in Climate Change

How does climate change occur? Changes in the climate system occur in two ways: natural variability and anthropogenic activities (National Oceanic and Atmospheric Administration, 2007). Natural climate change or nature-driven variability refers to changes caused by interactions among geophysical elements including the atmosphere, ocean, and land, as well as changes in the volume of radiation reaching the earth's surface, which can be traced from past geological records. On the other hand, anthropogenic (human-induced) climatic change refers to changes resulting from human activities which result into the build-up of greenhouse gasses in the atmosphere.[28] The United States Environmental Protection Agency (2014) identified some common greenhouse gasses to include Nitrous oxide (N_2O), Carbon-dioxide (CO_2), methane (CH_4), and fluorinated carbon contents which trap heat in the atmosphere.

Although some reports emphasize the effects of human interference (anthropogenic factors) as instrumental to the increase in atmospheric greenhouse gas, a good number of literature also document the natural presence of certain amount of greenhouse gasses in the atmosphere. This natural greenhouse gas level they pointing out, is required for the maintenance of a balanced combination of atmospheric gasses which helps sustain life (IPCC, 2001; Scientific American, 2008; United States Environment Protection, 2014). In

[28] Greenhouse gas is any gaseous compound in the atmosphere that is capable of absorbing infrared radiation, thereby trapping and holding heat in the atmosphere. By increasing the heat in the atmosphere, greenhouse gases are responsible for the greenhouse effect, which ultimately leads to global warming. A scientific explanation on the mechanism by which the Greenhouse effect occurs can be found on the IPCC website IPCC (2007) "Climate Change 2007: Working Group I: The Physical Science Basis", IPCC Fourth Assessment Report. http://www.ipcc.ch/publications_and_data/ar4/wg1/en/faq-1-3.html .

this regard, the Scientific American (2008) points out that natural greenhouse gas performed stabilizing functions in the mix of atmospheric gasses, and persisted for nearly 10,000 years prior to recent anthropogenic upsurge which dates back to the last two centuries.[29]

In identifying human activities which contribute to the build-up of greenhouse gasses and ultimately, the changes in the climate system, IPCC (2012) highlights the burning of fossil fuels for the generation of electricity and industrial activities, the felling of trees and the clearing of forests for industrial development and urbanization. The primacy of human agency in the deterioration of the climate system is further highlighted in the United Nation's (UN) definition of climate change under Article 1 of the United Nations Framework Convention on Climate Change (UNFCCC) as earlier noted.

Linking climate change to historical quest by humans, to exploit their environment particularly since the industrial revolution, a report published by the British Parliament notes that anthropogenic climate change accounts for almost 40% more carbon dioxide in the atmosphere compared with periods before the industrial revolution—the highest level so far seen in the last 800,000 years (UK Parliament, 2011). The levels of anthropogenic activities which impact on the climate system vary across regions of the world (UNFCCC, 2007). Ironically, while these aggravating practices occur majorly in the developed world characterized by high levels of industrialization and their consequent high carbon emission levels, poor countries in less industrialized regions of the world across Africa, Latin America, Asia and the small island developing states bear the greater costs of in exposure to risks arising from variability (IPCC, 2007).

It is held that climate change has immense adverse effects not only on ecological systems, but also on social systems and processes with its consequences cutting across regions in varying forms and degrees (Bauhaug, Gleditsch and Theisen, 2008). The fact that climate change mitigation has become a top security issue reflects the broad scope of its impact on sustainable security—a concept now encompassing national security, collective security of states, and human security. It also reflects concerns on the likely increase in hazards events in the absence of mitigation measures (Parson, 2009).

[29] According to the magazine, carbon dioxide concentration rose by about 35 percent above preindustrial levels, Methane level is at roughly two and a half times preindustrial levels, and nitrous oxide levels are around 20 percent higher (See Scientific American, 2008).

2.2.3 Human Security

The word security originates from the Latin word 'securitas' which means "freedom from care, concern, or composure" (Arends, 2008: 263). According to the 2011 edition of the *Oxford Dictionary,* security connotes the state of feeling safe, stable, and free from fear, threat or anxiety (Oxford Dictionary, 2011). By extension, human security may be defined as security with humanity as its focus. Highlighting the human core of the notion of 'human security', Alkire (2003) posits that:

> The objective of human security is to safeguard the vital core of all human lives from critical pervasive threats, in a way that is consistent with long-term human fulfilment. Human security takes its shape from the human being: the vital core that is to be protected. Institutions that undertake to protect human security will not be able to promote every aspect of human well-being. But at very least they must protect this core of people's lives (Alkire, 2003: 2).

Human security emerged at the end of the Cold War, having been informed by transformations in the global political arena, as well as a new awareness on the global nature of emergent security threats (Tsai, 2009). Bajpai observes that the utility of human security in policy circles was informed by the emergence of new challenges which scope extended beyond statist precincts envisaged in classical neorealist paradigms of national security focusing on states' strategic, military and territorial security (Bajpai, 2000).

The concept came into the global policy limelight following the publication of the United Nations Development Programme (UNDP)'s Human Development Report in 1994, in which human security was defined as:

> …[S]afety from chronic threats such as hunger, disease, and repression as well as protection from sudden and harmful disruptions in the patterns of daily life – whether in homes, in jobs or in communities', and as the totality of economic security, food security, health security, environmental security, personal security, community security and political security (UNDP, cited in Dokos, 2008: 68).

According to Paris (2001), the aftermath of the Second World War and the Cold War informed the need to re-examine the focus of conventional security. Hence, the observation in the UNDP report, that the concept of security "has for too long been interpreted narrowly: as security of territory from external aggression, or as protection of national interests in foreign policy or as global security from the threat of nuclear holocaust...Forgotten were the

legitimate concerns of ordinary people who sought security in their daily lives" (Paris, 2001: 89).

With the publication also coinciding with the semi-centennial of the United Nations (UN), a review of security was considered timely in ushering in a new phase in the United Nations mandate based on the understanding that the world will never be at peace unless people have security in their daily lives. This view was informed by increase number of conflicts within, rather than between nations—a pointer to the ineffectiveness of statist security paradigms of security relying on the acquisition and use of arms military hardware (UNDP, 1994: 1-2). Concerns about the implication of intrastate conflicts in the post-Cold War era were captured by the former United Nations Secretary-General, Koffi Annan who argued that "in the wake of [such intra-state] conflicts, a new understanding of the concept of security is evolving, once synonymous with the defence of territory from external attack, the requirements of security today have come to embrace the protection of communities and individuals from internal violence".[30]

Annan stated further that the building blocks of human and national security are interrelated, encompassing the reduction of poverty, economic growth, conflict prevention, the protection of the freedom of future generations to inherit a healthy natural environment, general freedom from want, and fear. He sees human security as a concept which in its broadest sense, embraces far more than the absence of violent conflict, one which encompasses human rights, good governance, access to education and health, and ensuring that each individual has opportunities and choices to fulfil his or her potential.[31] With this understanding, the 1994 report expanded the scope of security concerns from its traditional statist preoccupation, to accommodate emerging security realities of the post-Cold War era (Shinoda, 2004).

The 1994 report identified seven core elements of human security namely: economic security, food security, health security, environmental security, personal security, community security and political security (IIHR, 2010).[32]

[30] Koffi, Annan, at the presentation of the United Nations Millennium Report, August 22, 2001.
[31] Kofi Annan at an International Workshop on Human Security in Mongolia, May 8-10, 2000.
[32] Paris (2001) explains each of these elements accordingly: (1) economic security entails freedom from poverty; food security i.e. availability of, and access to food; (2) health-relate security entails people's access to adequate health care and protection from diseases; (3) environmental security refers to protection from environmental harm such as pollution, environmental degradation and depletion; (4) personal security entails physical safety from personal harms such as torture, war, criminal attacks, domestic violence, drug use, suicide, and even traffic accidents; (5) community security concerns the survival of traditional cultures and

Table 1: Aspects of Human Security and Associated Threats

Possible Types of Human Security Threats	
Type of Security	Example of Main Threats
Economic security	Persistent poverty, unemployment
Food security	Hunger and famine
Health security	Deadly infectious diseases, unsafe food, malnutrition, lack of access to basic health care.
Environmental security	Environmental degradation, resource depletion, natural disasters, pollution
Personal security	Physical violence, crime, terrorism, domestic violence, child labour
Community security	Inter-ethnic, religious and other identity based tensions
Political security	Political repression, human right abuses

Source: IIHR (2010).

As a key item in the human security priority in the post-War era, environmental security occupies a prominent position in contemporary human Security agenda since the safety of human and other biological inhabitants is contingent upon ecological safety and environmental sustainability (Conley and Werz, 2012). Hence scholars agree that threats arising from climate change pose great risk to human security (Onuoha, 2010; Wyk, 2010). It is against this backdrop that the Intergovernmental Panel on Climate Change (IPCC) describes human security as relating to the maintenance of the essential core of human lives, including the universal and culturally specific, material and non-material elements necessary for the pursuit of human interests and dignity. This condition, according to the IPCC, is met only "when vital cores of human lives are protected, and when people have the freedom and capacity to live with dignity" (IPCC, 2012: 15).

While contemporary discourse on climate change-conflict linkages derive from the broadening of security, awareness on the social impacts of environmental change dates as far back as 1798, having gained attention with the publication by Thomas Malthus (1766—1834)

ethnic groups as well as the physical security of these groups; and (7) political security which entails the enjoyment of civil and political rights, and freedom from political oppression (Paris, 2001: 87-92).

of his classic—*Essay on the Principles of Population*. Within the scope of the 20th century, Barnett (2007) traces current concern on climate change and human security to Falk's 1971 publication—*This Endangered Planet* in which he argued that ''there exists an inverse relationship between the interval of time available for adaptive change and the likelihood and intensity of violent conflict, trauma, and coercion accompanying the process of adaptation'' (Barnett, 2007: 2). In effect, Falk posits that "the faster the rate of change, the less time to adapt, and the more dangerous climate change impacts are likely to be" (Falk, cited in Barnett, 2007: 7). This postulation may be considered as the first law of ecological politics providing historical template for the current global climate change mitigation and adaptation agenda.

Another important linkage between climate change and security is found in Lester Brown's *Redefining National Security* published in 1977 which focused on the impact of climate change on food security. Brown's main argument is that changes in the climate system presented challenges that were insurmountable through conventional military engagement, making disarmament and budgetary reallocations necessary for combating its security challenge (Barnett, 2007). By 1989, it was already accepted that ''sustainable security...rests crucially on an active and creative participation in the politics of the world's predicament [of environmental change]'' (Barnett, 2007: 8). Similarly, the publication of the World Commission on Environment's report titled *Our Common Future* in 1987 marked the official recognition of the term 'environmental security' (Dalby, 2009), heralding the replacement of global nuclear warfare security threats with environmental concerns since both possessed similar characteristics: their global scope and potential for devastating effects on security (Barnett, 2007).

In more contemporary connections, the United Nations Framework Convention on Climate Change identified a range of climate-related hazards, especially those categorized as slow onset events. These events which include drought, desertification, sea level rise, land and forest degradation, loss of biodiversity, extreme increase in temperature, ocean acidification, glacial retreat, etc according to the agency constitutes threats to human livelihood and security (UNFCCC, 2012). Besides the 1994 report, the imperative of human security was further amplified at the Millennium Summit of September 2002, and with the publication of the United Nations Commission on Human Security report—*Human Security Now* in the

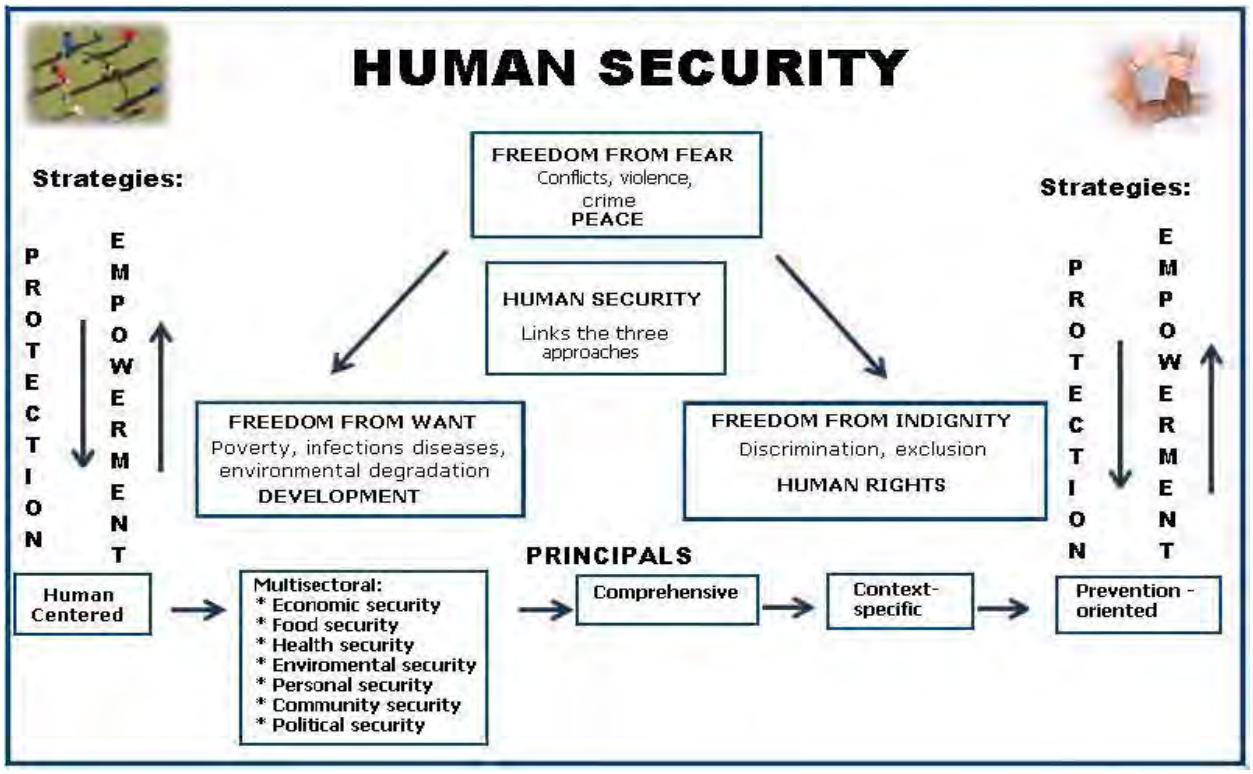
following year. The report highlighted further the priority on humanity as the core of the new global security focus in its definition of human security. It states that:

> [H]uman security means protecting the vital core of all human lives in ways that enhance human freedoms and human fulfilment. Human security means protecting people from critical (severe) and pervasive (widespread) threats and situations. It means using processes that build on people's strengths and aspirations. It means creating political, social, environmental, economic, military and cultural systems that together give people the building blocks of survival, livelihood and dignity (IIHR, 2010: n.p).

The Inter-American Institute for Human Rights identified Strategies of action which has shaped global policy on human security namely: protection and empowerment as promoted by the United Nations Commission on Human Security (UN-CHS). While protection entails strategies set up by states, NGOs and international organizations or agencies as well as the private sector, toward providing a shield against menaces that threaten people's security, empowerment refers to strategies that enables people build resilience in the face of difficult situations and challenges including climate change (IIHR, 2010: n.p).

Elaborating further, the IIHR explains that protection on one hand, entails putting in place "top-down" strategies which considers and accommodates threats that are beyond the control of individuals such as natural disasters, financial crises, and conflicts etc, as well as applying systematic and comprehensive preventive measures for their protection as a primary responsibility of the state to be enhanced by other actors such as civil society, international bodies and non-governmental organizations. On the other hand, empowerment implies a "bottom-up" strategy towards developing the capacity among communities and individuals for making informed choices and taking effective actions by themselves, thereby realizing not only, their full potential, also becoming capable of participation in the design and implementation of solutions towards enhancing security for themselves and for other people. The combination of protection and empowerment helps in realizing the people-centric and multi-sector principles of human security (See chart) (Ibid).

Figure 2: Protection and empowerment as strategies for enhancing human security



Source: IIHR (2010).

The advocacy for human security has been challenged for its ubiquity and all-encompassing approach to security. Some studies argue that human security suffers for the infiniteness of its overambitious and all-encompassing objectives (Baechler, 1999; Shinoda, 2004; Human Security Initiative, 2011). Its criticism notwithstanding, human security remains at the heart of contemporary international policy and action on security.

2.2.4 Vulnerability

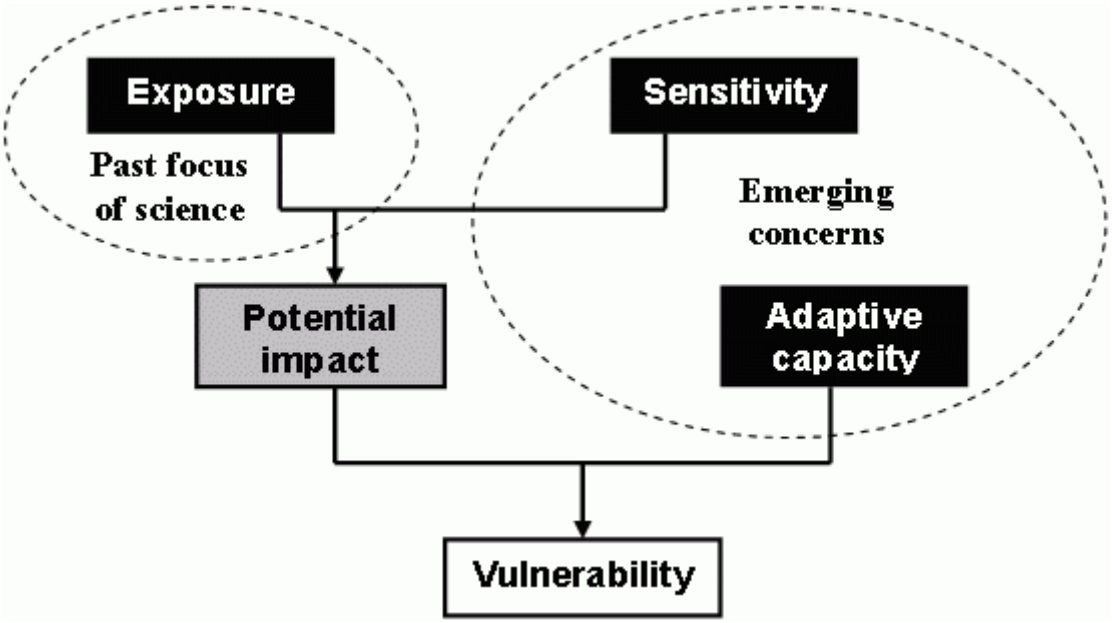
Vulnerability is central to climate change impact assessment because it conveys the various levels at which people and communities across regions are affected by its adverse effects. Given the many applications of the concept, its meanings have varied in different research contexts (Fussel and Klein, 2005). Cutter et al (2009) observe that the term 'vulnerability' has elicited wide interest across disciplines, and as such, is subject to divergent definitions. In their view, vulnerability refers to "the susceptibility of a given population, system, or place to harm from exposure to hazard, and directly affects [concerns] the ability to prepare for, respond to, and recover from hazards and disasters" (Cutter et al 2009: 2-3). It is in this light that Jones (2010) describes vulnerability simply, as the possibility of being harmed.

Similarly, the IPCC in its Fourth assessment Report (2007) describes vulnerability to climate change, as the degree of susceptibility of geophysical, biological and socio-economic systems to the adverse impacts of climatic variability. The report puts it thus:

> Vulnerability to climate change refers to the propensity of human and ecological systems to suffer harm, and their ability to respond to stresses imposed…The vulnerability of a society is influenced by its development path, physical exposures, the distribution of resources, prior stresses and social and government institutions (IPCC Fourth Assessment Report, 2007: 720).

The IPCC's definition highlights three critical elements in vulnerability assessment: first, the element of sensitivity which relates to the extent to which a system responds to certain changes in the climate system, including its beneficial or harmful effects. Second is the system's (or its population's) adaptive capacity which refers to the degree to which adjustments in processes, structures, or practices can be made in order to moderate or offset the potential for damage occasioned by the changes in the climate. Adaptive capacity also includes the possibility to reverse the negative impacts of variability by taking advantage of the situation created by a climate change event. Lastly, it is a function of the exposure of the system to climatic hazards which speaks to the scale of physical susceptibility (IPCC Fourth Assessment Report, 2007: 89). Smith, Lynam and Preston (2010) put this graphically thus:

Figure 3: Determinants of vulnerability



Source: Smith, Lynam and Preston (2010).

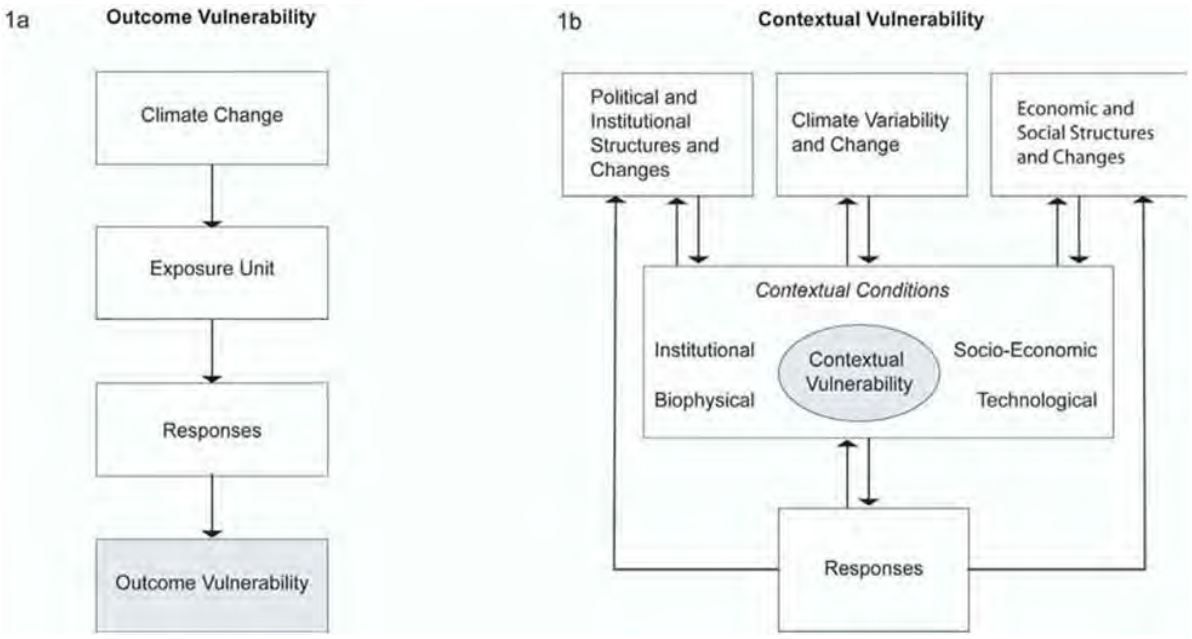
According to the IPCC's definition, a system is highly vulnerable when it is very sensitive to modest changes in climate, and where such sensitivity includes the potential for substantial harmful effects, against which it has a severely constrained ability to adapt. On the other hand, resilience implies the opposite of vulnerability in that resilient systems or population have the capacity to adapt to changing climates thereby becoming less sensitive to its expected hazards (IPCC Fourth Assessment Report, 2007: 89). It is in this light that the IPCC in its 2014 report identified resilience building as a strategy for reducing vulnerability (IPCC, 2014). In the 2008 report, the IPCC further notes that although exposure to variability is inherent in all societies, the level of sensitivity—the capacity to contain variability varies across societies, regions or and countries (Ibid).

O'Brien et al. (2007) identify two forms of vulnerability that has emerged from different approaches to framing the climate change problem. Their study makes a distinction between outcome vulnerability and context vulnerability. Outcome vulnerability in this purview, is seen as a "linear result of the projected impacts of climate change on a particular exposure unit (which can be either biophysical or social), offset by adaptation measures...where the result of the analysis is an outcome that can be attributed to climate change" (p. 76). On the other hand, contextual vulnerability is derived from a 'processual' and multidimensional view of interactions between climate system and the society in which both climate variability and change are viewed as occurring "in the context of political, institutional, economic and social structures and changes, which interact dynamically with contextual conditions associated with a particular exposure unit" (O'Brien et al., 2007: 76). While the first is linked to scientific or pedagogic framing of vulnerability to climate change, the other is associated with a human security framing of which views climate change from a perspective of its context-defined sensitivities. In essence, these two frames emphasize different knowledge system as well as different policy responses towards addressing the challenges associated with climate change.

This analysis suggests that there is a cross-related system of interaction between the changing biophysical condition as well as the context of vulnerability in the sense that contextual conditions shape and is in turn, shaped by the level of exposure to variability. Contextual vulnerability therefore takes into account the fact that climate change effects modifications in the biophysical conditions, which further alters the context and capacity for response to other changing processes such as economy or political structures. As such, a reduction in

vulnerability would involve effecting changes in the context in which climate change occurs such that individuals and groups are better able to respond to the changing conditions

Figure 4: Frameworks depicting two interpretations of vulnerability to climate change



Source: O'Brien et al. (2007).

O'Brien et al (2007) build upon a two-way analytical approach proposed by Kelly and Adger (2000) in which vulnerability is viewed as either 'end-point' or 'starting-point'. An end-point approach sees vulnerability as an end point in a chain of sequential analyses which starts from the projections of future trends in greenhouse gas emission, to the development of climate scenarios, to studies of biophysical impacts, then to the identification of options for adaptation, the starting point approach, on the other hand, views vulnerability as "a present inability to cope with external pressures or changes, which in this case is changing climate conditions" (Kelly and Adger, 2000: 326). Vulnerability viewed from this prism, is a characteristic of social and ecological systems resulting from multiple factors.

Rose (2010) identified ethnographic factors which may influence climate change vulnerability, and argues that nations characterized by tribal identities will likely face the most impacts from climate change due to several factors which disadvantage those societies relative to non-tribal societies facing similar exposures. Some of these factors include long-standing close linkage between people, their livelihoods and their land or other natural resource. According to CNA (2007), climate change, as a threat multiplier, exacerbates

vulnerabilities by adversely affecting the supply and distribution of natural resources, one with the capacity to aggravate instability in some of the most volatile regions of the world. Such societies, argues Rose, are also marked by ecosystem-dependent capitals or limited non-diversified economic bases, leaving populations highly exposed to climate shocks. In addition, they are further constrained by poor technological innovation as well as the practice of subsistence level of production activities such as farming or fishing at communal levels (op cit). Obioha (2008) corroborates Rose's position by highlighting the relevance of the interpolation of ecological cum cultural factors to incidences of violent conflict over land and natural environment resources in the north-eastern part Nigeria and across other states in Nigeria. Conflicts such as the Tiv/Jukuns and other groups across Benue, Taraba and Nasarawa which culminated in over 200 civilian deaths in October 2001 were based on similar tribal and ethnic grounds as climate change shifts ethnic and cultural balances (Folami and Folami, 2013).

Assessing vulnerability often involves analyzing expected impacts, risks and the capacity of a region or sector to adapt to the effects of climate change (European Climate Adaptation Platform, 2014). As such, analyses of actual or potential impacts on Africa, Asia and Latin America indicate that marginalized, primary resource-dependent populations are more vulnerable to risks of adverse effects due to high reliance on climate sensitive resources for livelihood compounded by systemic challenges ranging from ineffective political institutional capacity to overpopulation (Leary et al., 2006; Leary and Kulkarny, 2007). The linkage between natural resource dependency and vulnerability is amplified by Barnett and Adger who point out that:

> The vulnerability (potential for loss) of people to climate change depends on the extent to which they are dependent on natural resources and ecosystem services, the extent to which the resources and services they rely on are sensitive to climate change, and their capacity to adapt to changes in these resources and services. In other words, the more people are dependent on climate sensitive forms of natural capital, and the less they rely on economic or social forms of capital, the more at risk they are from climate change (Barnett and Adger, 2007: 641).

Barnett and Adger (2007: 643) note however, that environmental change does not undermine human security in isolation. Vulnerability to climatic stress feeds into broader social, political and social factors including but not limited to a high poverty level, a low level of social, institutional or political support to affected communities, the level of access to economic

opportunities, the character and effectiveness of decision making processes, the degree of social cohesion within and surrounding vulnerable groups all of which inform the degree of community resilience in the face of climate change.

Brooks (2003), highlighting the dynamic nature of human and ecological systems in vulnerability assessment, argues that a meaningful discourse on vulnerability must address a specified system, and in relation to a specified hazard or range of hazards. Brooks groups definitions of vulnerability as presented in the climate change literature into two categories: definitions which view vulnerability in terms of the amount of (potential) damage caused to a system by a particular climate-related event or hazard; definitions which view vulnerability as the state or condition existing in a system before a climate hazard event.

Building upon the usage of the term by the Intergovernmental Panel on Climate Change (2007), Brooks distinguishes between biophysical and social vulnerability. According to Brooks, biophysical vulnerability refers to the ultimate impacts of a hazard event measured in terms of the amount of damage on a system as a result of a climate hazard. This includes such indicators as monetary cost, human mortality, production costs or ecosystem damage all of which indicate outcome of a climate hazard rather than of the state of affairs in a system prior to the impact of a hazard event. On the other hand, he describes social vulnerability as vulnerability determined by subsisting social factors which predispose people to greater or lesser exposure. Such factors may be socio-economic: level of poverty and inequality, availability of, and access to food, the state of innovation or technology, the pattern of resource distribution, access to insurance against hazards, quality of housing, among others (Brooks, 2003: 3-4).

Brooks maintains that having a proper grasp of these factors is crucial to mapping social exposure and identifying the most vulnerable segments and members, as well as in examining variations in vulnerability levels between or within spatial units in the event of exposed to similar hazards. In line with Brooks' suggestion on context-specific interpretation of vulnerability, Downing and Patwardhan (2003) identify a number of dimensions from which vulnerability may be explained including: the source of vulnerability i.e. the threat to which a system is vulnerable; the region affected by such vulnerability, the impact on specific sectors, the population group and the implications, as well as the time frame of vulnerability.

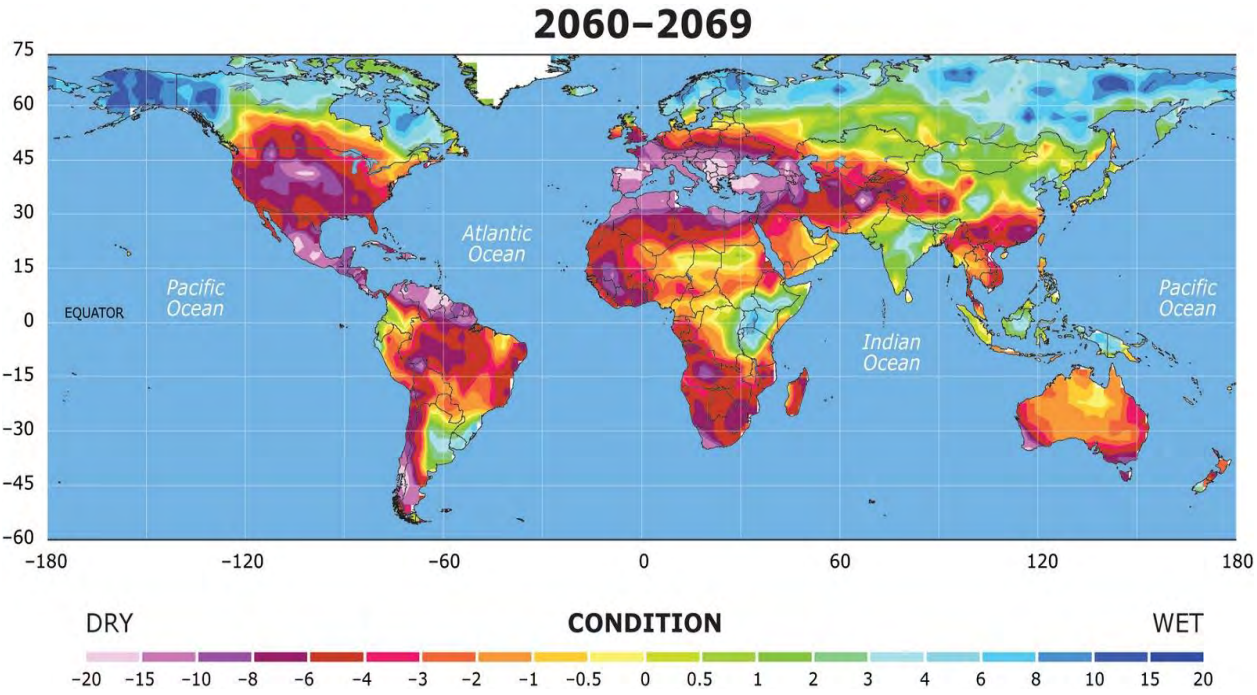
Highlighting the importance of the case-specific approach to vulnerability evaluation, Vogel et al. (2007) describe contextualization as "the key to producing science for public ends" (Vogel et al., 2007: 352). They argue further that "[s]cience that draws strength from its socially-detached position is too frail to meet the pressures placed upon it by contemporary societies. And instead, they suggest forms of knowledge that would "gain robustness from their very embeddedness in society" (p. 352). Similarly, Fussel and Klein (2005) describes climate-related vulnerability based on the characteristics of the vulnerable system, highlighting such dimensions as the type and number of stressors, their root causes, their effects on the system, and the time horizon of the assessment. In general, social vulnerability focuses explicitly on factors of demography and socio-economic variables that may increase or attenuate the impacts of hazard events on local populations (Heinz Center 2002; Tierney et al. 2001). In other words, it addresses the question: who is at risk, and the degree of harm to which they are exposed.

While exposure to climate change cuts across regions, levels of vulnerability to climatic exposure has also been defined by factors peculiar to each region or society informed by the level of adaptability to changes in the environment, hence less developed countries where capacities for adaptation are limited are generally exposed to greater extents compared with their developed counterparts (Leary and Kulkarni, 2007; Mertz, Halsnes, Olesen and Rasmussen, 2009; Tadesse, 2010). Buttressing this view, the United Nations identified least developed countries (LDCs) and Small Island states (SIDS) as particularly vulnerable to climate hazards. It pointed out that every developing country will face additional challenges, including challenges regarding the domestication of international mandates such as the Millennium Development Goals (MDGs) (United Nations, 2008).

Leary and Kulkarni (2007) explain that the level of vulnerability to climate change will be higher in developing countries as a result of social, economic and environmental conditions that amplify susceptibility to its adverse impacts, or a lower capacity of vulnerable populations to cope with climate-related hazards. This perhaps explains Carter and Jones (2007) argument that a proper grasp of the implications of vulnerability will depend on thorough understanding of the peculiarities of the context in which it is experienced. The higher level of exposure in developing regions is further heightened according to the authors, by the fact that most developing countries are located in low latitude areas where they are

projected to be more susceptible to climatic hazards than countries in higher latitudes (Leary and Kulkarni, 2007: 9-25).

Figure 5: Regional projection on vulnerability to drought due to global warming



Source: Dai (2011).

According to Olufemi and Samson (2012), the degree to which socio-economic systems in vulnerable societies are likely to be affected by adverse effects of climate change are functions of three factors which include: (1) the level of vulnerability assessed in terms of the extent to which societies are dependent on natural resources and ecosystem services; (2) the extent of sensitivity of these resources and services that societies to changes in climate; and (3) the adaptive capacity of the such a society to changes in the quantity or quality of those resources and services.

2.2.5 Risk and Climate Change

Closely related to vulnerability is the concept of risk. In recognition of the high risk potentials of climate change, Leary and Kulkarni (2007) argues that understanding risk reduction is critical to alleviating climate relate vulnerability. The term risk is used variously in the

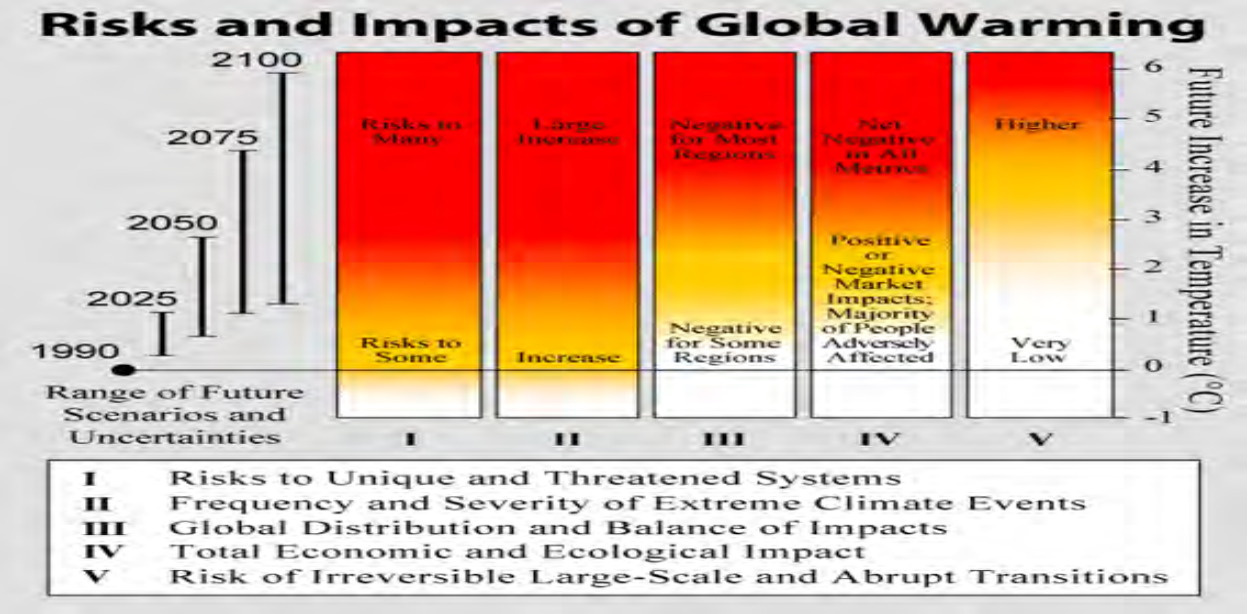
literature depending on the disciplinary orientation of the writer[33]. In relation to climate change, it refers to potential threats which arise from changes in the natural conditions and processes of the weather as well as the potentially adverse effects that these changes have on social and ecological systems (Scott et.al, 1990). Risks in climate change studies often receive attention because it accentuates potential harm and evokes the feeling of danger especially for the developing world (Leiserowitz, 2005; Lorenzoni, Pidgeon, and O'Connor, 2005).

The German Advisory Council—WBGU, in its 2008 report titled 'Climate Change as a Security Risk' maintains that if no resolute counteractive measures are put in place, the capacity to adapt in many societies will be overstretched by climate change in a couple of decades to result in massive destabilization, outbreak of violence and threat to security at both national and international security levels (WBGU, 2008). Presenting the climate change risk issue within a statistical prism, the Intergovernmental Panel on Climate Change (IPCC) projected that between 74 and 250 million people will be at risk from a climate-induced crisis by 2020 as a result of water shortages in Africa and Asia (IPCC, 2007: 10).

The element of potentiality is highlighted in Australian Greenhouse Office definition of risk as "a combination of the likelihood of an occurrence, and the consequence (s) of that occurrence" (Austrailan Green House, 2007: 18). Uncertainties and probability of risks in the context of climate change arise from the constraints in having full information on the extent of impact that climate events, as well as lack of capacity for precise evaluation of social vulnerability across different regions (p. 18-19).

[33] The Food and Agricultural Organization presented a quantitative assessment of risk as a mathematical function comparing frequency and vulnerability in an effort to address what it describes as the incoherence in the application of the term risk. (See FAO, 2014).

Figure 6: Risks and impact of Climate Change



Source: NASA (2015).

World Economic Forum (WEF) in its *Global Risk Report 2014*, observe that climate change presents one of the most sensitive risk factors. The report describes climate change as a global systemic risk which respects no national boundaries, and which, if not effectively addressed, would have far-reaching social, economic and political implications (WEF, 2014: 10). According to the report, global risk refers to:

> […] an occurrence that causes significant negative impact for several countries and industries over a time frame of up to 10 years. A key characteristic of global risks is their potentially systemic nature – they have the potential to affect an entire system, as opposed to individual parts and components (WEF, 2014: 12).

There have been attempts at categorizing climate-related risks. The International Organization for Migration (2008) identifies two forms of climate risk—namely climate process, and climate events. While climate process relates to gradual risks such as drought or desertification, climate event refers to sudden onset events like floods (IOM, 2008). In the same vein, Jones (2010) characterizes risk in two ways: (1) a concept relating to an event or set of events with potentials negative outcomes on certain set of values, and (2) an event envisaged within a timeframe of potential incidence.

Jones' two-part characterization of risk as the probability of a hazardous event, or the probability of negative outcome from an event builds upon the dichotomy between event risk

and outcomes risk in Sarewitz et al (2003). Sarewitz et al define event risk as the probability that a particular hazard or extreme event occurs, while outcome risk speaks to the chances that a particular outcome follows a hazard event. As such, outcome risk to them, combines system capacity or characteristics with the chance of an event occurring and resulting in losses. From the foregoing, it may be inferred that climate related risk entails speculative elements of hazards that may arise from geophysical, socio-economic, political or cultural exposures to climate change, which directly or indirectly or combined, engender negative anticipation in vulnerable populations.

2.2.6 Adaptation and Mitigation

Adaptation and mitigation of climate change effects on human and ecological systems are among top priorities in environmental security policy circles as global policy actors regard these as central to human security in the face of climatic variability. Gonzalez, et.al (2010) describes adaptation as adjustments in natural or social systems in order to cope with actual or expected climatic stimuli, towards moderating their harmful effects, or exploiting the beneficial opportunities that may be presented by such events. This conception builds upon the IPCC's Fourth Assessment Report (IPCC, 2007) which describes adaptation as the "reduction of risk and vulnerability through adjustments in practices, processes and capital in response to the actuality or threat of climate change, often involving changes in the decision environment, such as social and institutional structures" (p. 28).

A major highlight of this notion of adaptation is that it is influenced by social and structural systems. This connection is also well noted as not a few studies recognise adaptation as involving structural or procedural changes aimed at moderating or offsetting potential dangers (Brody et.al. 2008; Denton, 2002; IPCC, 2014; Wolf, 2011). A systems adaptive capacity therefore depends on the effectiveness of its structures and how they function in shaping its adjustment--coping capacity when confronted with climatic changes. This capacity is influenced by a range of other factors including the state of technological innovation, the prevailing capacity and distribution of the socio-economic capital, the level of, and access to information, the level of skill and education among the population, the availability of infrastructure and critical services, as well as the capacity of the political and administrative system to render adaptation support services (Homer-Dixon, 1996; Kolmannskog, 2008; Smith and Pilifosova, 2001).

According to Jones (2007) adaptation is influenced by a wide range of situational or context-related factors because it is location-specific. As such, it is informed by factors relating to 'where' (where is the specific areas of interest or the affected locality); 'what' (the risk to which adaptation need arises i.e. flooding, drought, dunes, etc); the question of 'who' (the stakeholders including the assessing body and the affected population, communities or region in relations to whom vulnerability is assessed); 'why' (the conditions which underlie the vulnerability and why there is a need to manage such risks); and 'how' which answers question relating to what extent, the level of, as well as the best method of vulnerability risk management (p. 12). In addition, Jones suggests a conditional 'what if' forecast scenario since, according to him, adaptation is a social process to which learning is crucial for future action.

On the other hand, mitigation refers to any action taken to permanently eliminate or reduce the long-term risk and hazardous impacts of climate change on human life or property (Global Greenhouse Warming, 2015). According to the Intergovernmental Panel on Climate Change, mitigation refers to any anthropogenic intervention towards reducing the sources of, or enhancing the sinks of greenhouse gases (IPCC, 2001). While mitigation addresses the causes of climate change, adaptation tackles its effects.

It is also widely acknowledged that a successfully implemented adaptation plan can help reduce population vulnerability by building on and strengthening existing coping strategies (Brisley, Welstead, Hindle and Paavola, 2012). Hence it is believed that the more there is in mitigation, the less impact to which adjustments will need to be made, and the less in anticipated risks and vice versa (Global Greenhouse Warming, 2015). Policy interventions are as such, best adapted to the circumstance of particular area in order to fashion appropriate responses since adaptation needs are mostly context-specific (Denton, 2002)..

2.2.7 Adaptive Capacity

Adaptive capacity refers to the potential or actual ability of a vulnerable system to adjust and minimize the negative impacts, or to exploit the conditions created by climate changes. Closely linked to vulnerability, adaptive capacity is influenced by the nature of vulnerability, the availability and capability to deploy socio-economic and political intervention for adaptation in affected system. Variations in the mobilization of these requirements often define the level of adaptation success in affected systems. Hence studies employ "ingenuity"

in describing different social and technological innovative measures and support system brought to bear in different intervention processes in mitigating the adverse effects of climate change (Homer-Dixon, 1999; Kolmannskog, 2009; Bauhaug, Gleditsch and Theisen, 2008).

Homer-Dixon (1999) for example, emphasizes the role of knowledge and ideas, or the lack of these, in societies' ability, or failure in adapting to environment-related scarcity. In his view, ingenuity refers to the combination of capabilities in knowledge and technology which "a society must be able to supply enough ingenuity at the right places and times" in order to cope effectively with environment-induced scarcity (p. 107). Further discernible from this viewpoint is the fact that both elements of technical ingenuity for example technological innovation in agricultural processes to compensate for environmental loss, as well as social ingenuity like the availability of appropriate policies, institutions and organizations, will combine in shaping adaptive capacity. In societies where these conditions are in deficit, there is an "ingenuity gap" leaving such societies vulnerable to the most pernicious effects of environmental change (ibid).

Poor regions of the world unable to mobilize sufficient elements of ingenuity to mitigate the adverse effects of climate change will bear the most negative impacts. For example the use of traditional methods in agricultural systems, as well as poor political and administrative structures and policies will hamper interventions which may help compensate for reduced resources. This situation according to the authors, will define adaptive capacity differentials between the advanced and developing countries because "poor societies having less adaptation buffers in resources, technologies, or resilient infrastructures such as irrigation systems" (Bauhaug, Gleditsch and Theisen, 2008: 25).

2.2.8 Climate-induced Migration

There is broad affirmation in the literature on the effect of climate change on human migration (see for example: Barnett and Webber, 2009; Gomez, 2013; Laczko and Aghazarm, 2009; Foresight Project and Government Office, 2011). Bauhaug, Gleditsch and Theisen (2008) noted that migration could be both a cause and effect of deteriorating environmental situations and identified certain indices and typologies based on rate, duration as well as the motive of migration (p. 26). Scholars often view migration as comprised of three types, namely: (1) rapid or gradual migration which pertains to the speed of occurrence of the environmental push or pull events; (2) permanent or temporary migration which speaks

to the nature of the hazard event experienced since alterations resulting from sudden on-set events and natural disasters like flooding and hurricane for example, are more likely to cause temporary forms of displacement; (3) long or short distance migrations distinguishing between those who move far away from affected areas enough to avoid immediate risks and those who embark on long travel in an attempt to find safe settlements.

Questions often arise about the significance of climatic factors in the actual decision to move. Distinctions are made for example in certain situations when populations have no choice besides leaving the risk-prone areas on one hand, and situations of the more conventional migration with minimal or less certain climatic influences may be adjudged not a necessarily a sole basis for the decision to migrate. Bauhaug et al (2008) notes for example, the varying levels of potential climatic risks for populations living in small island-states who are more likely to be forced to relocate ultimately in the event of greater concerns about projected rise in sea-level. On the contrary, inhabitants of regions undergoing increasing drought may adopt less collective migratory measures in their response. In addition, there are often a convergence of numerous and overlapping factors from the environmental, political, and economic which may act as push or pull factors in sending and receiving areas respectively, and further influencing the likelihood of deciding whether, where, and when to move (p. 26).

In general, studies identify two patterns of migration corresponding to the nature of impact. In areas affected by primary exposure to physical impacts from climate change including drought, flooding, desertification etc as highlighted above, the urge to migrate as an adaptation measure is regarded as primary. In other words, when a decision to move is informed by direct exposure to environmental change, such movements are classified as primary environmental migration. On the other hand, when the impetus to migrate derive from indirect or secondary impacts such as population reactions to consequences of population influx in receiving communities, the destruction of farm inputs or insecurity arising from increased contestation over resource, the decision to move is regarded as secondary to climate pressure.

For the purpose of this study, climate-related migration is categorized into two types: primary and secondary forms of climate-induced migration. Inferences from a number of studies on the climate change-migration nexus provide loops to the different ways in which the decision to migrate may fit into the primary or secondary typologies. These categories derive from the nature of climate change impact motivating movement among the affected population as used

by the Asian Development Bank (2009). The ADB classified climatic impacts into three: (1) primary impacts (resulting directly from changes in geophysical climatic patterns); and (2) secondary impacts (relating to changes in environmental systems resulting from primary impacts); and (3) tertiary impacts (broader impacts on societal systems, including the implications for migration patterns, and the implications of potential policy responses by governments). In terms of human movements therefore, we take into account, the form of exposure which informs the decision to move, i.e, either that the decision to migrate is a function of exposure to geophysical pressure, or from exposure to socio-demographic pressures arising occasioned by geophysical pressures.

2.2.9 Conflict

The word conflict is applied in different contexts, and as such, require some explication or a working definition. According to Chaphin (1979), conflict refers to "the simultaneous occurrence of two or more mutually antagonistic impulses or motives". In the same vein, Wilson and Hanna (1979) conceive of conflict as a "struggle involving opposing ideas, values, and or limited resources". Carl Deutsh (1973) unbundles it in behavioural terms as an action which interferes, injures, prevents, obstructs, or renders ineffective another action considered incompatible. In essence, conflict refers to the occurrence of dispute, disagreement, or controversy that may take the form of ideas, viewpoints or value interests between two or more individuals or groups, which results in a disharmonious interpersonal or intergroup relationship or in extreme cases, violent show of aggression.

Deutsch's (1973) and Wilson and Hanna's (1979) works both highlights seven causes of conflict one of which is the struggle for control over scarce natural resources that are essential to survival. This form of conflict may result from drought and desertification as livelihood systems such as pastoral people who will be affected by associated resources depletions may push into new areas in their attempt to find alternative sources. Homer-Dixon (1990) however warns that causation between environment and conflict is very indirect as "there are many causal steps between a specific environmental stress and a specific kind of conflict. However, the underlying influence of environmental factors, although perhaps not quantifiable, may be great" Homer-Dixon, 1990: 5).

2.3 Literature Review

2.3.1 Harmonizing Concepts and Contexts in the Discourse

In comparison with the near-unanimous epistemological appreciation of the geophysical impacts of climate change, discourse on its security implications has been marked by intense controversy (Adano et al, 2012). One reason often adduced for this controversy is the array of interwoven factors—from social, economic, political to cultural, which shape social exposure, vulnerability, and define societies' responses across different settings. More so, exposure to environmental risks and hazards vary across space since vulnerabilities are defined by social peculiarities across social systems. As a result, diverse narratives exist in attempts to explain or address human security implications of environmental change across settings.

Establishing the link between climate change and conflict has therefore remained one of the most controversial aspects in climate change and human security discourse. Toll and Wagner (2010) attribute the lack of consensus on this linkage to the absence of adequate research either in supporting or refuting climate change-conflict claims. Ongoing debates on the climate change-conflicts nexus relate to the establishment of causal trajectories, pathways, and linkages between climate change and conflict, and identifying the roles played by socio-contextual factors in order to situate *in-situ*, the weight of climate change as a factor in social conflicts (Gleditsch, 2012). Scholars differ widely in ranking variables in this regard.[34]

This following section is divided into two: the academic oriented literature and the broad policy-oriented literature. The first section interrogates scholarly controversies on the climate change-conflict discourse. This section focuses on debates on the role of climate change in resources contestation and violent conflict. Three contending persuasions are identifiable in the climate change-conflict literature, namely: climate change conflict rebuttal, causal affirmation and causal association. It also highlights the role of resources scarcity, migration and socio-contextual factors as an analytical prism in examining conflict linkages.

The second section reviews thematic dimensions of climate change vulnerability dynamics in wide-ranging literature relating to the objectives of this study. It examines literature with

[34] See for example: Merchant, 1990: Turner and Ali, 1995; Lambin et al; 2001; Lambin et al, 2001; Turner et al, 1990; Lambin et al, 1999.

regards to three well-founded pathways in the connective, namely: (1) links between climate change to social vulnerability, (2) links between vulnerability and migratory adaptation, and (3) the likelihood of violent contestation arising from migratory adaptation in migrant-receiving communities. Related issues arising from these linkages such as international dimensions to climate induced migration, estimating climate-related migration, and emerging gender issues are also examined.

2.3.2 Climate-induced Scarcity as Analytical Prism

Much of the discourse on the implication of climate change for conflict focuses largely on its effect on renewable natural resources (Baechler, 1998; Homer-Dixon and Blitt, 1998). Dependence of a vast number of people on natural resources in poor regions, it is argued, makes the depletion of the natural environment a human security subject (Barnett, 2003; Gleditsch and Urdal, 2002; Wolt, 2011). As such, heightened vulnerability resulting from climate-induced natural resources degradation and scarcity further highlights its importance to peace and security in those regions as scarcity plays an important role in precipitating violent conflicts and other forms of insecurity (Percival and Homer-Dixon, 1998; Gleditsch and Urdal, 2002). Bauhaug Gleditsch and Theisen (2008) define scarcity as "low per-capita access to a resource" and explain further that by resource scarcity, they refer to "a low per capita availability of a renewable resource, such as freshwater" which results from either, or both of two processes including: (1) "a dwindling resource base, and (2) increased demand for the resource through increased population pressure and/or increased consumption" (p. 7).

Similarly, Percival and Homer-Dixon (1998) argue that the relationship between environmental scarcity and violent conflicts lie in determinants that are context-specific. These factors include the "quantity and vulnerability of environmental resources, the balance of political power, the nature of the state, patterns of social interaction, and the structure of economic relations among social groups" (p. 280), which have influences on how resources are used, the effects of scarcity on social systems and processes, the potential for scarcity engendering grievances, and the degrees to which violence may be aggravated. The authors further identify three forms of environmental scarcity, namely: supply-induced scarcity resulting from the degradation and depletion of resources in an environment; demand-induced scarcity arising due to population growth in a given environment or increased per capita consumption of a particular resource and increasing its demand; and structural scarcity

which results from inequality in social distribution of a resource concentrating access to relatively few people. These result in resource capture and ecological marginalization.

Apart from scholarly expositions on the role of environment induced scarcity and renewable resources in violent conflict onset, the resource scarcity and conflict connection is also a major concern for policy makers. For example, the US Secretary of State, John Kerry, expressing concern on the issue, pointed out that 'If we don't respond adequately to the challenge of global climate change, over the course of these next years there will be people fighting wars over water and over land' (U.S. Department of State, 2013, n. p.)[35].

Similar concerns are held at multinational levels. The United Nations' Secretary-General, Ban Ki-Moon notes that "competition between communities and countries for scarce resources—especially water—was increasing, exacerbating old security dilemmas and creating new ones, while environmental refugees were reshaping the human geography of the planet, a trend that would only increase as deserts advanced, forests were felled, and sea-levels rose".[36] The Executive Director of the United Nations Environment Programme (UNEP), Achim Steiner also identified climate change as a threat multiplier which fuelled "competition over scarce water and land, exacerbated by regional changes in climate, [which is] already a key factor in local conflicts in Darfur, the Central African Republic, northern Kenya and Chad".[37]

While there appears to be a logical weight behind analogies in security sector narratives on the resource scarcity and conflict dynamics, much of the academic attempts at identifying the specificities of the connection draw validity from conjectured variables. As a result they have generated mostly sceptical, inconclusive, or very controversial findings. A number of quantitative studies suggest that there is a link between intrastate conflict and low levels of precipitation (Fjelde and von Uexkull, 2012; Raleigh and Kniveton, 2012) or between scarcity of freshwater resources and violent conflict (Gizelis and Wooden, 2010; Raleigh and Urdal, 2007). Some others also argue that there is no significant relationship (O'Loughlin et al., 2014; Wischnath and Buhaug, 2014), with some finding a negative correlation between

35 Secretary Kerry Holds a Google+ Hangout With NBC's Andrea Mitchell http://www.state.gov/secretary/remarks/2013/05/209273.htm. Accessed 24/08/2014.
36 Security Council Meetings Coverage Security Council 6587th Meeting, 20th July 2011. http://www.un.org/press/en/2011/sc10332.doc.htm.
37 Ibid.

the incidence of low rainfall or water scarcity and intrastate violent conflict (Hendrix and Glaser, 2007; Salehyan and Hendrix, 2014).

Similar controversies characterise quantitative studies aimed at specifying causal relations between scarcity and conflict such as those on soil degradation (Hendrix and Glaser, 2007; Raleigh and Urdal, 2007; Rowhani et al., 2011; Theisen, 2008) or deforestation (Esty et al., 1999; Theisen, 2008). The findings of qualitative studies are no less ambivalent. While some authors find important links between scarcity of renewable resource scarcity and violent conflict under certain circumstances (Homer-Dixon, 1994; Kahl, 2006; Schilling et al., 2012), many others reject such claims (Selby and Hoffmann, 2014; Adano et al., 2012), others give mixed results (Benjaminsen and Ba, 2009; de Chaˆtel, 2014).

How then can knowledge about resource scarcity and violent conflict linkages be advanced? Three challenges are often highlighted by scholars. First, as Barnett (2000) noted, relate to understanding how resource scarcity result in grievances, livelihood insecurities and conflicts. This has been positively argued by scholars, but gaps exist in our knowledge of how, why and when an escalation into open violence results from such grievances. Hence Engels and Chojnacki (2012: 94) argue that "the transition from conflict to violence has not yet been analyzed in a sufficiently sophisticated manner in the literature on environmental conflicts''. Second, results generated in previous studies and shared by nearly all authors on the subject (see Hauge, Wenche and Tanja Ellingsen, 1998; Homer-Dixon and Blitt, 1998; Scheffran et al., 2012), suggest that renewable resource scarcity is linked to violent conflict only in the presence of certain conditions or a combination of conditions. This position brings to fore the important question relating to understanding "why violence [associated with scarce resources] occurs in some places and not in others" (Peluso and Watts, 2001: 29).

In recent times, a number of quantitative studies have been conducted with a view to identifying the causal contingencies underlying environment-conflict transformation. This has been done by investigating the interaction between certain contiguous variables from climatic variability functions such as changes in the level of precipitation, to the nature of socio-political structure: the level of political exclusion or levels of socio-economic marginalization (Fjelde and von Uexkull, 2012; Theisen, 2012). This line of research is constrained however, by limitations arising not only from the nature of some of these variables as non-static processes most of which are not amenable to qualitative analysis or statistical regressions, but also by the multiplicity of interacting variables (Vis, 2012).

On the other hand, while case studies are relatively more suitable for examining the complex interactions among different variables because they address a particular context, it also suffers from limited validity, utility in generalization and comparability because outcomes pertain to the specific context of the study. This problem relates to a third and more general issue which bothers on the methods often used in the study of linkages between scarcity of renewable resource and violent conflicts. More often than not, studies rely on either a large-N regression analyses or a qualitative single-case study approach. While the single-case study approach is often faulted for its low external validity especially in drawing conclusive findings (see for instance: Koubi et al., 2014; Gleditsch and Urdal, 2002), studies using large-N regressions have also been faulted as well for missing details are crucial to shaping social processes such as incidences and scale of conflict. The validity question is without prejudice to Flyvbjerg's (2006) observation that in principle, generalize-able results can be produced from case study methods.

Apart from being constrained generally in regards to their suitability for capturing non-linear effects (Sterzel et al., 2014), large-N regressions are also unable to accommodate important variables such as resource distribution patterns, on which there are no available quantitative datasets, or in situations where data are difficult to generate, for example data on social identities or traditional conflict resolution mechanisms (Selby, 2014; Ide and Scheffran, 2014). In view of these limitations, there have been increased call for further studies to find middle ways between qualitative single-case and quantitative large-N studies that more suitably combines the strengths of both methods (Solow, 2013; Meierding, 2013).

However, while there is yet no consensus on this linkage, the climate change, scarcity and conflict nexus presents the closest empirical prism in contextualising the climate-conflict nexus. Arguments proceeding from this line of the narrative are mediated by varying significance of intervening effects of institutions, innovative adaptation systems and adaptive capacity which defines how communities adjust to resource scarcity and avert or respond to threatening changes (Forsyth and Schomerus, 2013)[38] and essentially, approach used in analyzing causal linkages. The next section examines three main perspectives in the climate change scarcity and conflict debate.

[38] As illustrated in Merchant, 1990, Turner and Ali, 1995, Lambin et al. 2001, Turner et al, 1990, Lambin et al, 1999.

2.3.3 Socio-ecological Contexts in the Climate Change-conflict Nexus

Studies have highlighted the important role played by systemic contingencies and contexts in societies' sensitivity and vulnerability to adverse effects of climate change (Lynn et al, 2011; O'Brien et al. 2007; Sayne, 2011). Lynn et al. argue for example that "climate change presents the potential for increased exposure to rapid and subtle environmental changes and, in turn, rapid and subtle social, cultural and economic and political changes" (Lynn et al., 2011: 3). This also underscores Carr's position when he stated emphatically that:

> Not even windstorm, earth-tremor, or rush of water is a catastrophe. A catastrophe is known by its works; that is, to say, by the occurrence of disaster. So long as the ship rides out the storm, so long as the city resists the earth-shocks, so long as the levees hold, there is no disaster. It is the collapse of the cultural protections that constitutes the disaster proper (Carr, 1932: 211).

The context defines who, how, to what threat, and to what extent the people are vulnerable. By extension, it defines how societies receive, and are able to respond to various forms of environmental perturbations that may affect them. Bauhaug, Gleditsch and Theisen (2008: 29) argue that "many of the same social entities that risk being negatively affected by changing environmental conditions also determine the likelihood and extent to which such consequences will to materialize". A catastrophe or disaster event is not disastrous by virtue of its occurrence, but in the effect it has on the human environment. This underlies McCarthy et al. (2001: 995) suggestion that vulnerability is a product of combined effects of many factors, namely: "the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity".

In fact, several studies have downplayed the significance of climate change as a security threat—especially with regards to the potential for escalated social conflict, highlighting instead systemic contingencies which predispose certain societies to heightened risks such as violent conflicts (Benjaminsen et al. 2012; Buhaug, Gleditsch and Theisen, 2008; Giordano, Giordano and Wolf, 2005; Koubi et al., 2012). In essence, this line of thought believes that answers to climate change-conflict linkages lie in non-climatic factors often related to the level of institutional and economic development and other influences such as socio-cultural relations and differentiations among the population (Gleditsch, 2012).[39]

[39] Giordano, Giordano and Wolf (2005: 54) for example, identify some contextual conditions which may lead to conflict to include inadequate managerial capacity regards to available resources, deficiently defined territorial

Some however caution against shifting attention from the primary sources of vulnerability to the contexts in which conflicts arise. Meierding (2015) for example, questions studies which methodologically redirected their analysis from the actual incidence of variability in climatic system as underpinning exposure, and then focus on issues of socio-contextual dynamics which function to exacerbate those vulnerabilities. The author argues that "by shifting the geographical scale of their analysis to the sub-national level and focusing on the proximate drivers of civil contentions", they downplay broader responsibilities for primary and secondary climate-related risks (Meierding, 2015: n. p).[40]

2.3.4 Delineating Perspectives: Rebuttal, Causality and Association

The schism in climate change debates has passed three historical phases since the era of contentious debates between climate change affirmation and climate change scepticism (Diethelm and McKee 2009; McIntyre and McKitrick 2003); to debates on nature versus anthropogenic agency following scientific affirmation of climate change (Allison et al. 2009; Carr, Brash and Anderson, 2010; RealClimate 2005); and to current debates which focus on the scope of impacts, options for adaptation, and mitigation. Current debates on climate change and human security is motivated not only by strength of scientific evidence of changing climatic system which has spurred global interest (IPCC, 2007a), but also by recognition of its alarming social implications either potential or actual. Among the diverse implications, its potential to precipitate violent conflict draws strong impetus from increasing incidence of resource-related violence already occurring in many parts of the developing world (Dokos et al. 2008; IPCC, 2007).

Although academic and policy interests are pervasive on this subject, the scholarship has remained stalled by epistemological controversies between theoretical universalities and specific contextual validities. As Hsiang, Burke, and Miguel (2013) noted, context-specific studies examining localized impacts often return varying degrees of causal relationships while also acknowledging complexities. Nonetheless, scientists especially in the social

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sovereignty in the presence of cross-border resource deposits or "international pool resources and the collapse or poor functioning of existing institutions and structures in consequence of political changes or abrupt alterations in resource demand and supply.

[40] Meierding (2015) is a chapter available in an unpaged Google Books text available online as a 2015 publication although its reference is shown in Wolrdcat as a chapter in O'LEAR, S., & DALBY, S. (2016). *Reframing climate change: constructing ecological geopolitics*. http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=1036439. Accessed: 16 September, 2015.

sciences pay increasing attention to climate change, impacts, adaptation and mitigation with special focus on its contributions to conflicts.

Points of divergence among analysts range from the validity of the environment-conflict linkages, to the mechanism by which this interface occurs, or is drawn by the analyst (Wolt, 2011). Other contentious areas include questions regarding the extent to which climatic variability may be said to determine or influence conflict outcomes in vulnerable societies (Kasperson and Kasperson, 2001). This divergence in perspective is not inexplicable. Messer (2010: 6) points out that "the relationship between climate change and violent conflict is complex, country-specific, with patterns that are localized within nations". Narratives on the relationship as variously espoused in the literature can be categorised into three analytical perspectives namely: rebuttal, association and affirmation. These perspectives vary according to the degree of importance accorded to environmental factors in social conflict—a major basis for the epistemological divide, as well as the various techniques and conceptual approaches which inform analyses and define outcomes associated with environmental problems (Almer and Boes, 2012; Conley and Werz, 2012; Messer, 2010).

2.3.4.1 Climate Change-conflict Rebuttal

The idea of climate change as a causal agent in social conflict has generated intense criticism over the years with many scholars challenging the climate change-conflict linkage. Raleigh, Jordan and Salehyan (2008: 34) for example, argue that "much of the available literature exaggerates the impact of environmental factors in causing or exacerbating conflict", and that the "most prominent studies of environmental conflict suffer from prediction, a lack of evidence, and a reliance on conjecture". Some also posit that proponents of this linkage are motivated by global north-south politics as argued Barnett (2000) when he opined that the linkage holds theoretically rather than empirically validity, emanated from the global north's security agenda as well as served to legitimise that agenda.

Most refutations of the climate change-conflict interaction have been founded on sceptical generalisations hinged on the complexity of multivariate interactions operative in climate change vulnerability scenarios, although many sceptics acknowledge basic assumptions from which the climate change-conflict linkage is inferred in theory, and also acknowledge contributions in empirical cases studies. As a result, while denial arguments are pervasive in the environment-conflict literature, few are able to effectively disprove arguments that

resource scarcity and attendant competition for access are important factors in environment conflict in certain cases especially in poor vulnerable regions across the developing world.

Barnett (2000) maintains that research in the climate-conflict linkage is more relevant as a study area in development than as climate change and security analysis. This he hinges on a belief that models adopted in such studies depict hypothetical realities and oversimplifies complex interface between social and ecological systems (p. 281). This position fails to see the vulnerability context and the level of development as an integral systemic whole just as higher resilience capabilities define climate change impact assessment in developed countries, hence his focus on development-conflict linkage rather than vulnerability-conflict dynamics.

Some refutations have resulted in contradictory arguments even from same scholars. Barnett (2003) for example, agrees like many other scholars, that there are linkages between environmental change and violent conflict. He notes specifically that resources and their distribution often have great influence on the risk of, and patterns of conflict. Barnett stressed that "relative to developed countries, developing countries must contend with more potentially conflict-inducing environmental changes" (p. 11). Despite his futurological insight however, the author expresses some scepticism about the idea that climate change could trigger violent conflict. Overall, in view of its inherent self-contradiction, there are little grounds for Barnett's broad rebuttal.

In some studies, the complexity associated with multiplicity of variables or difficulties inherent in statistically measuring or quantifying social indicators form the basis for rebuttal. Referring to climate-conflict linkage in the literature, Meier, Bond & Bond (2007: 717) argue that qualitative studies, "however convincing, do not compensate for the lack of statistical evidence on this form of conflict". Some analysis generalise findings derived from isolated effects of measured climatic variables such as precipitations, heat, and rainfall (Anderson, 1989; Anderson and Delisi, 2011), while some measure socio-economic indices such as income range and poverty levels or efficacy of systems of government, without recourse to the social context. For example, Raleigh and Urdal (2007) argue that conflict result more from political and economic circumstances, than from environmental variability because wealthy and democratic nations show greater prospects in both adapting to resource scarcity and also in mitigating conflict. Emphasizing the primacy of socio-economic factors, Hauge and Ellingsen (1998) also opine that economic and political factors had the strongest

predictive impacts on conflict although demographic and environmental factors also had notable impacts.

To Nordas and Gleditsch (2007: 529), "the relative vulnerability of different regions to climatic change is largely determined by their access to resources, information, and technology, and by the stability and effectiveness of their institutions". Echoing this view, Raleigh and Urdal (2007) posit that:

> ...environmental and demographic stress is not likely to be an equally important risk factor under all economic, political or social conditions, both because these factors determine a country's ability to adapt to environmental change, and because they largely determine the general opportunities for rebel groups to succeed (Raleigh and Urdal, 2007: 676).

In the same vein, Collier and Hoeffler (2004) identify poverty, high level of reliance on primary resources, and poor economic growth as more important determinants of civil unrest and war rather than ethnic and religious diversity. This position tends to discriminate between the vulnerability context in the developing world and the indicator of vulnerability itself, whereas studies of vulnerability and adaptation in the advanced regions address vulnerability as integral to the context of exposure.[41]

There is also a tendency to focus on a linear explanatory theory or a generally applicable causal chain which further impedes understanding of the complex environment-conflict trajectory. For example, Bauhaug (2010) questions the significance of climate change influence on resources conflicts in Africa, noting that conflicts result from generic structural and contextual conditions including ethnic and political exclusion, economic underdevelopment and other systemic problems.

Similarly, Henry, Boyle and Lambin (2003) in their study of environmental and socio-demographic factors in ecologically-induced inter-provincial migration, acknowledged that provinces with large numbers of immigrants in Burkina Faso face difficulties bothering on conflict arising from access to land and other infrastructures. They noted also that unfavourable weather conditions especially land degradation, variability in rainfall and land availability at the origin compared with favourable conditions at the destination were among vital factors in interprovincial movements (p. 115). They maintain nonetheless, that

[41] See for example, European Environment Agency (2012).

environmental variability contributes little to migration when compared with socio-demographic variables.

2.3.4.2 Associationist Perspectives

Scholars of this perspective agree that there is no absolute causal explanation but nonetheless affirm the importance of climate change under certain conditions, in precipitating violent conflicts. According to Bauhaug, Gleditsch and Theisen (2008: 5), "single-case analyses suggest that resource scarcity contribute to the outbreak of organized violence, though always in interaction with exogenous conflict-promoting factors". This position is common among security policy actors and among scholars who emphasize the contribution of climate change as a "threat multiplier" in social conflicts (Barnett and Adger, 2007:561) although it remains a subject of debate, whether it has the capacity to cause conflicts or not. As a threat multiplier, it is noted that climate change, on its own, is unlikely to cause conflicts, but in combination with other amplifying factors—social, political or economic, will potentially exacerbate conflict (Gleditsch, 2011; WBGU, 2007).

In view of the multiplicity of potential causal linkages, Shumway, Otterstrom and Glavac (2014) suggest that environmental hazards are best viewed through a vulnerability lens which includes both exposure and adaptive capacity in terms of the frequency and duration of the hazardous events as well as the ability of the affected communities to mitigate, deflect, or absorb the effects of exposure. Similarly, highlighting the importance of the co-causality in the environment-conflict linkage, both Brauch (2002) and Ta¨nzler & Carius (2002) explain that climate change will not likely be a sufficient cause of conflict although it may contribute to the mounting environmental challenge that will potentially trigger new conflicts or aggravate old ones. As such, there has been emphasis on the multiplicity of factors which mediate between environmental problems and social processes to define outcomes including conflicts. From this point of view, climate change is seen as an associated factor which may lead to conflict when combined with other triggers factors.

In the same vein, Meier, Bond and Bond (2007), studying environmental influences on pastoral conflict specifically focusing on cattle raiding in the Horn of Africa, found that "aggravating behaviour, along with a reduction in peace initiatives and reciprocal exchanges, are associated with an escalation in pastoral conflict, particularly when coupled with an increase in vegetation that may provide cover for organized raids" (Meier, Bond and Bond, 2007: 717). It is noteworthy that the their study conceives increased vegetation cover as a

factor in cattle raiding among herder groups rather than examining effects of natural resource scarcity (such as water and pasture) on the incidence of conflict. While they associate increased vegetation with increases in the frequency of pastoral conflict and argued that changes in precipitation and forage bear no direct relationship with conflict behaviour, Hendrix and Glaser (2007) contend that suitability of the climate to Eurasian agricultural processes may lower the risk of resources conflict.

Kolmannskog (2008), in the same vein, identified two patterns of linkage: (a) that climate change results in conflict, and then migration and (b) that climate change brings about migration and then conflict. Similarly, Almer and Boes (2012), examining climate change-conflict 'association and causation' logics in the context of sub-Saharan Africa, found that climatic factors significantly shape socio-economic systems including agricultural out-put, and GDP in ways that the resulting negative shocks exert fostering effects on civil conflicts even though there is no robust direct linkage to civil wars.

Although Hendrix and Glaser (2007) are sceptical of the climate change-conflict linkage, they argue nonetheless that variability may reduce the predictability and stability of ecological systems by increasing the risk of extreme events which may affect people's access to resources. They opined that conflict linkages are more associated with the marginal effects of inter-annual variability than with long term changes in climate. Based on this premise, they view the incidence of conflict as a function of resource scarcity in natural resource dependent areas that are mediated by existing asymmetries of wealth and access among a resource dependent population. In sum, they note that the higher the impact of variability, the more the likelihood of conflict onset to conflate with existing socio-economic factors.

Kahl (2006) offers an important insight into internal violent conflict. The study linked the environment-conflict nexus with the state and identifies two distinct linkages from the scarcity of environmental resources to violence. These include: (1) state failure and (2) state exploitation. Kahl hypothesizes that demographic and environmental stress (DES) by which he means populations pressures and resource scarcity, will likely exert severe pressure across societal fabrics and on state institutions. These pressures occur in two interlinked processes. According to the author, a chain of first-order effects results from the interaction of degraded natural resources, increases in population and inequalities in the distribution of resource potentially resulting in lower per capita availability and access to resources such of land and

increased pressure on income from agricultural activities which in turn, results in economic marginalization (Kahl, 2006: 40-41).

On the other hand, Kahl identifies a chain of second-order effects as those which occur when hardships arising from the first order effects result in other effects including rural-to-rural migration or rural-urban migration. While he notes the tendency of the former (rural-rural migration) to give rise to land-related inter-ethnic conflicts, rural-to-urban migration also poses a threat to security as it will lead to increased pressure on state capacity to provide vital services such as housing, healthcare, and clean water. Such pressures they argue, may lead to absolute or relative deprivations thus giving rise to grievances among the people (Kahl, 2006: 40-41).

Isiugo and Obioha (2015) point out for researchers, the importance of understanding ideational factors in the generation of conflict. The authors describe ideational factors as the broad and complex social and psychological context of environment-conflict actualities. . Particularly, if we wish to understand a society's propensity towards conflict they argue, we must understand certain socio-contextual effects which will determine the import of environmental stress. It is essential according to them, to explore the relationship, between the ideational factors and the occurrence of conflict. These factors include:

> [...] the patterns of land distribution; family and community structure; the economic and legal incentives to consume and produce goods, including the system of property rights; perceptions of the probability of long-term societal stability; historically rooted patterns of trade and interaction within societies; the distribution of coercive power within and among nations; the form and effectiveness of institutions of governance; and metaphysical beliefs about the relationship between humans and nature. This constitutes a threshold beyond or within which given societies could respond effectively to the inbuilt stress induced by climate/environmental change which differs among societies (Isiugo and Obioha, 2015: 157-158).

It is within the context of subsisting ideational circumstances that such a chain of events is likely to result in large-scale migration as more and more people move in search of greater access to resources. Immediate observable consequences include the overexploitation of environmental resources, the depletion or induced scarcity of resources and the inability of existing resources to sustain the demands of the human population which depend on its supply. This has been noted to play important roles in precipitating ethnic conflicts and spurring violent clashes between migratory groups and indigenous ones (Isiugo and Obioha,

2015). Isiugo and Obioha point out however that societies' threshold determine the possible transition from environmental stress to conflict as conflict is unlikely to occur if the environmental and resource scarcity threshold is not attained (p. 158). The recognition of important social influences in climate-conflict transformation marks the point of departure between associationist and causal affirmative perspectives.

2.3.4.3 Causal Affirmative Perspectives

In response to the acknowledgement of the importance of climate change in the conflict discourse, alongside criticism particularly on methodological and validity questions, the third line of research adopts streamlined approaches and methods, using more distinct variables and models in explaining causal patterns (Raleigh and Urdal, 2007). The focus of studies with this inclination range from examining the effects of inter-annual seasonal changes, to the effect of particular vital resources, some on millennial changes over centuries, and some on particular weather or climatic patterns, in highlighting causal connections between environmental variability and violent conflict with a view to drawing conclusions that are to them amenable to scientific examination. While most of the submissions are grossly conservative, they remain nonetheless one of the lines of thought in the climate change-conflict discourse.

From the causal affirmative point of view for example, Zhang et al. (2011) used a simulation of temperature data and climate-related economic variables across the golden and dark ages, and submitted that the cooling of the climate during periods between A.D. 1560-1660 was responsible for a chain of agro-ecological, socio-economic, as well as demographic problems which resulted in human crisis across Europe during the seventeenth century. They argue that climate change was one of the principal causes of the economic downturn which ultimately led to large-scale human crises during the pre-industrial period in the Northern Hemisphere (Zhang, 2011: 17296-17301).

Similarly, Anderson and Delisi (2011) identify two ways by which rapid global warming and its effects heighten the risk of violence and aggressive behaviour, these include: first, by creating uncomfortably warm temperatures which heightens irritability, aggression, and violence; and second, through indirect effects of global warming on factors which increase the risk of violence in individuals and youth. These factors may include effects on the livelihood of populations whose means of survival are suddenly exposed to risk (p. 249-263). A series of studies were done to test the heat-aggression hypothesis from experimental tests,

spatial/geographical analysis, and time period studies (See Anderson and Anderson, 1996; Anderson and Anderson, 1998; Anderson, Anderson, Dorr, DeNeve, and Flanagan, 2000; Anderson, 2001).

Drawing from the heat-aggression analysis, some authors attempt to explain social violence using spatial temperature variations and argue that hotter regions have higher violent crime rates than cooler regions (Anderson, 1989; Anderson and DeLisi, 2011). Van de Vliert for example, argues that risks of aggressive behaviour are higher in harsh climate zones which are conducive especially when it combines with high level of impoverishment (Van de Vliert, 2009 cited in Anderson and DeLisi, 2011). In the same vein, Carlsmith and Anderson (1979), as well as Anderson (1989) apply the heat effects analysis in a time-period reading of effect of heat and temperament by comparing variations in patterns of aggressive behaviour within the same region but across different time scales and found a positive correlation between increased heat and temperament.

In an experimental research which tested the inclination towards violence as a response to heat, Vrij, van der Steen, and Koppelaar (1994) used randomly selected Dutch police officers in a training session involving a simulated burglary under hot or comfortable conditions. The experiment found that officers subjected to hot conditions exhibited more aggressive behaviour including making threatening impressions towards suspects and also showing higher likelihood of drawing their weapon to shoot the simulated suspect. Similarly, in their study on climate conflict and social stability, Hsiang and Burke (2014) find a "strong support for a causal association" (p. 42) between changes in the climate and conflict across scales regions of the world.

In another study, Hsiang, Burke and Miguel (2013) argue that there is substantial systematic increase in the risk of conflict corresponding to deviations in precipitation and temperature across spatial and temporal scales across all major regions of the world. The study further stressed that:

> The magnitude of climate's influence is substantial: for each one standard deviation (1s) change in climate toward warmer temperatures or more extreme rainfall, median estimates indicate that the frequency of interpersonal violence rises 4% and the frequency of intergroup conflict rises 14%. Because locations throughout the inhabited world are expected to warm 2s to 4s by 2050, amplified rates of human conflict could represent a large and critical impact of anthropogenic climate change (Hsiang, Burke and Miguel, 2013: 2).

Although the authors point out that conflict outcomes differ in important ways, and according to settings in which they occur, they observe nonetheless that the character of conflict outcomes correspond to the nature of the climate system in markedly similar ways.

Similarly, Ide (2015: 61-70) examined how intergroup conflicts associated with scarcity of renewable resources escalate into violent conflict in developing regions especially in peripheral areas of the Southern hemisphere by reviewing twenty cases in which seven turned violent. The study found three important causal factors. These include (1) 'negative othering'—that is, a situation in which one party or group characterises another as a threat to the self, (2) low power differences among disputing parties, and (3) effects of a recent political change. Ide observes that in situations where escalation occurred, there was the "simultaneous presence of negative othering, low power differences and recent political change" which provided sufficient causal conditions for the escalation of conflicts to violence in the competition for scarce renewable resources.

2.2.2.4 Complexities and Contextualities in Climate-conflict Debate

There is no hard fixed and universally applicable verdict on the environment-conflict transformation. Many of the studies and findings from scholarly attempt to explain linkages produce controvertible results because they aspire beyond the spatial frame within which conflicts occur. Recently, it has become clearer that the complex mix of social and contextual situations play more important roles in shaping interactions as well as the processes by which conflict ensue. Hence, much of the validity or otherwise, of studies and findings by scholars pertain to a specific social and vulnerability context, and may produce contrary results in different contexts or with different set of variables. As such, scholars increasingly acknowledge the importance of socio-contextual and analytical approaches in shaping interactions and outcomes including conflict. As such, it may be futile to subject the fluid phenomenon of environmental-related conflict to specific, rigid analysis removed from the context, be it rebuttal or affirmative.

The awareness of the need for flexibility underpins the tentative tone characteristic of research reporting in most climate change-conflict studies. It also reflects the acquiescence by researchers, of the complexity imposed by contextual peculiarities which varies across regional and social systems as researchers, cautious of over-generalization, try to accommodate potential deviation of other findings by adapting interpretative tones that are

sensitive to the social-whole of the environment-conflict processes. This explains the common rendering of reports in probabilistic and tentative tones, as "likely" effects. Raleigh and Urdal (2007: 678) posit for example, that "the effects of resource scarcity are modified through political, economic and social structures". Highlighting the difficulty in attempting to isolate the causes of violent behavior, Suliman (1999) asks rhetorically thus:

> [w]hat chance do we have, then, in our turbulent and intricate time, to find that famous red thread that connects and goes through all aspects of such complex social behavior as violent conflict. Indeed, the complexity and variety of causes, perceptions, and manifestation of group violence baffle rational thought. Complex social processes and phenomena, themselves dependent on a multitude of objective and subjective factors, impart uncertainty to the course of violent conflict as well as to our attempt to understand and judge it as the actual behavior of actual people" (Suliman, 2009: v-vi).

Furthermore, Barnet (2001: 5) argues that there are "long-standing difficulties in finding meaningful evidence of the determinants of violent conflict and war". Complexity of analysis stem from the fact that research "has been conducted among members of quite different scientific communities" (Baechler, 1999: 76), and with divergent experiences and orientation. Hsiang, Burke, and Miguel (2013: 1) argue that the goals of "[r]eliably measuring an effect of climatic conditions on human conflict is complicated by the inherent complexity of social systems'. In the same vein, Homer-Dixon, Boutwell and Ratjens (1993: 42) observe that irregularities in contextual attributes account for the differences in causal pathways in different parts of the world. However, Gleditsch (1998: 389) notes that this factor of the operative contexts is often neglected in the environment-security literature.

Findings in many studies reflects the disaggregation of socio-ecological variables such as precipitation, rainfall and drought, frequencies isolating them from the social context in evaluating in testing causal linkages to violent conflicts (Anderson and Delisi, 2011; Burke et al. 2009; Hsiang, Burke and Miguel, 2013). As such, they lose sight of the contextual specificities and peculiarities of the context (see Raleigh and Kniveton, 2012; Salehyan, 2008). Even in the era of scientific precision in measurement, the complexity of multiplicity of interacting variable and fluid social contexts raise concern on "whether statistical relationships can be interpreted causally or if they are confounded by omitted variables" (Hsiang, Burke and Miguel, 2013: 1).

In the same vein, O'Loughlin, Link and Witmer (2014a) argue that much of the findings derived from qualitative studies on the climate change-conflict nexus are shaped by the modelling and data choices adopted by the researcher, and contradictory findings may be derived when different models are used. Precisely, they posit that "disciplinary-related modelling decisions, data availability and choices, and coding rules are critical in deriving robust conclusions about temperature and conflict." (p. 2054). Hence, they argue in favour of specific and limited data frame examined at sub-national geographic level in single-country studies or in cross-national inquiries since relying on a "fine spatial resolution for the analysis of political violence allows intergroup social dynamics within a country to emerge" (p. 2054), thus challenging reliance on overly wide spatial range in data coverage which might limit the ability of the researcher to uncover explanations emerging in contextual relationships.

Much of the rebuttal arguments on the climate change-conflict linkage stem from the methods adopted in the inquiry, particularly attempts to prune the phenomena so as to make it amenable to 'scientific' generalisation and theory building. These approaches prioritise prediction and theory building in the analysis of relationship between variables, as against inclusively understudying the nitty-gritty of vulnerabilities and the socio-systemic undercurrents which are defined by the social context. Hsiang, Burke and Miguel (2013: 4) put this in perspective in noting that, "most studies report only linear relationships that should be interpreted as local linearization of a more complex and possibly curved response function". The limitation of this approach in an early stage study such as such this becomes apparent in both its inability to yield an agreeable resolution of the controversy by producing acceptable degree of cross validity, and in its unsuitability for capturing the fluid social contexts in which environment-related conflicts occur and are interrogated.

The range of interwoven social and environmental factors that come to play in climate change-conflict transformation no doubt, tend to complicate connections. However, the premium placed on universal explanation rather than on detailed context-based understanding of the phenomenon yields little validity, and constrains in-depth understanding of co-causalities that can enhance policy relevant-inquiry. This is due to the fact that inputs from the social context could become lost in the isolation and cross-manipulation of a select number of causal variables. Sarewitz and Pielke (1999) explain the effect of the decoupling of social phenomena on robustness of findings in their critique of asocial analytical methods to examining social processes or phenomena. According to them, when disaggregated as

isolated variables, a social phenomenon is likely to lose substantially, its dynamic and intertwined nature which forms an important component of how social experiences unfold as well as the settings in which reactions occur (Sarewitz and Pielke, 1999: 121-130). Stojanov et al. (2014) corroborates this view by explaining that paying due attention to contexts enables researchers to understand the dynamics of the social experience and motives resulting from human environment interactions including the drivers, scales, and implications of environment-related population movements.

Shedding further light on problems associated with de-contextualize analyses, Adger et al. (2009) in examining links between vulnerability and social response, argues that limits to adaptation are endogenous and emerge from 'inside' the society. By this they mean that the factors which condition vulnerability are socially embedded. As such, determining what constitutes an impediment to a population's adaptive capacity is contingent upon the context of vulnerability. Put succinctly, the limits to adaptation "depends on goals, values, risk and social choices" of a particular society, all of which are "mutable, subjective and socially constructed" (Adger et al. 2009: 338). As such the processes by which they become constructed, rather than how they are discovered are the operative questions.

Adger et al. also identify four operative 'metadomains' that are crucial to the social construction of adaptation limits, namely: ethics (how and what we value), knowledge (how and what we know), risk (how and what we perceive) and culture (how and why we live), and argues that each of them "interacts with the realities and constraints introduced by the physical world—including the weather and the climate we experience, the consequences of changes to the climate system and the material impacts these changes cause" (p. 338).

Mortreaux and Barnett (2009) also highlight how elements of social context define how societies give meaning to their daily experiences in their interview in Tuval for example, noting that "religion plays a very significant role in shaping people's responses to climate change in Tuvalu" (p. 109). Although there is widespread concern on flooding, they note that half the interviewees raised religion in response to climate change and believed that it was not a concern because Tuvalu shares a special relationship with God from God's promises to Noah in the Bible. This indicate that in most poor societies, the allure of science is rarely as appealing as the prevalent belief systems, hence there is little attempt to understand complex interlinking 'scientific' underpinnings of vulnerabilities.

A similarly explanation is prevalent in rural communities in Nigeria as many rural people, though lament adverse changes over the years, believe it results from either directly visible events such as the influx of herdsmen, or to 'unseen forces'. This implies that given the complex chain of linkages from global warming to resource-induced conflicts, many people affected in rural communities are presumably not aware of the root causes of vulnerability. It is in recognition of this pervasive lack of awareness that there have been calls for environmental education in rural areas to enhance adaptation preparedness against climate change impacts (IFAD, 2013).

Consensus on the climate change-conflict phenomenon is further constrained by attempts among researchers to generalize findings derived from the study of particular cases. Indeed, attempts at policy-relevant discourse on the climate-conflict discourse has been faced with a double epistemological challenge in the form of (1) research failing to take into account the inherent thematic complexities of the relationship between climate change and conflict, and (2) the fixation on a universal theory and generally applicable findings in current social scientific research paradigms. While the former, consists in methodological attempts to de-socialize phenomenon in order to study them, the latter occurs in an attempt to universalise either of the two extremes of finite denial or general causal affirmation from observation of particular case-studies. Toll and Wagner highlight the challenge in this regard, noting that "there is in fact very little research to either support or refute such claims" (Toll and Wagner, 2010: 65). This explains the tentative, speculative or presumptuous research reporting. It is also against this backdrop that Baechler (1999a: 76) suggests that "environmental history should not, and indeed cannot, be separated from socio-economic and political history", because violent social conflicts occur, and are aggravated or attenuated by the social context in which they occur.

In the light of perceived gaps, scholars have highlighted the need for a new theoretical and methodological orientation in the study of environment-conflict nexus. Koubi et al. (2012) for example suggest that the "lack of agreement among scholars may reflect one of two errors: either the absence of a single causal explanation that can explain environment-related violent conflict, or there are limitations in methodological paradigms within which analyses are situated" (Koubi et al., 2012: 113). Salehyan (2008: 322) similarly opined that "empirical research on the environment–conflict nexus has typically focused on proving or disproving the deterministic view", and suggests that research be redirected to better specifying

contextual issues such as how the political processes and governments intervene or fail to do so in specific cases of conflicts.

Scholars agree that when studies are context-based, researchers can focus less on the scepticism on environmental conflict theory and more effectively proffer policy options to address specific cases. Arguing in this direction, Ide (2015) suggests that future research on this nexus should pay more attention to "conjunctural causation, local power differences and qualitatively different forms of conflict and political change" (Ide, 2015: 61). Similarly, scholars such as Cote and Nightingale (2012), Blaikie, et al. (1994), and O'Brien et al. (2007), Ribot (2010) have all canvassed for an intensive approach which accounts for the complex array of contextually operative variables—socio-economic, political, and cultural which inform individual and societal exposure, adaptation and resilience to impacts of climate change because focusing on socio-cultural contexts would help understand underlying dynamics and heterogeneities across social-ecological systems.

2.4 Expanding Causal Association: Beyond Theory Building

Scholars have tried to explain the chain of events by which environmental conflicts occur, the patterns of interactions which predispose societies and populations to conflict outcomes, and the contexts in which these are more or less likely to occur. An important aspect of climate change vulnerability that has been highlighted in this discourse pertains to is its adverse effects on renewable environmental resources and the implication of increasing scarcity of such resources for social contestations and violent conflict. Scholars argue that conflicts are likely to result from the shortage of renewable resources especially cropland, forests, fisheries and freshwater (Homer-Dixon, 1999; Kahl, 2006).

Two interrelated processes are often identified as pathways to resource scarcity: first, the way in which extreme weather events such as changes in temperature, heat waves, sea level rise, flooding, anomalies in precipitation etc, could lead to environmental degradation that affect the supply of renewable resource (see Klare, 2001: 20; Homer-Dixon & Blitt, 1998: 2-5; Pervis & Busby, 2004: 68; Renner, 1996: 46). The second concerns the process by which millions will be forced to migrate in response to these extreme weather events. The later has a potency to result into population displacement and disruptions in access to natural resource especially in receiving communities which may come under intense pressure resulting from resource competition (Barnett, 2001: 8; Renner, 1996: 108; Rahman, 1999: 205). This section

explores this argument and trends that may lead from vulnerability to environmental variability to violent social conflicts.

2.4.1 Climate Change, Vulnerability and Resource Scarcity

The World Economic Forum[42] in 2014, ranked the failure of climate change mitigation and adaptation as the fifth greatest security risk globally for the year 2014 (WEF, 2014). Such an assessment is attributable to the diverse ways through which humans are directly and indirectly vulnerable to its impact. Studies show that human societies are increasingly confronted with climate-related security threats at both primary and secondary risk levels arising from geophysical changes. Impacts of changes are felt across ecological, social, economic or political systems, and experienced in hazards like coastal erosion, flooding, loss of soil moisture, decline in levels of precipitation, intense storm, desert-encroachment, and extreme heat among others (McCarthy et al., 2001; Stern, 2007).

In 2007, two authoritative reports on climate research—the Center for Naval Analyses (CNA) and the Intergovernmental Panel on Climate Change (IPCC)—separately published reports focusing on how the manifestations of climate change indicated in rising sea level, water stress, and severe loss of arable land, among other extreme weather events, will affect populations across the globe. Highlighting the global nature of human vulnerability to environmental change, both reports emphasize the peculiar and disproportionate impacts that climate change will have on populations and governments in the developing regions. These reports highlight the greater threats both manifest and imminent across Asia in Africa where socio-economic stress may stretch civil society towards anarchy as environmental problems converge with other development challenges (CNA, 2007; IPCC, 2007).

Similarly, a 2001 report of the IPCC noted that about 1.7 billion people currently live in water stressed countries, i.e., within countries using more than 20% of the supply of renewable water, and projects that the number will increase from the combined effects of population and industrial growth, with climate change related decreases in stream flow and ground water as an aggravating factor (IPCC, 2001: 31). The report notes that while similar effects may result in increases in freshwater supply in some other countries, higher water temperatures will likely degrade the quality of water, and the much in reduction of

[42] World Economic Forum is an independent international organization with broad interest ranging from economic development to environmental security. The body organizes annual review on global challenges.

vulnerability to shortages in freshwater availability and quality will rely on water management (IPCC, 2001: 31). The import of the IPCC's observation is that "where vulnerability increases and water management fails, increased freshwater scarcity is a likely outcome" (Raleigh and Urdal, 2007: 678).

Kelly and Adger (2000) posit that social vulnerability concerns the capacity of individuals and social groups to respond—that is, it concerns the capacity to cope with, recover from, or adapt to any external stress on people's livelihoods and wellbeing. The authors identify indices of social vulnerability as measurable in terms of risks that may arise when existing social conditions are stretched by climate-related problems. These social factors include subsisting levels of poverty, proportion of loss in income diversification, loss in commonly held property or management rights, as well as losses in collective action among individual or groups in affected communities (Kelly and Adger, 2000: 326-329). An assessment of social vulnerability in their view therefore, entails an assessment of risks that society and its established social, economic or political order may face in the advent of climatic events.

Cutter et al. (2009) describe climate change and variability as environmental stressors underlying certain hazards to which societies are vulnerable. The stressors associated with climate change may be differentiated into two classes: sudden onset hazards (hazards which appear rapidly but lasts for short periods e.g. flooding or hurricanes); and chronic or slow onset hazards (slow events that are barely perceptible by the affected society e.g. drought, desertification, or sea level rise). Slow onset events have longer lasting incremental effects and often transcend into disasters only when some tipping point is reached. Whereas sudden onset events are amenable to policy aimed at adaptation or mitigation, chronic events are often difficult to manage because the immediate impacts are less clear and it is often hard to distinguish between "just a little dry spell" and a full-blown drought (Cutter et.al 2009: 2).

Some studies also identify specific climatic elements of social vulnerability. Building upon the IPCC 2001 report which identified climate change as a likely cause of extreme temperatures, intensified precipitation events, heightened risk of drought, increased flooding, increased tropical cyclone and intensified peak wind, Raleigh, Jordan and Salehyan (2008: 5-8) identified drought and famine, floods and slides, cyclones, hurricanes and waves, extreme temperatures and seas level rise as some of the key vulnerability patterns in climate change. The authors further highlighted the unique patterns of migration which result from these forms of vulnerability.

In the same vein, UN-OHRLLS (2009)[43] identifies a number of sectors that will be impacted adversely by climate change in high risk regions. Notable sectors include water resources, human health, agriculture and fisheries, ecosystems and biodiversity, coastal areas and deltas, tourism, settlements, industry and infrastructure. In the Nigerian context, such sectors as agriculture, forest and forestry, water and water resources, human activities and habitations around coastal areas, health and tourism, industry, and transport are often noted as highly vulnerable (see for example Adesina et al, 2010; Federal Ministry of Environment, 2010; FGN, 2009; Oladipo, 2008).

Scholars differ in their focus and approach to explaining social vulnerability. Approaches range from regional impact analysis mostly highlighting vulnerability contrasts between the developed and the developing world, some highlight vulnerability of sectors such as health and economy, and some adopt a spatial approach by focusing on geospatial frames such as vulnerability differentials between arid and humid areas. For example, Carter and Makinen (2011) emphasize timeline of impacts and identified two vulnerability patterns: the current (the actual exposure of social systems to observable environmental change), and the futuristic (projections of likely impacts such as flooding in coastal regions or of drought in arid regions).

Focusing on the domain of impact, Brooks (2003) identifies two spheres of vulnerability: the social and the biophysical. Similarly, the Stockholm Environment Institute (SEI) (2014) emphasized the sequence of vulnerability to climate stressors and characterized patterns into direct vulnerability i.e. vulnerability resulting from such events as drought or flood, or indirect vulnerability i.e. those experienced through receptor systems such as shared resources or economic relations, human migration and others.

Highlighting regional variations in vulnerability, the United Nations Framework Convention on Climate Change (UNFCCC) in a 2007 report for example, assess vulnerability differentials between developed regions and their developing counterparts including Africa, Asia, Latin America and the Small Island States. The report noted that billions of people in developing regions risked water shortages, food insecurity, and greater health risks due to climate change, and called for a concerted global effort in support of adaptation assistance as climate change unfolds and will likely worsen. The UNFCCC report puts it succinctly:

[43] United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States

> Developing countries are the most vulnerable to climate change impacts because they have fewer resources to adapt: socially, technologically and financially. Climate change is anticipated to have far reaching effects on the sustainable development of developing countries including their ability to attain the United Nations Millennium Development Goals by 2015 (UNFCCC, 2007: 5).

The exposure of populations in the developing world is further aggravated by the close linkage between environmental and social systems since vulnerability at the geophysical levels threaten socio-economic survival at the secondarily impacts level. Carter and Gulati (2014) show for example, that climate change adversely affects a wide range of systems including food, energy, health, natural resources and habitats. It is also widely acknowledged to play important roles in shaping socio-political interactions among people especially in poor societies where livelihoods are linked to climate sensitive resources (Barnett and Adger, 2007; Homer-Dixon, 2001).

Africa Climate Change Environment and Security (ACCES) advances a sector based analysis of climate change focusing on the vulnerability of system under extreme variability. Using the sector analysis approach, ACCES highlights five security sectors in which vulnerability to climate change poses a major challenge especially in Africa as follows: water security, energy security, migration, natural hazards, and food security (ACCES, 2010: 7-32). The report notes that climate change will potentially alter the patterns of precipitation, including the frequency of droughts, storms and floods. These changes, the report notes, are already manifesting and are evident in increased aridity in sub-tropical zones as well as desertification in the Sahara (ACCES, 2010: 8).

Figure 7: Drought-stricken cattle, South of Nairobi, Kenya. September 16, 2009

Source: BBC News (2009).

Although adverse effects of climate change on flora and fauna, as well as its impact on human welfare are some of the greatest concerns to the security research community, its extended social effects (i.e. on human populations and relations) may be described as secondary. This differentiation implies that changes in weather attributed in extremes such as drought, desertification, flooding, and other alterations which are felt across the physical, biological and social systems are considered as primary (UNEP, 2013). In other words, the changes that occur in the quality of the environment and its capacity to support and sustain human livelihood constitute the linkage between human security and climate change since it undermines the capacity of the environment to support life and human development (ADB et al. 2003).

It is against this background that climate change is seen as a threat multiplier with consequences cutting across social, political and environmental spheres of life (Barnett and Adger, 2007; CNA, 2007; Funder, Cold-Ravnkilde and Ginsborg, 2012; Tjossem, 2012). In view of its wide ranging impacts, especially on the social and ecological system, Barnet and Adger admonished that "there remains valid reason for concern about the continued changes in the climate system" (Barnett and Adger, 2007: 640). While the threat associated with climate change is believed to be a future issue in some quarters, studies increasingly highlight

that it is already contributing to conflicts and wars with mention of such cases as the Darfur conflicts (Byers and Dragojlovic, 2004: 2).

To Reuveny (2007), the fact that environmental problems in the past have played significant roles in human migration is suggestive that unfolding climate change will induce or aggravate migration which will likely increase conflict risks particularly in less developed countries that are constrained in their capacity for adaptation and mitigation. Reuveny puts this succinctly:

> ...people can adapt to environmental problems in three ways: stay in place and do nothing, accepting the costs; stay in place and mitigate changes; or leave affected areas. The choice between these options depends on the extent of the problems and mitigation capabilities. Developed countries (DCs) are likely to mitigate problems through technological innovation and institutional redesign. Less developed countries (LDCs) are less likely to mitigate such problems since they lack wealth and expertise. Facing severe environmental problems, people in LDCs may have to leave affected areas, which, in turn, may cause conflict in receiving areas due to several reasons (Reuveny, 2007: 657).

Similar links between population pressure and communal tension—albeit differently applied, is noted in a study of Melanesian countries by Ware (2005) who found that links between pressures from population density, limited opportunities for migration, and increased inter-communal tension.

Schwartz and Randall (2003), project that the consequences of climate change-related environmental pressures will threaten US national interest because "abrupt climate change lowers the world's carrying capacity, [and as a result,] aggressive wars are likely to be fought over food, water and energy" (Schwartz & Randall, 2003: 15). This scenario, according to them will further impose humanitarian interventions responsibilities for the United States. While emphasizing the need for caution in order not to overstate the causal linkage between climate change and armed conflict, both Pervis and Busby (2004) as well as Barnett (2001) acknowledge that depletion of natural resources as well as the resultant changes in the patterns of access and distribution of available ones (resources) have the potential, under certain conditions, to aggravate the risk of some forms of violent conflict.

Raleigh and Urdal (2007) explain three processes which are expected to be triggered by climate change thereby leading to conflict. These include increased degradation of cropland, increased freshwater scarcity and increased population displacement. Reasons why these will impact on social systems are due to their relationship with livelihood. They explain that:

> Climate change is likely to influence the food-producing capacity in many areas. While some areas may experience a reduction in crop yields, others are likely to benefit. One important factor is temperature. While an increase in temperature of a few degrees is projected to generally increase crop yields in temperate areas, greater warming may reduce agricultural output. In tropical areas, where dry land agriculture dominates, even minimal increases in temperature may be detrimental to food production (Raleigh and Urdal, 2007: 677).

He points out however that although degradation of soil and water resources is likely to be intensified by adverse changes in temperature and precipitation, the nature of adaptation strategies and interventions may help in mitigating the impacts of these changes (ibid: 677). How then does vulnerability transform into violent conflicts?

2.4.2 Vulnerability, Scarcity and Migratory Adaptation

Migration is an important linking mechanism in climate change conflict discourse. This linkage derives from its adverse effects on livelihood for the migrants and receiving communities (Brown, 2008; IPCC, 2007; Laczko, 2010; Scott, 1995). Although the influence of climate change on human migration is described by many researchers as a complex one in need of robust evidence (Bardsley and Hugo, 2010; Gomez, 2013; Gray and Bilsborrow, 2013; Piguet et al., 2011; Raleigh et al., 2008), migration is nonetheless widely acknowledged as a common adaptation strategy in the face of climate change (ACCES, 2010).

There is a broad agreement among researchers on this linkage: that climate change will affect the quality of the environment, reducing its capacity to sustain human livelihood thereby creating new forms of displacement and causing people to move from their abodes in search of other more conducive locations and sources of livelihood (Black et al 2008; IPCC, 2007; McLeman and Smit, 2005; Myers, 2002; Raleigh, Jordan and Salehyan, 2008). In the same vein, Nordas and Gleditsch (2007: 529) notes that climate change worsens “the challenges of meeting key human needs such as adequate food, clean water, clean air, and adequate and affordable energy services”. Heat waves, flooding, storms, and drought can cause famine, population displacement, the outbreak of diseases, and a decline in the agricultural productivity of rural areas may accelerate migration to the cities”.

Highlighting the importance of the environment as a human livelihood sustainability factor, Black et al. (2008: 11) explains that human migration will be informed by push functions in

the place of origin caused by among other things, lack of economic opportunities and access to resources on the one hand, and on the other hand, by pull functions at the point of destination due to the availability of better opportunities, access to resources, etc. According to Dingle and Drake (2007), migration often "serves as a pre-emptive strategy to adaptation in response to resources that fluctuate spatio-temporally either seasonally or less predictably" (Dingle and Drake, 2007: 113). Their study highlights four elements as characteristic of environment-induced migration: (1) as a type of persistent and defined "locomotory" activity, (2) characterised by the involvement of a large scale relocation of the subject moving on a longer duration as against patterns arising in its routine daily activities, (3) which may involve a seasonal to-and-fro movement of the affected population between alternately favourable and/unfavourable regions, and (4) resulting in a spatial redistributive movements in the extended population (Dingle and Drake, 2007: 113-114).

Oliver-Smith and Shen (2009: 12) predict that climate change when combined with depletion of ecosystems, overuse of natural resources and environmental degradation, will impact adversely on the habitability of large areas of the planet. In 1990, an Intergovernmental Panel on Climate Change report noted that human migration may be the "greatest single impact of climate change", opening the floodgate of research on the climate change adaptation and migration nexus (IPCC, 1990: 20). While mobility is historical in human nature, scholars agree that environmental deterioration and the attendant depletion of ecosystem's capacity to support life have been major influences on human migration (Gupta et al., 2006, Gomez, 2013; McLeman, 2011; Steiner, 2008).

Another study identifies three distinct ways by which climate change will significantly affect migration: (1) human vulnerability in dry regions which will witness a reduction in agricultural output and other ecosystems services such as availability of clean water and fertile land; (2) increase in the number and intensity of extreme weather events such as heavy precipitation resulting in flooding and mass displacement; and (3) its effect on coastal areas such as displacements in coastal habitats through rising sea-level which will permanently destroy extensive range of productive low-lying coastal areas and deprive millions of their homes (Brown, 2008).

As a 2001 IPCC report points out, since rising sea levels implies aggravated risks of flooding in vulnerable regions, "climate change is expected to contribute to migration from coastal and riverine settlements" (IPCC, 2001: 36). The report notes further that some patterns of changes

in the environment that are associated with climatic changes such as extreme weather events and coastal flooding are likely to cause population displacement in varying degrees and the most dramatic changes will are expected to occur in patterns of human settlement as rise in sea-level unfolds gradually just as the process of freshwater and soil degradation.

Raleigh, Jordan and Salehyan (2008: 6-8) identify different migration responses which correspond to specific forms of vulnerability. Temporary and circular labour migration has been associated with chronic drought. This is in contrast to enduring disaster events which often compels relatively long-term or permanent change of location. Similarly, they explain that floods and slides which are recurrent in nature and are 'known risks' for the victims, often resulting in direct localized temporary out-migration to relief sites. Within this characterisation of event-migration forecast, cyclones and hurricanes will likely result in short-term distress migration allowing populations to return and rebuild. Similarly, Munshi (2003) draws a link between movements into, and within the United States to changes in rainfall patterns particularly in regions relying on rain-fed livelihood systems. Reuveny (2008) also refers to the movement of about 2.5 million people displaced by drought and dust storms. During the 1930s, storms, forced over 300,000 people from the Mid West United States to neighbouring states like California in the world's first case of eco-migration.

A similar migration scenario according to Fritz (2010) was the year 2000 floods which saw the displacement of about a million people in Mozambique. Building upon experiences from this event, Fritz points out that sudden and collective displacement are common in the face of such events but mostly result in temporary forms of migration as a survival strategy, stressing that the patterns of migration from weather events will be proportional to the degree or intensity of impact. He notes however that movements may become permanent if the disaster renders the habitation unsuitable for resettlement, or damages the prospects of re-establishing an economic base upon return as was the case in certain parts of Southeast Asia. A particular case Fritz notes was the 2004 tsunami which altered the patterns of fish-stock farming and resulted in the loss of shrimp farms thereby forcing an inland movement of shrimp farmers for alternative livelihoods.

Small, Van der Meer, and Upshur (2001) also draw attention to the displacement of about 100,000 people as a result of severe environmental crisis in the Aral Sea region in 1996. Similarly, environmental degradation in Central Asia caused a multi-year drought beginning in the late 1990s which led to widespread unemployment in Karakalpakstan, a downstream

autonomous region in Uzbekistan (Glantz, 2005). About 273,000 people (20% of the region's total population) migrated to Kazakhstan and to the Russian Federation in search of better economic opportunities during the period of extreme drought in Uzbekistan between 1999 and 2001 (Glantz 2005). Small, Van der Meer, and Upshur (2001) observe that the level of vulnerability of the local population and the tendency to migrate was further heightened by poverty and ineffective governance with 48.8% of respondents preferring to migrate elsewhere in response to the loss of livelihood opportunities and inadequate institutional support.

Piguet, Pecoud and de Guchteneire (2011) note evidence in the literature that "drought and desertification are historically associated with population movements". Environmental factors, the authors argue, ranked highly in the first systematic theories of migration with classical studies. Ravenstein (1889) for example explained that unattractive climate, in combination with other socio-political and economic factors resulted in a continuous migration current (Ravenstein cited in Piguet, Pecoud and de Guchteneire, 2011). The authors further identified a number of factors which are predicted to increase in significance due to climate change, as well as impact on human migration: (1) an increase in the intensity and frequency of tropical cyclones, heavy floods and rainfall, (2) increase in the incidence of drought and desertification, as well as (3) sea level rise (p. 2-3).

In line with Piguet et al, (2011) above, Rebetez (2011) identified certain climate parameters in which serious changes will likely impact human migration. These in the authors view, include temperature change and the longer term global warming; a reduction in melt-water, snowfall, melt and altitude which could adversely affect seasonal dynamics as seen in the Peruvian Andes where seasonal precipitation have declined for example; sea level rise; changes in the general patterns of precipitation, as well as the frequency and intensity of hurricanes (Rebetez, 2011: 38-44).

Given the localized and location-specific nature of climate change impacts and adaptation requirements, a number of case studies on links between environmental variability and migration emphasize contextual factors as underpinning the level of exposure to events and the response generated among the populace (Downs, 1972; Ereaut and Segnit, 2006). Many agree that migration is often adopted as a mechanism for coping with environmental challenges in Bangladesh (Afsar 2005; Alam 2003; Asian Development bank, 2009; Samaddar 1999; Siddiqui 2005). Asian Development Bank (2009) observes that international

migration of unskilled labour have increased in Bangladesh substantially in recent years, with only 40% of migrant workers originating from just 5 of 64 districts[44] in the flood-prone south.

In a controlled study on environment-related out-migration in Nepal, Bohra-Mishra and Massey (2011) found a strong and consistent correlation between environment-related population pressure and the likelihood of population movement. They noted that this linkage is in response to a growing difficulty of accessing and exploiting environmental resources such as firewood, fodder as well as declining agricultural yield. Echoing Suhrke (1994), they identify land degradation, desertification, flooding as a result of rising sea levels, and deforestation among the most important elements of environmental change which ultimately leads to out-migration (Bohra-Mishra and Massey, 2011: 74-75). It is against this backdrop that Raleigh and Urdal (2007: 678) warned that "while abrupt displacements may happen, we primarily expect to see climate change resulting in a gradual migration by people in search of more fertile land".

2.4.2.1 Socio-economic Factors in Environment-induced Migration

With regards to predicting human migration in relation to environmental stress, studies are cautious enough to stress that migratory response to climate change does not occur in isolation. Socio-economic and political factors play important roles in shaping population responses to environmental stress hence the variation in adaptive capacity across cases: individual, communal, and regional when exposed to similar environmental stressors (see Ngigi, 2009; Schmidt-Verkerk, 2009). The high vulnerability of the developing world is linked therefore, to the low systemic capacity to support adaptation resulting in high vulnerability in poor regions where large scale migration will occur due to high reliance on climate-sensitive natural resources amidst low political or institutional capacity for mediated adaptation (IPCC, 2012; Oliver-Smith and Shen, 2009).

Some studies also maintain that certain conditions of exposure constrain the possibility of migration (See for example, Henry, Schoumaker and Beauchemin (2004) on Burkina Faso, and Findley, 1994 on Mali), suggesting a reverse relationship in which declines in resources results in a reduction in the capacity for migration (Black et al., 2008). Attention is therefore

[44] The 5 districts affected by large scale workers migration as a result of flooding risks in Bangladesh include Dhaka, Chittagong, Comilla, Tangail and Brahmanbaria.

paid to other factors which, acting alongside environment-related vulnerabilities, result in migration. ACCES puts this succinctly thus:

> [I]t cannot be assumed that climate change alone will lead to migration or displacement. Climate change plays an indirect role in such movements, by exacerbating existing vulnerabilities. Low "adaptive capacity" is an essential element of vulnerability to climate change, whether it is at the level of the individual, the family, the community/region, or the state. Adaptive capacity depends on factors such as demographic pressure, poverty, level of development (e.g. state provision of social safety net, basic services), weak or inequitable governance (land tenure being a key aspect), each of which can be important "drivers" of migration or displacement. At the level of the individual, and in addition to the above, other factors such as information/education, social networks, and physical condition can also influence the potential for environmental migration (ACCES, 2010: 18).

In the same vein, Schmidt-Verkerk, (2009) for example, argues that the relationship between environment and migration is a complex one which cannot be explained using a linear causal relation between for example, drought and population migration because a host of factors inform how people respond to environmental stress. Bronen, et al. (2009: 12) similarly observes that "diverse environmental events and conditions at multiple scales may cause and contribute to human migration and displacement". Indeed, regardless of the levels of predictive confidence by scientists on the environmental change and migration nexus, causal analysis is acknowledged as "far from [being] a straightforward analysis" (Oliver-Smith, and Shen, 2009: 10).

In far-flung international migrations unlike local migration or cross-border movements, the role of socio-economic factors are particularly noted. Examining links between environment and international migration into Europe for example, Black et al. (2008: 6) argue that "It is difficult to imagine that people whose livelihoods are undermined by climate change will immediately embark on a journey to Europe or to North America as refugees in need of protection". This is because the poor are regarded as lacking the capacity to migrate overseas due to the cost-intensive nature of international migration (Castles, 2000; De Hann, 2000; Haug 2002; Meze-Hausken 2004; Schmidt-Verkerk, 2009; Skeldon, 2002).

Highlighting the need for case-based analyses of links between climate change and human migration, studies have warned against the tendency to present migration as a necessarily response to environmental variability and stress (Haug, 2002; Meze-Hausken, 2004; Schmidt-Verkerk, 2009). Schmidt-Verkerk (2009) for example, maintains that populations' response

to environmental stress will be informed by a variety of factors including the socioeconomic circumstance of the people, or the availability of, and capacity to sequentially deploy a range of coping strategies among which migration is often considered as a last resort. In sum, given the complex intervening factors including social and economic variables which influence the migration decision, it is important to avoid an over-simplification of the environmental change-migration nexus (Oliver-Smith and Shen, 2009: Schmidt-Verkerk, 2009).

2.4.2.2 Estimating Climate-induced Migration

Statistical estimate is an important component of modern policy decision making. The challenge of statistical evaluation therefore poses a major problem in social policy formulation in many areas of policy planning. This challenge manifests clearly in climate change-migration studies. As a phenomenon subject to multiple contingencies, isolating and estimating cases of migration informed by environmental factors in order to accurately quantify the affected populations poses a huge challenge. Indeed, it remains one of the most controversial aspects of environmental migration research (Black et al. 2008; Gomez, 2013; IPCC, 2012). The complexity of variables which influence populations' vulnerability, capacity to adapt, or the impetus to move is combined with the absence of empirical data in constraining statistical accuracy in this regard. Some analysts have put it categorically that "long term, empirical data on migration patterns in response to environmental hazards does not exist" (Raleigh, Jordan and Salehyan, 2008: 8).

Estimates are further constrained by definitional issues since "figures for the number of environmental refugees worldwide vary depending on the definition and the source of data" (Kolmannskog, 2008: 8). The result is low confidence in the ability to assign direct causality to climatic impacts, or to the numbers of people affected (IPCC, 2012 cited in Gomez, 2013: 5). Similarly, Black et al. notes that "different causes of migration cannot be isolated from each other, since migration is a multi-causal phenomenon in which a range of factors are inter-related" (Black et al, 2008: 7). The inter-related nature of causal factors underlies the divergence of estimates and projections on environment-related migration.

Researchers advance different methods in attempts at deriving estimates of affected populations. McGranahan and Anderson (2007) quantify the number of people and the land area at risk as a result of sea level rise using a 10 meter scenario. Their study focused on density of areas such as China, India, Bangladesh, Vietnam and Indonesia, or by the share of

the population, using Bahamas, Suriname, Netherlands, Vietnam and Guyana, and noted that migration appears to be increasing into more vulnerable places such as China and Bangladesh.

Based on EM-DAT data on previous disaster events, Raleigh Jordan and Salehyan (2008) attempted a representation using value mean percentages of an affected country's population, including those killed or made homeless by seven of the most common chronic and sudden disasters.[45] Their method involves tabulation of these disasters over time and regions and across countries, sampling them by income levels and political instability.

As a result of the divergence of scales, results vary extensively. Estimates given since the mid-1990s in a number of studies are often criticized by scholars who question the reliability of the data upon which such estimates were based.[46] Studies such as McGregor (1994), Suhrke (1994), Kibreab (1997), and Black (2001) for example, have argued that Myers over-simplified the causal relation between migration and environmental factors, and that his study failed to provide data that sufficiently substantiates his predictions on the numbers of people to be affected.

Focus Migration (2009), puts the figure of persons that will likely be affected by environment-induced migration through events such as flooding, famine and desertification and similar threats at 24 million. Similarly, the German Advisory Council on Global Change (WBGU, 2008) estimates that climate-induced migration and its secondary impacts accounts for between 10-25%, of human migration globally—a number which according to Forced Migration (2009: 1), could amount to between 25-60 million migrants. Similarly, the United Nations University – Institute for Environment and Human Security (UNU-EHS) in Bonn puts the number of migrants displaced by environmental factors up to 2010 to be in the range of 50 million (UNU-EHS, cited in Forced Migration, 2009).

Other high-level policy actors have also given projections. For example, the Intergovernmental Panel on Climate Change (IPCC) projects a total of up to 150 million climate change migrants by 2050 (Acketoft, 2008). Another exhaustive study—the Stern

[45] Emergency Events Database (EM-DAT) is a database maintained since 1988 by the Centre for Research on the Epidemiology of Disasters. It was supported initially by the World Bank and the Belgian Government. Its aim is to provides information and humanitarian support at national and international levels. See more at http://www.emdat.be

[46] See Myers and Kent 1995, Myers 1986, 1993, 2001, and 2002.

Review, working from a larger review of data and forecasts, submitted that there may be 200 million environmental migrants across the globe by 2050 (Stern Review, 2006). In its analysis, the Inter-Agency Standing Committee (IASC) (2008) also reviewed common estimates and projected that environmental degradation is likely to have displaced between 25 million to one billion people by the year 2050.

The inconsistency in projections and estimates on climate change-induced migration points not only to a dearth of accurate statistics and reliable climate-migration data, but also to the complexity of the challenge given variations in patterns across and within regions. It raises therefore, the imperative that more case-specific research is carried out on the subject in order to give a more accurate representation of localized experiences, and to also provide adequate data which may then be combined to arrive at a holistic picture of climate-related migration flows.

2.4.2.3 International Dimensions to Climate-induced Migration

Migration, including those occurring across nations, is one of the widely accepted consequences of climate change (Brown, 2008). Although scholars believe that climate is unlikely to bring about large scale wars between nations, it is acknowledged to play important roles in aggravating both national and international conflicts over distribution or access, heightening the likelihood of violence that may expand across national boundaries (WBGU, 2008). It is also argued that climate change results in significant numbers of cross-border movements, explaining calls for international legal measures to cater for environmentally displaced persons (Lopez, 2007; McAdam and Saul, 2010; Myers, 2002; Naude, 2008; Norwegian Refugee Council, 2008; Onuoha, 2010).

There is some agreement among scholars that threats to human livelihoods within vulnerable nations will likely increase the number of livelihood induced out-migrations and influx risks especially into proximate regions (Siddiqui, 2005; Black et al, 2008). From this point of view, it is speculated that populations' livelihood will be threatened by the effects of climate change such as desertification, sea level rise, coastal flooding, and heat waves especially in poor regions. All of these events, it is argued, will increase vulnerability in weak or fragile states, and amplify the impetus to move (WBGU, 2014). It is in this context that climate-related migration is recognized as a security concern in international security circles. In this

regard, Kliot notes that "the fear of mass migration of environmental refugees has become a major issue in the international community" (Kliot, 2004, 69).

It is argued that migrating people are rarely bound by national territorialities but the availability of alternative means of livelihood, in their quest to move. Highlighting the international dimension to environment-related migration and insecurity in Nigeria, Onuoha (2010: 259) observes that “the impacts of climate change for national security in Nigeria is external and were made possible due to contiguous boundaries or territorial proximity”. This observation corresponds with Wolt (2011) who explains that cross-border movements often occur particularly in cases where climatically stressed communities abut alternative sources of livelihood regardless of territorial delimitations of countries as seen in cases of climate-driven movements across drought and famine stricken countries in East Africa, as well as migration from Somalia into Kenya. However, opinion remains divided on the patterns and process of climate-related international migration.

For Martins (2012), climate change may increase the likelihood of migration both at local and international levels through four path-ways which include: increased drought and desertification, sea level rise, intensification of and increased frequency of storms, increased competition for access to scarce resources among others. As Martins (2012) notes, it is the recognition of the likelihood of cross-border movements, that Parties to the UN Framework Convention on Climate Change (UNFCCC) adopted the Cancun Adaptation Framework in 2010, which called on all countries to take measures towards enhancing understanding, cooperation and coordination with regard to climate change induced displacement, migration and planned resettlement at national, regional and international levels.

According to Fritz (2010), the frequency, severity and duration of climatic changes affect the broad types of migration whether temporarily, permanently or internationally which may occur in the effort to cope with changing environmental realities. Similarly, Smith et al. (2008) explain that the adverse effects of climate change including sea level rise, desertification, degradation of the dry-land, and flooding among others, will significantly affect livelihoods and become a defining factor in large-scale population movements both locally and internationally.

Black et al. (2008) examines environment-related migration in Bangladesh and identified internal migration which occurs mostly in rural-to-urban, as well as international migration

motivated mostly by the prospect of increased economic opportunities. According to the authors, while it is a historical fact that significant migration has been associated with climatic variability, the degree to which individual and groups are vulnerable to migration in response to environmental degradation will be determined by their asset base—asset base in this regard is used in a broad sense to include "not only physical capital (such as land and other infrastructure) but also human and social capital" (Black et al. 2008: 25-26). As such, even in the face of similar exposures, the consequences of climate change will have a varying degree of impacts on individuals and socio-economic sectors, as well as reflect the aggregate standard of living among the people.

McAdam and Saul (2010) examine recent application of human security and refugee perspectives to addressing the problems of climate change-related migration. The study notes the emphases in international policy intervention and literature, on the prioritization of adaptation support in climate-related displacement as human right protection strategies, as against framing the problems of migrants as a refugee issue. While acknowledging the likelihood of cross-border movements, especially in abutting areas with existing social interaction, they note also that the 1951 Convention on Refugees does not envisage the circumstance of environmentally-induced out-migrants.

From a different viewpoint, some studies emphasize that there is no necessary causal linkage between environmental stress and international migration. This line of argument holds that environmental stressors bring about more of localized and short-term forms of migration as are often seen in rural-rural or rural-urban movements (Ezra and Kiros 2001; Findlay 1994; Henry, Schoumaker and Beauchemin 2004). Similarly, looked at from positive lenses, WBGU (2008) highlights the fact that climate change provides an opportunity for cooperation among nations by providing grounds for unity in the international community if countries treat it as a mutual threat that affects humankind and unite to prevent it. WBGU points out that if the international community fails to unite, the result is that:

> …climate change will draw ever-deeper lines of division and conflict in international relations, triggering numerous conflicts between and within countries over the distribution of resources, especially water and land, over the management of migration, or over compensation payments between the countries mainly responsible for climate change and those countries most affected by its destructive effects" (WBGU, 2008:1).

Given Nigeria's strategic location in the West African sub-region as well as its ecological diversity, it is a favoured destination for climate-related migration both within and across its bothers (Adesina and Odekunle, 2011; Awogbade, 1987; Naude, 2008; Nze, 2015). It may be argued that environmental peculiarities in terms of the nature of resources affected by climate change, the proximity of alternative coping resources destinations, as well as the nature of socio-economic interaction between communities at territorial fringes among other factors, help to shape migratory adaptation including those from across Nigeria's borders. A significant level of local exposure to adverse impacts of climate change in poor regions which lack the needed social adaptation support systems will no doubt lower retention capacity in such regions and heighten incentives for outmigration as many will seek alternative means of livelihood. These movements will also occur regardless of limitations that may be imposed by national borders—a situation that is particularly true for countries with poor cross-border regulation measures. In essence, there is no hard fixed position on the linkage between vulnerability and population movement.

2.4.2.3.1 Africa and Climate Change Migration

In spite of its low emission levels in comparison with those of the developed regions of the world, studies show that Africa will be the hardest hit, and is indeed already experiencing adverse effects of climate change (ACCES, 2010; Toulmin, 2009; United Nations, 2008; Wyk, 2010). Index reports on climate change vulnerability in 2015 for example indicate that seven out of ten most affected countries are in Africa (Deonarian, 2014). Deonarain notes further that there has been decreasing rainfall over a large part of the Sahel and Southern Africa as against an increase in parts of Central Africa with a doubled number of weather-related disasters, such as floods and droughts resulting in a higher mortality rate on the

continent than any other region over the past 25 years. Several migration hazards on the continent have been situated with its drastic environmental variability challenge.[47]

Climate change, according to Lisk (2009), is already a reality in Africa. According to the author, while climate change poses a threat to political and economic stability in the developing world in general, it holds a greater threat for Africa where, due to reliance on nature, conflict may arise from struggle among communities and nations competing for access to scarce resources especially when previously separate people or groups are forced to share resources from one resource. Highlighting the various scenarios of vulnerability and how migration may arise, Lisk notes that:

> There are prolonged and intensified droughts in eastern Africa; unprecedented floods in western Africa; depletion of rain forests in equatorial Africa; and an increase in ocean acidity around Africa's southern coast. Vastly altered weather patterns and climate extremes threaten agricultural production and food security, health, water and energy security, which in turn undermine Africa's ability to grow and develop. Climate and environmentally related disasters which threaten human security can induce forced migration and produce competition among communities and nations for water and basic needs resources, with potential negative consequences for political stability and conflict resolution (Lisk, 2009: 9).

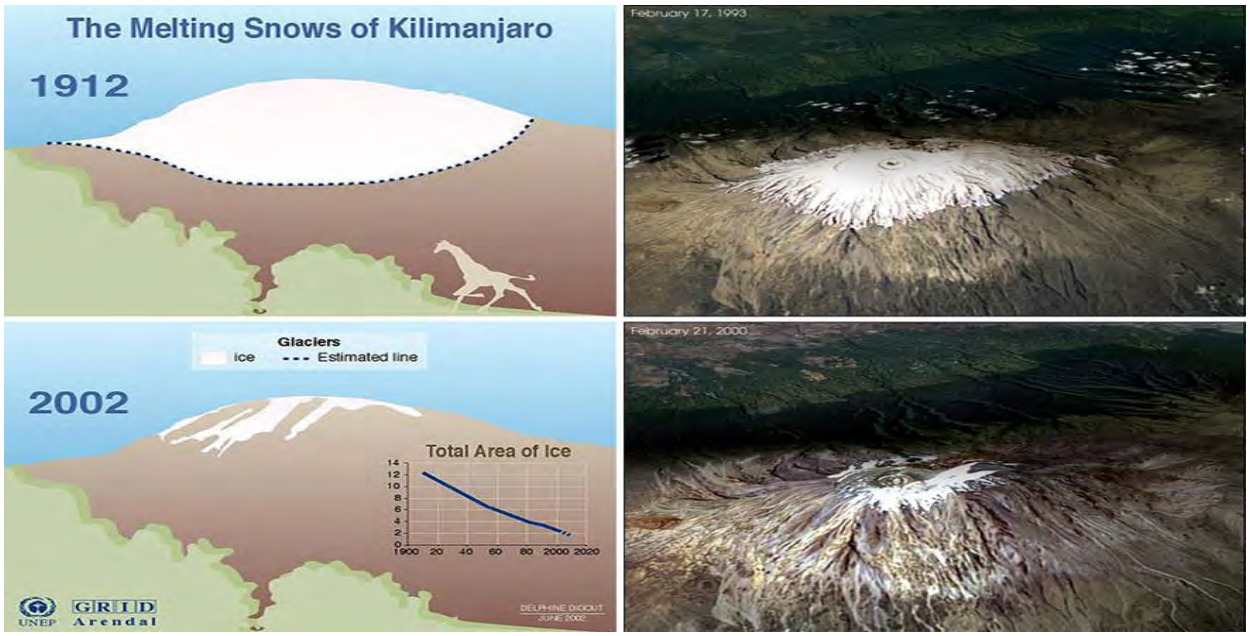
Highlighting the peculiarity of the African context of vulnerability, Lisk further points out that the security risk is higher in Africa with its history of conflicts. The author explains further that:

> Climate change could aggravate territorial and border disputes and complicate conflict resolution and mediation processes. Conflict zones and potential flashpoints in Africa, such as Darfur, the Sahel, the Horn of Africa, the DRC and northern Kenya, all have populations living in fragile and unstable conditions making them vulnerable to climate change's effects and the risk of violent conflict. Declining water resources and diminishing arable land are already intensifying

[47] Migrant Deaths and Displacement Soar in 2014 <http://fnsnews.nmsu.edu/migrant-deaths-and-displacement-soar-in-2014/>. NIGER: Southern villages emptying as drought bites http://www.irinnews.org/report/88385/niger-southern-villages-emptying-as-drought-bites. Food insecurity in Niger: The potential for conflict and regional destabilisation http://www.consultancyafrica.com/index.php?option=com_content&view=article&id=480:food-insecurity-in-niger-the-potential-for-conflict-and-regional-destabilisation&catid=60:conflict-terrorism-discussion-papers&Itemid=265. Acute food shortages hit countries in Africa's Sahel region http://www.redcross.org.uk/en/About-us/News/2015/March/Acute-food-shortages-hit-countries-in-Africas-Sahel-region. Sahel Crisis: 2011-2015 http://reliefweb.int/disaster/ot-2011-000205-ner. Sahel's Food Crisis Gets Swift Response but No Long-term Answers <http://ourworld.unu.edu/en/sahels-food-crisis-gets-swift-response-but-no-long-term-answers >.

competition for those resources, and creating tensions for displaced (Lisk, 2009: 10).

Figure 8: Dramatic disappearance of the glaciers on Mount Kilimanjaro



Source: Deonarian (2014).

In a 2009 review of vulnerabilities in the Global Humanitarian Forum's (GHF's), it is noted that over one third of the entire human population are physically vulnerable to climate change with more than 2.8 billion people residing in locations that are vulnerable to more than one type of physical hazardous impact of climate change from flood, droughts, storms, to sea level rise (GHF, 2009). The report notes further that when secondary socio-economic factors are included, human vulnerability amounts to over 4 billion people with over half a billion in the category of extremely vulnerable (p. 16). Highlighting that spatial range of vulnerability, the GHF report, identifies "people living in the semi-arid dry land belt countries, sub-Saharan Africa, South and Southeast Asia, Latin America, Small island developing states and the Arctic" as most vulnerable (p. 15), with severe impact likely in low-lying and flooded-prone parts on the Equator and glacier regions, as well as in semi-arid dry Sahelian land belt which separates arid north Africa from more fertile areas.

The GHF (2009) report explains further that countries including Niger, Sudan, Ethiopia, Somalia, Yemen, and Iran, all the way to Western/Northern China belong in the category of extremely vulnerable countries due to their location in semi-arid dry belt that is prone to droughts from the Sahara/Sahel to the Middle East and Central Asia. Similarly, countries

most affected in sub-Saharan Africa include Kenya, Uganda, Tanzania, Nigeria, Mozambique, and South Africa as a result of vulnerability to flood and droughts. Others include South and Southeast Asia due to the Himalayan melting ice sheets, droughts, floods and storms; Latin America including certain parts of the US as a result of shortages in water supply and floods; Small island developing states due to cyclones and sea level rise mostly affecting the Comoros islands, Kiribati, Tuvalu, the Maldives and Haiti; as well as the Arctic region where there has been continuous melting of ice caps (GHF, 2009: 15-17).

Studies on climate-related migration scenarios in West Africa suggest that traditionally temporary and seasonal patterns of migration among pastoralists in the Sahel region are increasingly being replaced by a permanent form of movement southward and into the cities (Azuwike and Enwerem, 2010; Trench et al., 2007). These incidences are particularly common in Nigeria and the Republic of Niger where changes in the patterns of southward migration of pastoralist from seasonal to sedentary have resulted to increasing clashes with their receiving communities.

The implication of Africa's peculiar vulnerability for peace and security on the continent is also well documented in the policy and scholarly literature. The Verisk Maplesoft risk assessment report for 2015 which compares risk for 198 countries based on 26 risk assessment criteria, observes that "A worrying combination of climate change vulnerability and food insecurity is amplifying the risks of conflict and civil unrest in 32 countries, including the emerging markets of Bangladesh, Ethiopia, India, Nigeria and the Philippines" (Verisk Maplesoft, 2014: n.d). In addition to the risks of unrest, the effects of environment-induced migration on women and children have also come under the purview of environment security discourse. I examine this briefly.

2.4.2.4 Women and Children in Climate-induced Migration

Children and women have been noted to face unique challenges arising from environment-related migration (Chindarkar, 2012; Hunter and David, 2011). Goh (2012) studied gender-differentiated impacts of climate change and illustrated how environmental stressors bring about primary and secondary forms of migration such as the rural-rural and rural-urban movements of the men-folk in response to climatic factors. The study argues that men were found to be "more mobile and more likely to migrate to areas unaffected by climate events in

search of employment, whereas women are less mobile, and more likely to stay back in the affected area to care for the family and household" (Goh, 2012: 13).

It is also argued that crucial differences in the experiences of men and women in regard to environment related migration are often neglected because policy makers and academics often regard migration informed by climate change as gender neutral. They posit that on the contrary, migration as a social process operating within a variety of other social processes often conditioned in peculiar ways that are gender-sensitive (Hunter and David, 2011). Some of the peculiarities according to the authors are gender-influenced cultural expectations, as well as policy and institutional intersections which shape the causes and consequences of migration for the womenfolk (ibid).

Using sustainable livelihoods as a framework, Hunter and David (2011) argues further, that shifts in proximate natural resources and agricultural potentials which constitute natural capitals serving to supply basic living requirements particularly in rural areas, are significant push factors which ultimately shapes household strategies for survival and its gender constraints (p. 307-309). Natural capital in this regard, includes important natural resource-based activities such as arable farming, farming in livestock, the use and trading in natural produce such e.g. wild herbal products, firewood etc all of which serve as buffers for rural family livelihood against shocks (Hunter et al 2009). Declines in such resources are noted to have an immediate and direct impact on family health and livelihoods especially in the rural areas (Koziell and Saunders, 2001). Similar experiences are widespread in several parts of Africa, and Nigeria in particular, where according to Agwu and Okhimambe (2009), the yearly approach of the dry seasons or rainy seasons, come with large scale migration into urban areas as rural dwellers move in search of jobs often leaving their women, children and household responsibilities.

In proposing a framework of analysis for the analysis of gender dimensions of climate change related migration, Chindarkar (2012) argued that there are gender-defined experiences, priorities, and needs which are peculiar to sexes and also require specific targeted policies for an inclusive approached to climate change mitigation. Women according to the study, are more likely to be affected in disproportionate ways among groups that are vulnerable to climate change because on average, they "tend to be poorer, less educated, have a lower health status and have limited direct access to or ownership of natural resources" (Chindarkar, 2012: 1). Furthermore, the paper notes that both in the process of moving, and

in its outcomes including rural–rural or rural–urban migration, and the general out-migration in which men are the major participants, the end consequences are potentially gendered in high degrees.

Similar observations of peculiar vulnerability have been made in regard to children. A report by the United Nations Children Emergency Fund (UNICEF) examines impacts of climate change on children in South Africa and found that the search for alternative livelihoods through spatial or occupational changes imposes immense strains on children's well-being as "[H]households may need to abandon current livelihood practices completely, in favour of opportunities that are more sustainable in the changing climate" (UNICEF, 2011: 9). The UNICEF report maintains that poor children were top in the most vulnerable population groups due to the array of constraints they face from poverty, poor nutrition and housing, access to quality education and medical care. In essence, climate change and its attendant development pressures will likely impose detrimental impacts on children either directly or through its implications for households occasioned by changing economic conditions including poverty, monetary income, international or national economic stress and shocks. These impacts also include pressures arising from internal migratory adaptation that will likely to impose strains on families' livelihoods and ultimately have adverse impact on young people (Ibid).

The report notes further that in addition to the effects of visible physical alterations which result from climate change, an important aspect of local vulnerability is the "interactions and overlaps between climate change and wider development pressures" (UNICEF, 2011: 35). The UNICEF also agrees that "climate and development have a dual relationship since climate change threatens sustainable development and the achievement of many key development targets including the Millennium Development Goals (MDGs)" which holds an important mandate for the welfare of children (Ibid).

In another study which examined the vulnerability of children to climate change and the impact of disaster in East Asia and the Pacific, UNICEF (2011) highlights evidence of children's vulnerability in the region including: mortality and injury arising from extreme weather events, heightened risk of disease and deaths due to thermal stress, risk of increased water scarcity, waterborne, vector and food-borne diseases transmission, forced relocation and induced migration due to extreme weather events and sea level rise, and declines in the

living condition of the population as well as heightened risks of food insecurity among others (UNICEF, 2011: 7-13).

Some of the common challenges that affect the well-being and development of children relate to the effects of climate change vulnerability on school attendance and child nutrition. Based on reports from interviews conducted in Kiribati and Vanuatu in East Asia, UNICEF maintains that children often face disruptions in their education and living conditions during extreme weather events as they are required to assist their families and the community. In such situations the report argues, more parents are likely to withdraw their children from school, or children are forced to miss classes while others drop out of school entirely due to destruction of educational infrastructure (UNICEF, 2011). Growing consciousness on the gender and child dimensions of climate change attests to the importance of case studies in understanding human vulnerability to climate change since a proper grasp of this complex web can be more meaningfully achieved when studies are embedded with broader social, economic and cultural contexts of vulnerability experiences (Hunter and Davis, 2011).

2.4.3 Climate Change Migration and Conflicts

Migration is acknowledged in many studies as an important mediating factor between climate change and conflict especially in developing countries (Acketoft, 2008; Alam, 2003; Asian Development Bank, 2009). As such, inquiry into the role migration plays in climate induced conflict is gaining increasing traction among climate change human security researchers. Conley and Werz (2012) point out that the rising number of migrant-settler conflicts in many cases, point to local or regional stress from climate change in already weak or conflict-prone societies. They argue further that areas that are already characterised by weak or brittle states are more likely to experience conflict when confronted with adverse effects of climate change such as resource short-ages, intergroup competition, and mass migrations (Conley and Werz, 2012).

Peters and Vivekananda (2014) highlights the relevance of state capacity and socio-economic components of adaptation noting that the likelihood of climate change resulting in conflict rests on ‘intermediary factors’ which condition the transition from exposure to adverse effects of climate change on one hand, and conflicts among peoples and groups on the other. Hence they point out that:

> Effects of climate change, such as more frequent natural disasters, long-term changes in precipitation and temperature, and sea-level rise, could combine with other factors to increase the risk or prevalence of violent conflict. Increased vulnerability to conflict depends on a mix of factors: the context of poverty, effectiveness of governance and institutions, adaptive capacity, political inclusion and financial management. These factors affect the capacity of individuals and institutions to adapt to climate change and manage conflict in a peaceful manner (Peters and Vivekananda, 2014: vii).

Illustrating migratory interface between environmental degradation and conflict, Libiszewski (1999) explains that loss of livelihood among Bangladeshis as a result of drought and flood resulted in migratory adaptation—a move supported by the regional government in the Bangladesh province of Khulna. This resulting emigration of a large population of Bangladeshis into the Indian states of West Bengal and Assam was met with hostility from the local community toward the migrants—a reaction which saw the migrants forming resistance movements to prevent forced deportation and leading to violent clashes between immigrants, police and nationalist Hindus (Libiszewski, 1999: 115-135).

Bauhaug; Gleditsch and Theisen (2008) identify four different ways through which climate-induced migration is likely to lead to violent conflict in migrant receiving areas. First, competition may ensue over diminishing natural or economic resources following the arrival of newcomers as share per capita decreases. There is particularly in ethnically diverse regions, a second linkage in which a wave of migrants from a different ethnic background to those of the original local population forms the basis for tensions along ethnic lines with a solidification in-group versus out-group identities. A third potential linkage concerns the animosity that may arise between two or more states: the one from which large out-flow of migrants has occurred and the ones to which they are migrating. Four, and lastly, migration induced by climate change has the potential to create fault-lines or aggravate traditional ones as is the case between peripatetic pastoral farmers and local sedentary farmers who compete with them over rights and use of land.

Withagen (2014) identifies two aspects in which greater attention is needed in climate change-conflict linkages especially as it relates to migratory pressures: one is the absence of legal frameworks that recognise migration arising from climatic pressures or what he terms ‘climate refugees’. Studies have in this regard, shown that there is a need for legal instruments on refugees displaced by climate-related pressures—a gap they argue, exists in the 1951 UN Convention on the status of refugees (See for examples, Biermann and Boas,

2010; Cournil and Mazzega, 2006; Environmental Justice Foundation, 2009). The second factor identified by Withagen pertains to the need for a theory capable of explaining transition and also testing for causality. He therefore advocated the integration of the climate change–migration–conflict dimension to existing Integrated Assessment Models as climate change problems can no longer be adequately be tackled without paying attention to demography and conflict issues.

In his analysis of the transition from climate change to conflict, Reuveny (2005, 2007) identifies four factors that are likely to influence in vital ways, the occurrence of violent conflict as a result of climatic pressures. These include competition over scarcer resources, the existence of ethnic distrust, tensions, and fault lines as may occur when migrants move into other territories. Out of 38 major cases of climate-related migration resulting into conflict, Reuveny found that 19 cases significantly exhibited these traits. He however emphasized the importance of purely local conditions as very potent factors that may influence the trajectory of conflict occurrence.

Other extensive discussions on climate change, migration and conflict nexus are found in literature (See for example: Funder, Cold-Ravnkilde and Ginsborg, 2012; Kahl, 2006; Homer-Dixon, Boutwell and Rathjens, 1993; Gleditsch, 2011; Green, 2005; Hendrix and Glaser, 2007). The following section focuses on the focus of this study—conflicts in migrants' host community.

2.4.3.1 Environmental Displacement and Conflict in Migrant-Receiving Communities

The receiving community vulnerability dimension is rarely discussed in the environment and conflict linkage. Yet, studies show that migratory adaptation extends the spatial scope of vulnerability to climate change (Bowles, Buttler and Friel, 2013; Green, 2005; Onuoha, 2010; Raleigh, Jordan and Salehyan, 2008). Through migration, the potential for conflicts associated with environmental change and degradation reaches far beyond physically affected regions as people move into less affected areas triggering conflicts and violent contestations for resources in the receiving communities (Bowles, Buttler and Friel, 2013; Green, 2005; Homer-Dixon, 1999; 1994; Onuoha, 2010; Raleigh, Jordan and Salehyan, 2008; Msuya, 2013).

Kolmanskog (2008: 4) argues that "while in transit or at the place of destination, migration can (be perceived to and/or) contribute to a competition for already scarce resources such as

land and water". Because most environment-driven conflict occurs within countries, movement of groups often lead to greater competition for access to, and protection of valuable natural resources. Conflict in migrant receiving locations can be traced to competition arising from the degradation of the critical resources in sending locations. In addition to primary migration from resource depleted regions to areas with relatively greater abundance, competition and conflict in receiving communities also increases the likelihood of secondary migrations from rural to urban or suburban areas thereby aggravating the risk of other forms of insecurity. Kolmanskog captures this dynamics of migration-conflict linkage thus:

> During a drought people may move to a less affected region, resulting in rising demand there. A competitive situation is more likely where population growth is strong. Climate change may also lead to further increases in rural-urban migration because of the degradation of land and people searching for better livelihoods. This may result in growing slums and an increased competition for resources in cities. There may also be competition and potential for conflict when migrants return to areas of origin and issues arise such as ownership or rights of use. The conflict potential of migration depends to a significant degree on how the government and people in the place of transit, destination or return respond. Governance, the degree of political stability, the economy and whether there is a history of violence are generally important factors (Kolmannskog, 2008: 21).

Highlighting the role of migration in spreading the impacts of climate change vulnerability including the potentials for tension over use of shared resources, Raleigh, Jordan and Salehyan (2008) argues that areas not directly affected by climate change will nonetheless experience its adverse effects. They cite cases from Burkina Faso, Mozambique, Rwanda, Somalia and Tanzania, where the adverse effects of climate events are being felt due to labour migration shifts from neighbouring regions (Raleigh, Jordan and Salehyan, 2008: 8-16).

In the same vein, Green (2005) notes that natural resource scarcity will have direct and indirect effects among which is social breakdown manifesting through migration or expulsion. Social breakdown according to the study includes migration/expulsion, receptiveness to insurgency, decreased economic productivity, weakened state, as well as potentially negative effects of social adaptability on conflict. This will likely aggravate if human migration directly, create competition between groups over resources, or indirectly

contribute to social inequality that accompanies migration of relatively poor groups into more resource rich areas (Green, 2005: 6).

Other studies have also examined the secondary forms of movement which occur in receiving communities in response to secondary stressor, particularly from the influx of environment-induced migrants. Both Toulmin (2009) and Deonarain (2014) note the wave of migration from physically vulnerable regions, and warn that such waves will likely result in new forms of resource constrictions thereby altering social relations and exacerbating the potentials for conflicts. As such, apart from conflict between migrants and their hosts, resource declines and conflicts between immigrants and hosts in receiving communities will further aggravate rural-urban outmigration especially in host communities as rural youths faced with destruction of investment and livelihood insecurity will be forced to migrate in search of alternative means of livelihood (Toulmin, 2009). Toulmin traces the high rate of conflicts associated with environmental migration in Africa to the continents pervasive poverty, weak institutions and underdevelopment, which leaves vast populations to remain dependent on natural resources with adverse changes in the climate system leading many people to migrate to areas with better condition as millions of environmental refugees result from drought and other hazardous changes to weather systems.

Toulmin further maintained that a "major reason for conflict in Africa is the large flow of people seeking land where they can settle and farm because relations between incomers and indigenous inhabitants are often tense, especially where there are few social and cultural values shared in common" (Toulmin, 2009: 119). Illustrating this, he points out that the droughts in West Africa and the Horn of Africa in the 1970s and 80s resulted in substantial movements of people into the wetter higher potential regions far south, from the low-rainfall Sahel region. This event, in his view, is testimony to how climatic extremes may result into widespread impoverishment of large numbers of people due to crop failures and other events with effect for migration and conflict. Alluding to the case of Ethiopia in 2008, Toulmin highlights the challenge climate change migration may pose to political stability in Africa explaining that the fear of urban influx of rural migrants left the government battling to "keep impoverished rural people on the land in their villages or camps", in order to prevent environmentally impoverished people whose lands had been degraded, from seeking shelter and livelihoods in the cities—a potential threat to political instability because "riots by a large and hungry urban mass can threaten and topple an unpopular government" (p. 119).

The likely implication of environment-driven migration for health in receiving communities is also noted. For example, Bowles, Butler and Friel (2013) points out that the movement of environmentally stressed population potentially carries with it, the risk of transfer and transmission of diseases as migrants such as the pastoralist who suffer a higher risk of exposure to diseases along the migration channels may expose receiving communities to new health risks upon contact with the migrants. Hence, their observation that "climate change will increase migration, potentially exposing migrants to endemic diseases for which they have limited resistance, transporting diseases and fostering conditions conducive to disease transmission" (Bowles, Butler and Friel, 2013: 1).

Addressing the Nigerian context of environment-related migration, Onuoha (2010) observes that "when people no longer have access to basic necessities of life, such as water, food, shelter, or physical security critical for survival, they adapt by switching livelihood systems or migrating to greener pastures", consequently generating security challenges which arise "when the capacity of the receiving communities are stretched to a tipping point where interactions and relations become conflictual rather than cooperative" (Onuoha, 2010: 259). He notes further that the outcome of influx into host communities depends on the carrying capacity of the receiving communities in terms of its ability to accommodate influxes at any particular point in time.

Similarly, in examining the impact of climate change on population drift and violent conflict in Nigeria, Obioha (2008) explains that effects of environmental variability has the potential to cause other social effects which in turn are likely to result in conflict as illustrated in the linkage between desert encroachment and on landmass which may produce large-scale migration which also creates ethnic tension and conflict. This results from clashes between migratory groups and indigenous or settled population. In view of these security linkages, it is imperative to ensure that provisions are made to accommodate all sectors affected in order to limit the likelihood of conflict that may result from climate-related migration. Taking due consideration for the communities where displaced persons migrate as an adaptation measure and forestalling outbreaks of conflicts offers a broader sphere of coverage in enhancing security-sensitive adaptation.

2.5 Conclusion

In this chapter, the key concepts which are critical in the climate change human security discourse have been examined. The various perspectives on the climate change-conflict linkage as currently advanced in the literature including (1) conflict rebuttal, (2) causal affirmation and (3) causal association were also examined. A criticism of these perspectives and highlighting their general limitations was also presented. Furthermore, a three-path connection deduced from previous studies on the transition from climate change to conflict, and especially violent conflicts in migrant receiving communities was examined, as well as other related issues in the three linkages including the international dimensions of climate induced migration, climate migration estimates, and gender issues.

As the various contributions indicate, there is no linear explanation among scholars on the relationship between climate change and conflict, nor is there adequate appreciation of its contribution as one among factors, if not the major in certain cases of conflict. Similarly, complexity remains a confounding factor in the attempts at drawing a clear correlation even though most scholars agree on basic channels of impacts. The task of this research therefore gains its justification from the imperative of filing this gap in the literature by situating socio-contextually, the significance of the climate change to resource conflicts in Nigeria.

CHAPTER THREE

THEORETICAL FRAMEWORK

3.1 Introduction

This study adopts an eclectic approach to its theoretical frame in view of its interdisciplinary outlook. This approach enables us to capture the ecological, politico-economic and psychosocial variables that underpin human-environment relations as examined in the study. An eclectic approach is one that integrates various frameworks of analysis, harnessing their complementarities in order to assuage limitations that may constrain the representation of variables. The study combines theoretical frameworks having considered the divergent thematic functions that are relevant to understanding environment-conflict linkages in the context examined.

The advantage of an eclectic approach which combines two or more frameworks has long been acknowledged by various scholars (see Johnson and Onwuegbuzie, 2004; Khan, 2013; Little, 2007). Khan (2013) explains that the relationship between environment and societal issues are multi-dimensional, involving diverse elements and requiring some kind of eclectic theoretical approach. This approach, he argues, is needed in order to harness the strengths of different theoretical frames that can help interrogate different aspects of the phenomena (Khan, 2013). Little (2007) points out that the utility of eclectic approaches is more apparent in interdisciplinary areas of research like political ecology. According to the author, although research in this field directly targets specific problems, those problems "are manifested in multiple spheres of interaction each of which has its own rules and norms of functioning" (Little, 2007: 5). This study combines three theoretical persuasions as convergent theoretical anchors. These are Eco-violence, Frustration-Aggression, and Relative Deprivation.

3.2 Eco-violence Theory

The Eco-violence framework emerged as an approach to analyse environmental change and human security at the end of the Cold War in the 1990s (Klare, 2000; Schwartz and Deligiannis, 2008). The enthusiasm with which research on the environment-security linkage was received resulted in a series of publications (Homer-Dixon, 1994, 1998; Kahl, 2006;

Kaplan, 1994), as well as some well-funded academic research programmes aimed at demonstrating and typifying the causal mechanisms between resource scarcity and violence. These included a team of researchers at the University of Toronto often referred to as the "Toronto Group"[48], and lead by Thomas Homer-Dixon; and scholars affiliated with the "Environment and Conflict Project"[49] (ENCOP) of the Swiss Federal Institute of Technology in Zurich and the Swiss Peace Foundation in Bern (Hagmann, 2005: 7).

Motivated by earlier research by Homer-Dixon,[50] scholars on the environment and security project developed the eco-violence model as an analytical frame to explain whether cases of environmental scarcity contribute to violence in developing countries, and if it does, to understand how it does (Percival and Homer-Dixon, 1998). Percival and Homer-Dixon (1998: 279) explain that the eco-violence framework defines "scarcities, the social effects arising from these scarcities, and the ensuing movement towards violence." Barnett (2000: 281) describes the Homer-Dixon-led research programme as "the most engaging and thoughtful of all the literatures that have addressed the nexus between environmental degradation, population and conflict". He identifies three key questions including (1) what is known about the links among population growth, renewable resource scarcities, migration and conflict? (2) What can be known about these links? And (3), what are the critical methodological issues affecting research on these links? (p. 281).

[48] Thomas Homer-Dixon, "On The Threshold: Environmental Changes as Causes of Acute Conflict", International Security,16(1991), pp. 76-116; "Environmental Scarcities and Violent Conflict: Evidence from Cases", International Security,19(1994), pp. 5-40; "The Ingenuity Gap: Can Poor Countries Adapt to Resource Scarcity?", Population and Development Review, 21(1995), pp. 587-612; Environment, Scarcity, and Violence (Chichester: Princeton University Press, 1999);Thomas Homer-Dixon and Marc A. Levy, "Correspondence. Environment and Security", International Security, 20(1995), pp. 189-98;Val Percival and Thomas Homer-Dixon, "Environmental Scarcity and Violent Conflict: The Case of South Africa", Journal of Peace esearch,35 (1998), pp. 279-98; DanielM.Schwartz, Tom Deligiannis, and Thomas Homer-Dixon, "The Environment and Violent Conflict", In: Environmental Conflict, op. cit., pp. 273-94.

[49] Günther Baechler, "Why Environmental Transformation Causes Violence: A Synthesis", Environmental Change and Security Report,4 (1998), pp. 24-44.;Violence Through Environmental Discrimination: Causes, Rwanda Arena, and Conflict Model (Dordrecht: Kluwer, 999); Günther Baechler, Volker Böge, Stefan Klötzli, Stephan Libiszewski, and Kurt R. Spillmann, Kriegsursache Umweltzerstörung. Ökologische Konflikte inder DrittenWelt und Wege ihrer friedlichen Bearbeitung. Vol. 1. [Environmental Destruction as a Cause of War: Ecological Conflicts in the Third World and Ways for their Peaceful Resolution] (Chur and Zurich: Rüegger, 1996); Günther Baechler and Kurt R. Spillmann, eds. Environmental Degradation s a Cause ofWar.Vol.2: Regional and Country Studies of Research Fellows and Environmental Degradation as a Cause of War. Vol.3: Country Studies of External Experts (Chur and Zurich: Rüegger, 1996).

[50] Thomas Homer-Dixon, 'On the Threshold: Environmental Changes as Causes of Acute Conflict', *International Security* 16 (1991), pp. 76–116.

Studies conducted by the group explored climate change-conflict linkages using "process-tracing" methodology involving the examination of multiple cases across countries (Hagmann, 2005: 7). The theoretical application of the eco-violence analysis runs through in many publications produced in the studies, including Homer-Dixon (1998), Homer-Dixon and Percival, (1998), Baechler (1998), Homer-Dixon (1999) Gleditsch (2001), Gleditsch and Urdal (2002), Obioha (2008), Odoh and Chilaka (2012) among others, and receive wide reference in the political science discourse of environment-security studies indicating the scarcity-inducing roles of environmental change. It has been a reference case in studies on the interaction between human vulnerability in situations of conflict associated with environmental problems such as drought, erosion, and population growth that are believed to have significant causal links pressure on availability of environmental resources, aggravating inequality in distribution and access to scare resources, and heightening contestation among powerful groups to control a limited resource (Dougherty and Pfaltzgraff, 1996).

3.2.1 Major Postulations of the Theory

Eco-violence occupies the intersection between environmental and demographic changes on one hand, and scarcity of natural resources on the other, as factors which, under certain conditions, engender violent contestations over access to resources (Baechler, 1999; Kahl, 2006; Homer-Dixon, 1999).[51] Along with other neo-Malthusian scholars, Homer-Dixon rooted eco-violence on the view that 'shrinking resource pie' fuels violent civil conflict by aggravating strained social relationships among different groups sharing common natural resources (Isiugo and Obioha, 2015). To Dougherty and Pfaltzgraff (1996), the eco-violence core postulation is that the depletion occurring in the amount or quality of resources reduces the total [resources] available, while increases in population divide what remains [of such natural resources] into smaller portions. They identify population growth and resource depletion as two potent factors which converge to produce conflict in many parts of the developing world. Highlighting the complex chain of events that contributes to environmental scarcity, Schwartz and Deligiannis (2008: 319) point out that:

> [...] severe environmental scarcity can produce a number of identifiable 'intermediate' social effects: it restricts local food production, aggravates poverty of marginal groups, spurs large temporary or permanent migrations, enriches elites that capture resources, deepens divisions among social groups, and undermines a

[51] According to Hagmann (2005: 3), "Environmental conflicts", "environmental security", or "eco-violence" are often used interchangeably in the literature.

> state's moral authority and capacity to govern. Marginal groups that directly depend on renewable resources find themselves trapped in a vice between rising scarcity on one side and institutional and policy failures on the other. In many cases, these social impacts are aggravated and amplified by weak or dysfunctional governance capacities in developing states. These long term, tectonic stresses can slowly tear apart a poor society's social fabric, causing chronic popular unrest and violence by boosting grievances and changing the balance of power among contending social groups and the state. Schwartz and Deligiannis (2008: 319).

Eco-violence analysis sees conflict as a product of scarcity or the fear of natural resources depletion that may occur in at least two primary ways as illustrated by its proponents: one, "the environmental effects of human activities in a given ecological zone, which is in itself a function of the total population of the region and the physical activity per capita as defined by the level of available physical resources (whether non-renewable resources, renewable or ideational such as institutions, belief systems, social relations and preferences), and (2) the level to which the ecosystem in that region is vulnerable (Isiugo and Obioha, 2015).

Works by Homer-Dixon and his team capture wide ranging issues in showing how violent conflict may develop from environmental scarcity as a result of chains of events including the degradation of the environment, the depletion of its resource supply, spurring human migration into new regions and increasing competition among groups. As a result, there is an increase in demand occasioned by population influx and inequality in distribution. This situation results into competition for access and control of available resources thereby sharpening divides between groups. Clarke (1999: 598) posits that such turns of event have the potency to weaken governmental institutions and of the capacity of the state, as at "contributes indirectly and in combination with other social, economic, and political factors, to various types of civil violence".

Eco-violence points to four interrelated effects of environmental degradation in Homer-Dixon's work, namely: reductions in the level of agricultural production, increased economic decline, displacement of populations, and a disruption in regular and legitimate social relations (Barnett, 2000: 280-281). The combination of these effects, depending on the contextual dynamics in the system, potentially gives rise to various forms of violent conflict ranging from insurgency, rebellion, and clashes among ethnic groups especially in developing countries. According to Homer-Dixon (1994), scarcity results from changes in the environment as events such as drought, flooding, and other forms of vulnerability

exacerbating changes impact on the availability of fresh water, forests and cropland (Homer-Dixon, 1994: 5-40).

A central theme in eco-violence is the effects of resource scarcity. Homer-Dixon and Blitt (1998) highlight two environmental processes that are likely to produce resource scarcity and precipitate violent conflict. First, they argue that changes such as rising temperatures, precipitation anomalies, extreme weather etc. will aggravate environmental degradation and aggravate completion for the few available resources. Secondly, rising sea level, drought, flooding and other extreme weather events they argue, will force millions of people to migrate away from risk areas. The result of migration will impose pressure on available resources in destination areas leading to resource competition and conflict. These effects are more likely in less developed countries with limited mitigation and adaptation capabilities (Homer-Dixon and Blitt, 1988: 2-5).

Scarcity is described as a product of three patterns of interacting factors including population growth, resource degradation, and the distribution of resources between individuals and groups (Raleigh and Urdal, 2007). These factors according to Homer-Dixon, results in three scarcities namely: supply induced scarcity which refers to scarcity caused by the degradation and depletion of an environmental resource, for example, the erosion of cropland; demand induced scarcity which results from population growth within a region or increased per capita consumption of a resource, either of which heightens the demand for the resource, and structural scarcity which arises from an unequal social distribution of resources thereby resulting in its concentration in the hands of relatively few people while out-groups of the power circle are subject to resource shortages (Percival and Homer-Dixon, 1998).

According to Homer-Dixon, these forms of scarcity have the capacity to combine and interact with one another, and to shape the patterns of social relations in different social contexts. For example, he identifies two patterns of social relations that may result from environmental scarcity, namely: resource capture and ecological marginalisation. While the first describes a situation in which resource degradation and population growth leads to the acquisition and control of resources by powerful groups at the expense of groups that are relatively weaker or poorer, the second—ecological marginalization—describes the movement or concentration of large number of people in regions that are ecologically fragile as a result of inequality in access to land or the growth of population on a limited amount of land space (Homer-Dixon, 1991).

The eco-violence model also recognises the role of innovative intervention as an ameliorative strategy which if well deployed as is the case of developed societies, will help populations adapt. This he describes as social and technical ingenuity modifications and adjustments which help societies avoid the adverse effects of environmental scarcity. The likelihood of adjustment depends on the available technical or social ingenuity which determines one of two options: first to deploy effective knowledge and attitudes which helps them to continue to depend on the natural resources in a more sensible manner while adopting strategies for mitigating the effects on a resource-strained population, or second, to decouple itself from reliance on the resources in the supply of which it is vulnerable given its capacity for alternatives (Homer-Dixon, 1994: 5-40).

Furthermore, eco-violence analysis also deals extensively with intergroup dynamics as defining elements in environmental scarcity and conflict linkages that is particularly apposite in explaining the impact of scarcity-induced migration on increases in urban crime rates, youth violence, militancy and insurgency, as well as the incidence of terrorist mobilization in the Nigerian context. Percival and Homer-Dixon (1998: 280) point out that in order "for these social effects to cause heightened grievances, people must perceive a relative decrease in their standard of living compared with other groups or compared with their aspirations, and they must see little chance of their aspirations being addressed under the status quo".

Contrary to the assumption that grievances, group identities, and opportunities for violent collective action are causally independent, Percival and Homer-Dixon (1998) presents a socially intertwined process in which grievances play a very significant role in influencing the formation of groups and in defining what group membership means. In such systems as they explain, the existence of grievances has the potency to shift members' perception of opportunities for violence (p. 280). As such, the tendency towards group formation increases just as the understanding of the essence of membership is informed by the degree and character of shared grievances, when people are able to identify with one another on the basis of a mutually shared grievance. The perception of justifications or opportunity for group action is influenced by the level of saliency in group identity as this level guarantees that individual participant shares in the costs of violent resistance to authority, and that their resistance increases the likelihood of success from their confrontation with the authority (Percival and Homer-Dixon, 1998).

The transition from environmental scarcity to violent conflicts is shaped by the socio-economic and institutional or political system, but the impetus for conflict arises more evidently from the distributional effects (Baechler, 1999; Homer-Dixon, 1999; Kahl, 2006). Percival and Homer-Dixon argue that:

> ...high levels of grievance do not necessarily lead to widespread civil violence. At least two other factors must be present: groups with strong collective identities that can coherently challenge state authority, and clearly advantageous opportunities for violent collective action against authority. The aggrieved must see themselves as members of groups that can act together, and they must believe that the best opportunities to successfully address their grievances involve violence (Percival and Homer-Dixon, 1998: 280).

Homer-Dixon also captures the migratory effects of environmental scarcity in eco-violence, highlighting human migration as one of the common outcomes of adverse changes in the chain of events which leads to demographic pressures and violence, as influx in receiving areas causing distributive tension over access and control for scarce resources (Homer-Dixon, 1994: 5-40). Homer-Dixon (1991: 91) points out that "scarcity and its interactions produce several common social effects, including lower agricultural production, migrations from zones of environmental scarcity, and weakened institutions".

Another notable assumption in eco-violence theory is the recognition that industrializing countries are more vulnerable to environmental change than rich ones. Hence Barnett argues that poor countries are "more prone to environment-induced conflicts" (Barnett, 2000: 281). Conflict outcomes are produced by both the distributional implications aggravated by subsisting socioeconomic conditions of the affected population, as well as by the poor capacity of state and its institutions to leverage adaptation among affected groups with the requisite infrastructural innovation and support. As such, whereas developed countries easily adapt to changes in the environment, countries characterised by high poverty rates and low levels of development are exposed to higher risks of environment-induced violence (Baechler, 1999; Homer-Dixon, 1999). This risk is proportionate to the reliance on primary natural resources.

Percival and Homer-Dixon (1998: 279-280) note that "the causal relationship between environmental scarcities- the scarcity of renewable resources-and the outbreak of violent conflict is complex... since "environmental scarcity emerges within a political, social, economic, and ecological context and interacts with many of these contextual factors to

contribute to violence", hence they note that "the context specific to each case determines the precise relationship between environmental scarcity and outbreaks of violent conflict" (p. 280)

Explaining further the factors which often determine the specificities of the context, Percival and Homer-Dixon (1998: 280) note "the quantity and vulnerability of environmental resources, the balance of political power, the nature of the state, patterns of social interaction, and the structure of economic relations among social groups" as factors which define or influence how resources are used, the significance of environmental scarcities on the society, the level of grievances that may arise as a result of these scarcities, and how much contribution can be generated from such grievances as a contributory factor to violence.

The relevance of the eco-violence approach in examining the dynamics of resource contestations in Nigeria derives from the balance of variables captured in the framework. The eco-violence framework as presented by Homer-Dixon and his team is described by Gleditsch and Urdal (2002) as far removed from the simplifications which characterize some other analysis of the environment-conflict discourse as represented by the sensationalism of Robert D. Kaplan (1994), or the prediction of doomsday as presented by Paul R. Ehrlich and Anne H. Ehrlich (1968).[52] Thus, Homer-Dixon avoids the tendency for definitive claims presenting population pressure and environmental degradation as sole sources of violent environmental conflict, and instead emphasizes the close interrelationship between demographic/environmental, social, and political factors in the generation of violent conflict.

3.2.2 Limitations of the Theory

A major criticism of eco-violence relates to the assessment of the relative causal weight of environmental factors which operates in conjunction with other factors at least, as a threat multiplier. Critics point out that environmental factors including scarcity of resources have little value as an independent explanatory factor among the many causes of conflict since, according to Homer-Dixon, it is difficult, if not impossible to separate intertwined causal dynamics in complex and indirect cases of resource scarcity. Peluso and Watts (2001) argue that resource scarcity does not have causal significance on violence on its own, and that conflict results from the combination of a number of factors. In this regard, Homer-Dixon

[52] Paul R. Ehrlich and wife Anne Ehrlich in 1968 published *The Population Bomb: Population Control or Race to Oblivion* in which they warned of mass starvation of humans in the 1970s and 1980s due to overpopulation, as well as other major societal upheavals, and advocated immediate action to limit population growth.

emphasizes contextual depth and researcher attention on the specificities on the individual situation under analysis in order to understand the wide range of factors beneath conflict to decipher the importance of environmental scarcity (Busby, 2010: 135).

Homer-Dixon's approach avoids the common accusation that the environment-conflict literature makes deterministic causal claims on the interaction between environment and violent conflict by pointing out that "a correlation between the scarcities of renewable resources and the outbreak of violence is not adequate proof that the violence was caused primarily by resource scarcity" and that the "analysts must trace carefully how environmental factors contribute to the forces that produce violence" (Percival and Homer-Dixon, 1998: 271). Another issue more broadly applied to the environmental scarcity and conflict linkage concerns the "robustness of research designs, the conceptual value of core variables, neo-Malthusian assumptions, and the epistemology of northern-driven discourse on environmental change and conflicts" (Hagmann, 2005: 11).

3.3 Frustration-Aggression Theory

The frustration-Aggression theory is one of the oldest theories of human behavior. It has been associated with the works of many prominent pioneering psychologists including Sigmund Freud, McDougal (Dougherty and Pfaltzgraff, 1996). Njoroge and Kirori (2014) argued that the principles underlying frustration-aggression theory derived from Freud and McDougall's works on aggression and social behavioral processes. However, its modern application is often associated with a 1939 monograph on aggressive behavior published by a group led by John Dollard at Yale University Institute of Human Relations.

Over the years, Dollard's monograph has had tremendous impact directly and indirectly, in nearly all studies on human aggression in the behavioral sciences (Berkowitz, 1989). Dollard's team sought to account from the very basic ideas, to virtually all types of human aggression in their book, *Frustration and Aggression* and in several articles which followed its publication.[53] The issues raised in the analysis of the Yale group defined to some extent at least, the focus of most of the studies subsequently examining the underpinnings and the implications of aggression in the decades immediately following its publication (see

[53] It had seven articles in a single issue of the Psychological Review in 1941 with authors focusing on the controversy generated by the monograph, with excerpts from these papers as well as from other related articles reprinted in a major section of the classic Readings in Social Psychology (Newcomb & Hartley, 1947).

Berkowitz, 1958, 1962; Buss, 1961). The popularity and wide application of the F-A theory across disciplines in the social sciences derive from its lucid presentation and clarity.

3.3.1 Major Postulations of the Theory

Dollard et al. (1939: 7) contend that "the occurrence of aggressive behaviour always presupposes the existence of frustration and, contrariwise, that the existence of frustration always leads to some form of aggression". In other words, the exhibition of aggressive behaviour always follows from a frustration-evoking impulse, while every action which evokes frustration is believed to result in some form of aggression.[54] Dollard's original theory posits that aggression occurs when there is an external impeding interference to some goal-response by an individual which generates an aggressive energy that is ultimately released through aggressive behaviour that is directed either toward the frustrating agent or "displaced" in aggressive behaviour towards non-associated targets (Felson, 1992).

Frustration is a key concept in Dollard's theory, conceiving frustration as "interference with the occurrence of an instigated goal-response at its proper time" (Dougherty and Pfaltzgraff, 1996: 269). That is, frustration implies the thwarting of a goal response, where a goal response refers to the reinforcing final operation in an ongoing behaviour sequence that is aimed at achieving some goals. In essence, frustration arises when a barrier is interposed between a person and certain goals they desire to achieve, leading to the mobilization of extra energy that flows over into the exhibition of generalized destructive or aggressive behaviour. The term frustration does not only refer to the process of blocking a person's attainment of some reinforcement, but also includes the target's reactions to such blocking. As such, 'being frustrated' means that another party or circumstance has thwarted someone's access to reinforcement, and that the reactions to such thwarting express annoyance (Berkowtitz, 1989; van der Dennen, 2005).

Notably, scholars have adjusted the frustration-aggression hypothesis over time. These adjustments have followed criticisms relating to the broad generalizations of the theory in its

[54] This latter part of the assumption was modified by Miller (1941) recognizing its overgeneralization since potential aggressive outburst may be effectively inhibited or frustration may in some cases, elicit alternative response that are not aggressive, showing that frustration is not a sufficient causal factor for aggression. Miller thus puts it that the second part of the hypothesis thus: "Frustration produces instigations to a number of different types of response, one of which is an instigation to some form of aggression".

original forms. Some analysts highlight the cost consideration in the exhibition of aggressive response in a frustrating situation. Hence, they opine that in order for frustration to elicit aggression, the external costs of aggression must be minimal (Berkowitz, 1962), or that frustration is likely to elicit an aggressive response only when there is a cue on the actions facilitating aggression (Berkowitz 1964), or when the frustrating agent is seen as arbitrary or illegitimate (Pastore 1952). Similarly, Miller (1941) argues that potential responses to frustrating situation vary and that in some cases, aggression may be instrumental rather than just a contingent response based on thwarting. As such, frustrations do not always necessarily result in hostile or aggressive outbursts, just as potential outbursts may be inhibited or result in alternative actions like the pursuit of other more readily available re-enforcers.

Given criticisms of its original claims as being too general and making frustration appear to be both a necessary and sufficient condition for aggression, Felson (1992: 1) reconstructed the main assumption thus: "any form of negative affect or distress is likely to increase the likelihood of aggression". Berkowitz (1989) explains that aversive events generally result in aggressive behaviour because they produce negative effects. Berkowitz suggests that psychological discomfort, depression, anxiety, and physical pain, as well as goal-blockage, instigates aggression. In substituting experience of aversion and negative effects for frustration, Berkowitz argues that arbitrary and illegitimate thwarting are most conducive to aggression because they produce a greater level of negative effect since a higher negative effect comes when people fail to experience or receive what they expect. In his cognitive-neo-associationist model, Berkowitz (1989) modified the theory thus: "frustration generates aggressive inclinations to the degree that they arouse negative effect like anger" (Berkowitz, 1989: 1). Following this modification, F-A accommodates cases in which frustration does not engender an aggressive response especially if it does not arouse anger in victims that could result from availability of other means of achieving the desired goal.

Some important conceptual elements in the frustration-aggression theory explicitly treated in Dollard et al (1939) concerns the redirection of aggression referred to as displacement, and catharsis. As van der Dennen (2005) explain, Dollard and his team emphasized that although an act of frustration instigates aggression primarily against the source of the frustration, aggression is also instigated against targets which are related to that source to some degree. The strength of the aggression instigated towards the related target was seen to differ in tandem with the level of associative ties that exist between the actual or primary source of

frustration, and the secondary or alternative target. This notion of displacement is associated with the Freudian mechanism of displacement interpreted in terms of stimulus affinities. Although the original source(s) of frustration constitutes the primary target for aggression, secondary subjects that are closely associated with the primary targets elicit similar reactions of aggressive actions. The strength of instigated aggression to the secondary target also increases or diminishes correspondingly as the similarity between the original and alternative target decreases.

Further on displacement, Dollard et al. argue that the more the level of punishment expected to follow from any contemplated aggressive response against a particular target by a frustrated person should he/she react aggressively towards the sources of frustration, the higher the likelihood that the 'inhibited' aggressive acts will be either replaced by an alternative course of action with less punishment-burden, and/or, the aggressive response is displaced upon other targets. This interplay is often referred to as the transfer of aggression, and shows that the inhibition of aggression is always incomplete as espoused in the frustration-aggression theory since a frustrated but response-inhibited individual (because such an inhibition is in itself a considered frustrating experience which heightens the frustration suffered), is motivated to seek alternative outlets for the expression of his or her pent-up aggressive inclinations.

As such, the only option for reducing instigations for aggression lies in the ability to express the feeling towards some object or targets. Hence, Zillmann (1979) argues that frustration must be viewed as a force that 'drives' the organism for an indefinite period of time, until he is opportune to perform the venting hostile or aggressive act. The latter analysis differ with Millers (1941) modification which suggests that frustration may instigate a non-aggressive reaction as well as aggressive action, presupposing thereby, that a non-aggressive reaction may help alleviate the need to carry out aggressive reactions. However, Dollard et al. (1939) points out that the reduction in the instigation to aggression is achieved, at least partially through any acts of aggression.

In addition, van der Dennen (2005) notes that Dollard's proposition makes for an equivalence of forms of instigation-reducing option that may be an inversely related to the occurrence of a different form of expressed aggression, including overt versus covert, or self-directed as against outward-directed aggression. As the frustrated expresses aggression according to Dollard, there is a catharsis—the reduction in the instigation regardless of the status of the

target. In the context of frustration-aggression analysis, Dollar et al. uses the notion of catharsis in describing in general, the reduction in the level of instigation or urge to carry out aggression in a subject of frustration, regardless of the targets (whether primary or associated target). As such, the execution of a violent assault on the sources of frustration or any target is seen as having a cathartic effect even if it does not harm anyone (van der Dennen, 2005).

Social science scholars have applied the F-A theory in analysing wide-ranging issues concerning social order or violent behaviour. The theory is noted to have greatly influenced correlational studies of violence outside of the laboratory especially studies focusing on effects of chronic rather than situational frustration (Felson, 1992). It has been argued for example, that nearly all social ills especially those related to violence are associated with pervasive denials that people face around childhood and early adolescence. Most of these are believed to actually result in aggressive behaviour especially in aggression-permissive or conducive environments (Plack, 1969 cited in van der Dennen, 2005). Bandura and Walters (1959) found for example, that juveniles who have suffered incidence of frustration during the periods of childhood have a tendency to be more aggressive than children with less experience in frustration. Similarly, Blau and Schwartz (1984) observe that inequality can produce "pent-up aggression which manifests itself in diffuse hostility and violence" (Blau and Schwartz, 1984: 180). Its application is seen in such studies as between scenarios of political violence and relative deprivation (Feierabend and Feierabend 1966).

Other social scientists including political scientists have concentrated more on its basic assumptions as theoretical basis for linking deprivation with aggression and violence (van der Dennen, 2005). It has also played a central role for example, in the interpretation of stressors associated with the environment and their aggression effects. Mueller (1983) for example, suggests that stress has an effect on aggression because “it impedes behaviour, produces stimulus overload, and creates feelings of annoyance, irritability, and discomfort...associated with frustration or negative effects” (Meuller, cited in Felson, 1992: 2). Slettebak (2012: 164) also observes that “environmental shocks generate insecurity, frustration, scarcity of important resources, and weakened enforcement of law and order, which are frequently suggested to increase the likelihood of outbreaks of armed violence”.[55] The interplay between climate change and violent conflict within the F-A framework is captured succinctly by Olaniyan, Francis and Okeke-Uzodike (2015) note that climate change has adverse effects on

[55] See also Brancati (2007), Burke et al. (2009), Homer-Dixon (1999); Miguel, Satyanath & Sergenti (2004), Nel & Righarts (2008).

peoples' socio-structural conditions by altering the quality and quantity of resources available to them potentially resulting into violent conflict. Illustrating the transition, they point out that:

> 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 the wetland areas are due to high level of frustration. Here, the frustration is two-way: the herders are fleeing their traditional arid zones towards wetter places and are frustrated by dwindling pastures that sustain their means of livelihood. Upon reaching the wetter regions, their cattle consume the crops of farmers, who in frustration, respond by attempting to kill off the destructive animals or drive out the newcomers. Revenge missions of grazers result in circles of violence. In other words, the basic source of frustration experienced by both parties is traceable to climate change, which is caused both by human and natural factors (Olaniyan et al. 2015: 56).

3.3.2 Limitations of the Theory

Frustration-aggression theory has been criticised and modified in various ways within the psychology discipline. In applying this theory to environment-induced conflict, the influence of complex contextual factors and the absence of cultural considerations in F-A theory may be viewed as a limitation. However, this has been alleviated by the use of the eco-violence framework. Specifically, the theory is often criticised for the lack of precision in the use of the concept of aggression which leaves questions about the forms, and level of intensity of frustration on one hand, and the type and degree of aggression that may be expected to occur as a result (van der Dennen, 2005).

This is particularly relevant in the context of studies of violence and conflict from a socio-political standpoint. Although the theory aptly demonstrates the linkage from frustration that may arise from a sense of deprivation in a political setting, in view of the individuality of aggression as emphasized in the theory as against the collective nature of political violence or angst, it becomes relevant to define the forms of frustration or deprivation, and the level of intensities at which collective perception of deprivation may result into group-based political act of aggression such as civil disobedience, crime, riot, insurgency, revolution, terrorism, civil war etc. This is as earlier noted, constrained by the difficulty of attempting a finite predictive or deterministic correlation which is rarely achievable in the fluid and context-shaped processes of human relations and society. In the analysis of social processes, scholars increasingly emphasize the importance of contingency in understanding social phenomenon.

It is argued that the social process be taken altogether as a unified interaction between phenomena and context, as distinct from the reductionist approach which focuses on generalising predictions by identifying and describing invariant aspects of the phenomena (Sarewitz and Pielke, 1999: 124-6; Simon, 1985: 297).

Against the backdrop of its original formulations with generalised assumptions on frustration and aggression, the theory is often used as an ad hoc explanation rather than a predictive tool for analyses. That is, rather than assume universal explanatory efficacy, the F-A theory serves more or less in specific cases contrary to its initial overarching generalisations. In highlighting its ad hoc or tentative utility, the question often arose as to why some frustrating acts result into aggression and others do not (van der Dennen, 2005). While one may argue that there are relative variances in the way in which people feel and interpret their feelings of discontent and satisfactions in relation to frustrating situation or event in different contexts, and that this variances may influence responses making them contingent upon other factors operational in the particular socio-cultural, political and economic context, there are apparent limitations that may inform a more conservative view on the relevance of the theory. As such different contextual aggravating or attenuating functions are likely to shape collective response or perception of frustration. This leads us to how social groups emerge in reactions to perceived social disadvantages in relation to other groups.

3.4 Relative Deprivation (RD) Theory

Relative deprivation theory is one of the theories of social movements which suggest that certain forms of collective phenomenon can be understood within the prism of relative deprivation.[56] It refers to "perceived discrepancy between on one hand, the actual position or state of the actor with respect to some good or value dimension, and on the other hand the level of aspiration or the normative expectations of the actor with respect to the dimension, i.e., what he believes he is justifiably entitled to" (Korpi, 1974: 1521). Narratives vary on the origin of the theory with some going as far back as Aristotle and de Tocquevile (Brush, 1996: 528). Ver der Dennen (2005) also observed that some of the key assumptions of RD theory derived from Dollard and Berkowitz's frustration-aggression theories.

According to Flynn (2011), the first application of the theory is credited to the work of sociologist Samuel A. Stouffer (1900-1960) in his research on soldiers in America after

[56] See Guimond and Dube-Simard (1983).

World War II in which he sought to understand how soldiers measured their personal successes by comparing standards attained in their operation units against those of other units in the military operation as opposed to broader standards in the armed forces in general.[57] However, the elaborate development of the theory as an approach to understanding broader social behaviour is associated with Ted Gurr's book 'Why Do Men Rebel published (1970). Brush (1996) explains that the theory emerged in the 1960s, as a biological and psychological explanation replaced the then dominant cultural and environmental analysis of social behaviour, with the idea that "nothing more than a fundamental aggressive instinct was needed to account for the prevalence of violence in human and animal species" (Brush, 1996: 527). Hence, Ted Robert Gurr looked towards psychology in his attempt at understanding the contexts in which the occurrence of aggressive behaviour takes place (Gurr, 1968, 1970). In his review of Gurr's theory, Oberschall (1978: 299-300) sums RD as:

> [T]he basic precondition of civil strife, and that the greater the deprivation, the greater the magnitude of strife. Relative deprivation in turn is produced by a discrepancy between what people think they are entitled to and what they are actually getting. As deprivation increases, frustration and anger will ensue. These psychological states will produce aggression. At the level of aggregates, many aggressive acts and tendencies will produce civil strife (Oberschall, 1978: 299).

Relative deprivation theory is often used as a framework for understanding how comparative perception of individuals in regards to the socio-political and economic conditions of others, may engender a sense of deprivation in the subject. This perception of relative deprived in turn, creates a pattern of behaviour often an aggressive one, towards a target. As a system of thought that has the potential to create or strengthen a group's collective identity against another (Singer 1992), relative deprivation provides a theoretical loop from which vulnerability of individuals, groups and communities to the environmental stress can be linked to the emergence of grievance-based actions in affected societies (Flynn, 2011).[58] As such, it links an individual's perception with the society in which he lives as alluded to in Karl Marx's treatise 'Wage Labour and Capital' (1847). Marx notes that "Our desires and pleasures spring from society; we measure them, therefore, by society and not by the objects which serve for their satisfaction. Because they are of a social nature, they are of a relative nature" (cited in van der Dennen, 2005: n. p).

[57] Davis (1959) notes that original conceptualization, of RD occurred in *The American Soldier* (3) volumes but the theory was never codified in the book described as 'informal'.

[58] According to Flynn, "Social movement theory, which began in the late 19th century, refers to the study of social mobilization including its social, cultural, and political manifestations and consequences."

The framework offers relevant concepts and insights to the study of diverse social phenomenon especially political action at various levels including interpersonal, inter-group and organisational levels. As Flynn (2005) notes, the relative deprivation theory is commonly applied in the study of socio-political, economic, and other problems in explaining issues related to the feelings and actions from individual to group levels since it encourages, for example, the exploration of an individual's feelings of deprivation that are likely to arise from comparing his or her situation with that of a referent person or group as well as the effect in terms of preceptors behaviour, that may result from this feeling of deprivation. It has complementary utility for the analysis of civil movements or group violence when combined with frustration-aggression theory because as they both concern relativities: the first towards a referent object, and the latter towards a target of aggression. More so, as Korpi (1974: 1570) argues, the consideration of relative deprivation is important in understanding the mobilisation of group conflicts "because any theory of conflict that focuses on mobilization of power resources will at least implicitly have to come to grips with motivational concepts like relative deprivation, since motivational factors are generally accorded a central place in theories of mobilization", especially towards creating a stronger frameworks of analyses that may be derived from incorporating the notion of relative deprivation into other models of conflict in situations where differences in power resources or their mobilization play a crucial role.

3.4.1 Major Postulation of the Theory

According to Guimond and Dube-Simard (1983: 526), the core argument of the relative deprivation theory is that "people protest and rebel against their condition not when they are deprived in an absolute sense but when they "feel" deprived relative to some [object of] comparison, persons or groups". In his book *Why Men Rebel* (1970), Gurr outlines relative deprivation as referring to the perceived discrepancies between the value expectations of people and their value capabilities. Value expectations here refer to those goods and conditions of life that people believe they are rightfully entitled to. On the other hand, value capabilities describe those goods and conditions they believe they are capable of obtaining and keeping. Gurr employs a threefold classification scheme for the types of values including: welfare, power, and interpersonal values, and subdivides interpersonal values into three, namely: status, communality, and ideational coherence. Relative deprivation according

to him, are in three patterns, namely: decremental deprivation, aspirational deprivation and progressive deprivation.

Echoing Gurr, Korpi (1974) notes that variations in relative deprivation strongly affect the potential for collective violence and also the magnitude of political violence. As such, increases in relative deprivation will, all things being equal, result in increased incidence of conflict. To Flynn (2011: 100), it refers to the notion that "feelings of deprivation and discontent are related to a desired point of reference (i.e., reference groups)." Flynn points out that relative deprivation, as opposed to social satisfaction, arises when desires which have become legitimate expectations are blocked by society. As such, it is seen generally, as an important force explaining the inspiration for social change, and also, as a central variable to analysing social movements and agitation that often emerge from collective feelings of relative deprivation. Korpi (1974) explains these three forms thus:

> Decremental deprivation occurs in a situation where men's expectations remain stable but where they receive less and less. If men's expectations rise while their achievements remain stable, aspirational deprivation is created. The third type is progressive deprivation, which occurs when a relatively steady improvement in men's social and economic conditions generate increasing expectations but is followed by a sharp reversal in the trend of improvement (p. 1575).

Decremental deprivation he explains, results from widening differences in the power resources between actors. Such increases in power resources changes the going rate of exchange between the two actors to the disadvantage of the weaker party, and given that aspiration levels are presumable slow in downward movement, a decrease in achievements is likely to produce decremental deprivation for the weaker actor. However, in such a situation, the likelihood of conflict is likely to decrease because deterioration in the balance of power will lead to a decrease in the success expectancy of the weaker party thereby increasing the expected costs of reaching the goal and a concomitant decrease in the probability of mobilization against the stronger referent party (Korpi, 1974).

Going by the nature of subjects of aggression, two typologies of deprivation are often differentiated. The first, egoistic deprivation refers to feelings of comparative deprivation that is experienced by a single individual; and the second, fraternal or group deprivation describes a collective feeling of discontent shared by a group as a result of its members' mutual perception of deprivation in regards to the status of own group when compared to some other

referent group(s) Guimond and Dube-simond, 1974; Flynn, 2011). There has been series of modifications in the original postulations in view of over-stretched assumptions and exceptions to the claims. However, the import of the theory sufficiently addresses our current purpose.[59]

3.4.2 Limitations of the Theory

A number of limitations are also highlighted by scholars in the RD theory. It is noted by some critics that aggression does not follow deprivation in some cases. Flynn (2011: 108) notes that "much of the evidence linking social movements to feelings of relative deprivation is indirect", whereas absolute deprivation obviously leads to a sense of discontent, and ultimately some effort at effecting social change, "feelings of relative deprivation may or may not definitively lead to the creation of social movements and collective identity". In this regard, Gurr contextual or situational mediators are noteworthy and instructive.

According to Oberschall (1978), the transition from feelings of discontent and the occurrence of strife is mediated by a number of intervening factors which may either facilitate overt conflict or inhibit it. Illustratively, inhibitions may be brought to bear on a potential act of aggression or overt violence by knowledge of the likelihood or certainty of punishment. In broader social context Obeschall notes, "increased size and use of social control agents against regime opponents can be expected to have a deterrent and depressing effect on group conflict." Such inhibiting factors according to Gurr (1968: 1105), could be from the 'coercive potential' of the regime, or what RD theory describes as 'institutionalization'—the presence of firm and enduring associations and solidarities beyond the primary group level where members have the opportunity to obtain those things which they think they are entitled to. The presence of such solidarities and associations may thus lower the effects of deprivation, or provide non-violent alternative means of expressing discontent.

Another major limitation is the lack of agreement among researchers as to the general applicability of the theory or how much of its supposition is backed in actual cases. Cases of exceptions are highlighted in a number of studies which have questioned the postulations of the RD theory based on certain forms of aggressive behaviour that were noted to no origin in

[59] Flynn (2011) identifies some of the areas addressed in latter models to include: (1) the revolution of rising expectations in which social expectations and aspirations rise at a much faster rate than capabilities; (2) the so-called J-curve situation when capabilities increase and keep pace with rising expectations for a short period and then suddenly suffer a sharp decline; (3) the serious crisis or malaise that causes a reduction in capabilities while expectations remain constant; and (4) situations in which expectations and aspirations increase while value capabilities remain constant.

deprivation, including racial riots and student protest events in which the participants were neither the most disadvantaged nor deprived in their groups (Guimond and Dube-simond, 1974). Many scholars highlight these contradictions and contend that discontent as argued by the RD theory is not always a major factor to explaining militant attitudes and protest behaviours (McPhail, 1971; Oberschall, 1978; Snow, Zurcher, and Ekland-Olson, 1980). Despite these criticisms however, the theory remains relevant in understanding the origin of some cases aggression and social disorder. Crosby (1976) concludes after an extensive review of the literature, that "most of the empirical data coming from over 95 different investigations supports the theory" (p. 109).

3.5 Application and Synthesis of Theories

In the study of climate change-conflict linkage, especially when viewed within the prisms of renewable natural resource scarcity and conflict transformation, there is an interaction among variables across the ecological, the socio-economic, and the psych-social spheres. This interplay is noted by Little (2007) who observed that problems are manifest in multiple spheres of interaction. Not a few studies acknowledge that socio-economic, ecological and psycho-social processes combine to play crucial roles in the progression from populations' vulnerability to adverse environmental events, that lead the incidence of, or the escalation of existing conflicts (Adger, 2003; Adisa and Adekunle, 2010; Gleditsch, 2011; Koubi et al. 2012; Miguel, Satyanath, and Sergenti, 2004; Okunola and Ikuomola, 2010). The cross-cutting nature of inputs into climate change-conflict transformation processes in the study areas therefore provides a strong empirical basis for the convergence of analytical frames presented above.

When examined against day to day manifestation of scarcity-induced conflict in Nigeria, the core arguments of the ecoviolence frame of analysis find expression in recent reports of farmer-herder conflicts and violence across regions in Nigeria. In 2013 for example, one report puts the number of killings resulting from farmer-herdsmen contestations in Benue State at about 205 deaths, while about 10,000 people were displaced as conflicts escalated and drew motivation from religious and ethnic fault-lines (Muslim Worldwide, December 20, 2013).

More recent contestations and violence conflict have not only strengthened relevance of the postulations offered by ecoviolence proponents on the mechanics of ecological

marginalisation and resource capture by groups confronted with resource scarcity, it has thrown up what appears to many as a new security issue in Nigeria. Hindsight shows however, that the increased attention now given to these contestations are not indicators of their increasing scales per se, but rather, an indicator of the diminishing attention on Boko Haram terrorism due to recent successes recorded by the state in combating the menace, and the shift in attention to a hitherto largely unreported security threat (farmer-herder conflict).

Just as the ecology-violence dynamics is well captured in eco-violence analysis, the psycho-social dimension of aggression is captured by Dollard's F-A theory (Burke et al., 2009; Nel and Righarts, 2008; Slettebak, 2012). The articulation of frustration as a driving factor of aggressive behaviour in the climate change-conflict transformation process in Nigeria has been espoused by narratives highlighting the various levels of vulnerability: from the pressure imposed by drought and desertification on herders which spur migratory adaptation, to loss of expected levels of productivity, to increased threat from cattle rustlers in transitory routes, and to the plight of farmers in host communities who experience loss of crops to encroaching cattle herders among other risks.

The socialisation of this frustration-induced aggression is the main theme of Gurr's Relative Deprivation hypothesis in which the power resources which underpin feelings of frustration assume a socio-comparative character (Korpi, 1974; Brush, 2006). This socialisation of frustration and deprivation creates a social force for conflict among groups. Between 2015 and 2016, the increased prominence of herder-farmer problems in different parts of the country have combined with the new matrix of power following the emergence of a northern Fulani as President of the country on May 29, 2015 in the person of Muhammadu Buhari. This socialisation of tension is seen in recent media and public discourse on the underlying motivations for recurring confrontation and violence.

Furthermore, the extended outcomes of these interconnected frames are seen in the effect of environmental change on primary and secondary population movements. This is central to explaining the dissipation of tension through rural-urban migration. When considered as an integrated lens for understanding conflict transformation, the relationship between climate change, declining rural economies, population movement and security in primary and secondary migrant receiving areas are not far-fetched. Whether this linkage manifests through environmental declines or through secondary vulnerabilities such as resource contestations

and push functions from rural urban areas, the environment-security dynamics are apparent (Baron, 2006; Kennedy et al., 1998).

The use of these frameworks is not novel in the current study. A number of studies have adapted them either combined, or individually, in demonstrating the links between environmental variability and social contestations or conflict. An important defining element however, is the robust exploration of contextual and systemic factors which give empirical validity to the operationalisation of the theories. For example, Slettebak (2012) observe that the primary connections inferred in by Homer-Dixon's eco-violence approach anchor on the context-sensitive transition from environment-induced stress and frustration to secondary factors such as contestation for scarce resources, and/or migration. This in turn engenders a feeling of deprivation among individuals that is, in relation to the context, capable of evoking a sense of solidarity among members around their vulnerabilities that may breed aggression and conflict.

The socio-economic context is a defining element and this is adequately represented in the three analytical frames. For example, the socio-economic setting is important to conflict transformation because climate change has the capacity to "widen the disparity between the 'haves' and the 'have-nots' both within and between nations" (Weissbecker, 2011: 105), especially in the face of inadequate support systems. Barnett and Adger (2007: 643) highlights the relevance of context to Relative Deprivation theory viz a viz the links between climate change violent conflict in pointing to "the spatial differentiation of climate impacts and the sensitivity of places to them". According to them, when there are no alternatives, climate change has the potential to directly increase absolute, relative, and transient poverty by undermining access to natural capital.

Hauge & Ellingsen (1998) and Olaniyan, Francis and Okeke-Uzodike (2015) among others, affirm a positive correlation between decreasing access to renewable resources and higher levels of frustration among affected population in resource dependent societies, which in turn, results in individual and broader forms of grievances including those directed towards the state, with broader non-direct but equally consequential effects including weakening of the capacity of the state as well as creating the conducive environment for the instigation of insurrection among the population.

Both Obioha (2008) and Isiugo and Obioha (2015) combine F-A theory with group identity and structural theories in his review of the effect of population drift in northern Nigeria. In the same vein, Ubhenin (2012), using the relative deprivation framework, tried to understand the main causal chains between climate change and violent conflict, and to identify theories which are helpful in explaining climate change and violent conflict linkages, observed that there is substantial evidence of climate conflict dimension to Nigeria's many violent conflict in emerging empirical literature. The author argued that relative deprivation theory "helps to situate the restiveness among Nigerian youths and their preference for violence to the use of words" (p. 534).

3.6 Conclusion

This chapter presented the theoretical schema upon which the study is based, comprising Eco-violence, Frustration-Aggression and Relative Deprivation. The combination of the three approaches enable the researcher to adopt an integrative outlook towards the analysis as the study is better able as such, to apply a multidimensional conceptual prism accommodating various angles of the contextual dynamics from the ecological, psychological and socio-cultural and political undercurrents of the transition from environmental variability to violent contestations in Nigeria.

CHAPTER FOUR

SOCIO-ECOLOGICAL BACKGROUND TO VULNERABILITY-CONFLICT TRANSITION IN NIGERIA

4.1 Introduction

This chapter examines contextual factors in climate change-conflict linkages in Nigeria. A number of studies have noted the importance of socio-economic and political factors in the climate change-conflict linkage (Amobi and Onyisi, 2015; Adesina and Odekunle, 2011; Gleditsch, 1998; Ide, 2015; Raleigh and Urdal, 2007). For Amobi and Onyisi (2015: 205), "climate change will be differently impactful [in] different regions, generations, age, classes, income groups, occupation and gender". Raleigh and Urdal (2007: 676) similarly observe that "[e]nvironmental and demographic stress is not likely to be an equally important risk factor under all economic, political or social conditions because these factors determine a country's ability to adapt to environmental change". In the same vein, Liverman and Merideth (2002) argue:

> Many factors at several scales need to be included in a comprehensive contextual analysis for regional climate assessments, such as socioeconomic conditions and trends, resource distribution and use, institutions, as well as relevant cultural traditions and values. Context also might include an analysis of the major networks of power that control decision-making and information flow, and of the nature of integration of the region into a national or global economy (Liverman and Merideth 2002: 202).

In the Nigerian context, Sayne (2011: 2) argues that "understanding Nigeria's climate future depends on better country-specific and local-level analysis". A context-inclusive analysis of climate-induced conflict enables us to identify the level of exposure and vulnerability, exposes systemic peculiarities which amplify or attenuate the effects of climate change, as well as show the cross-cutting effects of variability across systems. Fasona and Omojola (2005: 2) observe that "many communal clashes [often seen as ethnic and religious clashes] are actually struggles over either the control of land or mineral resources or both". This chapter explores the national and regional contexts of climate-related vulnerability and adaptation experiences in Nigeria.

4.2 Nigeria: A Historical Background

Nigeria attained independence from British colonial rule on October 1st 1960 following the amalgamation of its diverse peoples since the annexation of Lagos in 1861. Its creation as a country under the name 'Nigeria' followed the amalgamation of the Protectorates of Northern Nigeria and the Colony and Protectorate of Southern Nigeria on January 1, 1914. The amalgamation unified the two protectorates into a single British Colony of Nigeria under the administration of a Governor General, the first of which was Sir Frederick Lugard (British Colonial Report—Annual, 1916; Falola and Heaton, 2008).[60] Nigeria is as a result, often described as a creation of British colonialism.

In a 1914 report presented to the British imperial government on the amalgamation, Frederick Lugard gives a vivid background to the process and series of amalgamations which culminated in the creation of Nigeria. In the report, Lord Lugard explained:

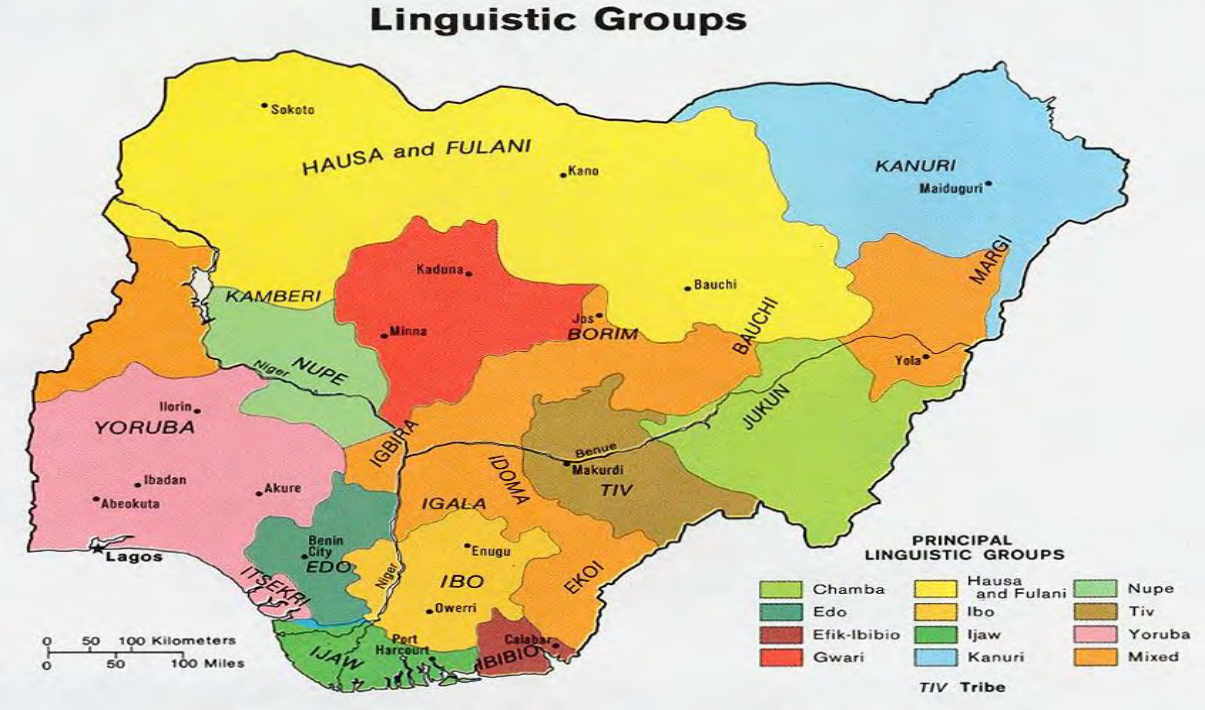
> The geo-political entity "Nigeria" is a colonial creation whose origins are to be found in the three British proto-colonial economic polities: the Colony of Lagos, which was under the supervision of the Colonial office, the Niger Coast (Oil Rivers) Protectorate under the Foreign Office, and the territory of the Royal Niger Company, a royal chartered company vested by Her Majesty's Government with judicial and administrative powers (Dorward, 1974: 2).

Nigeria is as such, an encapsulation of ethno-linguistically and geographically diverse groups and localities with pervasive heterogeneities among its people (See figure 9). It is in view of its pluralism that Blench (2003: 2) describes Nigeria as "the third most ethnically and linguistically diverse country in the world, after New Guinea and Indonesia". With ethnic groups and distinct linguistic units numbering between 248 and 500 respectively, Blench argues that Nigeria is a country in which ethno-linguistic diversity has a very significant effect in almost every area of the economy, intergroup relations and national integration in Nigeria.[61]

[60] According to Afigbo (1980) the merging of southern protectorates followed revocation of the control charter held by the Royal Niger Company on 31st December, 1899 due to its mismanagement of its assumed territories in the region. Hence the merger of the southerly territories with the territories of the Niger Coast Protectorate on January 1, 1900, forming a new Protectorate—the protectorate of Southern Nigeria with four administrative divisions: Western, Central, Eastern and Cross River with its headquarters at Calabar.

[61] The figure of 248 comes from Coleman (1958). The Index of Nigerian Languages (Hansford et al. 1976) gave a count of 394 languages, while the new edition (Crozier & Blench 1992) gives 440. The Ethnologue for 2000 lists 515 living languages, while the as yet unpublished Third Edition of the Index records 466. Wente-Lukas and Jones (1985) is an ethnic inventory and records some 550 ethnic groups. Coleman is probably the source of the oft-quoted figure of 250 languages frequently given in the Nigerian Press, and the Federal Government itself recognises no official figure. Indeed, one of the pillars of the colonial service was that officials did not reach

Figure 9: Ethno-linguistic groups in Nigeria



Source: Victoria (2015).[62]

The diversity of the post-colonial Nigeria led Osimen, Balogun and Adenegan (2013: 79) to argue that "the 1914 amalgamation exercise embarked upon by Lord Lugard, of the areas of North and South of the river Niger and Benue was a unification without unity, or at best unity in diversity". This factor accounts to a large extent, for the constant tension among its various groups since independence. Despite attempts made over the years towards engendering national integration including institutional and structural reforms such as state creation, the federal character principle and the national youth service scheme among others, competing centrifugal loyalties have remained important factors shaping conflict among groups in the country. Nigeria is today made up of 36 states, a Federal capital territory, and 774 local government areas (See map in figure 10).

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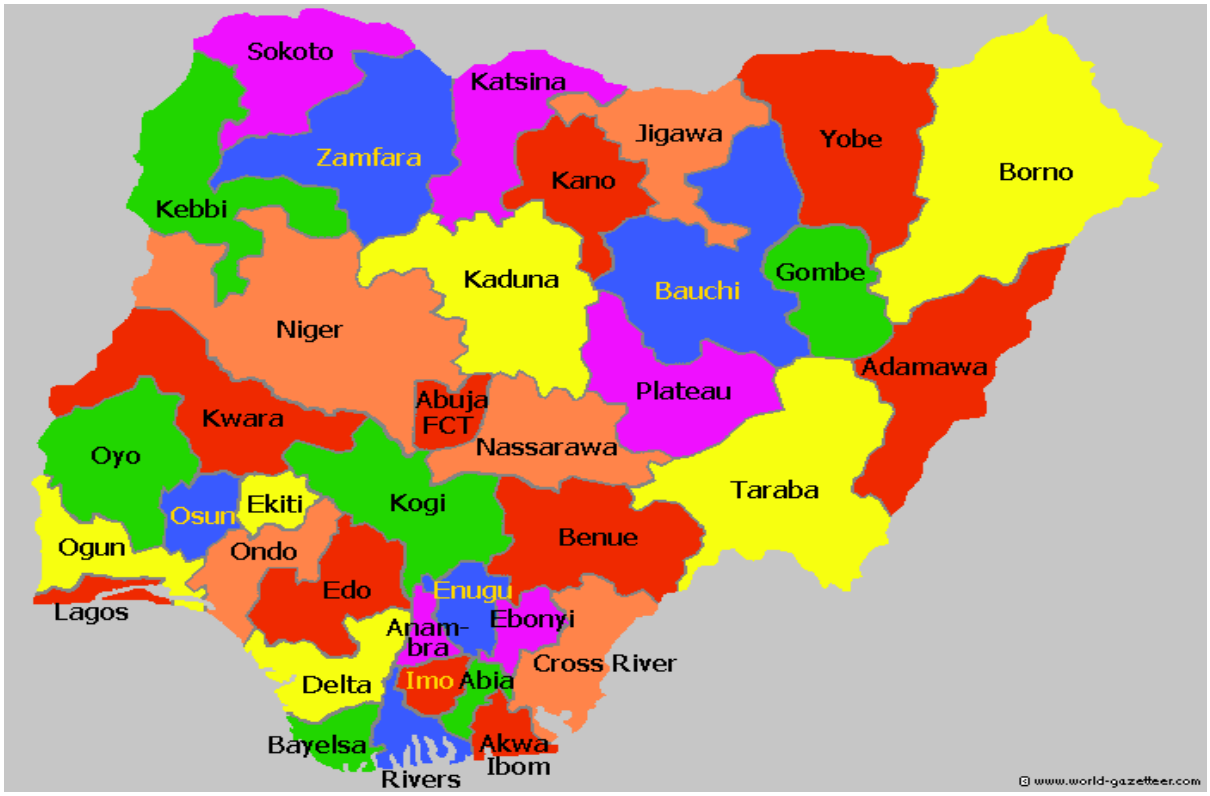
their full salary until they were fluent on the 'local' language, local being defined as one of these official *linguae francae*. A consequence of this system was that 'native courts' could be held in the vernacular, a situation that does not hold true in most parts of the country today, where plaintiffs are forced to operate in English, a system they consider highly unsatisfactory.

[62] Global Horizontal Irradiance (GHI) is one of the ways in which the solar radiation (sun's energy) reaching the earth's surface can be represented. GHI is the total amount of shortwave radiation received from above by a surface horizontal to the ground. It is usually measured per unit area on a given surface. SI unit (metric measurement) is generally used for all of these quantities, and are usually watts per square meter (W/m2). In this map of Nigeria, kWh/m2 (kilowatt per square meter) is used. As can be seen on the map, the northern part of Nigeria, closer in distance to the Sahara Desert (and generally known as the Sahel Savanna) receives the most irradiation per sq. meter and it is naturally Nigeria's hottest region.

Figure 10: Map of the 36 states of Nigeria



NHC, London (2015).

Nigeria's expansive size and location also plays an important role in its climatic characteristics and diversity. It is Africa's most populous country and a power hub with a population estimated of over 170 million people[63]. It is also the largest economy on the continent with a GDP estimated in 2014, at $515, 431 billion dollars (Lees, 2014). Globally, Nigeria's population is the seventh largest and its economy is considered to be among the fastest growing in the world (UN, 2015). It is also known as the world's largest agglomeration of black people (Nigerian Watch, 2014).

Nigeria has a total surface area of 91.07 million hectares and a land mass of about 923,768km², with a coastline totalling 850km in length bounded south at the Atlantic Ocean Nigeria (Cleaver and Shreiber, 1994). Aregheore (2009) puts Nigeria's land usage distribution as follows: total irrigated land of about 9570 km^2; about 35% arable land; 15% pasture; forest reserve of about 10%; settlements of about 10% and an uncultivable land size

[63] Although the last population census by the National Population Commission (NPC) of 2006 puts the total population at 140, 431, 790 million <http://www.population.gov.ng/>, there has been yearly estimates by many agencies based on the 2006 figure. A 2014 estimate by the Global Britanica puts it at 177, 156, 000 million <http://global.britannica.com/place/Nigeria>, while the Central Intelligence Agency (CIA) for example, estimates the country's population to be about 181,562,000 million as at July 2015 <https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html>. Accessed, 16, September, 2015.

of about 30%. It also has a sizeable arable land of about 33%; about 3% for permanent crops; 44% for permanent pastures; 12% for forests and woodland and 8% for other uses. Its borders are shared with four countries including Benin Republic to the west, Niger Republic to the north, Cameroon to the east, Chad Republic through Lake Chad in the northeast, and a southern boundary formed by the Atlantic Ocean. As a result of its size and ecological diversity, it has been argued that "no single generic model or adaptation scheme could reasonably apply to the whole country" (Sayne, 2011: 3).

Table 2: Facts and Figures about Nigeria

Demographics	
Total Population	180, 202, 000 (2015 est.)[64]
Distribution of population by sexes	Male: 92, 789 Female: 89 413
Number of Ethnic groups and share of population.[65]	Over 250 ethnic groups. Hausa and the Fulani 29%, Yoruba 21%, Igbo (Ibo) 18%, Ijaw 10%, Kanuri 4%, Ibibio 3.5%, Tiv 2.5%
Population density	188.9/km^2 , 489.3/sq mi
Geographic	
Geographic Location	Between 3º and 14º East Longitude and 4º and 14º North Latitude. Longest: East to West: about 767 kilometres; North to South: 1,605 kilometres.
Contiguous states	Nigeria shares its borders with The Republic of Benin, Niger, Cameroon, and Chad. The lower course of the Niger River flows south through the western part of the country to the Gulf of Guinea.[66]
Climate	Varied across regions: equatorial in south, tropical in central region, and arid in the north.
Natural hazards and environmental issues[67]	Periodic droughts; desert encroachment and flooding/ soil degradation; rapid deforestation; urban air and water pollution; desertification; oil pollution-water, air, and soil; has suffered serious damage from oil spills; loss of arable land; rapid urbanization
Geo-Physical Areas[68]	Total: 923,768 sq km; Land: 910,768 sq km; Water: 13,000 sq km
Land use[69]	Agricultural land: 78%, arable land 37.3%; permanent crops 7.4%; permanent pasture 33.3%, forest: 9.5%, other: 12.5% (2011 est.),
Socio-economic statistics	
Urbanization[70]	Urban population: 47.8% of total population.

[64] According to the United Nations 2015 World Population Prospects.<http://esa.un.org/unpd/wpp/Publications/Files/Key_Findings_WPP_2015.pdf> Accessed, 16, September, 2015.

[65] World Fact book. https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html. Accessed, 16 September, 2015.

[66] See Onyia (2015: 186)

[67] World Fact book, Op cit.

[68] Ibid.

[69] Ibid.

		Rate of urbanization: 4.66% annual rate of change (2010-15 est.)
Distance from sea level[71]	Lowest Highest	Atlantic Ocean 0 m At Chappal Waddi at 2 419m

Source: Author's compilation from World Factbook or as otherwise footnoted.[72]

4.3. Cross-regional Analysis of Nigeria's Climate

Nigeria has been described as highly prone to varying effects of climate change due to its location, unique and varying ecological characteristics (Amobi and Onyisi, 2015). Variations in geography and climatic features across its regions imply that "climate change events will impact on [the] variegated ecologies differently" (Amobi and Onyisi, 2015: 206). This explains Olufemi and Samson's (2012: 17) assertion that the consequence of climate change for Nigeria is "a geographical pincer threat from desertification in the north to rising sea levels [risks] in Nigeria's southern coastal regions." Similarly, highlighting the effects of Nigeria's regional variations and geo-climatic characteristics on forms of vulnerability, Fasona and Omojola (2005) argue that:

> The unique location characteristic of Nigeria made the country vulnerable to climatic change and environmental externalities resulting from both natural and anthropogenic driving factors. In terms of climate change driven land degradation, Nigeria is being 'attacked' in all fronts - serious coastline erosion, the pervasive gully erosion in eastern parts of the rain forest zone and central guinea savannah zone, and the ferocious wind erosion and desertification in the sudano-Sahelian zone. Nigeria is yearly loosing an increasing amount of prime agricultural and grazing lands which results in ecological migration and intensification of transhumance among the northern cattle rearers (Fasona and Omojola, 2005: 5-6).

Nigeria's location is unique in that it cuts across all tropical ecological zones. It has a 923,000km^2 in landmass which covers from about longitude $2^0\ 40^1$ to $14^0\ 45^1$ east of the Greenwich meridian, and north of the equator from latitude $4^0\ 15^1$ to $13^0\ 55^1$. All tropical ecological zones are found in Nigeria from the southern Atlantic to the edge of the Sahara which makes a latitudinal distance of about 1500km. These zones include: the Mangrove swamp of the southern zone situated between latitude 4 and $6^o\ 30^1$N, Tropical rainforest situated around latitude 6^030^1 to 7^045^1 which reaching from the southwest to the southeast. It also has a Guinea Savannah belt on latitude 7^045^1N to 10^0N, Sudan Savannah belt on10^0N to

[70] See World Fact book ibid.

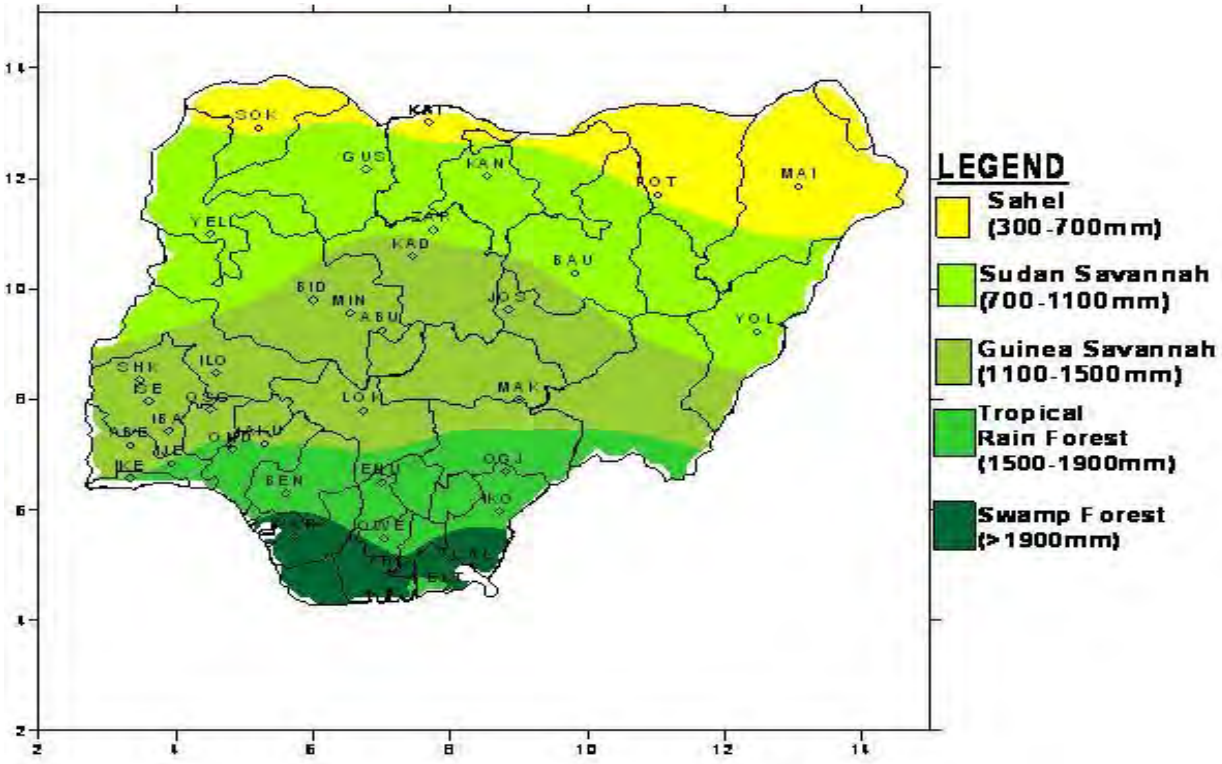
[71] World Atlas Highest and lowest points in countries islands oceans of the world. <http://www.worldatlas.com/aatlas/infopage/highlow.htm>

[72] See more at <https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html>

12^0N as well as the Sahel Savannah situated in areas above latitude 12^0N (Fasona and Omojola, 2005).

Describing its varied attributes, Sayne (2011) explains that Nigeria lies on the tropical belt across six unique vegetation zones, from mangrove-saltwater swamp to montane regions, grass-lands, to desert regions. It is characterised by wide regional differences and contrasts in its biophysical, agro-ecological, and eco-climatic zones in addition to varying socio-economic conditions and ethno-cultural characteristics which significantly influence patterns of exposure and vulnerability across its two major regions—the North and the south. Its southern tip laying towards the Atlantic Ocean according to Aregheore (2005), marks the lowest point at sea level while the Chappal Waddi at 2 419m mark its highest point above sea level.

Figure 11: Ecological zones in Nigeria



Source: Adapted from Okpara, Tarhule and Perumal (2013).

According to Fasona and Omojola's detailed account, Nigeria's ecological diversity is also manifest in its topographic features which differ widely across its regions, and also influence the types of interaction between people and the environment as is evident in regional agricultural traditions. It is characterized by variegated relief attributes encompassing uplands of elevation ranging between 600m and 2200m as well as basins or low lands in which

elevation drops as low as 0m in some places particularly around the extensive Niger Delta Basin.

The country has five relief regions, namely: the Western uplands, the North-eastern Highlands and Eastern scarp-lands, the North central Plateau and Highlands, the Plains – the great plains of northern Nigeria, the inland basins – the Niger-Benue trough and the Niger Delta Basin (Fasona and Omojola, 2005). Both Aregheore (2009) and Oyenuga (1967) explain that Nigeria's topography and soil composition also reflects its diversity influencing agro-based systems across the country. This to them also defines variations in the soil quality across the eco-climatic regions, in that soil types found in the humid tropical forests vary from those of the drier savannah zones. Each region also has varying crop productivity advantages as well as stress reactions sensitivity levels. The implication of this ecological mix is that the country is ecologically conducive for various productive systems across its regions. It also implies that regardless of season, the country has alternative destinations to meet its various agro-ecological capital needs. As such, it is characterised by environment-induced migration from both within and across its borders.

4.4. Climatic Variability and Changes in Nigeria

Like many parts of the continent, there are notable changes in Nigeria's climate. This is seen in increases in the frequency and severity of both drought and floods throughout the 20th century. Trends in climatic variability according to Hulme et al. (2001), is indicated in a warming rate of about 0.05°C per decade amounting to an increase of approximately 0.5°C. This variation has been most visible in the long-term decline in the quantity of rainfall especially in West Africa's semi-arid regions affecting large areas of Nigeria's northern region. The effect is increased regularity in the periods of drought in Nigeria especially in the drier regions in the north. This reflects climatic variability across tropical Africa, with the most serious effects experienced by pastoral groups who primarily occupy the drier margins of agricultural zones.

Tracing temperature changes in Nigeria back to 1901, Odjudo (2010) observes that there has been an increasing pattern beyond the 0.74ºC global mean increase in temperature since the beginning of scientific temperature measurement in 1860. This change, he notes, was initially gradual until the late 1960s, when the gradual changes gave way in the early 70s, to a sharp increase in air temperatures that has continued till the present. According to him, measured mean of air temperature was 26.6ºC between 1901 and 2005 with temperature increasing by

1.1°C for the period spanning 105 years. This portends a risk of increase between the 2.5 C middle risk temperature, and a high risk temperature of 4.5C by the year 2100 if the observed increases continued unabated. A similar trend is observed precipitation which according to Nkomo et al. (2006), has decreased by an average of 25% in the Nigerian Sahel region in the last 30 years, although this has been more moderate in other parts of the continent.

The effects of climate change have been most obvious in seasonal patterns across the different regions in Nigeria with significant effect on the lifestyles and occupational patterns of the people in the climatic transition from the north to the south. Odjudo (2010: 48) notes that "while the areas experiencing double rainfall maximal is shifting southward, the short dry season (August Break) is being experienced more in July as against its normal occurrence in the month of August prior to the 1970s". This changing pattern has varying manifestations and implications for the regions. This is expected since as noted by Azuwike and Enwerem (2010: 1), there are "different ecological zones from the wet southern tip on the Atlantic coast to its desert-like northern borders with Niger republic". In the same vein, Fasona and Omojola (2005) highlight the impact of environmental variability on agricultural and ecological systems. According to them, there has been drastic ecological and economic transformation in the northern and middle belt regions of Nigeria where traditional cereal-productive soils of the Sudan savannah ecology has been transformed into a pure Sahel, the Sahara has been extending towards the south, and the Guinea Savannah traditional root and tuber ecology has increasingly transformed into Sudan Savannah grassland.

Such alterations, they argue, is a result of the prolonged drought of the 1940s during which most stations within the upper Sudan and Sahel zones[73] suffered more than 5% decline in rainfall between two decades". This decline worsened further by the decade-long sudano-Sahelian drought between 1971-1980 from which the region never recovered (Fasona and Omojola, 2005: 14), worsening the rate of desertification in the region. Highlighting the pace of desertification in the northern region, Odoh and Chilaka (2012: 117) notes that:

> ... 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. Already the Sahel creeps south by approximately 1,400 square miles a year, swallowing whole

[73] Some of the most affected locations within the upper Sudan and Sahel zones include Birnin Kebbi, Gusau, Kano, Maiduguri, Sokoto, Yola, Nguru, Potiskum and Katsina. Worst affected is Nguru, Maiduguri and Katsina that are located in the interior of the Sahel zone.

> villages; government geological data show a 400 percent increase in sand dunes over twenty years (Odoh and Chilaka, 2012: 117).

One of the effects of this transformation, according to them, is that pastoral Fulani herdsmen of the lower Sahel and Sudan savannah are increasingly forced to move Southwards into the forest belts and the Guinea Savannah ecologies of the South in order to find more regular pasture for their herds, thereby resulting in conflict with their hosts—the Guinea Savannah farmers most of whom grow root and tuber crops—as they resist crop destruction by the influx.

4.5. Nigeria's Farming Systems and Farmer-Herder Contestations

Nigeria's varied agro-ecological regions and soil types make for diverse opportunities in the production of crops and livestock across the country. These regional differentiations in agro-productive traditions have come with it, certain threats in recent times due to increased climatic and ecological pressure. This is more so, with high reliance of the agricultural systems on traditional tools and methods. Although technological innovation is known to improve the practice of agriculture globally, its introduction in Nigeria's agricultural system has been far below with subsistence farming practices taking the dominant share of activities in the sector (Enete and Amusa, 2010). Under such circumstance, small scale traditional farming systems remains the dominant form of agricultural practice across the country, leaving the majority of the farmers operating at risk of climatic perturbations and uncertainties.

Given the traditional techniques as against the modern ranch system of livestock production that has become popular elsewhere, nomadic pastoral farmers faced one of the greatest direct impacts of climate change in the agricultural sector. Migration and increasing competition for grass and water as heightened by drought and sahelization poses a threat to existing resources, forcing more reliance on migration into new terrains, thus making conflicts inevitable. As Adekunle and Adisa (2010: 2) notes, conflicts arising from herders' search for resources such as water, forage and land in host communities have remained a "most important" problem faced by Fulani Herdsmen in the course of tending their herd. This has brought about enmity between them and the host community mostly arable crop farmers.

4.5.1 Nigeria's Migrant Fulani Herdsmen

Pastoral farming is a major component of the agriculture sector in Sub-Saharan Africa servicing the region's high demand for livestock products. In Nigeria, pastoral herdsmen occupy an important position as the sector remains largely dominated by traditional Fulani nomadic herders. Population increase also implies increased demand for livestock products and trade booms for herders despite environmental pressures in the arid regions where pastoral farming contribute a major share of agriculture. Highlighting the significance of pastoral farming in the sub-Saharan Africa region, Majekodunmi et al. (2014) noted that there were about 120 million pastoral herdsmen globally. Of this number, about 50 million were to be found in sub-Saharan Africa, representing about 12% of the population in rural areas.

Similarly, Nzeh (2015) noted that the Nigerian livestock production sub-sector account for about 25% of Central and Western Africa's entire livestock holding. This figure makes Nigeria the leading producer of livestock in the sub-region with an estimated over 16 million herds of cattle ahead of Niger Republic's 8.7 million, Mali's 8.2 million, and Chad's 7 million herds. The sector in Nigeria also provides employment for a significant number of herders in the country. It noted for example, that "between 85% and 90% of Nigeria's locally produced livestock are grown by over 8 million migrant herders and farmers, majority of whom are of Peul ethnicity although other groups are also herders (Shuwa Arabs, Koyam, Kanuri, Kanembou, Touareg, etc.)" (Nzeh, 2015: 22).

There is also substantial cross-border movement in the Fulani livestock rearing trade, although the actual figures of the inflow of herds have been difficult to assess. According to Nzeh (2015), Nigeria's cattle market has significant inflow from Niger, Mali, and Chad, with regular cross-border movement of herders and cattle during the yearly migration circles with Nigeria accounting for 50% of beef consumption in the ECOWAS region, and importing over 25% of this to meet the need of the population that is also fast increasing. At the national level, the sector adds about 5% to national GDP as a fragment of agriculture which in general, contributes 35% of GDP according to the Central Bank of Nigeria (CBN 2013).

The Fulani pastoral farming ethnic group, the primary pastoral group numbers about 15.3 million, and are mostly found in the arid and semi-arid northern parts of the country. They are closely associated with peasant cattle herding. According to Azuwike and Enwerem (2010: 3), "cattle production has been a preoccupation of the Fulani tribe of northern Nigeria for

centuries". The south on the other hand, has often offered two attractions to the herders: as a refuge for the cattle herders during the scarcity seasons and as a cattle market for the pastoralists. According to Lambrecht (1976: 26), they are a socially conservative people who, despite their migratory nature, "integrate neither socially nor politically with other ethnic groups".

As a historically migrant people, relationship between Fulani herders and their farming southern hosts were originally a symbiotic one. During their temporary stops around villages, they provide organic manure to the farmers from cow dung in addition to rich protein from their beef and dairy products. On the other hand, nomads also depended on farm produce from farmers for food (Ofem and Inyang, 2014). In spite of the potentials for complementarities in herder-host community relations, Nzeh (2015) explained that apart from the barriers of language and culture which isolate nomads from their hosts,[74] "the audacity with which they shepherd their flocks to graze on available vegetation on their route often attracts protests from communities" (p. 21). This situation, he notes further, creates unhealthy rivalry that often leads to violence. Nzeh describes the typical Fulani herding practice and lifestyle and notes that:

> By their culture, tradition and occupation, they have not remained an itinerant race who owned lands nor had any permanent abode. In fact, they cared less about land ownership because they are always on the move. They simply lived with their cattle wherever there was abundance of fodder and absence of tse-tse-fly, the blood sucking insect that once threatened the existence of their flocks. The nomads used to embark on seasonal migrations from the North to the South but this movement has become an all season's affair. The reason has been that over-grazing in the far north has given way to desertification and the normal alternating wet and dry seasons have metamorphosed into some unusual weather conditions now known as climate change (Nzeh, 2015: 21).

The lifestyle of the Fulani herders is significantly impacted by climate change in the long-run, and in the short-term, by yearly seasonal changes. Traditionally, the seasonal period of grass scarcity in arid northern regions usually implies more difficult access to feed for the herd during the dry season. This forces the herdsmen into a protective movement to down south which usually retains higher wetness and vegetation at such times. Highlighting the

[74] The migratory nature of Fulani lifestyle means that there is little sustained interaction with other peoples. This also means that few are able to learn their language and communicate with them as obtains between other tribes where languages have been learned to enhance intertribal relations.

pressure for migration caused by changes in the climate of herder communities, Aderinoye-Abdulwahab and Adefalu (2012: 4) explain that "climate change such as dessert encroachment makes grazing difficult. As most animal grazing is carried out in dry lands, pastoralists and their families are usually affected by harsh weather conditions such as droughts which have serious ecological and economic effects on rangelands".

The attraction of a permanent stay had often been prevented by the presence of tsetse fly in the wetter southern areas, particularly during the rainy season. This often makes a return migration to the north inevitable at the onset of the heavy wet season of the south. In recent times however, the nature of the transhumance have changed (Majekodunmi et al., 2014). Azuwike and Enwerem (2010) observe an increasingly longer stay in the south by the Fulani herders of northern Nigeria who have increasingly turned sedentary thereby putting pressure on natural resources of the local host communities as they compete for access to resources such as water and lands. The social effect of their protracted stay, especially in farming host communities, with intense hostilities, and sometimes, deadly conflicts arising. Many reasons are tipped to have influenced this change, including possible improved adjustment of cattle to the ecologies of the southern region aided by improved vaccination against infection by tsetse. This adjustment however, has been informed by push factors in the northern region. Majekodunmi et al (2014) justifies that migration of herders pointing out that "the ability of pastoralists to fulfil their role as food producers is directly dependent on the viability of their livelihoods and the factors affecting their livelihood strategies", a factor itself dependent upon access to constant supply of necessary feeding and water for the cattle and the herders.

4.5.2 Fulbe Fulani Migrants

Fulani ethnic and sub-ethnic groups share similar plurality as other groups in Nigeria although they have a relatively smaller population. Studies often identify variations such as the Fulbe, the Kanuri-related groups, the Shuwa, the Yedina and the Uled Suleiman (Odo and Chilaka, 2012). Among these groups, the Fulbe group also known as Fulani are the most populous and widespread, having expanded eastward from the Gambia River over the last millennium. Their entry into the area of modern day Nigeria may date as far back as the fourteenth century (ibid). The Fulani, pressured by declines in the availability of grazing resources and the decline of former wetlands which served as grazing areas, have been forced southward (Blench et al. 2003).

As a result of forced Fulani movement, pastoral migration has been at the centre of herder-farmer conflict in Nigeria in recent years. Blench (2003) explains that the wave of migration among Fulani herders started since the beginning of the twentieth century, and was a remarkable departure from long years of their confinement of to the edges of the Sahara desert. This change in the pattern of habitation has increasingly brought them into unfriendly contacts with previously unknown cultures, productive systems, and peoples. The result is repeated incidence of misunderstandings and conflict. Odo and Chilaka (2012) attribute the migration of the Fulbe/Fulani population from the desert region to effects of climatic changes and drought in areas hitherto made up of wetlands.

Pull factors also play significant role in influencing migration. Odoh and Chilaka (2012) identified ecological, religious, and cultural reasons as top among factors which account Fulani movement into the south-western parts of Nigeria. One of these—ecology, according to them, is the derived savannah climatic regime of parts of the south-west which loops southwards nearly reaching the coastal areas of Benin and Togolese republics, thus creating a relatively open land conducive to cattle grazing. Another relates to their vulnerability to theft and cattle rustling. This also explains the easy militarisation of the Fulani herder in terms of acquiring weapons (Awogbade 1983: 8-10).

Although movement is almost in all cases, a character of nomadic herdsmen, there are identifiable variations in the nature, length, and season of movements. Two forms of movements are often noted in the literature: the sedentary settlers, and the continuous transhumance or seasonal migration. While the former establish fairly isolated but more environmentally integrating settlement, adapting their herds to the ecology of the host trends of changing weather systems in Nigeria. According to Majekodunmi et al. (2014), some of the reasons for migration by herdsmen include:

1. Drought and scarcity of feed during the dry season compelling a search for adequate supply of pasture and water
2. Restrictive activities of indigenous farmers and conflicts with farmers arising from encroachment on crops
3. The need to avoid farmers' crops
4. Increasing population of herders and cattle grazing in a particular area
5. Resistance from indigenous populations
6. The need to avoid the tsetse fly-prone wet seasons that often result in death of cattle.

4.6 The Fulani/Bororo Dichotomy

Besides the more popular Fulani herders, there is the Bororo Fulani subgroup known as 'Wodaabe'. This group forms a distinct category of herdsmen in Nigeria that is often identified by host communities simply as 'Bororo' especially across Nigeria's north-central and South-western regions. The Bororo Fulani were estimated in 2001, to number about 100,000 (Fernwhite Hilsenrath, 2014). They speak a Fulfulde dialect called Kano-Katsina-Bororo Fulb that suggest the adoption of languages from the Hausas of northern Nigeria who were once conquered by the Fulani. Due to their reclusive ways, not much is known in the host communities about the Bororo or Wodaabe Fulani in Nigeria. They are regarded by some as representing the traditional Fulani lifestyle (Loftsdottir, 2001), while distinctions have been based mainly on physically observed cultural characteristics, migration and settlement patterns, integration with host community, among other attributes as perceived by their host communities.

Notably, unlike the typical Fulani ethnic group who often combine cattle rearing with crop farming, and may practice relatively lengthy settlement in cattle friendly environments making them fairly more integrated with hosts communities, the Bororo Fulani are mainly nomadic cattle-herders spreading across the Sahel. The Bororo Fulani are mostly associated with transitory seasonal migration across the Sahel region in the Niger Republic, Chad, Northeastern Cameroon, Central African Republic, and northern Nigeria, with migration increasingly stretching into the southern region of Nigeria. Severe recurring drought since the 1960s is identified as a factor forcing the Bororo or Wodaabe tribe into southward migration since the late 1960s after the cattle were killed in serious of severe drought episodes. The Bororo Fulanis are resistant to modern civilisation. Describing the penchant for the traditional, Fernwhite Hilsenrath argued that:

> Modern day Wodaabe are still untainted by automation, advances in technology and kind of consumerism that drive the economies of many city states. They have come in constant contact with civilization and many migrate to the cities during the dry season to find work so that they can buy millet and replenish their herds, however, city life does not appeal to them as they long to go back to "follow the cattle". Except for their cattle – the long horned Zebu – the same cattle that have been found painted on ancient rock walls – the Wodaabe have very little in the way of possessions. This is an intelligent move on their part, as travelling light is desired for people always on the move (Fernwhite Hilsenrath, 2001: n. p).

Describing the Bororo Wodaabe transhumance, Carol Beckwith, a Boston anthropologist wrote that "the distance they cover in the ceaseless search for grass and water to sustain their herds is not easily measured. Beckwith estimate that they travel about 250,000 square kilometres (96,500 square miles) and maintained that "no one knows exactly where the Wodaabes originated" (Beckwith 1983: 483). Frernwhite Hilsenrath (2014) similarly describes Bororo migration southward migration as a product of many factors, including environmental degradation and population increase since the 1900 which resulted in stiffer competition for pasture in the Sahel region. To him, the Wodaabe or Bororo Fulani people roam the land following wherever as the cattle leads and their Nomadic way of life serves as a form of cultural adaptation. This partly explains the difficulty in tracking the Bororo herders, as well as the poor relation with host communities due to their inability to communicate well with the people give their unfamiliar language.

4.7 Pastoral Influx in Southern Host Communities

The southern region, consisting of the South-west, South-south and the South-east, has witnessed increasing conflict between herders and farmers in recent times. Although this form of conflict is not exclusi ve to the region, the arable nature of agriculture makes it inconsistent with unbridled migration of cattle farmers. The region has also not been totally immune to direct adverse effects of climatic change. Sudden onset events such as irregularities in seasonal transitions, weather intensity, frequent spate of flooding, and increased incidence of acid rain have been among the hazards associated with climate change in the region (Odufuwa et al., 2012). The regions particularly in the south-south and the southwest regions, have witnessed increased flooding. Since the first deadly incidence of flood in Ibadan, Oyo State in 1948, Odufuwa et al. notes that the country has seen "series of serious tragedies of floods" occurring across the country especially in the coastal areas (Odufuwa et al., 2012: 73-74). Beyond the import of natural climatic variability however, the southern region experiences serious upheavals from the effects of drought in the northern region, receiving large influx of its direct victims.

Traditionally conditioned to open migratory grazing across the grazing planes of the northern terrain, the influx of herds under the effects of increasing drought and scarcity of fodder has forced two contradictory user-groups into a tenuous system of cohabitation in the southern that continues to cost hundreds of lives and properties, as well as threaten national security and unity in Nigeria. As Fasona and Omojola (2005: 14) noted, the effect of prolonged

droughts across the northern sudano-sahelian region in the 70s especially for the largely pastoral population was a wave of ecological migration towards the south which translates to pressure on land and land resources of the guinea savannah and rainforest zone by the Sahel-Sudan Hausa-Fulani tribe.

4.7.1 Changing Patterns of Pastoral Transhumance

The intensification of long-range southward migration explains the recurrent communal friction and conflict with the host communities across the southern guinea savannah and rainforest belt. According to Azuwike and Enwerem (2010), the increase in the scale of conflict is a result of changes in the nature and frequency of nomadic transhumance in recent decades. Migration over the years, have been planned in tandem with seasonal considerations for planting and harvesting periods, the risk of violence have been minimal. However, distortions in this sensitivity to crop timing have heightened the risk of violent conflicts. Describing the annual grazing circle of Fulani nomads, Iro stated that:

> [T]he herding season begins with southward movement of the herd and along rivers and stream valleys from October to December –marking the end of rainy season and beginning of dry season. January to February is the harmattan season that is characterized by longer grazing hours, herd splitting, and more frequent visits to stable water sources. These thus increase southward movement of the herds. The months of March and April are usually the toughest for the herdsman and his cattle, as it is the hottest period in the grazing calendar. May and June signify the end of dry season and vegetation begins to appear. This also marks the beginning of northward movement of cattle herds. From this period up till September, which is the peak of rainy season, though characterized by cattle-breeding, more milk production and shorter grazing hours, cattle herding coincides significantly with arable crop production (Iro, cited in Adekunle and Adisa, 2010: 2-3).

It is also against the backdrop of the transformation in both scale and form that Azuwike and Enwerem (2010) observe that:

> ...the northern Fulani cattle herdsmen, rather than maintain the transit orientation they have always been known for in most southern areas, appear to be turning sedentary in the south. The newly found tendency to establish permanent and semi-permanent camps comes at the cost of conflict with their farming hosts (Azuwike and Enwerem, 2010: 4).

In line with Azuwike and Enwerem's exposition, one of the main sources of tension particular to those between sedentary farmers and the host communities revolve around land use and claims to such land after certain length of time. This also has to do with the

contradictions in traditional and formal government structures and their roles in the management of land. While hereditary ownership of land obtains at the traditional community level with traditional adjudication still largely relied upon for settling local land disputes, government policy in the land use Act of 1990 gives right of allocation to state structures particularly, the state and local tiers of governments.[75] The incongruities in the operation of this formal versus informal institutional processes impact on community perception and adherence to regulatory systems.

Given subsisting hereditary land ownership system at the traditional level, increasing demand for allocation of land for new sedentary settlements by herders, or the tendency to claim areas allocated by the community for temporary occupations often strains relationships with the host communities. Although all states in Nigeria have many designated areas allocated to herders for grazing, the arrival of new groups and the increasing population of existing herders often result in ownership tussles, herders' demand for more space most of which are under cultivation or believed to belong to members of the local community. Such ownership tussles often follow long periods of temporary settlement by herders. This is further complicated by contradictory constitutional provisions which invest powers of control and allocation of land in the state, despite subsisting traditional and hereditary ownership at the community level. As such, disputes often end up in courts, leading to sustained hostility between herders and their hosts regardless of the position of the court.

Two patterns of pastoral presence are often noted in studies on pastoral migration and host community relations (see for example: Azuwike and Enwerem, 2010; Kratli and Schareika 2010; Kratli 2008). These include: (a) transitory migration in which herders are a continuous movement of cattle dictated by seasonal characteristics and availability of forage, and (b) sedentary movement in which there is either a permanent or semi-permanent relocation of herdsmen. While semi-permanent sedentary relocation often involves identifying an area for all-years-round grazing opportunities and the development of temporary huts until the need to move arises, increasing acclimatization to the environment and the cost of repeated resettlements has made permanent stays increasingly attractive to many herders.

[75] The Land Use Law of 1990 vests the control of land in the formal governments at state and local governments levels, for the control of urban and local areas respectively. (see Land Use Act 1990 at http://www.nigeria-law.org/Land%20Use%20Act.htm)

While the first form of transit movement appears to have increased in intensity, extending into the planting season and thereby constituting a higher risk for the farmers' crops, the latter has increased in size and demand with claims to land and community rights emerging as new challenges to the host communities. More so, stays beyond the post-harvest season has meant increased risks to damage crops in the planting season breeding conflicts as a result (Azuwike, and Enwerem, 2010). Concerns also arise in some communities with the trend of pastoral-farmer militancy, as the herders increasingly adopt the practice of bearing sophisticated guns and arms rather than the herding staff, ostensibly for protecting themselves—a practice farmers often claim, was to make their resistance impossible or to overpower whatever resistance arises when Fulani cattle are left to wander into farms causing destruction of crops. Such transformations have altered the traditionally cordial relationship between the migrant and the host.

In addition to natural resource contestations, the influx of migrants in the host communities also generates tension and often results in violence between herders and community youths. Ofuoku and Isife (2009) note allegations of cattle theft and harassment often brought against youths in their host community as well as allegations of female harassment, armed robbery, rape and kidnap alleged by community members against the herders in addition to damage to farmers' crops, pollution of community water sources and encroachment of lands. By and large, the presence of pastoralists is often seen as disincentive for agricultural activities which constitutes the mainstay of economic productivity in the rural areas across Nigeria. Some of these tensions are seen as hampering youth retention in rural areas, heightening rural outmigration and increasing urban unemployment rates which also leads to increased city crime rates (Ofuoku, 2009: 49-51). The incumbent President, Mohammadu Buhari also acknowledged the menace in his inaugural speech when he noted that:

> Boko Haram is not only the security issue bedeviling our country. The spate of kidnappings, armed robberies, herdsmen/farmers clashes, cattle rustlings all help to add to the general air of insecurity in our land. We are going to erect and maintain an efficient, disciplined people–friendly and well–compensated security forces within [an] overall security architecture (President Buhari's inaugural speech, on May 29, 2015). [76]

Given the atmosphere of ethnic and tribal suspicion (this is fully discussed in the next section—section 4.7.), criminal acts and related social disturbances have often acquired

[76] See full speech at <http://www.vanguardngr.com/2015/05/read-president-buhari-inaugural-speech/>.

colourations that lean towards ethnic or tribal in-group versus out-group differentiations in Nigeria. The ethnicisation of social problems further aggravates hostilities between migrants and host community adversely affecting intergroup relations in the country. In the south west region, where cases of kidnapping has been rife in recent months, the alleged involvement of a Fulani migrant in the kidnap of a former Minister and one-time Secretary to the Federal Government, Chief Olu Falae stirred intense ethnic furore between the Yoruba and the Hausa Fulani. Elite altercation along ethnic lines dominated news media with some leaders of the southwest region threatening to secede from the Nigerian federation or wage war against Fulani influx.[77]

The levels of apprehension that have arisen in the south with the conflict transformation in nomadic herdsmen migration are summed in thus:

> The Fulani markets in the south are no longer simply places where cattle exchange hands but have now turned into major grazing bases. They have also become havens protecting pastoralists against irate crops farmers. Increasingly, mere calves are brought to the south to be nurtured to commercial size. This has also necessitated major Fulani settlements around the so-called markets. Southern governments have had to pass laws restraining herders to newly carved-out grazing zones in reaction to incessant conflicts with local people. Fear of Fulani cultural domination is common in many places leading to deadly ethnic clashes and cases of social isolation. Communities like Uturu (Abia State, southern Nigeria) have in place, standing orders restraining property owners from renting out rooming apartments to Fulani herdsmen. It is also quite instructive that the Fulani herdsman who has not demanded rooming apartments for rent is now making this demand in southern communities (Azuwike and Enwerem, 2010: 4).

[77] Fulani Herdsmen Kidnap Former SGF, Chief Olu Falae On His Birthday <http://www.360nobs.com/2015/09/fulani-herdsmen-kidnap-former-sgf-chief-olu-falae-on-his-birthday/> How Fulani herdsmen abducted Olu Falae <http://www.vanguardngr.com/2015/09/how-fulani-herdsmen-abducted-olu-falae/> How I was abducted, tortured, released—Olu Falae <http://www.premiumtimesng.com/news/headlines/190728-how-i-was-abducted-tortured-released-olu-falae.html> Olu Falae: 'Our people did not kidnap ex-SFG' - Fulani herdsmen <http://pulse.ng/local/olu-falae-our-people-did-not-kidnap-ex-sfg-fulani-herdsmen-id4229660.html> Olu Falae's Abductors Are Not Herdsmen – DSS <http://www.channelstv.com/2015/10/12/olu-falaes-abductors-are-not-herdsmen-dss/> Femi Falana: That Fulani herdsmen kidnapped Olu Falae, is doubtful <http://www.thescoopng.com/femi-falana-that-fulani-herdsmen-kidnapped-olu-falae-is-doubtful/> Fulani Invasion: Yoruba leaders threaten secession <http://www.vanguardngr.com/2015/10/fulani-invasion-yoruba-leaders-threaten-secession/> My Death Would Have Ignited an Ethnic War between Yoruba and Fulani – Falae <http://www.theheraldng.com/my-death-would-have-ignited-an-ethnic-war-between-yoruba-and-fulani-falae/>. Falae's Abduction: Yoruba Elders Want Fulani Herdsmen Out of the Southwest <http://www.informationng.com/2015/10/falaes-abduction-yoruba-elders-want-fulani-herdsmen-out-of-the-southwest.html>. Falae's Abduction: NANS issues four-day ultimatum, declares war on Fulani herdsmen in Akure <Falae's Abduction: NANS issues four-day ultimatum, declares war on Fulani herdsmen in Akure>.

Recent violent conflicts in communities across the country have seen a heightened tension nationally. In a recent spate of attack, an incident in Nimbo—a community in Enugu State on April 2016, left about 46 community members were dead and several other injured while properties were also destroyed. The frequency of such attacks have elicited widespread criticism with leaders from across the country accusing the federal government of indecision on herders violence, an attitude that some commentators attribute to the President's Fulani ethnic origin. Some analysts have argued that increasing frequency of these incidences poses a threat to Nigeria's corporate existence especially at a time of ethnic and religious tension in some parts of the country (http://www.vanguardngr.com/2016/04/fulani-herdsmen-attacks-threaten-nigerias-existence-nass/).

Some state Governors have, in response to growing insecurity, introduced measures that many fear, may further escalate intergroup conflict. For example, Ifanyi Ugwuanyi the Enugu State Governor placed a ban on razing and rearing of cattle in the state (http://sunnewsonline.com/herdsmen-violence-enugu-bans-night-grazing/). Another incident in Oke-Ako in Ekiti State which saw two people dead also resulted in the state Governor, Ayodele Fayose banning cattle grazing in the state while challenging local hunters to prepare for war against any Fulani herdsman found grazing cattle in any part of the state. Calling for war, the State Governor charged:

> This killing of our people must stop…It is deliberate and we must take all actions to stop it…They have killed two, they have killed all of us. A fight against one Ekiti man is a fight against everybody, the President must rise up to the challenge and stand this decaying security situation in the face, we cannot continue like this…This is Ekiti Parapo war and it must be fought in the totality of our spirit (Governor Ayo Fayose on herdsmen attack in Oke-Ako, Ekiti State). (http://www.premiumtimesng.com/news/top-news/203970-fayose-vows-equip-ekiti-hunters-war-fulani-herdsmen.html).

According to a newspaper report, the Governor had warned that "*On no account should anybody come to sack our communities again, rise up against them. Before any herdsmen kill you, kill them, before they rape your wives, kill them, and before they rape your children kill them*" (http://thenationonlineng.net/fayose-kill-erring-herdsmen-cows/). There is no gainsaying that the implementation of such confrontational approach in managing the herdsmen-farmer crisis could result in reprisals against citizens of the state involved, especially those who reside in Fulani/Hausa dominated regions in the country. Since such a

crisis easily acquires ethnic and religious dimensions, it could escalate into much larger conflict.

4.8 Socio-contextual Amplifiers of Climate-related Conflict in Nigeria

The trajectory of Nigeria's historical development and its present socio-political and economic circumstance contribute in exacerbating environment-related vulnerabilities and ultimately, the outbreak of violent conflict. Clear as this may appear, the complex interplay of the context often confounds the specificities sought in attempts to disaggregate causal factors with a view to understanding conflicts. Attempt at unravelling the causes of incessant conflicts in Nigeria have therefore often revealed interwoven factors from historical, demographic, socio-economic to political governance issues as underpinning social outcomes (see for examples: Akwara, Agba and Edino, 2013; Iyoboyi, 2014). Although the scale of terrorist killings in Nigeria and the attendant shift in both national and global attention on terrorism appear to have concealed the spate of environment-related killings, a cursory look at recent incidences of large scale violence across the country point to the conflation of socio-ecological factors in insecurity as historical, religious, or tribal delineations become volatile fault-lines.

Linking environmental variability with violent conflict in Nigeria is constrained by the fact that studies on environment-conflict interface are recent. While the Nigerian state has a long history of intergroup conflicts dating back into pre-colonial years, the exploration of its environmental agency has only gained attention in recent times. The next section thematically discusses contextual factors which contribute to environment-related contestation and violence. It also presents some illustrative cases.

1. Tribalism

Since its independence, Nigeria has faced challenges of disunity among its diverse ethnic groups. Although leaders have often highlighted the imperative of national integration, pre-colonial and post-colonial ethnic and tribal allegiance has remained dominant. Bank (2008: 4) describes tribalism as "an identity established by a group of people to organize themselves politically and socially". Tribalism manifests in competition among diverse ethnic groups. As such, it is a socially constructed form of group differentiation. In Nigeria, tribalism has been accentuated over the years through systems of social relations historically entrenched since

colonial rule, and further entrenched in the centrifugal system of post-colonial governance (Jacob, 2012; Alemazung, 2011).

Davis and Kalu-Nwiwu (2001: 1) recognize this historical fact, and therefore argues that "colonial legacy of patently artificial borders drawn for the convenience of European conference tables bequeathed to many newly independent African nations a motley mix of people, each with their own separate ethnic loyalties and traditions". As a result, forging a national citizenship psyche and allegiance to the state entity has remained a herculean task over the years among over 250 distinct ethnic nationalities with loyalties remaining largely towards ethnic origins.

Tribal tension was institutionalized, not only through colonial arbitrary mergers in the formation of the protectorates, but also through the divisive character of the colonial administrations which followed (Davis and Kalu-Nwiwu, 2001). Explaining this phase in the development of cultural disharmony and divisive ethnic and identities in Nigeria, Davis and Kalu-Nwiwu note that:

> Britain's practice of indirect rule in colonial Nigeria perpetuated separate ethnic and local identities. By using traditional native institutions and tractable tribal chieftains as their functionaries in exercising the doctrine of indirect rule that colonial administrator Frederick Lugard fashioned, the British sheltered the parochial political patterns of many ethnic groups. Particularly in the north, where Hausa-Fulani tribal leaders resisted European education, indirect rule contributed to the persistence of isolated tribal identity (Davis and Kalu-Nwiwu, 2001: 2).

Figure 12: Northern and Southern protectorates in colonial Nigeria

Source: Alscon (2013)

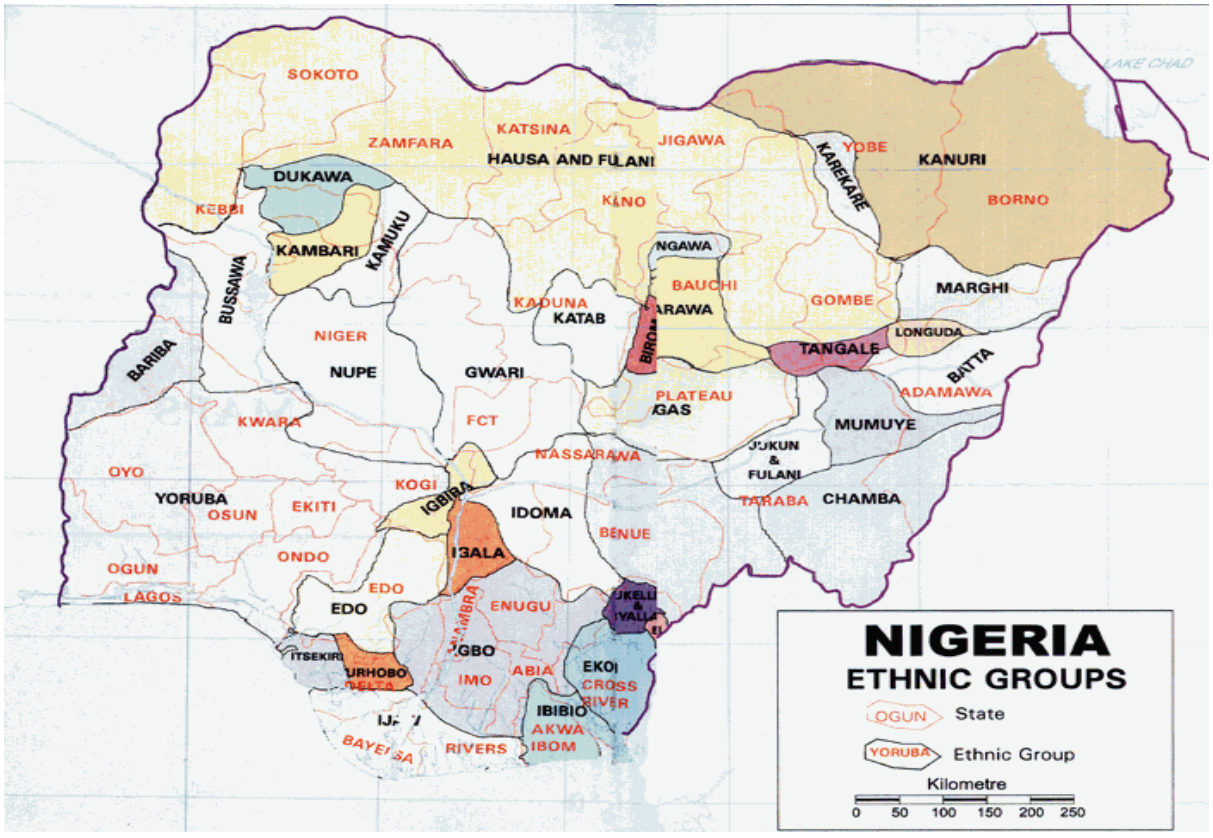
In effect, the adoption of regional structures of government by the British colonial masters further compounded the persistence of separateness despite formal unification of the different tribes from north to south. The colonial administrative system incrementally divided Nigeria perpetuating this division internally with its further fragmentation into three regions: Northern, Eastern, and Western Regions which ran between 1922 and 1957, with its Federal capital Territory shifted to Lagos in 1954, thus creating a country comprised of regions which upon becoming self-governing in 1960 following independence, were separated units of a tenuous federation (Davis and Kalu-Nwiwu, 2001). Although tension and conflicts characterized relations among the original contiguous chiefdoms and tribes which inhabited the areas (Dudley, 1973: 240-244), the attempts at unification by colonial administrators created a bunch of unified but disunited entities and made little or no attempt at ethnic fusion towards forging a national community. Ethnic and religious rivalry which marked the colonial era was reinforced further through the introduction of regional administrative structures which were carried into independence in 1960.

In buttressing Davis and Kalu-Nwiwu's observations, Kalejaiye and Alliyu (2013) argue that ethnicity is a product of colonialism and the structure it created since "it was within the colonial urban contexts that ethnic groups acquire a common consciousness" forming the

context of ethnicity in Nigeria (p.253). According to them, ethnicity emerged in the process, of urban proliferation of communal associations triggering interpersonal and intergroup competition across personal and socioeconomic levels which increased with the formation of ethnic unions. This consciousness according to Nnoli (1980), was further heightened by pervasive poverty, environmental degradation and scarcity, as well as widening inequality in an emerging capitalist state, all of which combined to aggravate the rivalry and struggle for access to resources among competing ethnic formations.

This has heightened to alarming levels in recent years as the state increasingly failed to meet up with the provision of opportunities such as employment and other services regardless of the formations thereby boosting their relevance. Under such circumstances Kalejaiye and Alliyu argue that ethnic formations inadvertently "became the only institutions through which the individuals could find a meaning to their lives" (p. 253). The effect of this ultimately, is that greater dependence by individuals on the unions resulted in greater cohesion within. By extension, "as the bond between the individual and the union became stronger, his loyalty was transferred from the state to the union which gave meaning to his social existence" (ibid).

Figure 13: Major ethnic groups in Nigeria



Source: Online Nigeria (2015).[78]

Ethnic competition and rivalries plays important roles in conflicts in Nigeria. According to Akwara et al (2013), three factors underlie ethnic conflict in Nigeria's social space. These include struggle over natural and economic resources among different ethnic groups, population migration across ethnic territories, and attempts at state building [or political control] by ethnic nationalities. In essence, struggle over values that provide the basis for ethnic differentiation among competing groups significantly account for many incidences of conflict. This negative competition draws social capital and rationalization as the duo noted, from pervasive fear of dominance which characterise ethnic relations in the country.

The conflict of ethnic loyalties and solidarity among groups also serves to generate tension when new contacts occur thereby resulting in intergroup hostilities, suspicion and tension. Folami and Folami (2013: 105) explain, while push and pull factors condition migration by Fulani herdsmen from the north to the south, such movements often result into intergroup conflict. While this provides a historical background to understanding migration and intergroup conflicts in Nigeria, colonial accentuation of ethnicity only build into an existing system of ethnic hostility which remains relevant in Nigeria (Akwara, Agba and Edino, 2013).

World Watch Research (2015) for example, reports the intensification of tribal and ethnic hostility between the Tiv and Fulani ethnic groups in Benue State in which a total of 853 people lost their lives between June 2014 and March 2015. The report noted that "while the Fulani herdsmen claimed to have lost 214 people in addition to 3200 cows, Tiv people reported killed are estimated to be 633 excluding children and women who died in ramshackle camps" (p.19). On the part of the state during this period, six soldiers were killed from the 72 battalion in Makurdi during a cross-fire which broke out between the two groups: five killed in Agatu in January 2015 and another—a captain beheaded in Guma local government area of the state. The total deaths recorded by the Tivs in Guma, Gwer, Gwer-West of Makurdi as well as other towns bothering the state with Taraba state is put at about 458 with over 350 communities sacked and currently in refugee camps. While both statistics are worrisome, the recent figures indicate an alarming increase in violence and death rates when compared with 175 death and 34 overrun villages as previously recorded in 2013.

[78] Online Nigeria is a Nigeria Community portal available at http://www.onlinenigeria.com/mapethnic.asp.

2. Endemic poverty

Although the direct connection between poverty and violence conflicts is debatable issue, many studies link mass impoverishment and violent conflict (Halliru, 2012; Joshua, 2013). Some have specifically linked the rise of anti-poor policies in Nigeria in the 80s with the advent of the Structural Adjustment Programmes (SAP) as a factor which aggravated economic hardship, and by extension, diverse forms of communal tension and violence (See Nnonyelu, 2013; Onyeonoru, 2003). As such, while there are a complex range of intervening factors between poverty and violent contestations, the logical linkages between poverty, inequality and social disorder is not farfetched (Ikejiaku, 2012). According to Muhammad (2012: 243), mass poverty "is synonymous with failure in security in all states of the globe". In Nigeria, the pervasive level of poverty is one of the most important factors behind recurring intergroup contestations.

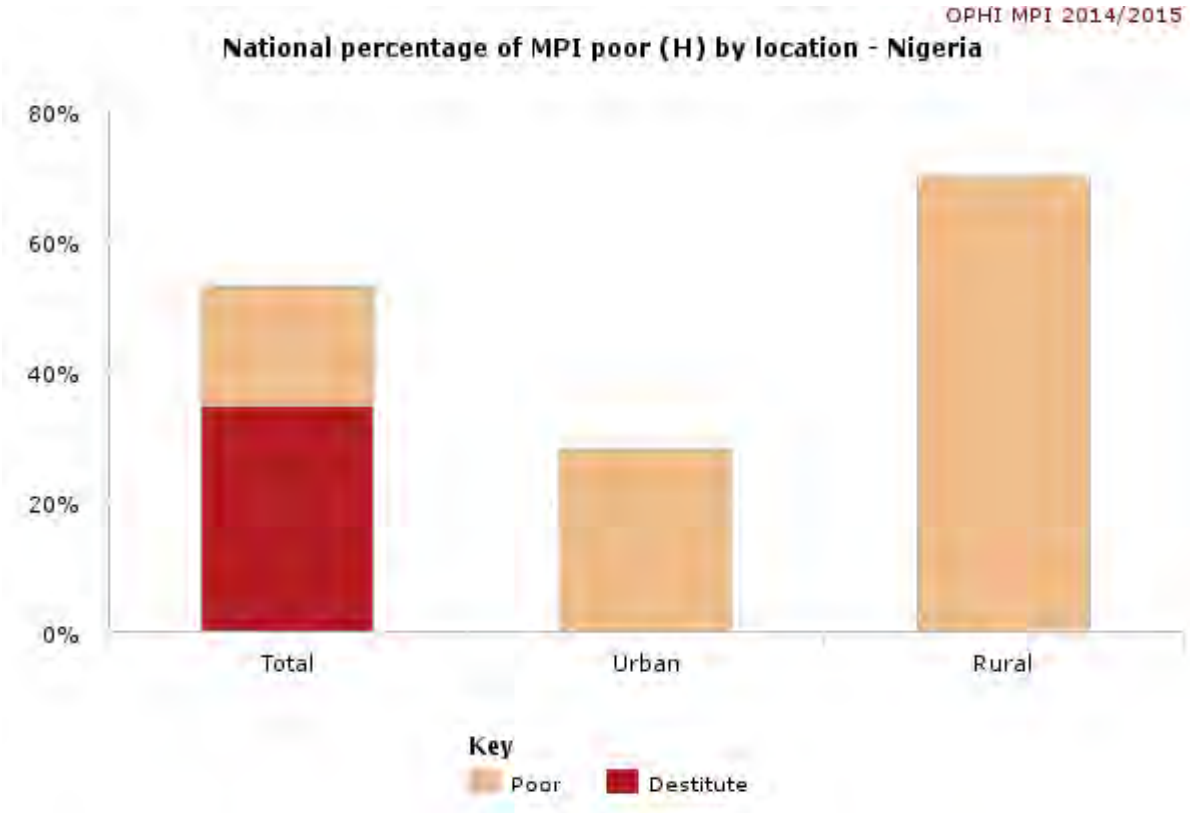
Similarly, it is argued that conflict do not result merely from the existence of ethnic or religious differences among its people, but the unending competition for scarce resources ranging from scarce tangibles such as land, to intangible values attached to them. In essence, poverty, unemployment and corrupt politics are crucial forces which drive groups against one another in Nigeria (Handley, 2010). The potential causal pathways from poverty through inequality to the various forms of insecurity across the country, including insurgency, urban crime, militancy or terrorism are functions of the context-specific dynamics particular to the environment within which conflicts occur. In other words, while poverty more or less characterized all regions, the socio-cultural, political and religious milieus define how and to what extent societies respond.

Ironically, while state statistics often projected improvements in economic growth, there has been an increase in the scale of violent conflict raising doubts about the integrity of data relied upon in growth reports, the distributive system, and the conversion from growth indicators in national GDP to citizens' standard of living. For example, the Federal Government under President Goodluck Jonathan announced expansions in the economy following the rebasing of the economy in 2013, raising its GDP figures from World Bank estimated $262.6 billion in 2012, to $488 billion in 2013. While this increase places Nigeria as the 26th largest economy globally, income per capita remains at a lagging 121st position in the world even as poverty survey indicates that there has been an increase in the percentage of the population living on less than one dollar a day from 52% in 2004 to 61% as at 2010

(Magnowski, 2014). This contradiction has led many to argue that while the country may have become richer, not much has changed in the living conditions of the vast majority of its people.[79]

There is ample statistical data on the rate of poverty across Nigeria. in 2014, Jim Yong Kim, the World Bank President noted that Nigeria held 7% of the world's poor people, ranking third (beaten in the ranking by only India and China) among 5 countries which has the highest number of poor people globally (Gabriel, 2014).[80] According to Oxford University's 2015 Global Multidimensional Poverty Index (MPI) for 2014/2015, 53.3% of Nigeria's population lives in poverty out of which 34.6% are destitute. 39.9% of the population lives in urban areas while 60.1% lives in rural areas. While 28.1% of the urban population lives in poverty, 70% of the population in rural the areas are poor.

Figure 14: Multidimensional Poverty Indicator (MPI) by location



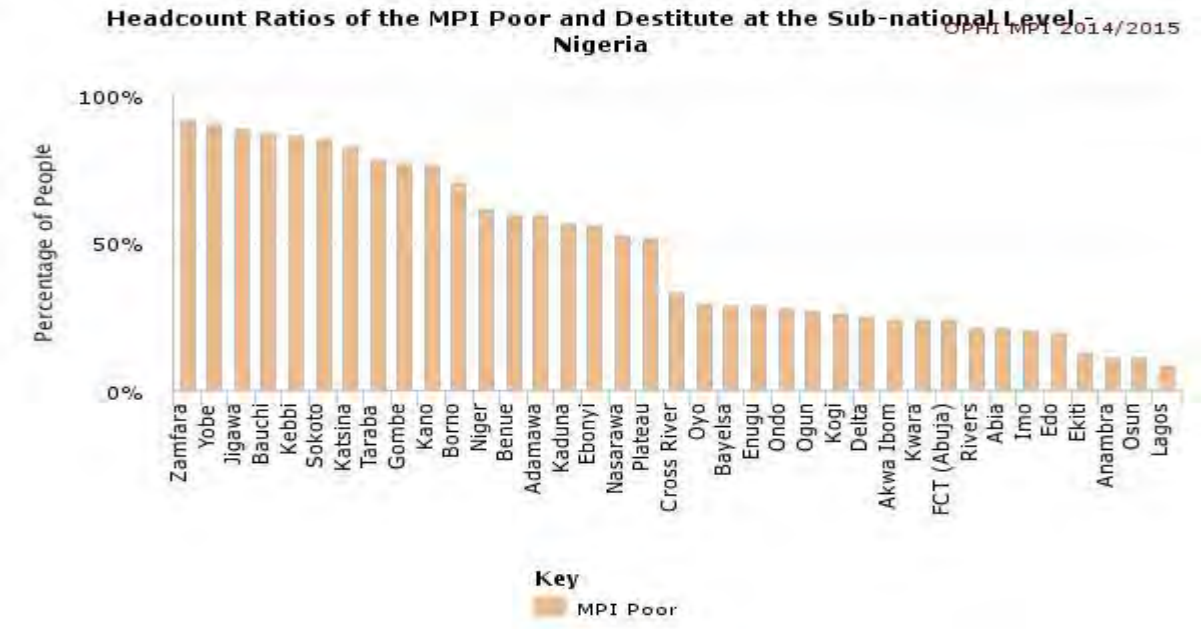
[79] See Poverties.org. "Poverty in Nigeria: Rich Country, Poor People", http://www.poverties.org/poverty-in-nigeria.html. 19 September, 2015.

[80] Highlighting the contradiction of economic growth concurrently expanding as poverty level increases, Kim stressed that "while economic growth remains vital for reducing poverty, growth has its limits... Countries need to complement efforts to enhance growth with policies that allocate more resources to the extreme poor. These resources can be distributed through the growth process itself, by promoting more inclusive growth, or through government programs, such as conditional and direct cash transfers.

Source: Oxford Poverty and Human Development Initiative (2015).

At the state level, there is clear increase in the rate of poverty among the population between the North and the South. Figures 15 indicates that states in the northern regions of the country are riddled with higher levels of poverty with the poorest state (Zamfara) recording 91.1% poverty as compared with the southern region where Lagos with the lowest poverty rates records 8.5%.

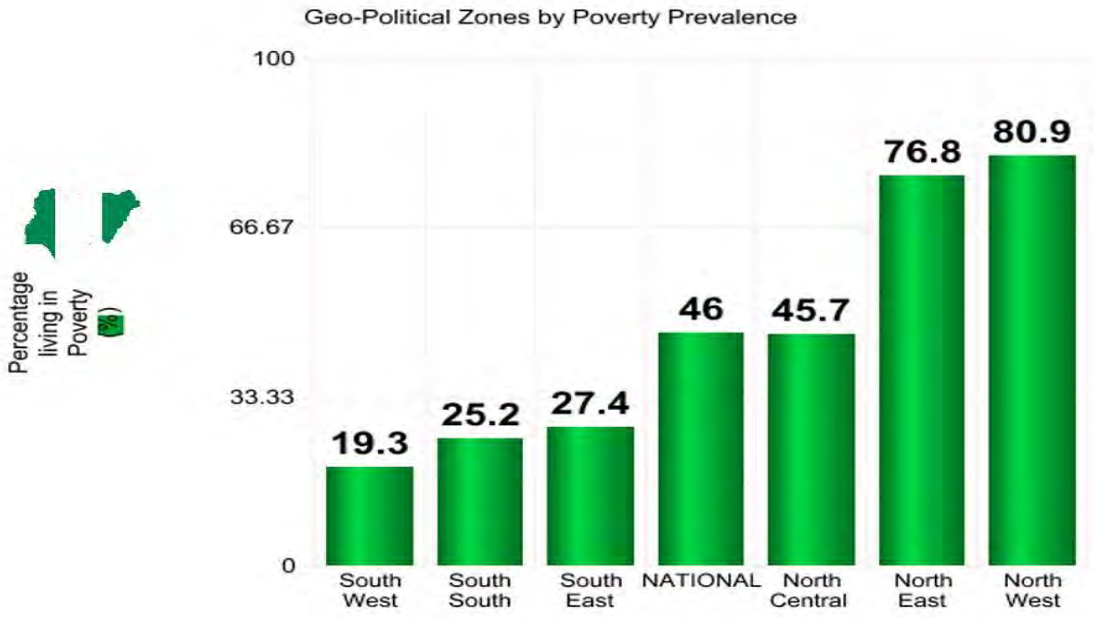
Figure 15: Poverty levels by States of the federation



Source: Oxford Poverty and Human Development Initiative (2015).

Regional averages between the six geopolitical zones also follow similar patterns. (See table below). Besides the Federal Capital Territory (FCT) with the lowest at 23.5%, the least poverty-ridden state in the north—Plateau State has a 51.6%, above the national average is at 46.0%.

Figure 16: Poverty level by Geo-political zones



Source: Oxford Poverty and Human Development Initiative (2015)

Given the relevance of environmental capital to livelihood in Nigeria, coupled with the concentration of majority (over 60.1%) of its population in rural areas, natural resource-related deprivation and competition are often heightened by migration, further aggravating violence. Studies have shown that as population influx intensifies rivalry and generated new forms of solidarity among groups resulting into violent conflicts. Folami and Folami (2013) for example argues that poverty aggravated by effects of climate change induces increasing migration, uneasy cohabitation, and violence between farmers and Fulani herdsmen as both groups compete for resources. Massive ecological crises have fuelled desperate poverty, playing increasingly important roles in many security challenges confronting the Nigerian state especially the long-running battle between farmers and cattle herders hand, and also the Boko Haram terror campaign that have pitched Nigeria's two main religious groups against one another resulting in thousands of deaths and destruction of properties in recent years (Eichelberger, 2014).[81]

[81] Eichelberger stresses that Drought, population explosion, and poverty are aggravating conflict in Nigeria. Climate change will likely add fuel to the fire. "How Environmental Disaster Is Making Boko Haram Violence Worse", <http://www.motherjones.com/environment/2014/06/nigeria-environment-climate-change-boko-haram>

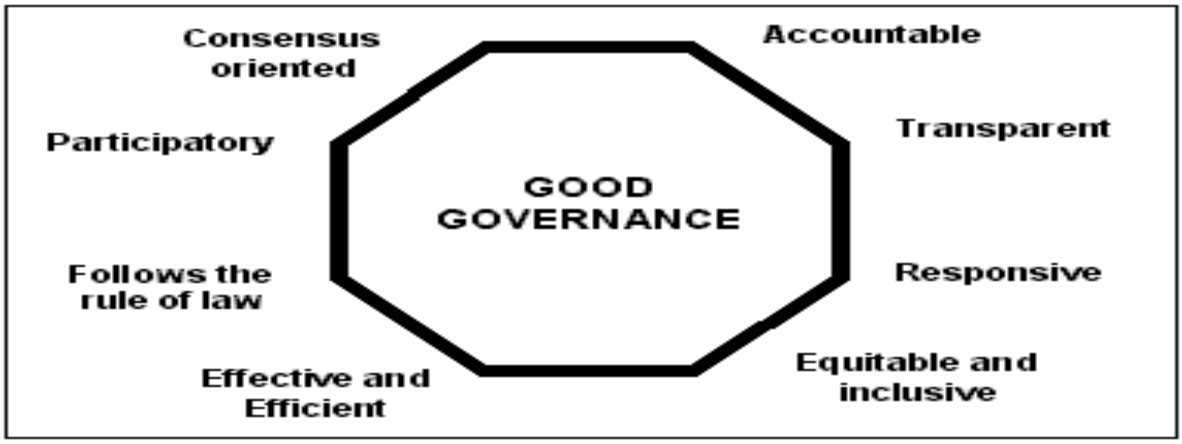
The relationship between environment, poverty, and resource conflict particularly as it relates to farmer-herders' conflicts are borne out of their significance to livelihood in vulnerable societies. First the impact of climate change depletes the natural environment of the natural capital with which it supports livelihood in many poor regions. This diminishes the range of opportunities available to inhabitants of the affected areas. Second, the population that rely most on nature-dependent livelihood systems such as the Fulani cattle herders, are adversely affected and forced to seek alternative means of survival with their herds. The rise in migration also poses a threat to livelihood in the receiving communities as conflicting livelihood patterns may lead to destruction of crops and further impoverish the host. As such, frustration among members of both groups for fear of loss of their livelihood underlies the various patterns of resistance which often snowball into resource conflict (Adekunle and Adisa, 2010).

3. Deficit of good governance

Lack of responsive and adequate legal and institutional regulation and intervention from the state contribute to the escalation of environmental conflicts in Nigeria. Adekunle and Adisa (2010) note that lack of attention to the plight of the affected populations especially the farmers, account for despair and anger among the victims making to resort to taking the laws into their own hands. Viewed within this prism, there is a strong linkage between good governance, development, and security. Governance is described as a developmental process which captures and directs the use of influence in ways that enhances efficiency and effectiveness of a government for the promotion of economic well-being for its people (Bello-Imam, 2004: 537). The World Bank described good governance as the manner in which power is exercised in the management of a country's economic and social resources for development (World Bank, 1992). The World Bank definition emphasizes sound development management as an essential quality for good governance.

Sapru (2008:508–509) x-rays the notion of good governance, and outlined its basic features. These include accountability, rule of law, responsiveness, transparency and humane implementation of laws (policies). As indicated in Figure 17, good governance is multidimensional and includes strong participation from the civil society, consensus oriented leadership, that is accountable, responsive, inclusiveness of minority interests, in tandem with the rule of law, and efficient in conflict management (see for a more elaborate discussion: Adamolekun, 2002; Akume, 2012; Ginikanwa, 2009).

Figure 17: Dimensions of Good Governance



Source: Rise Networks (2014).[82]

The importance of governance to socio-economic development makes it a factor in societies' vulnerability to climate change. While vulnerability to climate change is a global phenomenon, the capacity of states to respond has played roles in alleviating its effects and mitigating secondary insecurities that may arise. This may be through direct intervention in provision of emergency relief measures or through broad social safety nets in the form of economic leverage for citizens. It may also be in the form of provision of adequate infrastructural capacity to assuage risks and reduce vulnerability. Nigeria has over the years been confronted with development deficits associated with bad leadership and poor governance that have had serious implications for the coexistence of its people. Gaps between the vast potentials of the Nigerian state relative to its poor welfare delivery lend credence to the view that bad leadership and poor governance is a bane to national development peace and security in the country (Arisi and Ukadike, 2013).

As rightly noted by Abdullahi (2012), Nigeria is a country lacking in sincere leadership which aggravates chaos and anarchy. The author maintains that in other to meet its development aspirations, Nigeria "needs obedient and hardworking leadership that has high degree for tenants like honesty and patriotism" (p. 36). Unfortunately, Nigeria has been bedevilled by poor leadership over the years. Abdullahi (2012: 36) noted this when he argued that leadership in the country has been dominated by "people who brainwash their followers,

[82] Available at http://risenetworks.org/2014/02/17/the-ethical-imperative-in-governance-and-development-in-nigeria-1/. Accessed: May 20, 2014.

siphoned public funds which [should] help in the development of the country, and maintain many bank accounts in several part of the world thereby leaving the masses in penury".

There is no doubt that a society's quality of governance and leadership is key to human development which also has far-reaching implications on the system's support capacity for citizens in the face of security risks like climate change both in long and short terms. This is because development does not only boost the capacity for enduring immediate impacts but also substantially prepares the system for future vicissitudes. For example, in the 2014 UNDP Human Development Report,[83] Nigeria ranked 152nd among 187 globally and 22nd on the continent, with an index value of 0.504 placing it in the low human development performance category (UNDP-Human Development Report, 2014: 2). Similarly, the Mo Ibrahim Foundation's 2014 Index of African Governance ranked Nigeria 37th on the African continent with a score of 45.8 out of the total possible of 100 and way below the continental average of 51.5.[84]

There is a relationship between development and adaptive capacity, since adaptive capacity is a function of systemic factors, including social, economic, institutional, political, cultural and environmental conditions. This explains Kriegler, O'Neill and Hallegatte (2010: 2) contention that "socio-economic scenarios constitute an important tool for understanding long-term consequences of anthropogenic climate change, and available response options". Hence, it is argued that many of the adverse effects of climate will be reduced with a higher level of socio-economic development (Kriegler et al. 2010; Olufemi and Samson, 2012). In the same vein, Sayne (2011: 10) argues that adapting to climate change means "adapting development". Just as Amobi and Onyishi (2015: 199) note that "there is a direct relationship between the characters of the state and governance system on one hand and Nigeria's response to climate change on the other". Indeed, a balance of development across segments of the society is crucial in engendering affective adaptation.

In view of the affluence of leadership in the face of mass poverty, a relative deprivation effect is noticeable across sections of the country with implication for increasing rate of crimes and violence from disgruntled citizenry especially youths who see the failure of the governing

[83] The UNDP Human Development Report values and ranks countries and territories recognized by the United Nations based on a Multidimensional Poverty Index (MPI) including its gender dimensions rated 187 countries.
[84] The Mo Ibrahim index of African Governance defines governance as "the provision of the political, social and economic goods that any citizen has the right to expect from his or her state, and that any state has the responsibility to deliver to its citizens." The Index ranks the continent's 54 countries using 100 variables. http://www.moibrahimfoundation.org/iiag/data-portal/

class to cater for the welfare of the citizenry as a signal for a bleak future and a motivation for violence (Inokoba and Kumokor, 2012) with the result that feelings of disillusionment and aggression become prevalent among the population (Akinwale and Aderinto, 2012). This further deepens the resort to ethnic and regional in-group versus out-group solidarity as a result of failure of the state, thereby promoting sectarian circles described as "alternative hierarchies, based on ethnicity, religion or other factional identities" (Nnonyelu, 2013: 100).

Inadequate governance functionality in addressing environment-aggravated conflicts in Nigeria spans across all levels of governance including the executive, legislative, judiciary, bureaucracy, and non-state hierarchies. In many communities, the instrumentality of the state are often used to serve the ethnic and political interests of majority versus minority groups which also corresponds to the control of state power. World Watch Research (2015) reports for example, how control of state power has been instrumental to dominance and appropriation of land by herdsmen in the case of the widespread violence between power-dominant Muslim Hausa-Fulani tribes of mainly herdsmen, and the largely agrarian Eggon farmers (who though 'powerless' in this case constitute demographically, the majority ethnic group), giving rise to the resuscitation of the Ombatse Cult largely by the farmers as a militia for ethnic self-defence in Nasarawa State. The report indicates that widespread public perception among the Eggon Christians is that "the predominant Muslim Alago ethnic group who hold the levers of power in Nasarawa state connived with the Hausa-Fulani Muslim herdsmen to dominate and control indigenous Christian communities" (World Watch Research, 2015: 28).

Similarly, although traditional structures have historically played influential roles in resolving different forms or dispute at the local level, rising scale of conflict as well as overwhelming interest interplay have served to whittle both the capacity and the efficiency of intervention. It is reported in many cases that protection of territorial domains of traditional leaders have acquired a complicated dimension as many of the leaders and government officials own herds of cattle managed alongside Fulani cattle holdings in the invaded communities (See Olaniyan, Francis and Okeke-Uzodike, 2015).

In many cases, traditional rulers, wary of the consequences of high-level interests at the broader formal political level, are unwilling to intervene in cases of disputes even in their immediate communities. As such, while parties have little confidence in the neutrality of the

arbiter—both from the state and the tradition political institutions, the capacity of mainstream security institutions to quell conflicts is also challenged by equipments.

4. Political corruption

Political corruption defined loosely as the abuse of public office for private gain (Warren, 2004: 329), has been identified as one of the major problem with Nigeria. Although it is not peculiar to the Nigerian state, the level at which corruption especially among political leaders has become endemic is debilitating for development and creates the conducive environment for frustration and violence. Beyond the developmental effects of corruption in Nigeria, it also plays significant roles in the capacity of institutions needed in mitigation effects of adverse environmental condition. As Sayne (2011) notes, public corruption has a tendency to erode institutions and relationships in destabilizing ways. In 2011, Transparency International rated Nigeria as one of the most corrupt countries in the world in Corruption Perception Index. More alarming is the social cycle of tendentiously corrupt mass of people that political corruption breeds as the citizens pick a clue from the corrupt tendencies of the political elite and the colossal mismanagement of state resources which leaves majority of the people to devalued lives of gripping poverty (Nnonyelu, 2013).

Corruption has gained prominence due to the historical disharmony and continuous exploitation of ethnic identities in Nigeria national affairs. As such, there is low allegiance and sense of ownership on the part of citizens to the state. This impedes the much needed patriotism and collective ownership which encourages a collective commitment among citizens to advancing the wealth of the nation state and protecting it rather than sharing its wealth often seen as the 'national cake' which everyone shares but no one bakes. Consequently, there is among its various groups, a sizzling preoccupation to circumvent processes and obtain as much as possible to private coffers in the name of regions with little or no reprimands from the society.

With many challenges including a high rate of poverty, poor infrastructural capacity, and high rate of youth unemployment, the state is ill-equipped to effectively protect its citizens from the effects of climate change. In 2011 for example, the World Bank noted that more than 70 percent of the population live in extreme poverty and are desperate to save themselves from poverty and their inability to survive amidst state abandonment from the political elite (World Bank, 2011). This speaks to the problem of leadership and good

governance given the huge resources that has been at the disposal of the political leadership over the years.

Understanding the link between corruption and insecurity in Nigeria is not farfetched and many studies affirm this linkage. In a study on the connection, Idris (2013) argued that there is a perfect correlation between corruption and insecurity in Nigeria resulting from greed among insurgent groups and pervasive corruption among public officials which leads to deprivation, alienation, conflict and insecurity. The study therefore concluded that "the major cause of insecurity in Nigeria is corruption and failure of governance to achieve the Fundamental Objectives and Directive Principles of State Policy as contained in the Constitution of the Federal Republic of Nigeria" (p. 59).

The provision of security architecture significantly depends largely on the capacity of the state to put in place the human and material necessities. For example, there have been report of protests in Nigeria's security and military circles, about the poor state of existing arms and ammunition as well as the diversion of funds meant for the purchase of new ones (Chayes, 2014; Transparency International, 2014), hence (Ikita, 2014) draws a parallel between corruption and the failure of state security agencies (includes especially the military, the regular police and the secret police) in their capacity to confront various forms of violence including insurgency, communal conflicts and terrorism.

While corruption saps the resources needed to broad-based social welfare and infrastructural needs for economic wellbeing, long-term effects of poverty created by corruption will no doubt include heightened spate of insecurity as the state increasingly fails in its task of delivering basic services, to the citizenry. In addition to the challenges of capacity decline associated with corruption, there is also a psychosocial dimension in which corruption results into aggression and hostility among citizens, depleting trust in the capacity of state institutions to protect them and engendering a competition for 'grabbing' state resources or protecting those found culpable of doing so (Transparency International, 2014).

In practice, besides the fact that many acts of terrorism are precipitated by corruption related social injustice—whether actual or perceived injustices, that are seen in feelings of deprivation, marginalization, poverty, exploitation, greed, oppression, and repression among citizens (Chinwokwu, 2013), the capacity of the state and its institutions to contain security threats is also hampered by graft. This is glaring in Nigeria's response in the ongoing fight

against the Islamist terror group—the Boko Haram which has ravaged the country since 2009. Transparency International report in 2014 described corruption in the country's military and security forces as a weapon in the hands of the Islamic sect Boko Haram and concluded that the solution out of the country's instability due to ineffective response to the terrorist insurgency on the part of the government was to fight corruption (Uwimana and Wawro, 2014).

Akinkuotu (2015) narrates the plight of soldiers regarding the poor conditions of troops including the lack of basic needs including uniforms, feeding, and arms and ammunition and also necessities needed for troop motivation and combat-readiness, hence they resort to fleeing when overpowered by terrorists with a superior firing power. Some soldiers narrate their ordeal thus:

> The troop's morale is very low because we are not issued with kits (uniforms and boots); we buy the kits ourselves. I bought mine,"... When asked why the military authorities had not looked into the problem, the soldier said, "Whatever is allocated for these things, corruption consumes it."...Asked why he continued to serve under such harsh condition, he said, "It is a call to serve."...Another soldier, who showed the *CNN* reporter his medical papers, said his unit was defeated by terrorists with bigger weapons. He said, "We don't have the equipment to fight insurgency. Our equipment are inferior to those of Boko Haram. I feel very bad. In fact, my family has asked me to quit the job. Even after sustaining injury during the battle, they did not pay for my drugs (Akinkuotu, 2015: n.p).[85]

There have also been several news reports of protest by military personnel and soldiers on the poor state of equipment, maintenance and allowances available for the prosecution of the country's anti-terror campaign.[86] The effect of corruption is the inability of the state to respond effectively to development problems including environmental challenges that can be drastically checked through technological innovation, infrastructural development, hazard

[85] The Nigeria Defence Headquarters has condemned and refuted claims in the CNN news report. See press release: Beware: Terrorists Sympathisers Are Fabricating Stories To Encourage them, <http://defenceinfo.mil.ng/category/press-release/>.

[86] "We lack weapons, buy uniforms, Nigerian soldiers tell CNN", <http://www.punchng.com/news/we-lack-weapons-buy-uniforms-nigerian-soldiers-tell-cnn/>. "Nigeria: Military Protests - When Combatants Are Held Prisoners At Home Front", <http://allafrica.com/stories/201408251776.html> . "Why Nigeria's military is losing the battle against Boko Haram". <http://america.aljazeera.com/articles/2015/1/13/boko-haram-nigeriamilitary.html>. "The Nigerian military is so broken, its soldiers are refusing to fight", <https://www.washingtonpost.com/world/africa/the-nigerian-military-is-so-broken-its-soldiers-are-refusing-to-fight/2015/05/06/d56fabac-dcae-11e4-b6d7-b9bc8acf16f7_story.html>

relief and welfare intervention, the reduction of poverty and inequality, and the provision of adequate security.

5. Religious rivalry and acrimony

Interreligious relations has posed a major security challenge in Nigeria with Reports of mass killings even in the case of resource related struggles have shown to be more selectively deadly and aggravated when conflated with issues of religion. In December 2013, several news outlets reported mass killings of Christians in Jos, Nigeria. Noting that such killings have been a common trend which often drew attention in the Muslim-dominated central Northern region, Muslims Worldwide (2013), and online magazine reports also that:

> [...] in more southerly Benue state Islamic extremists killed at least 205 Christians in the last six months alone, sources said. In the southeastern part of Nigeria's middle belt, Benue state's Agatu Local Government Area saw deadly attacks on Christian farmers by Muslim, ethnic Fulani herdsmen from May through November that displaced an estimated 10,000 people (Muslim Worldwide, 2013, n.p).

Religious killings conflated with resource conflict appear to be so commonplace and entrenched that killers also employ 'killer-contractors' to assist in the violence. The online magazine went further to explain that:

> As in attacks in Plateau state, several of the assailants appeared to be mercenaries from outside the area rather than herdsmen, and locals questioned how the Fulani became so heavily armed. In some of the attacks a herdsmen spokesman alleged stolen cattle as the reason for the bloodshed, but frequently the Nigerian press asserted that motives for the attacks were unknown" (Muslim Worldwide, 2013, n.p).

The backdrop for these and many religion-induced clashes in Nigeria can be found in the nature of inter-religious relations in the country. Joiner, Kennedo and Sampson (2012) describes Nigeria as "one of the most religiously diverse countries in Africa, [a social dynamic they ague] has historically shaped Nigerian politics and conflicts". The volatile arithmetic of this division, according to them, is found in Nigeria religious cartography which they describe as one that is:

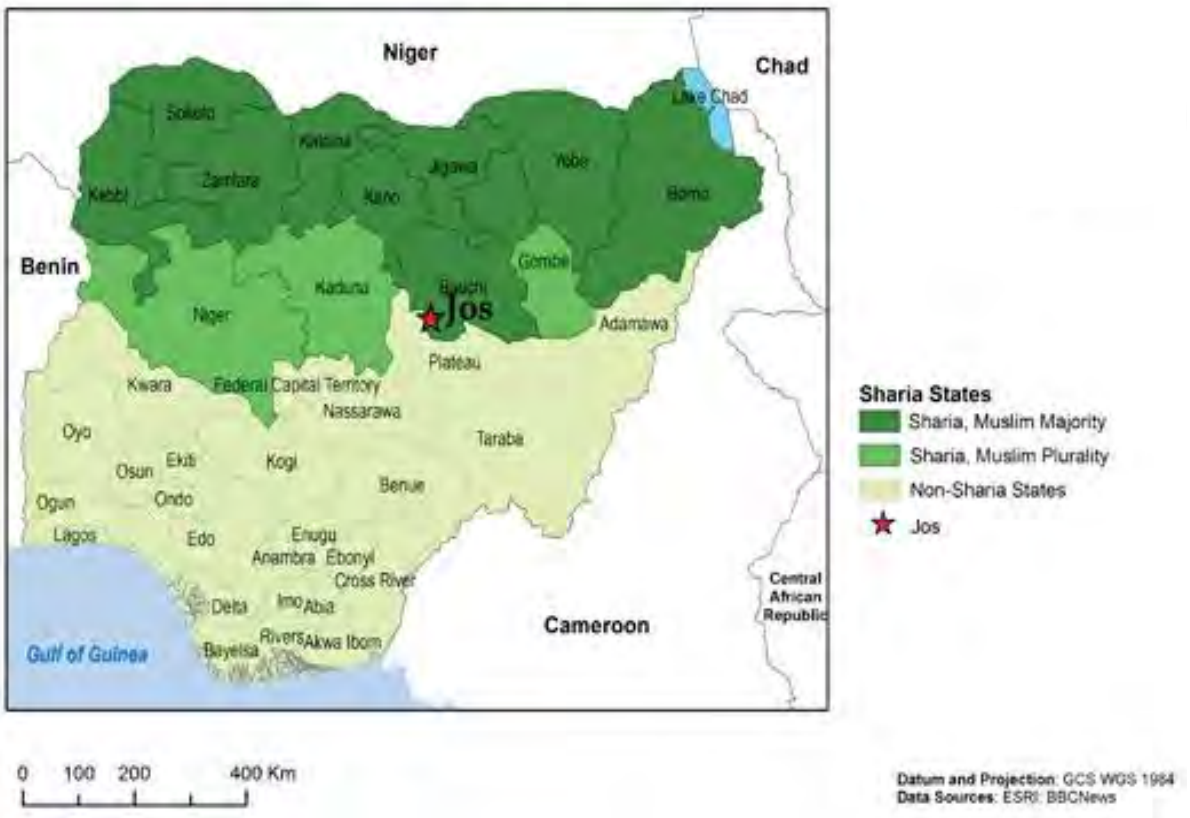
> ...divided roughly evenly between Christians (48.5 percent) and Muslims (50.5 percent), with Muslims concentrated in the north, and Christians concentrated in the south. Islam has spread from North Africa into West Africa and has existed in Nigeria for 1,000 years

> among the savannah and Sahel populations. Meanwhile, Christianity has been practiced for 500 years among the coastal populations in the south who had contact with Europeans. The religion later spread throughout southern Nigeria when the British colonized the country in the 20th century. Today, Sharia Law has been implemented in 12 states in northern Nigeria, causing riots in a number of states (Joiner, Kennedo and Sampson, 2012: 26).

The volatile nature of competitive space between religious groups traverses nearly all spheres of interaction. For example, in the Northern city of Jos, there has been series of religiously-differentiated clashes between Muslims and Christians resulting from state government appointments perceived to favour one religious group against the other. The appointment of a Muslim by the state government in 2001 resulted into protests which saw the death of over 1,000 persons. Religious killings have indeed been a serial exercise in the regions. It is documented that between 2001 and 2010, hundreds of lives were lost to such forms of violence. Chains of intergroup clashes resulted in 700 deaths in 2004; 300 deaths in 2008; and about 1,000 deaths in January and March 2010 (Joiner et al 2012).

The frequency of violent religious cum value-distributive conflicts in the city is such that Joiner et al (2012: 26) describe the area as one lying "on the border of the Muslim-Christian divide, and [therefore] the epicenter for widespread religious tensions in the country". There is no gainsaying that these tensions have monumental effect on governance as well as reflects governmental inadequacies in the country since power must be shared between Muslims and Christians. Political leaders therefore have to take tenuous fault-lines into account in the making of policy decisions so as not to trigger tensions. Hence Joiner et al (2012: 27) argue that "in the event of a slow or rapid-onset climate event, policymakers will contend with the pressures of responding to the hostilities of their constituencies when distributing aid or resources for economic recovery".

Figure 18: Religious divide in Nigeria



Source: Adapted by author, from Joiner, Kennedo and Sampson (2012).

6. Youth bulge and unemployment

There is substantial evidence in literature suggesting a close linkage between insecurity and the number of unemployed youths in any given population (Clapham, 2003; Kaplan, 1994; Urdal, 2004). It has also been associated with high crime rates, insurgency, and terrorism among others (see for example: Alkali, 2007; Beehner, 2007; Osakwe, 2013). It is believed that the capacity of a society to provide employment for its young population reflects on the general state of security, and hence the prevalence of crime and in security may be understood within the prism of youth engagement within the society. In the same vein, the UNICEF Bureau for Crisis Prevention and Recovery (2005: 31) argue that "war would not be possible without youth" since the combatants in any form of war are primarily made up of young people".

Conceptually, both 'youth' and unemployment are ambiguous concepts which are often applied to different category or situation depending on the legal and sociological context. In Nigeria, the exact age delineation for youth is a subject of controversy. While the National Populations Commission defines youths as persons between the ages of 18 and 24, the 2009 Second National Youth Policy expands the category of youths to cover persons between ages 18 and 35. The National Population Commission's description of youth as referring to persons who would normally have attained secondary education, and is either in institutions of tertiary education such as a university, someone striving to gain employment, who is already employed, or persons who would require post secondary education, employment, and reproductive health information and services (Osakwe, 2013). Unemployment, according to the National Bureau of Statistics (NBS), describes the situation of persons between ages 15 to 64 years, "who during the reference period were currently available for work, actively seeking for work but were without work" (NBS, 2015: n.p). Similarly, youth bulge describes "societies with rapidly growing young populations [who] often end up with rampant unemployment and large pools of disaffected youths who are more susceptible to recruitment into rebel or terrorist groups" (Beehner, 2007: 1).

Both of the above challenges—unemployment and youth bulge, have been a continuing menace feeding into various security challenges in Nigeria. Given Nigeria's large population, there is proportionately, large number of youths in the country. The National Population Commission in 2013 states that about half of the country's population are youths, that is, aged between 15 and 34 years. Increases in the population of youths in Nigeria follow similar patterns as that of the total population and also employment statistics, hence Akande (2014) argues that increase in youth population also result in higher rates of unemployment.

There is also little yet to suggest there is a positive turn. A quarterly report of the National Bureau of Statistics for 2nd Quarter 2015 indicates a continuing rise in the number of unemployed person in the country. According to the report, there is an increase from 7.5% in Q1 to 8.2% in Q2 recording three consecutive increases since the third quarter of 2014. This has serious impact on security in Nigeria. Going by this figure, by Q2, Nigeria has a total of 19.6 million persons within the labour force, who are between ages of 15 and 65, and who are either unemployed or underemployed.

In his apocalyptic view of the youth bulge, Robert Kaplan in 1994 portrayed a picture of looming demographic disaster in his "Coming Anarchy". Kaplan warned of a looming

security crisis resulting from the presence of mass unemployed and disaffected youths—a situation he exemplified with countries in West Africa including Nigeria, where he argues that the combined effects of resource depletion, population explosion and social decay have made hordes of young men in the cities into "loose molecules in a very unstable social fluid, a fluid that was clearly on the verge of igniting" (Kaplan, 1994: 1) in what he sees as a fast retreat from modernity towards a Hobbesian state of nature.

4.9 Conclusion

In this chapter, the study set out to examine the background to the climate change-conflict nexus in Nigeria. The chapter explored the politico-historical formation of the Nigerian state, its cross-regional geo-ecological comparison, climatic transition and weather dynamics across the regions with a view to showing push and pull forces underlying changes in pastoral migration. The pastoral system, its vulnerability to environmental vagaries and the reliance of pastoralists on migratory adaptations as means of surviving increasing resource constrictions is also highlighted. Particular focus was beamed on pastoral farming practice in Nigeria, as well as the effects of increases in, and changes in the methods of pastoral movement in search of livelihood as weather becomes increasingly intolerable in the Sahel-savannah grassland arid regions. Highlighting the effects of socio-contextual conflict exacerbating peculiarities in the Nigerian environment, the chapter also identified interrelated systemic factors that play influential roles in conflict generation and escalation in Nigeria. It may be concluded from this background analysis, that contextual circumstances including: political, historical, cultural and institutional factors have important roles to play in environment-conflict processes, and are thus crucial to the understanding of climate change-conflict nexus as can be seen through the farmer-herder contestation in Nigeria.

CHAPTER FIVE

RESEARCH METHODOLOGY AND METHODS

5.1 Introduction

Academic research in general, is guided by fundamental principles and processes which undergird the practical execution of research activities. These philosophical anchors also help to define the parameters for structuring research processes, provide indices for evaluating outcomes, and provide a gauge for assessing validity and relevance of research findings. Polit and Hungler (2004) describe methodology as a way of obtaining, organising and analysing data. For Burns and Grove (2003), methodology refers to the design, setting, sample, methodological limitations, and the data collection and analysis techniques in a study. Sharing this view, Henning (2004:36) defines methodology as a "coherent group of methods that complement one another and that have the ability to fit to deliver data and findings that will reflect the research question and suit the researcher's purpose". Similarly, Holloway (2005:293) describes methodology as "the framework of theories and principles upon which methods and procedures are based". This view corresponds to Karfman's position that methodology refers to the "the theory of correct scientific decisions (Karfman, cited in Mouton and Marais 1996:16). Methodological decisions depend on the nature of the research and the questions it seeks to answer.

On the other hand, Myers (2009) describes research methods as referring to the strategy of conducting an enquiry in which the researcher moves from the assumptions underlying the study, to the design of his research, and to the collection of data. In sum, while method refers to the actual practice, techniques, and strategies employed in the course of an investigation, methodology refers to "the philosophy or general principles behind research" (Hall and Hall, 1996: 29). Specifying the methodological assumptions helps to illuminate the world view which necessitated the techniques adopted, and its relevance in addressing the questions posed, and its efficacy in achieving the objectives of the research.

This chapter combines a theoretical backdrop (methodology) with an explanation of the pragmatic steps (methods) followed. As such, it discusses both in philosophical and practical terms, the procedures and strategies employed in the study. These include techniques and

instruments adopted in data collection, methods followed in the analysis, and the procedure for testing the validity of findings. Specifically, the method used in gathering data in the four spatial areas used as case studies is explained. It also presents the strategies used in selecting case studies in the climate change-conflict linkages, the method for identifying population sample, collection of data, and interpretation of collected data, tools employed in drawing inferences, and the method used in testing the validity of results.

5.2 Research Design

In terms of design, this study is qualitative, combing elements of exploratory, interpretative, and explanatory investigation methods in explaining climate change, migration and conflict nexus in Nigeria. This combination is warranted by the nature of the phenomenon and the contextual and the multi-dimensional sequences of linkages being drawn from vulnerability to migratory adaptation, to resource contestation and conflicts. The following section explains the theoretical justifications as well as the practical application of these qualitatively adapted strategies in the execution of the research work.

A research design, according to Bhattacherjee (2012: 35), is the "comprehensive plan for data collection in an empirical research project". It is the "blueprint" used in an empirical investigation in order to answer specific research questions or, to test specific hypotheses. To Burns and Grove (2003:195), it is seen as "a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings". In the same vein, Parahoo (1997:142) explains that a research design is "a plan that describes how, when and where data are to be collected and analysed", while Polit et al. (2001: 167), see it as "the researcher's overall plan for answering the research question or testing the research hypothesis".

Unbundling research designs, Bhattcherjee (2012) identifies three processes which, in the minimum, must be specified in the design of a study. These are (1) the procedure for data collection which may follow a positivist/deductive method, or an interpretivist/inductive method; (2) the process of developing the instrument that is, the parameter of measurement or articulating data and relevant information; and (3) the sampling process which entails the strategy for selecting sources, subjects or respondents. Conceptualizing a research paradigm as an interrelated and all-encompassing system of practice and thinking which informs the nature of an enquiry, Terre Blanche and Durrheim (1999) identify three important dimensions that are crucial to the designing of this process. These include: (1) the ontological dimensions

which concerns articulating the nature and structure of the observed world; (2) the epistemology which relates to the form of relationship between what is known and the knower i.e. how the knower acquires the knowledge of what is known; and (3) lastly, the methodology which concerns the actual processes by which the researcher (the knower) obtains knowledge of what needs to be known.

5.3 Qualitative Approach

In order to effectively capture the contextual dynamics and socialised processes in the climate change-conflict discourse under investigation, the current study follows a qualitative approach. While there are different ways of characterizing or distinguishing between orientations of research, the quantitative and qualitative methods are the two dominant typologies. These two distinctive types identify with the nature of knowledge both already acquired and what is sought in the investigation. They both speak to how the investigator understands the world and the essence of the investigative endeavour being embarked upon. The form of research also influences the methods that may be considered most useful in a research endeavour because it determines how data is to be collected and analysed, as well as the types of representations and generalizations that the researcher needs to derive from the data being used.

A qualitative method, according to McDonald and Headlam (1999: 8), is one which "attempt[s] to gain an understanding of the underlying reasons and motivations for actions and establish how people interpret their experiences and the world around them [while also providing] holistic insights into the settings of a particular problem". It is a dialectic and interpretive method which enables the researcher to discover in its holistic social form, the worldview of the participants by capturing events and the contextual meanings which inform social processes and shape the contexts within which events occur. It is against this backdrop that Burns and Grove (2003:19) defined the qualitative approach as "a systematic subjective approach used to describe life experiences and situations to give them meaning".

The qualitative approach accommodates the subjective peculiarities of persons, places, and contexts. Parahoo (1997) captures this in explaining that qualitative research focuses on the experiences of people while stressing uniqueness of the individual. In the same vein, Holloway and Wheeler (2002:30) describe qualitative research as a form of inquiry into the social world, which "focuses on the way people interpret and make sense of their experience and the world in which they live". This approach, as Field and Morse (1996) explains, is

person-centred, holistic, and humanistic in that it seeks to understand lived experiences. The qualitative method is particularly suitable for studies seeking to understand the interplay between such elements as the perspectives, behaviour, experiences and feelings associated with a social phenomenon. This is because of its naturalistic nature which makes it strategic to the study of the real life situations of the focal groups, people, and communities as they are in their natural social settings.

While a qualitative research design is popular in the social sciences, it is found particularly appropriate in this study because it allows the researcher to capture fluid socio-contextual details of the phenomenon under investigation that may escape analysis if subjected to a de-socialized, de-contextualized quantitative research method. This design also enables the researcher to uncover socio-cultural and historical linkages in the phenomena and establish important transition from one level of vulnerability to another. In this study, adopting the qualitative design helps to uncover the underlying motives for migration and the significance of eco-climatic factors in transitory and sedentary migration decisions among pastoral farmers, gaining insight into experiences of farmers and youths in host communities, as well as evaluating institutional interventions. Denzin and Lincoln (2003) listed some of the qualities which enhance the utility of the qualitative method to include its interpretative, and naturalistic approach to the subject matter being studied, enabling the researcher to make sense of his investigation through the interpretation of the phenomena in the natural sense in which the human elements involved ascribe meanings to them.

The study takes an explanatory, contextual, and critically interpretative approach enabling the researcher to gain a holistic understanding of the context and dynamic processes which justify the qualitative method. According to Berg (2001: 30), explanatory case studies are essential in conducting research on causal linkages especially in complex studies of communities or organisation where researchers may desire to use multivariate cases in order to examine diverse influences such as in pattern-matching situations in which the researcher seeks to relate several bits of information gathered from a similar or same set of cases to test a given theoretical proposition.

The research is also descriptive in the representation of observations drawn across the study areas while also critically engaging the literature. Polit and Hungler (2004) described descriptive research as one which with its main objective as the accurate portrayal of the characteristics of persons, situations or groups. In addition to describing the phenomenon as it

is observed, the study also attempts to elicit information from respondents with a view to qualifying the effects of climate change on their livelihood and the significance of this impact on the decision to migrate as well as the changing dynamics of such migratory response. Descriptive method in a qualitatively oriented research enables one to achieve a more accurate capture, and representation of data in the way that a clear picture is produced about the phenomenon being investigated (Mouton and Marais 1996:43-44).

This approach is necessary given the ecological, socio-contextual, and historical nature of the phenomenon under investigation, the subjective nature of the aggregated experiences of the target populations, as well as geo-ecological attributes of the study areas. Focus Group Discussions (FGDs), participant interviews and geo-ecological observation of study area are reported in descriptive and interpretative manner, while extant literature is explored from a critical historical perspective. The descriptive approach allows us to contextualize and understand the social effects of climate change and its associated and extended vulnerabilities on the herders and their host communities. It also allows the description of the observed linkages of these effects on conflict and secondary migration in the affected communities. The interpretative character of the study is in the logical connection that are potentially drawn between one level of vulnerability to another as reported by respondents, and as captured in extant literature.

The approach adopted in this study is informed by the need to understand the socio-ecological and political dimensions of climate change impacts in Nigeria, and particularly, to understand the role climate change plays in violent conflict through resource scarcity and migratory adaptation. It explores how the incidence of climate change and the context of vulnerability influence violent outcomes, as well as how primary and secondary vulnerability links up with broader security issues. To this end, modes of engagement which enable researcher to extract contextual and latent details from the selected cases is deemed necessary in order to effectively address the research questions posed in the study.

Given the importance of the specific nature of the subject and the questions the researcher seeks to answer, it is important to recap the motivation for this study, the objectives, as well as the research questions posed towards achieving these objectives. The motivation for this study is to demonstrate that climate change is a major factor in many cases of violent conflict in Nigeria. It thus attempts to show how climatic and contextual factors interact to precipitate violent outcomes, also highlighting in the process, how such interaction link up with broader

security issues. The importance rests in its challenge to dominant narratives which question the significance of climate change as a causal factor in violent conflicts and insecurity particularly, in the developing world. In view of this motivation, the study uses data from four recurrent cases of conflict in Nigeria to explore this connection.

The study aimed at the following: one, to establish the connection between climate change and resource contestations or violent conflicts in Nigeria; two, to examine the contributions of socio-contextual (cultural, institutional, economic, and systemic) factors in the transformation of climate-related scarcity and contestations in Nigeria; three, to demonstrate and amplify the connection between climate change-induced scarcity, migration and violent conflicts on communal insecurity; four, to examine the transformation, dispersal, and broader security implications of climate-induced scarcity and migration for primary and secondary host communities; and lastly, to make policy recommendations towards reducing climate-induced migration, communal conflicts and related security challenges in Nigeria.

Correspondingly, the study proposed five questions, including: (1) what is the linkage between climate change and natural resource contestation in Iseyin/Shaki in Oyo, Efon-Alaaye in Ekiti, Oke-Ero in Kwara, and Udeni-Gida in Nasarawa Local Government Area of Nasarawa, in Nigeria? (2) How do socio-cultural, institutional or systemic factors exacerbate climate-related conflict and insecurity in these communities, and Nigeria as a whole? (3) To what extent does migration serve as a conflict engendering intervening factor in the transformation of climate change-induced scarcity into security problems in Iseyin/Shaki in Oyo, Efon-Alaaye in Ekiti, Oke-Ero in Kwara, and Udeni-Gida in Nasarawa Local Government Area of Nasarawa, in Nigeria? (4) In what ways are the effects of climate induced scarcity dispersed to secondary host communities in cities and urban centres, and how are these effects replicated in other parts of the country? (5) How can the impacts of climate change-induced scarcity be mitigated at both physically depleted environments and migrant host communities to prevent or reduce conflicts thereby enhancing security, peace and development?

5.4 Case Study Method and Case Selection

This study uses the case study method. In general, the case study approach is commonly used in context-sensitive social research as it helps researchers to understand and interpret human actions and interactions in the natural social context capturing the dynamics of social

processes from individuals, groups, community and particular event dimensions (Tellis, 1997). The study particularly explores the process tracing potentials of the case study method. The process tracing case study approach according to Porta and Keating (2008: 224) is "a procedure designed to identify processes linking a set of initial conditions to a particular outcome". The importance of the process tracing technique as an indispensable element of case study method that is well acknowledged by scholars (see for example: George and McKeown, 1985; George and Smoke, 1979).

It is in this lens that Yin (2003) views the case study approach as an empirical inquiry which investigates a contemporary phenomenon in the context of its real-life expression—a method that is particularly necessary where there are no clearly defined boundaries between the phenomenon and the context within which it is taking place. Yin's view is corroborated by Gillham (2000: 2) who describes a case study research as "an investigation to answer specific research questions which seek a range of different evidences from the case settings". Given (2008: 68) similarly defines the case study as "a research approach in which one or a few instances of a phenomenon are studied in depth". In the same vein, Bhattacherjee (2012) also saw the method as one involving the intensive study of phenomena in its natural setting in a single or more sites using multiple data gathering methods such as interviews, documents, observations, secondary data etc, in order to gain rich, detailed, and contextualized inference on the nature of the phenomenon under study.

There are four basic characteristics of a case study according to Merriam (1998). These include particularistic which speak to the specificity of context from which inferences are drawn; a descriptive style which indicates the attention paid to extensive detailing of facts relating to the phenomena; a heuristic focus which aims to advance knowledge of the subjects matter; and its inductive nature which tends to make generalisation of concepts derived from data obtained in the cases observed. The emphasis in a case study method is not to represent proportionally, but to explain a broad phenomenon on the basis of details derived from cases extensively studied (Tellis, 1997). It is as such seen as a valuable method for advancing fundamental knowledge of a wider domain of the understudied event or process. Hence, Stufflebeam, Madaus, and Kellaghan (2000: 283) argue that an underlying philosophy behind the case study methods is to improve knowledge rather than to prove.

Another primary feature which defines the case study approach is that it allows the researcher to focus on relevant subjective aspects of the phenomenon while integrating the multiplicity

of context-specific processes and information that are necessary for understanding the phenomenon being studied (McMillan and Schumacher, 2001; Ritchie and Lewis, 2003). In this way, the researcher is able to collect all relevant data connecting social processes towards arriving at the best likely resolution of the questions posed in his research. Contextualised investigation which the case study guarantees also enables the researcher to develop new insights into hitherto unknown factors as the complex underpinnings of processes and their linkages in the interaction process of relations are discovered for more extensive analyses.

There are many advantages in the use of the case study. One that is particularly relevant here is that it makes for pliability which is essential for accommodating qualitatively, diverse forms of data collection including interviews, literature reviews, participant observations, and exploration of archival materials, thereby ensuring a robust examination of the phenomena being studied (Yin, 2003). As Walsham (1995) noted, the robustness associated with the case study approach gives room for researchers to gain access to the nitty-gritty of social phenomenon, the subtleties of, the changing, and often multiple interpretations that are the nature of social processes. It is as such, particularly useful in research issues in which emphasis is on the contextual dynamics of the subject of investigation and in which the investigator seeks understand events as they unfold.

Among the key arguments against the case study method is its low representativeness. It is as such seen by some as unsuitable for universal generalisation. Second is the complexity associated with its reliance on multiple data sets some of which are not amenable to scientific quantification and are vulnerable to subjective interpretation and bias by the researcher (Cornford and Smithson, 1996; Miles and Huberman, 1994), it has been argued that the capacity to generalize from a case study research can be improved by "looking at multiple actors in multiple settings" (Denzin and Lincoln, 2000: 193). Yin (2003) corroborates this argument when he noted that the approach can serves for analytical generalisations in cases where the objective of research is to make generalisations from a particular set of results to theoretical propositions on a wider scope.

Given diversity of data explored in this study, the focus on capturing various levels and the contextual interplays from vulnerability to climate change, to migratory adaptation, to violent contestations, while also optimizing interpretative aggregation of participant experiences, the researcher is convinced that the case study method best serves the study's purpose in gathering relevant data, and accommodating the diverse forms of analysis and generating

results that are best reflective of in-depth exposition of the issue investigated. This conclusion is based on its suitability to: (a) the variety of participant and their perspectives that are crucial to a contextual understanding of the phenomenon; (b) the need to utilize various techniques in the collection of data; and (c) the advantages that flow from interactive socialized investigative approaches.

Four rural communities and 4 suburban locations are used as sites for data collection. These are: Iseyin/Shaki in Oyo, Efon-Alaaye in Ekiti, Oke-Ero in Kwara, and Udeni-Gida (Nasarawa LGA) in Nasarawa states. These cases are distributed across two geopolitical zones in Nigeria (Southwest: Oyo and Ekiti; and Northcentral: Kwara and Nasarawa). These cases are selected based on three important criteria, which allowed the researcher to isolate, as much as possible, less complicated cases of climate-related conflicts, from those in which connectives are confounded by extraneous fault lines. Sites are categorized into two, namely: (1) rural host communities, and (2) urban or suburban host communities. Both of these communities serve as destinations for primary (environmentally displaced), and secondary (socio-ecologically displaced) groups.

In order to streamline climate-conflict connectives, preferences were given to:

I. Identified locations with repeated occurrence of Farmer-herder conflicts, and in which there is institutional awareness of this occurrence at the political level, as well as ongoing effort processes and at the political and communal level on the issue, to demonstrate the currency of such contestations in the area.
II. Those among parameter 1, in which, preliminary study shows that there are higher volumes of youth involvement in agriculture. This is important in order to unravel the secondary implications of dispersed vulnerabilities on youth retention, rural-urban migration, and potential effects on urban unemployment and associated risks.
III. Locations which conform with substantial presence of the two identified forms of herdsmen migration (i.e. transitory and sedentary forms of migration) and also reflect a regularity in migratory pattern on the western axis of the north-south migratory route as captured in literature, media reports, as well as researcher's preliminary investigations (This is discussed in detail in Chapter One with relevant references on the incidence of migrant herdsmen/farmer conflicts).

5.5 Data Collection

Primary and secondary data sources are used. Primary data sources include face-to-face semi-structured in-depth interviews with a sample of 120 interviewees across the four study areas. Study areas were further divided into two each: i.e. each study location was divided into two: rural settlements and proximate urban and suburban area. This helped to obtain data from other relevant groups besides farmers and herdsmen in rural farming communities since such respondents as local government head, police authority, traditional rulers, and urban migrant youth can only be found outside of the interiors. Focus Group Discussions (FGDs) were planned group meetings conducted with clusters of informants. FGD sizes were loosely regulated depending on mix of suitable participants, willingness to participate, interest and availability. Discussions were conducted with sizes ranging from between 12 and 22 participants. Discussions were captured digitally with participants' permission, and fully transcribed and anonymised in the analysis.

Others sources of data included preliminary spatial area studies (personal observation of environment and people) and critical content analysis. Locations and interviewees at this stage were selected purposively (for farmers, youth and institutional informants), Snowball sampling (for pastoralist). Secondary sources include, critical review of extant literature, including print, virtual, and electronic materials such as books, journals publications, government gazettes, and news reports.

This process helps in eliciting information on the links being investigated—the effect of climatic variability in pastoral migration decision and changes in migration patterns, the effects of these on farmers, the secondary effects on youths and implication for security, local livelihood and rural-urban migration. An approved Interview Guide is used in obtaining primary data from respondents, allowing detailed narration of respondents' experiences. FGDs are pre-scheduled meetings with clusters of respondents in all four study areas, including farmers, herdsmen, and youths, to uncover socialized perceptions and response to geo-climatic and socio-ecological changes, institutional mediation, and options often explored. Geo-ecological observations of cases of recent disputes, and tension and violence are documented.

5.5.1 Pilot Study

The first step in the course of this study was a pilot study of selected areas in order to understand contextually, i.e. the nexus between the phenomena and preliminary assumptions

held by the researcher. Although Holloway and Wheeler (2002) explain that pilot studies are rarely incorporated into qualitative research, they however agree that it may be of help where the researcher is a novice on the subject matter. In the case of this study, and although the pilot study was entirely accidental, it helped the researcher build a base towards developing the study from its interdisciplinary dimensions: environmental, ecological, to the political. It therefore provided an understanding of the important dimensions that needed to be captured in the review of literature.

The pilot study investigation was carried out to determine cases where potentials for clearly distinctive researchable linkages could be drawn, cases among these in which the security of the investigator as well as the reliability of a deeper study can be most assured and hence terrain where there was adequate facility for communication and access. As such, the pilot study took place in two locations, namely Ekiti and Oyo states. The researcher explored the opportunity of working in the areas, and observations related to the past incidence of the phenomenon in eliciting information from actual participants across all principal groups involved in the study. However, time and facilities did not allow full documentation at the pilot study stage. Information gathered at this state enabled the researcher specifically, to:

1. Establish incidence of the linkages between climate change, migration and violent conflicts in host communities.
2. Get insights from primary and secondary vulnerable groups.
3. Understand the best approach to elicit the right information from participants.
4. Understand the varied interpretations ascribed to these vulnerabilities and the need to maintain neutrality in studying the phenomenon.
5. Plan for a more structured study and understand potential limitations to the various approaches that may be adopted in conducting the study.
6. Develop local trust across groups involved as well as develop a utility list of critical requirements for a comprehensive research.

5.5.2 Content Analyses and Literature Review

The pilot study was followed by a preliminary engagement with relevant literature on the linkage as well as on relevant interdisciplinary concepts and theoretical constructs that provide analytical frame for the research. This phase helped the researcher in the formulation of research problems, objectives and questions that are crucial to unravelling the hypothetical linkages in relation to the position of existing literature on the subject matter. As such the

preliminary review provided an avenue for the researcher to familiarize himself with important concepts, existing state of knowledge, as well as developing a frame of vacuum that needs to be filled in the new study. This corroborates the position by Polit et al. (2001:121) that "a literature review provides a background for understanding current knowledge on the topic". The review focused specifically on the linkage between climate change and human vulnerability in the context of the developing world, links between vulnerability and migration, the degree of such incidence in poor regions, the nexus between migratory adaptation and contestation for resources in host communities, as well as the implication of these dynamics for international migration, gender problems and wider national security issues such as urban crime etc.

The second phase of the literature review focused on the debate on climate change-conflict linkages. This phase explored three dominant narratives in the discourse, namely: climate change-conflict rebuttal, climate change-conflict association, and climate change-conflict affirmation. It also examined existing meta-theoretical critiques of the subject in recent literature. The later more contextually robust review provided the basis for cross-narrative interpretation, correlation, and validation of findings derived from the study.

5.5.3 Participant Interviews

Shneiderman and Plaisant (2005) describe an interview as a tool used by researchers in gathering information by engaging the subject in oral quiz with a pre-planned set of pertinent questions. It enables the researcher who is the interviewer to focus on specific areas of concern thereby guiding discussions in a constructive and productive manner. Scholars have identified a number of advantages in the use of interview method as tool for data collection (Shneiderman and Plaisant, 2005; Genise, 2002). Some notable advantages include: (1) enabling direct one-on-one information between investigator and the respondents thereby allowing control of information flow; (b) making the generation of detailed account possible; (c) providing a more robust data from fewer number of participants.

There are three types of interview the choice of which are often informed by the nature and design of the study as well as the attribute of its targeted respondents. These include the structured, unstructured, and semi-structured interview forms. Optimal interview structures are determined by the nature of engagement required to elicit adequate response from respondents, as well as the most effective style of fielding questions that best guarantees this. The semi-structured interview was used in this study. A semi-structured interview is one

which combines features from both the structured and the unstructured forms of interview by combining elements of closed and open ended questions in line with the nature of specific questions and the optimal method that helps filter necessary details. The focus is on consistency in question set administered to all clusters of respondents. The researcher develops a preset number of core questions that are applied to all common respondents in such a way that the same set of questions are put to all member of the cluster while the interviewer maintains flexibility by shedding light on specific areas to ensure that respondents have equal understanding of the questions as the interview progresses. The interview schedule in this study targeted 120 respondents (see sample size below).

5.5.4 Sample Size

Sampling, according to Burns and Grove (2003:31), is the "process of selecting a group of people, events or behaviour with which to conduct a study". Polit et al (2001:234) similarly describe a sample as the portion used to represent the whole population chosen for a study. The aim of sampling is to arrive at findings that can be generalised by examining the selected case(s). The sampling method used in this study is non-probabilistic, combining purposive for official/institutional subjects and farmers, as well as snowball sampling for herdsmen and youths. Parahoo (1997:223) describes the non-probability sampling technique as one in which the researcher relies on personal knowledge and judgment in selecting subjects that serve as a source of data. This applies to the study since the researcher knew beforehand, the specific characteristics of institutional respondents, herdsmen, and youths who are most suitably positioned to supply the needed information. The peripatetic nature of the herdsmen on the other hand made snowball sampling inevitable.

Sample population, according to Parahoo (1997:218), refers to "the total number of units from which data can be collected". In the same vein, population according to Burns and Grove (2003) refers to all elements identified as satisfying the criteria used for inclusion as illustrative case in a study. It is the identified number selected by the researcher as fulfilling the requisite conditions in "a list of characteristics that are required for the membership in the target population". The size of the sample for the study is specific at interview stage, with 120 total interview respondents. The population of FGDs were however open to as many as where available at the optimal location of the scheduled sessions.

Specifically, in order to elicit adequate response to these questions, the sample size in the research design consisted of 120 respondents across the four case study areas with 30 informants engaged per study area. These respondents were distributed as follows:

1. 10 farmers in each location making 40 in all.
2. 5 migrant pastoralists
3. 5 native youths (non-migrants)
4. 2 community leaders (1 native, and 1 pastoralist from each location making 8 in all)
5. 1 traditional head (Emir or Oba)
6. 1 top local Police personnel
7. 1 top Local Government official
8. 5 urban/suburban dwelling youths (4 natives and 1 migrant) in proximate towns (Efon Alaaye township, Oke-Ero township, Nasarawa township, and Saki township) making 20 in all.

Of the 120 proposed, a total of 117 interviews were successfully conducted. Informants successfully interviewed included:

1. 40 farmers.

2. 20 pastoral farmers.

3. 20 native farming community youths.

4. 4 native farmers' community leaders.

5. 4 pastoral community leaders.

6. 3 out of 4 proposed traditional rulers (or their designated representatives) as one declined based on alleged tension between traditional authority and state government mediation on the subject.

7. 3 out 4 proposed interviews with top personnel from corresponding offices of the Nigeria Police.

8. 4 Local Government Authority Chairmen or their designated representatives were interviewed.

9. 16 indigenous youths in the contiguous urban or sub-urban area engaged in alternative/irregular jobs were interviewed.

10. 3 out of 4 proposed with migrant (former herder) non-indigenous migrant youths in contiguous urban or sub-urban area engaged in alternative/irregular jobs were also interviewed. Attempt at identifying a migrant youth in Nasarawa study area was unsuccessful.

5.6 Focus Group Discussion

Focus Group Discussions were also used in the study. A focus group discussion, according to Parahoo (1997: 296), is "an interaction between one or more researchers and more than one participant for the purpose of collecting data". Holloway and Wheeler (2002) explain the procedure in focus group discussions as including the interview of participants by the researcher(s) who identifies respondents with common experiences of characteristics in order to generate information, ideas, and perceptions concerning specific topics and issues that are related to an area of interest.

In this study, groups engaged in Focus Groups include farmers, herders and youth in primary and secondary host communities. FGDs used an interview-cum interactive style in order to allow for flexibility while maintaining control on the focus of the session. As Holloway and Wheeler (2002:115) suggested, the researcher, doubling as the facilitator, deploys both social and refereeing skills in guiding contribution from participants effectively. The researcher was responsible for maintaining control over discussion topics which were taken from questions related to the respective groups as contained in the interview guide, and ensuring that participants were allowed to express views as they perceived without any form of coercion. As such, he ensured that order and decorum by reciting the rules of the process to maintain focus and prevent hateful or prejudiced confrontations.

In structure, questions fielded in Focus-group discussions are less structured and less formal in comparison with the individual interviews. This is as a result of the number of discussants, as well as the need to allow natural flow of discussions and ideas, thereby enriching the data as new facts are obtained, issues are critiqued among members of the cluster and perspectives that were missed in individual discussions often emerge in the interactive atmosphere of FGDs as participants cross-ventilate perspectives. The FGDs play a crucial role in this study

in that it serves to cross validate data that were collected and also provided contextual basis for the evaluation of perspectives in the dominant literature.

Parahoo (1997) lists some of the advantages of FGDs. These include that:

1. It makes data collection cheaper and quicker.
2. It creates a comfortable, socially engaging, and less official environment where participants are able to voice their opinions as group rather than individually, with the researcher.
3. Participants have the opportunity to further reflect, react and corroborate the views and opinion held by others, or learn from, and shed light on new issues that are likely to escape individual interview sessions (p.298).

In the same vein, Holloway and Wheeler (2002) identified a number of strong points in the use of FGDs. These include:

1. The thought-stimulating dynamism of interactive information sharing among participants which calls to memory, past experiences in regards to the subject matter.
2. The opportunity to ask questions open to both the participants and the researcher, further enriching the data obtained.
3. The opportunity it offers informants to build upon answers given by other participants.
4. Lastly, the ability of the researcher to shed light on conflicting views, and clarify ambiguities in the perspectives of participant (Holloway and Wheeler, 2002:117).

Against the backdrop of these benefits associated with FGDs, the study, in addition to the 120 interviews conducted, 10 FGDs were also conducted with relevant groups (farmers, herdsmen, native community youths, and indigenous urban migrants). A group discussion of the research problems and questions drawn from the interview guide were used to elicit responses from the focus groups. The open-ended nature of the FGDs helped to enhance natural flow interaction and cross pollination of participants' experiences by respective groups. This serves the main essence of the sessions which is to cross validate data and the contextually socialized experiences of the population, to provide information that can be simulated by the researcher. Tape recorders and cameras are used to capture data based on consent of respondents.

5.7 Data Analysis

Data analysis entails the process of organising data, giving form and structure, and eliciting meanings from collected information. The process of analyzing data in qualitative form often involves active, interactive set of procedures (Polit et al 2001:383). This underlies Holloway and Wheeler's (2002) observation that data analysis runs simultaneously with the gathering of data (p. 235). Scholars have also identified certain intellectual activities which play important roles in the analysis of data, especially in qualitative study designs. These include:

1. Comprehension—the process by which the researcher tries to understand events as they occur in order to put the phenomenon under investigation in detailed descriptive perspective.
2. Synthesising—the process by which piecing salient information together from the raw data in order to make sense of typical points that can be deduced from facts relating to the phenomenon under study. This may include sorting and coding.
3. Theorising—which involves the systematic sorting of the data into its various dimensions, in order to develop alternative perspectives and explanations regarding the phenomenon so as to determine correlations with existing data (Field and Morse, 1996:82).

Parahoo (1997:355) argues that in order to make sense of interview data, a number of steps must occur. These are identified as follows:

1. Verbatim transcription of responses obtained from the focus group interview.
2. Extracting significant statements pertaining to the experience under investigation.
3. Formulation of meanings from statements.
4. Organisation of statements into clusters
5. Structuring experiences into descriptive thematic categories.
6. Reviewing or comparing categories with original source of information (in this case, existing literature) for validation of conclusions drawn.

In analyzing data collected for this study, respondents' experiences, as derived from semi-structured participant interviews, FGDs, and spatial observation are grouped into categories or active clusters such as herdsmen, farmers, youths etc. These are then aggregated by groups using computer-assisted qualitative data analysis software—Nvivo. Word frequency and text queries are run to identify dominant themes. Where applicable, information was classified to

help in ranking motivating factors and establishing a weighted significance of multivariate functions using Nvivo10. Responses are synchronized in nodes to develop themes and discover relationships and classifications. Word and text queries are run to identify key words and develop further relevant child-nodes. These are then compared, aggregated for patterns and recurring trends. These are tabulated to show regularities and compare patterns.

The use of NVivo10 aided qualitative analysis by developing coding frames to representing dominant themes, and patterns by reading through synchronized transcripts. These frames, after they are coded, are then integrated into NVivo nodes, or compared and contrasted as applicable. Recurrent or dominant textual constants are interrogated in a comparative way across contexts in order to monitor peculiarities across the four study areas. Given premium on individual standpoint through whole-text quotation of key statements borrows from Harding's (1993) standpoint analytical framework which emphasized the importance of direct participant's perspectives.

Certain important comments are quoted and presented in coded forms to maintain participant anonymity. Responses are represented statistically and graphically. This will make report amenable to further analyses. Interpretation employs descriptive representation, and explores latent underlying, but discernible meanings. Aggregated respondent inputs are cross-validated against reports from Focus Group Discussion sessions and existing narratives in literature. Critical content analytical method is adopted in reviewing extant literature and other secondary materials. Findings in Field data are compared with dominant views as embodied in highlighted narratives on climate change-conflict linkage.

5.8 Validity and Reliability

Qualitative research aims towards arriving at findings which depict actual reality, and which as far as possible, are divested of the biases of the researcher. This underlies the needs for reflexivity—the researcher's self-awareness through all stages of the research, that there is need for caution to minimize how much he allows personal factors such as his/her race, age, gender, affiliations, and other such factors to influence the outcomes of his study (Hall and Hall, 1996). This imperative brings up the question of validity and reliability of findings which help users to measure the value of such research and whether they represent existing social realities.

Hall and Hall (1996) defines validity as the "extent to which a test, questionnaire or other operationalisation is really measuring what the researcher intends to measure" (p. 42), while reliability is "the extent to which a test would give consistent results if applied by different researchers more than once to the same people under standard conditions" (p. 44). In the contextual social investigation however, there is limited room for standardization as beyond researcher reflexivity. Hence, strict measurement more easily applies to quantitative research which can be better procedurally protected from interference making it rank highly in internal validity, although its findings are also rarely representative of the complex interaction in the real social world, hence lowering its external validity (Hall and Hall, 1996).

Qualitative researchers often rely on multiple parameters for measuring or enhancing the trustworthiness (the quality) of findings, that is, the degree of believability of the data and its analysis. A number of parameters are suggested by scholars in measuring trustworthiness. These include: credibility—pertaining to the degree to which data and its methods of analysis can be trusted or believed to be adequate. This is similar to internal validity i.e. the parity between research findings and reality. Second is Transferability or generalizability which speaks to how well research findings can fit into new contexts outside of the actual context studied. That is, the ability of the researcher applying his account in the particular context observed, to other situations other than the immediate context studied (Maxwell, 2002). Overt emphasis on transferability often leads scholars to shed off the subjective, socialized and crucial undercurrents of qualitative context-based phenomena. Transferability is enhanced here by detailing the context of the study at hand as advocated by Seale (1999: 45), supportive of "inferential generalisation" which enable future studies to generalising onto matching contextual backgrounds (Ritchie and Lewis, 2003).

Third is dependability which is analogous to how reliable and consistent observation across contexts similar to transferability. Lastly, conformability deals with the extent to which findings can be subjected to confirmation or corroboration by others, analogous to the objectivity level of the researcher and his consciousness of participant and investigator bias. In this study, FGDs and cross-critique of findings with existing meta-theoretical studies are used as self-auditing techniques to enhance confirmability by detailing procedure as suggested by Seale (1999: 45). Qualitative research nonetheless prioritizes the robustness of research by capturing the subjective meanings and interpretations of reality as constructed within specific contexts and period. Hence, the premium in this study is on the experiences

and perspectives of participants in selected cases, as replicable explanations for climate change conflict transformation in the larger Nigerian context.

5.9 Ethical Issues

The design of this study necessitated that the researcher interacts with, and explore participants' experiences. This often entails gaining access to the personal domain of individual personalities, orientation, past conducts, etc in order to obtain relevant data. The sensitive nature of such personal experiences underlies Silverman's (2000) caution that researchers must remember that in the course of their research, they operate in the private spaces of participants which require due consideration. Hence the researcher is under the obligation to ensure that the rights, needs, values and desires of the informants are protected (Creswell, 2003).

Miles and Huberman (1994) identified certain important considerations that must be taken into account by researchers before, during, and after collection and analysis of data. This according them, include: (1) informed consent—that participants must have full knowledge of what is involved; harm and risk (2) whether the study can bring harm to, or hurt participants; (3) honesty and trust by researcher in presenting data; (4) protection of the privacy, anonymity, and confidentiality of participants, and (5) the response of the researcher should a participants display risky, illegal or harmful behaviour.

Steps were duly taken in the course of this study towards protecting participants. Institutional approvals were obtained at appropriate levels for ethical vetting of interview instruments on data collection method, questions to be asked, devices to be used and the consent of respondents to participate, allow/disallow electronic capture device for interviews, as well as post analysis safety measures such as technique for data storage and period of data storage. Anonymity of respondents was also protected in the data reporting with ordinal representation of participant inputs. On the field, informed consent document in the local language was presented to each participant. The purpose of the exercise was verbally explained to each participant ahead of interview session, emphasizing the following: (1) that participation is voluntary, (2) that participant were allows to discontinue or refrain from answering any questions should they feel uneasy to do so, and that they were free to chose to be recorded and by which instruments.

The anonymity of respondents is protected in reporting and data processing by the use of nominal encoding systems for representation of interviewees. The code names used are as follows:

1. F (1-10) = Farmers (numbering 1 to 10 in each of the 4 locations)
2. FCH = Farmers' Community Head
3. LGH = Local Government Head
4. NCY (1-5) = Native Community Youth (numbering 1 to 5 in each of the 4 locations)
5. PCH = Pastoral Community Head
6. PH (1-5) = Pastoral Herder (numbering 1 to 5 in each of the 4 locations).
7. PP = Police Personnel. Head of nearest Police office or his delegated representative.
8. TR = Traditional Ruler. Head of traditional authority or delegated spokesperson.
9. IUMY (1-4) = Indigenous Urban Migrant Youth (numbering 1 to 4 in each of the 4 locations).
10. NIUMY = Non-Indigenous Urban Migrant Youth.

5.10 Limitations to the Study

A major limitation encountered in the course of this research relate to the volatility of the phenomenon being studied. Heightened risks of data collection in volatile regions partly influenced the choice of destinations selected for data collection, FGDs, and interviews. However, the researcher ensured that in selecting spatial locations for case studies, consideration was given to those affected locations which possessed the requisite parameters needed to retrieve adequate data and background information, while also guaranteeing access to substantial number of interviewees.

Three important parameters were used to streamline the selection of spatial contexts with connectives drawn. Priority was accorded to sites which fulfilled the following criteria: (1) had a history of Farmer-herder conflicts, (2) had historically, a comparatively larger number of youth involved in agriculture, a essential to unravelling linkage to youth retentions, rural-urban migration, and crime; and (3) locations which conform with the substantial presence of the two forms of herdsmen influx (i.e. transitory and sedentary forms of migration) and also reflect the north-south migratory routs.

A second challenge encountered concerns the inability of the research team to locate the Bororo subset of the Fulani herders—a critical population in the farmer-herder conflict

discourse as will be seen in the field report of assessment of aggressive disposition among the Fulani herders. Related to this is a general concern among certain respondents on the sensitivity of the subject, and hence, the unwillingness of some to participate. This however is significant only in regards to designated officials and title holders. While this challenge is factored into the research as part of the institutional environment and the systems of mediation which influences policy making, alternative strategies were adopted towards understanding underlying socio-political sensitivities.

5.11 Conclusion

This chapter provided a detailed background to the methods and methodology of the study. The chapter discussed in pragmatic and theoretical terms, critical aspects of the practice including the research design, the qualitative method adopted in the study, case studies and case selection, the pilot study and methods of data collection. Others areas covered in this chapter include the use of content analysis and literature review, participant interview forms and procedures, sampling size and methods, FGDs, data analysis, validity and reliability, ethical issues as well as the limitations to the study. A summary statement for this chapter is that the methods and methodology responded to the nature of the study, the phenomenon explored and the context in which the study is conducted.

CHAPTER SIX

CONTEXTUALIZATION AND ANALYSES OF DATA

6.1 Introduction

This chapter undertakes two main tasks: first, it presents the spatial and socio-demographic background of the four selected migrant host communities in Nigeria's North-central and South-western regions. These cases include Saki/Iseyin in Oyo State, Efon Alaaye in Ekiti State, Oke Ero in Kwara State, and Udeni Gida (Nasarawa LGA) in Nasarawa State. In doing this, I highlight the classificatory scheme used in structuring the context of investigation. The second section presents the analysis of field data. It uses computer-assisted qualitative data analysis software—Nvivo, graphic presentation, and tabulation styles.

6.2 Classifying Study Areas

Vulnerability to climate change impacts may be classified as primary or secondary based on the sequence of exposure to risk from the occurrence of climate change event to actual experience of vulnerability (see for example: Asian Development Bank, 2009; Bauhaug et al 2008; Goh, 2012; McCarthy et al., 2001; Stern, 2007; Villagran de Leon, 2006). From this point of view, population exposure to climate change or its associated migratory adaptation pressures is viewed as either primary of secondary. Applying this classificatory scheme spatially, migrant host communities may be regarded as experiencing primary or secondary forms of migration.

Although various reasons may explain environment-related migration in different contexts, classifying these into primary and secondary environmental influences as attempted here needs to addresses question pertaining to whether migrating persons are exposed to geo-climatic (primary) pressures, or socio-ecological (secondary) pressures. Geo-climatic pressure as used here refers to pressures associated with variability in the physical climatic condition, while socio-ecological factors are those arising from population response when exposed to geo-climatic pressures.

In this section, the study probes the significance of climatic variability (direct or indirect) in herdsmen's decision to move. It also explores how these influences are distributed spatially in each location. Findings show two forms of migration: (1) migration from areas affected by primary geophysical impacts particularly drought, desertification, and heat waves, and (2) influence on outward migration from communities receiving environment-displaced migrants due to demographic and socio-ecological impacts on livelihood systems. These affects range from destruction of farm investment, insecurity from contestation over resources, and loss of livelihood in host communities. Secondary host communities are urban or sub-urban destinations which receive population influx due to socio-ecological impacts.

6.3 Spatial Background to Study Areas

There is increasing understanding among researchers, on the need for a demographic orientation in studying the impacts of climate change. Specifically, studies on the social dimension of climate change highlight the imperative of population-specific analysis (Bailey, 2010; Brauch, 2004; Lopez-Carr *et al.* 2014). Brauch argues that the analysis of environment security issues on a regional level requires a spatial approach (Brauch, 2004). This section offers a descriptive background to spatial locations used as case studies in the study.

6.3.1 Ekiti State: Efon Alaaye

Ekiti State is located in the southwest zone of Nigeria. Ekiti state created on October 1 1996. It was one of the last six states created by the then military Head of State, General Sani Abacha, which brought the number of state in Nigeria to 36. The people of Ekiti State are Yoruba by ethnic group, and are made up of a combination of Christian, Muslim and traditional religion adherents. Ekiti State has 16 local government administrative areas and its state capital is located in Ado-Ekiti. It had a population of 2,384,212 according to the 2006 population census figures.

The state lies entirely in the tropical region, situated between longitudes $4^0\ 5^1$ and $5^0\ 45^1$ East of the Greenwich meridian and latitudes $7^0\ 15^1$ and $8^0\ 5^1$ north of the Equator. Ekiti's tropical climate has two distinct seasons: the rainy season (between April and October), and the dry season (from November to March). The state has a tropical and Guinea savanna forest in the south and in the northern peripheries respectively (Obayelu, Adepoju, and Idowu, 2014). Ekiti state shares its border with the south of Kwara and Kogi States, to the east of Osun State, and by Ondo State in the East and in the south. Its total land area is 5887.890sq km

(EKSG, 2015). Given low industrial presence in Ekiti state, farming is the dominant occupation in the state.

Efon Alaaye local government area site for this study is noted to be among over 20 villages and locations in Nigeria that have recently witnessed "armed conflict between herdsmen and their host communities" (Odoh and Chigozie, 2012: 113). The town is recorded to have a population of 86, 941 in the 1996 census (EKSG, 2015). It occupies a total landmass of 243,201 Sq km with 55km length and 30km breadth. The landscape and topography of the Local Government are hilly and mountainous. The climate pattern in the Local Government is tropical in nature with two distinct seasons i.e. the raining and dry seasons corresponding to the pattern of the state.

The aerated soil of Efon Alaaye makes its land suitable for both arable farming and pastoral farming, hence its attraction of herdsmen. Its abundance of streams and rivers include the Oni, Orooro, Agboro- Oke, Anidun, Agbonrin, Ibase, Olua, and Osun all of which contribute to its large presence of herders (EKSG, 2015b). Spatial areas study showed that many farmers in Efon Alaaye are migrant farmers of the Ebira extraction from neighboring Kogi State. Like other local communities, Efon Alaaye has both formal local government administrative structure headed by a local government Chairman, as well as a traditional kingdom headed by the Alaaye.

6.3.2 Oyo State: Saki/Iseyin

Located in the southwest zone of Nigeria, Oyo state was created in 1976 as one of the three states formed out of the old Western State. It is mainly home to the Yoruba people. The state has a population of about 5,591,589 according to the 2006 headcount. Local administration in Oyo consists of 33 Local Government Areas including Saki West and Saki East local governments. Oyo State is situated on longitude 4° 00' 00" E and latitude 8° 00' 00" N. It spreads over a land mass of about 27,249 square kilometres and shares boundaries with Ogun State in the south, with Kwara in the north, partly with Ogun and the Republic of Benin in the west, and with Osun State in the East by Osun State (Government of Oyo State, 2015).

The climate in Oyo State is an equatorial one with dry season from November to March, and the wet seasons from April to October. The state is ecologically diverse with a rain forest vegetation pattern in the south and a guinea savannah in its northern axis, making its climate

highly suitable for growing a wide variety of crops such as Maize, Yam, Cassava, Millet, Rice, Plantain, Cocoa tree, Palm tree and Cashew (Government of Oyo State, 2015). Data was collected in farm settlements in Saki East and Iseyin. Saki East has an area of about 1,569 km² a population of 110,223 according to the 2006 headcount while Iseyin Local Government area is estimated to have a population of 236,000 in 2005.

6.3.3 Kwara State: Oke Ero

Kwara state is a situated in north central Nigeria. It is located in Latitude 7º 55' and 100º North and longitudes 2º and 20º East. The state was created in 1967 following the creation of 12 states from the country's four regions. The state was initially called the West Central State—a name late changed to Kwara (a local name for the Niger River). It has a total landmass of 32 500 square kilometres and a population of about 2.5 million people. Kwara state abuts to the west with Niger republic and shares its internal boundaries with Niger State to the north, Kogi State to the east, and to the south with Ekiti, Osun, and Oyo States. Kwara has a substantial indigenous Fulani population given its history of Fulani occupation. Historically, almost all of its savannah area had been conquered in the early 19th century by the Fulani until 1897 when the area was conquered by European forces and incorporated into the protectorate of Northern Nigeria.

Ecologically, Kwara state is made up of mostly wooded savannah in its northern axis reflecting Nigeria's north-south ecological transition, with some forested regions in the lower southern part. Because of its rich soil which supports the production of a wide variety of crops, the state is rich in food production although most farmers remain subsistent like other parts of the country. The history of Fulani settlement makes for significant presence of livestock production. It also makes a destination for the study of intrastate migration and farmer-herder confrontations common in many parts of the state. Oke-Ero LGA has its headquarters in Iloffa was created in 1996. The LGA covers an area of 445 Square kilometres with a population of 56,970 according to the 2006 headcount. Oke-Ero is inhabited mainly by Yoruba farmers who specialise in cassava, sugar cane, yam, kola nut, cocoa, cashew, and palm oil production.

6.3.4 Nasarawa State: Nasarawa Local Government Area

Nasarawa State is one of the seven states in Nigeria's North Central geopolitical zone. Like Ekiti State, the state was created on October 1, 1996 with its capital in Lafia. The state is located in the north-central region of Nigeria. According to the National Bureau of Statistics,

it has a total area of 27,117 km^2 (10,469.9 sq mi), a population of about 2,040,097 by 1996 census, and thirteen (13) local government areas. Created from old Plateau State, Nasarawa State is bound in the north by Kaduna State, by Abuja the Federal Capital Territory to the west, by Kogi and Benue States to the south, and to the east by Taraba and Plateau States. Similarly, the agriculture is the mainstay of the state's economy in Nasarawa State where the production of different cash crops including yam, rice, cassava, melon, soybean, maize, sorghum, and millet among others crops with planting of different varieties running round the year (NSG, 2015).

Nasarawa local government area which includes Udeni-Gida and many other villages and communities, has a population of about 217, 520 according to the 2011 estimates.[87] The area has witnessed series of herder/farmer violence between 2009 and 2014. Udeni-Gida village is one of the key areas known as a beehive of activities in the local government. It is a densely populated and busy community of over 30,000 people who are mostly peasant farmers (Joseph, 2009). The communities' usual tranquillity has been upset serially by recurrent incidence of violent conflicts mainly between the farmer and herdsmen. As Joseph (2009: n. p) puts it, "the once densely-populated Udeni-Gida in Nasarawa Local Government Area of Nasarawa State could pass for the faint remains of an ancient world.

A first-time visitor would hardly believe that there was once life in the once bustling community". A 2009 wave of attack was allegedly sparked off by the killing of one Abdulrahman Adamu after a lone protest against herders who reports claim, drove cattle into his yet-to-be harvested rice farm. Series of violence which followed have left the area desolate with many relics of destruction seen in razed houses and many dead in what many describe as herdsmen-organized mercenary attacks in the community (Joseph, 2009).

6.4 Data Analysis

This section presents the analysis of field data collected across rural communities in Efon-Alaaye in Ekiti, Iseyin/Shaki in Oyo, Udeni-Gida in Nasarawa, Nasarawa state, and Oke-Ero in Kwara, as well as in their contiguous urban or sub-urban areas. Locations were short-coded as follows: Efon Alaaye in Ekiti State = EEA, Oke Ero in Kwara State = KOE, Nasarawa in Nasarawa State = NAS, Saki-Iseyin in Oyo State = OS-I. Participant clusters are also coded

[87] According to National Population Commission. See http://www.citypopulation.de/php/nigeria-admin.php?adm1id=NGA026. Accessed: November 27, 2015.

accordingly (see coding in Chapter 5 sub 7: Ethical Issues). The research questions are treated as broad thematic guides and used in charting field date questions sets. Relationships are cross-analysed to establish patterns, divergences, and contextual peculiarities.

6.4.1 General Socio-demographic Background

Spatial observation and socio-statistical overview of communities examined for this study highlighted certain population characteristics. Ages of farmers across host communities range between 18 to 70 years. Youths are in the majority at about 58% of the farmer population. About 4% of youths interviewed are employed in the civil or teaching service and most combine agriculture with their employment. About 60% of the youths combine other jobs as commercial motorcycle transport or artisans with farming while about 25% are involved only in agriculture. Nasarawa farmers have the lowest level of formal education among the four areas studied: about 75% of the farmers have no formal education and about 20% had attained primary school level with 5% had secondary education in contrast for example, to Ekiti which has the highest level of formal education among farmers. Most food production activities in all the communities are done at subsistent level with significant presence of team-farming[88] among youths.

Most native community youths engaged in the study are male, although it is noted that a substantial number of the females were also involved in farming. According to participants, most females often provide labour in support of the men assisting in planting, harvesting, and processing of crops in household farms. Participants in Kwara, and Oyo noted that there has been a reduction in the involvement of women and children and by extension, their supply of labour input into farming due to rising insecurity in their farmsteads.

Majority of the youths are formally educated with a minimum of junior secondary school certificate education. About 2% are graduates of tertiary institutions, combining farming with civil service employment, and 30% are at various levels of education. On the other hand, about 10% of the herders attained education up to primary school certificate level. About 75% had Arabic education while 15% had no formal or Arabic education. About 20% of the herders are aged between 45 to 75 years, while the rest are aged between 12 and 44 years. There is significant number of women and children in herders' settlements. Most households

[8888] Joint cropping refers to a system whereby a number of youths obtain loans and pull resources together in order to grow a larger expanse of same crop. These are often high value crops on which there is a ready market.

are large with sizes ranging between 8 and 14 and wives between 2 and 4. Cattle herding activities are taken up by men while the females oversee day to day processing of bye-products such as dairy milk growing of seasonal crops. Settlement history of sedentary herders interviewed range from 5 to 25 years.

6.4.2 Climate Change and the Dynamics of Pastoral Migration

This section addresses Research Question 1. In order to understand linkage(s) between climate change and natural resource contestation in Efon-Alaaye in Ekiti, Iseyin/Shaki in Oyo, Udeni-Gida in Nasarawa, Nasarawa state, and Oke-Ero in Kwara, Nigeria, the study probe intervening factors between primary vulnerability among herdsmen and secondary vulnerability in both primary and secondary host communities in the four study areas. These are presented in tables and other graphic styles as applicable.

1. Factors Motivating Pastoral Migration

Findings: Four factors were highlighted by respondents. These include environmental scarcity, environmental variability, population pressure, and other personal contingencies. These are presented in an order of significance.[89] Although its ramifications are understood in terms of geophysical, seasonal, and inter-annual variability experiences, environmental decline and resource scarcity ranked as the most significant factor motivating southward migration among cattle herders (See table). The importance of environmental pressure to migratory decision is captured thus:

> *We herders are often chased about by drought. It is often said that pastoral farmers have no home. We do have homes, but our profession forces us to move when we are confronted with drought. When we come to a place where the environment is conducive, we desire to stay. Many of us have become comfortable and prefer to stay permanently rather than migrating every now and then. There is a huge difference between here [Efon-Alaaye] and there [northern region]: the cows are feeding well here, and instead of giving birth two times in a year as obtains up north, my female cows give birth three times here (PH5, Efon Alaaye, May, 2014).*

[89]Contingency-induced migration refers to those not directly relating to environmental or demographic pressures on each herdsman, for example the need to move because of other family members' migration.

Table 3: Pastoral Farmers' Perception of Factors Influencing North-South Migration

S/N	Factors	Ekiti, Efon Alaaye	Kwara, Oke-Ero	Oyo, Saki-Iseyin	Nasarawa, Udeni-Gida	∑	%
1	Environmental Variability	3	--	--	1	4	15.4%
2	Environmental Resource Scarcity	5	5	5	3	18	69.2%
3	Population Pressure	2	--	--	--	2	7.7%
4	Contingency Factors	--	--	--	2	2	7.7%
∑						26	100%

Source: Author.

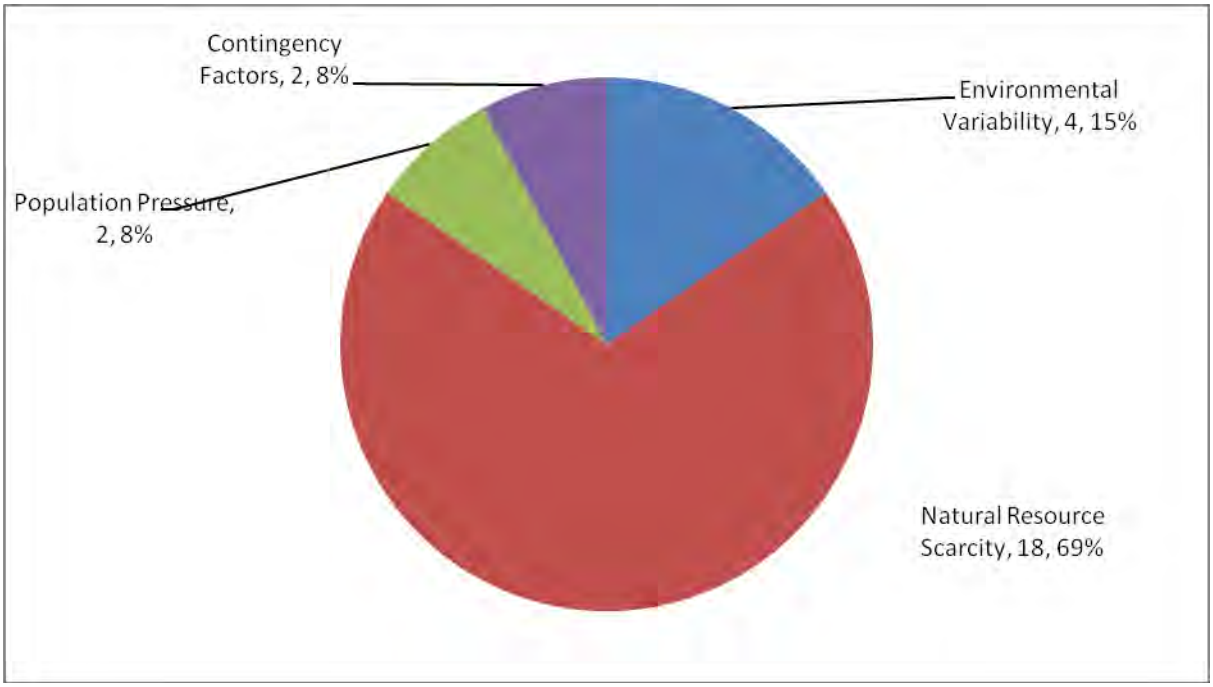
As shown above, factors relating to observed environmental variability and decline in natural resource carrying capacity assessed over time accounted for 69.2% in herders' motivation reference. As shown in the table above. The impacts of climate change as motivation for migratory adaptation is understood by herdsmen in terms of its effects experienced as inter-annual geo-physical declines in cattle-sensitive environmental resources. In comparison with seasonal change, herders demonstrate proper grasp of inter-annual patterns in variability, and are able to differentiate between seasonal weather changes and longer-term climate change. They are also able to recognize pressures from climatic changes as distinct from pressures arising from demographic increase population and herd holdings.

While respondents acknowledge the importance of demographic factors, majority affirm higher push pressures from increased levels of inter-annual environmental decline evident in prolonged drought and cattle-sensitive resource scarcity prior to migration from previous locations. One respondent puts it thus: *"I know that there is scarcity of grass because of longer dry season and increasing drought there [referring to Sokoto State in the northern region]" (NAS PH4, June, 2014).* Another herdsman explains that:

> *At a point, during the dry seasons, streams remain the source of water, but in recent years, the dry season no longer leaves water in the streams. Same also applies to the grasses. That is the reason why we have to move to this area and I decided to settle permanently since I find grass with relative ease throughout the year (EEA PH5, May, 2014).*

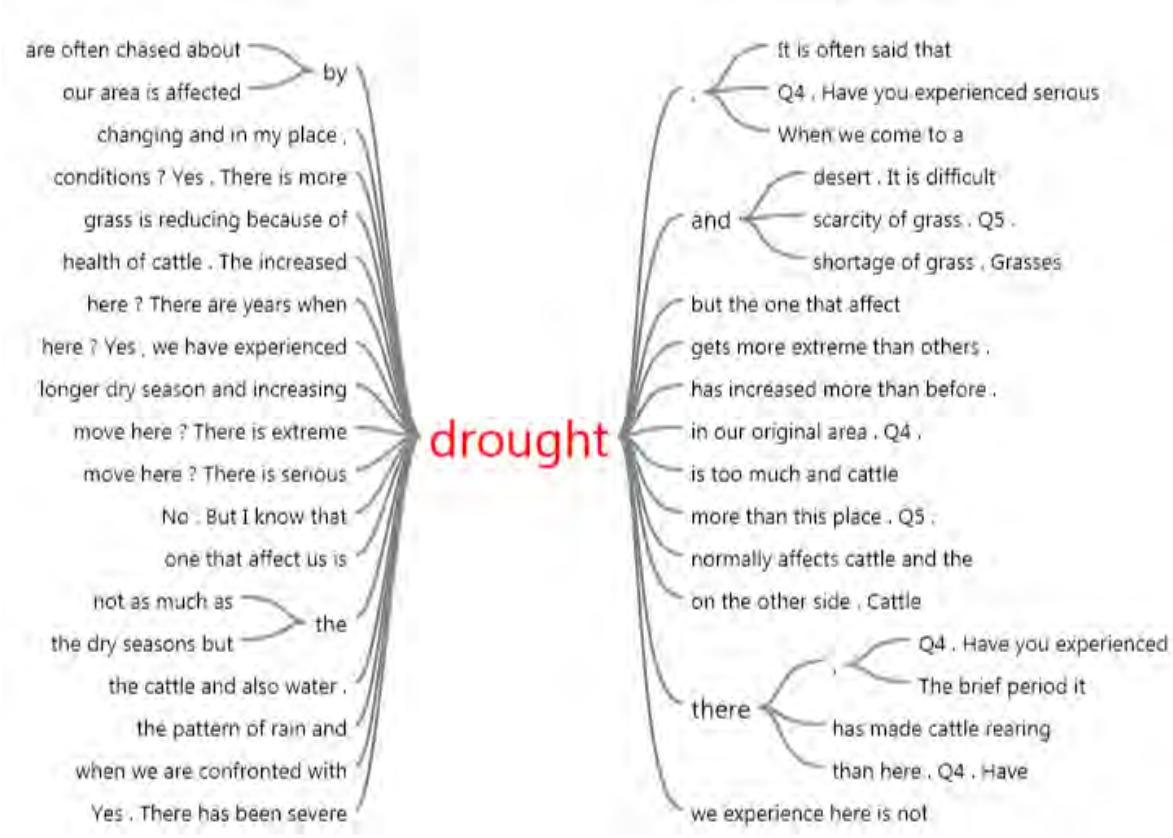
The distribution of the causal agency in pastoral migration can be graphically summarized thus:

Figure 19: Factors Motivating pastoral Migration



Source: Author.

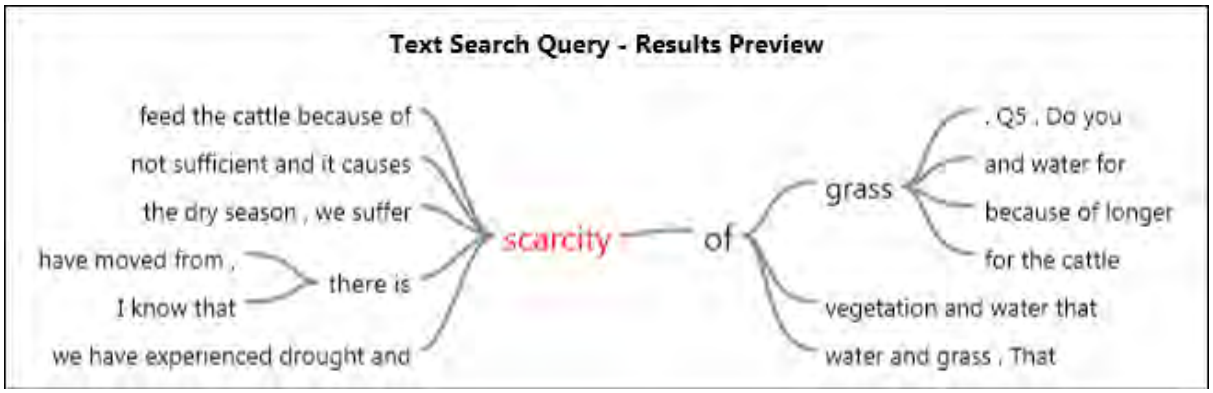
Figure 20: How Pastoral Farmers Conceptualize Climate Change Impact: Drought



Source: Author.

Scarcity features prominently as one of the important concepts associated with inter-annual variability.

Figure 21: How Pastoral Farmers Conceptualize Climate Change Impact: Resource Scarcity



Source: Author.

2. Fault-lines in Herder-Farmer Conflict

I analyze the observed causes of conflict between herdsmen and farmers as reported by herdsmen in order to see similarities in their understanding of tension points. The table also shows most significant causes in farmer-herder relationship in the study area. While 20% of the herdsmen reported no major conflict with farmers, 15% reported conflict relating to harassment, theft and assault on women, 65% reported conflict arising from resources including encroachment of farms, damage to crops and competition for access to water sources. This shows conformity with theoretical narratives identified in eco-violence theory, as underlying resource competition, deprivation and frustration which results into aggressive behaviour. The table below shows response among herdsmen of underlying causes of conflict with farmers in their host communities.

Table 4: Herders Perception on Patterns of Farmer-Herder Fault lines

S/N	Factors	Ekiti, Efon Alaaye	Kwara, Oke-Ero	Oyo, Saki-Iseyin	Nasarawa, Udeni-Gida	∑	%
1	No conflicts	3	1	0	0	4	20%
2	Socio-cultural conflict	0	1	1	--	3	15%
3	Resource use conflict	2	3	4	5	13	65%

Source: Author.

From the table above, resource-related contestations was identified as accounting for greater risks of conflict than socio-cultural differences between pastoral farmers and their host community. Fault lines identified relate to tension in the use of critical resources by herdsmen on one hand, and the protection of those resources on the part of the community. A herdsman puts this rivalry thus: *"...they are friendly but you know cattle are not humans, and no matter what you do with large herd, they will roam into peoples' farm when there are many farms around. That is where we often have problems"* (EEA, PH5, May, 2014).

Both sides identify some factors as specifically underlying grievance. For farmers, factors spurring conflict include: encroachment of farmer's fields and destruction of crops by cattle, pollution of community's water sources by cattle, crop theft by herdsmen, alleged civil crimes including: harassment of community members by herdsmen, robbery and rape by herdsmen. On the other hand, herdsmen reported encroachment by farmers into allocated

grazing reserves, blockage of access roads to water sources, cattle theft or poisoning. A head of a settlement puts strains in farmer-herder relationship thus:

> */About the farmers, we have a problem which pertains to our cattle eating the farmers' crops. The other challenge which we also have is theft of our cattle. The natives shoot our cattle and drag them away to eat them. In this regard, I have lost up to 6 of my cows. But we always settle the issues because we also offend them too. Even when there are actual cases of stealing, they isolate the herdsman's involvement. Another problem relates to accusations that our cattle herders rob the community people. People pretend to be herders and then commit armed robbery on the highways so that the community will blame the herdsmen (EEA, PCH, May 2014).*

6.4.2 Systemic Factors in Conflict Transformation

This section addresses Research Question 2 which examines the importance of socio-contextual and systemic factors including institutional processes, populations' economic circumstances, and adjudicative processes, in conflict transformation among vulnerable groups in the study area. Findings are narrative and presented in tables and graphically where applicable.

1. **Environment-dependency and Resource Contestations**

The patterns of economic activities in the rural communities show that subsisting levels of poverty and the range of opportunities available for survival in a given area significantly affects the chances of natural resource struggle among groups. All primary host communities studied had largely agriculture-based activities. In the absence of industrial or medium scale besides few elementary and school teachers, local government officials, and petty trading kiosks, over 70 percent of adult males are engaged in farming. Almost all adults combine farming activities with other occupations such as teaching, artisans, and commercial motorcycle transportation known in local parlance as 'Okada' or 'Ashaba'.

The spatial area survey shows that the majority of unemployed youth rely on Okada transportation which serves as the fall-back alternative source of employment when farming fails. A number of scholars have linked occupational displacement among farmers as one of the reasons for increasing number of Okada transporters in rural communities. Some specifically link this trend to pastoral invasion. For example, Ofem and Bassey (2014: 513) noted that the invasion of farmers' crops by Fulani cattle "has not only created an

impediment on the survival of the host communities, but has for instance led to crop-farmers abandoning farming for lesser occupations like Okada riding and other artisan vocations".

This gravitation away from farming is captured by a native community youth in Saki who noted that "all of us originally rely on farming. If one invests in farming for one year, the gains are far more than what I can get from Okada" (Interview with OS-I NCY4, June, 2014). Making a similar observation in Udeni-Gida village in Nasarawa, a native community youth noted that "there is no other thing we know how to do other than farming. Now they no longer allow us to do the farming" (Interview with NCY3, Udeni-Gida, Nasarawa). The reliance of the population on agriculture heightens the stake in the event of crop damages and couples with the large presence of youths raise the risk of violence.

2. Conflict Management Systems in Farmer-Herder Violence

The effectiveness of conflict mediation systems in ensuring just and adequate mediation in conflict situations plays an important role in preventing the escalation of violent conflict among groups. Here I tabulate the conflict response preferences among two aggrieved groups: farmers and native community youths. It is noteworthy that most of the youths are also either currently involved, or recently involved in farming in most communities studied.

Table 5: Strategies Adopted Farmers in Addressing Conflicts

S/N	Approaches	Ekiti, Efon Alaaye	Kwara, Oke-Ero	Oyo, Saki-Iseyin	Nasarawa, Udeni-Gida	∑	%
1	Recourse to Traditional Authority	5	3	4	3	15	37.5%
2	Recourse to State Authority	1	2	0	1	4	10%
3	Recourse to Associational Bodies	2	2	2	2	8	20%
4	Recourse to Self-Defence	1	3	4	4	12	30%
5	None	1	0	0	0	1	5%
∑		10	10	10	10		
						40	100%

Source: Author.

From the table above, a high number of affected farmers (at 30%) rely on self-help or self-defence measures. This is surpassed only by recourse to traditional authority which was

preferred by 37.5% of the farmers. There is no doubt that self-help approaches that are not mediated by neutral and impartial adjudicators open the space to unpredictable outcomes including violence and subsequent counter-attacks. The preference for traditional authorities is apparently due to the perception of relative ownership of the system by the aggrieved farmers hence a higher level of trust regarding its perceived attributes including the sanctity and integrity of traditional adjudication, sensitivity to context, neutrality and effectiveness of traditional conflict mediators most of whom are also farmers.

The influence of traditional authority is significant in that most of the conflicts are settled at the local level and rarely extends to the attention of state administrative authorities except where conflicts have escalated into major violence. Perceived failure to do justice at this level however leads to a breakdown of confidence. The popularity of this institution notwithstanding, there is a notable decline in its effectiveness. This, according to Baca (2015) is a consequence of the changing political economy of power in the country. A major effect of this transformation is emergence of formal leadership at the local level. Leadership at the formal level derives their devolved political authority from the centre, and are headed by personnel whose authority does not derive from the local communities. As such, they have little or no incentive to be fair in arbitration of disagreements arising from access to resources, thereby making self-help and violence viable options among farmers and pastoralists (see Barrot, 1992; Breusers, 1999; Moritz, 2010).

When aggregated, the data obtained shows that 67.5% preferred resort to third party mediation when contestation arose as against 35% which resorted to self-defence (30%), or did nothing (5%). This shows that institutions both at the traditional and formal levels still play important roles in conflict prevention and management. This institutional mediation factor is also seen in the variations in the propensity to violence in each of the areas examined. For example, farmers in both Ekiti (Efon Alaaye) and Kwara (Oke-Ero) recorded high indicators in the resort to third party mediation with 80% and 70% respectively. Correspondingly, both states (Ekiti and Kwara) also recorded low indicators in resort to self-help with 10% and 30% respectively.

The high score for institutional mediations also raises question about their effectiveness as popular options to conflict mediation among the population. Effectiveness determines the level of community confidence in the respective mediating institutions, as well as the credibility of their outcomes, which also reduced people's resort to self-help and violence. In

all the study areas, testimonies from farmers point to widespread low confidence especially in mediation from governmental institutions. This is due to perceived gaps in neutrality and effectiveness of mediation processes by officers. Although this cuts across traditional and formal conflict management systems, formal institutions were perceived as the least reliable mediation option.

The implication of preferred conflict response approaches to peace is evident. For example, the Ekiti sample reported the lowest in the use of self-defence and also scored high in the resort to traditional authority. One factor that may have contributed to this pertains to the large presence of non-indigenous Ebira farmers in many of the communities. Most of the migrant farmers obtain lands from natives and traditional chiefs, and pay in kind in the forms of produce from the farms at harvest. This arrangement gives the land owner greater roles in conflict management processes compared with the tenant-farmer. The effect is that the farmer who is himself a migrant is less assertive and rarely engages a fellow migrant in violent contestation as against cases between indigenous farmers and migrant herders.

Furthermore, feelings of distrust among farmers can be attributed to a number of factors including corruption and bribery among police officials, the influence of powerful politicians and other influential figures some of whom also have cattle held by the Fulani herdsmen (Olaniyan, Francis and Okeke-Uzodike, 2015). Similar feelings were expressed among some farmers with regard to some traditional authorities alleged to have been compromised and often to enforce unjust mediation (Umar, 2002). This has the likelihood of increasing the resort to self-help and jungle options thereby escalated conflicts.

Some participants express frustrations experienced in mediation systems particularly involving the state police authorities in conflict mediation processes. A farmer explained that:

> *...the dispute involving me ended in the police station. Sometimes, they [herdsmen] pay compensations that do not match the level of what has been destroyed. At other times, they blame us the farmers. The fact is that many of the herders actually lead cattle most of which belong to the government officials and politicians, so it is not easy to get justice in such a situation. And if you are not connected in this country, you will always be guilty (Interview with F1, KOE, June, 2014).*

Another respondent noted that:

> *...there have been disputes over access to water and road. Sometimes, it results into physical fights and the owner of the damaged farms may*

> *even become the guilty for physically confronting them" (Interview with F2, KOE, June 2014)./*

On what measures have been taken to stop farm encroachment and how effective these measures have been, a farmer in Nasarawa pointed out that:

> *...Even very recently, they were caught in a farmer's fields with the aid of hunters and the police, the compensation paid for the damages they have done to the farm would not help the farmer as it is shared between the farmer, the police, and the team of hunters who went to arrest them (interview with F1 NAS, June 2014).*

The low level of trust in the effectiveness of institutions is put succinctly by farmer in Oke-Ero during a youth/farmer mobilization for a counter-offensive against herdsmen at the time of this study. Some participants argued thus:

> *We have taken ourselves [farmers and herdsmen] to the police station several times. But the police always ask them to beg instead of compensating for the damage done, even though we took loans to maintain the farms" (F5 KOE, June 2014).*

> */There has been serious of disputes. At a point, after the leaders failed to respond to our cries and the Fulani herders continued to deny responsibility, we set a trap in the farm and a cow was caught overnight. We called them to see their cattle and they called the police who arrested the farm owner for setting a trap in his own farm to harm cattle. Even the Police chief has cattle being catered for by the Fulani (KOE F9, July, 2014).*

Others expressed similar views about state police mediation in resolving farmer-herder conflicts. Interrogated further on the necessity of the planned counter-offensive when there were structures for mediation and compensation, some youths complained that:

> *Last week, after a series of heated crises that the Police failed to resolve, we took ourselves to the traditional ruler in Ilorin, but the traditional rulers supported them after they claimed that their cattle was lost too, and they discharged everyone to go and bear their losses. Both the Fulani and the Bororo do havoc to farmers. The Fulani only has permanent places where you can find them when they damage our crops (Interview with F6, KOE).*

Another aggravating factor in the escalation of conflicts is the large population of youths and the agriculture based livelihood system of the rural areas. A sampling of the mood of native youths towards Fulani-related disturbances shows pervasive frustration that may degenerate at any prompting, into civil chaos. It is not out of place therefore, to infer a connection

between resource contestations, the social system and youth predisposition towards violence. Alao (2007) lends credence to this view in a study which identified three factors underlying violent inclinations among Nigerian youths. These factors are: first, widespread feeling of frustration and political neglect among the youths who see themselves as struggling in an unjust social setup thus owing no allegiance to the state. The second relates to the access to information that is occasioned by global connectivity and coverage of social media which has enabled the youth to keep abreast of global events especially those relating to social movements, protests, or civil actions as seen in the wave of revolutions now known as the Arab Spring. A third factor noted by Alao concerns the insensitivity of the elite and the political classes who display wealth thereby aggravating the feeling of deprivation and intergroup rivalry among the youth, hence the resort to violence at any prompting (Alao, 2007: 265-266).

Some of the youths interviewed also put this in context thus:

> */Personally as a youth, the activities of herdsmen disturb me in many ways. First, the way they destroy our crops, you must be very courageous to invest in farming in this area. When we plant cassava and hope to make about 15,000 harvests, you may end up making only 5,000. Secondly, we feel unsafe because they may kill anyone in the farm when they are confronted over damages to crops. We have gone through civil means to stop them like the police station but they don't do anything to stop them (Interview with NCY3, KOE)/.*

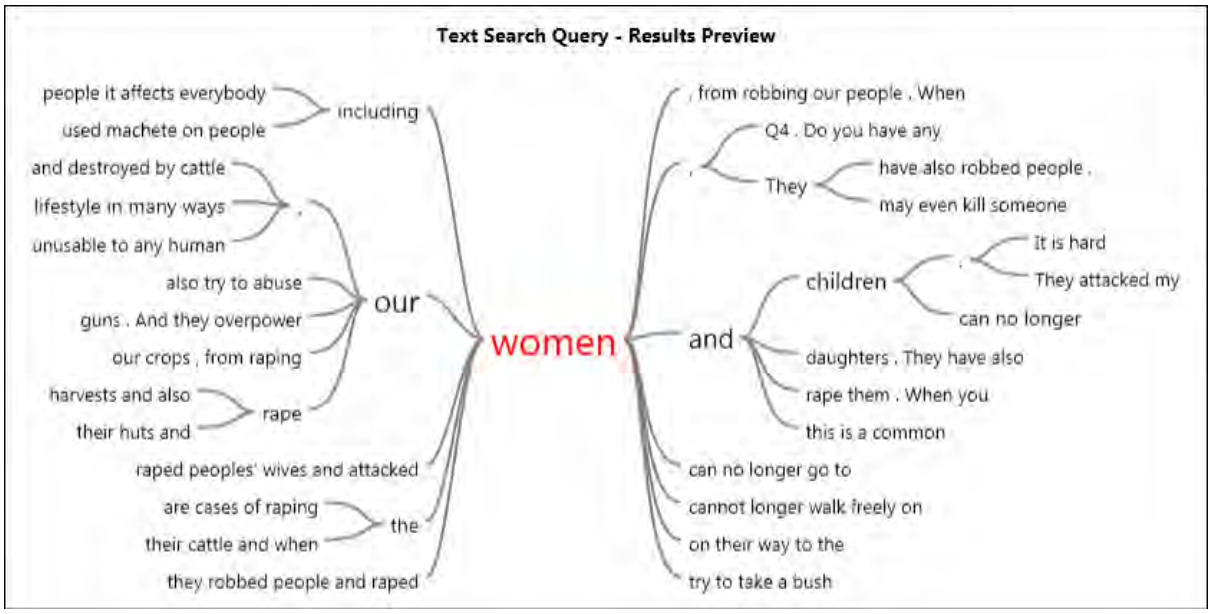
Among impacts reported by native youths are: loss of loan facilities and investment insolvency as damages constrain their ability to recoup capital, heightened insecurity and fear occasioned by frequent gun and machete attacks by herdsmen particularly the Bororo, theft of produce in barns and processing points and general decline in rural livelihood which is largely agriculture. These factors according to the youths, have forced increasing numbers of youth into abandoning traditional farming occupations, for alternative jobs in the rural areas, or migrating to the urban areas. In the face of these exposures, coupled with weak confidence in conflict mediating institutions of state, youth grievances have a tendency to produce escalated violence. A youth leader in Oke-Ero corroborated this view when he noted that they [youths] "*have been managing [coping] with them [herdsmen] because we don't want casualties. But now the people are tired and they are prepared to fight for themselves now" (Interview with NCY4, KOE June 2014).*

3. Soft Targets: Women and Children in Farmer-Herder Conflicts

In most rural communities in Nigeria, women and children play crucial roles in the productivity of the agriculture economy. More so, farming is not only the major base of livelihoods, it also constitutes the dominant productive system around which families' survival revolves. As such, farmer-herder unrests have significant impacts on women and children. Vulnerability of these categories of the rural population—women, and children, often manifest in forms of direct and indirect exposures.

The study showed that all four study areas recorded high exposure of women as well as children. Two cases of alleged herder-related women and children-targeted assaults (including actual or attempted rape) were reported in Efon Alaaye in Ekiti State, 5 cases in Nasarawa, and 2 cases in Saki/Iseyin, and no incidence in Oke-Ero. There were 4 alleged cases of rape in Udeni Gida in Nasarawa, 3 in Saki/Iseyin, and 0 cases in Oke-Ero. Similarly, 7 cases of children-directed violence were reported in Nasarawa, and 2 in Iseyin. It is important to note that given the nature of these allegations, the researcher was unable to interact with victims in order to ascertain the veracity of some of the allegations. The query bellow shows the patterns of vulnerability experienced by women and children.

Figure 22: Word Querry Report on Patterns of Vulnerability Experienced by Women and Children

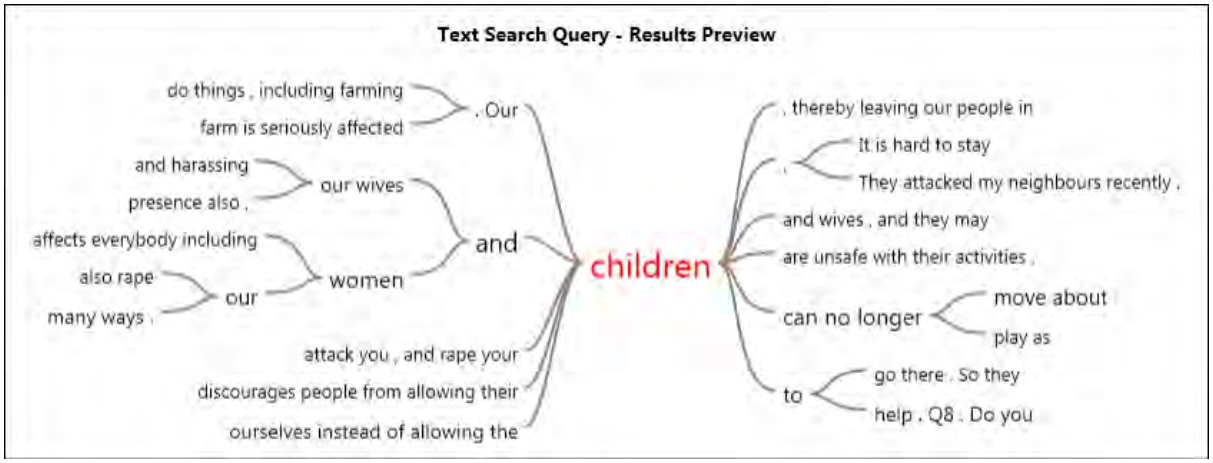


Source: Author.

Figure 23: Word Querry Report on Alleged Incidences of Rape by Herders

Source: Author.

Figure 24: Word Querry Repport on vulnerability of Children to Herdsmen Violence



Source: Author.

Notable gender and child-intensive risks include those resulting from the burning of communities in cases of escalated violence leaving women and children vulnerable regardless of which sides of the divide. The devastating adverse effects such scale of violence can impose on communities have been documented in a number of studies (see Blench, 2003; Muhammed, Ismaila and Bibi, 2015; Nzeh, 2015; Moritz, 2010). Blench (2003: 9) noted in the case of escalated conflict between Tarok and Hausa and Fulbe (Fulani herders) in Jos, that "women and children have fled into refuge areas and well-organised groups regularly burn down villages in remote areas". Similarly, Muhammed, Ismaila and Bibi (2015) highlight the

unique vulnerability of women and children in such situations noting that it directly affects the lives and livelihoods the communities and reinforce circles of extreme poverty and hunger, food security among the most marginalised groups including women and children.

Essentially, the exposure of women across the study area contributes to the decline of livelihood in that it inhibits the important roles which that segment of the population plays in the output of the agrarian rural economies since many peasant farmers rely on labour inputs from their wives and children. Under circumstance where security becomes unpredictable, women are unlikely to contribute optimally due to fear for their safety.

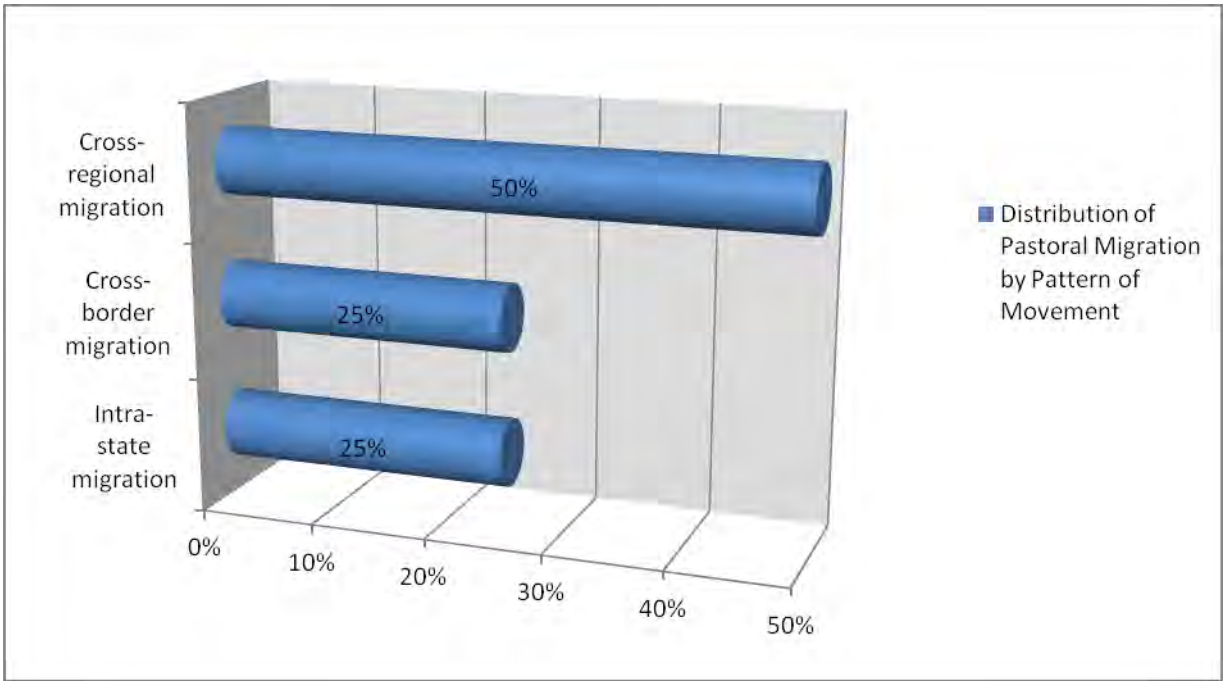
6.4.3 Migratory Adaptation in Conflict Transformation

This section addresses Research Question 3 which addresses the role of migration as an intervening variable in farmer-Herder conflict.

1. **Geospatial Patterns in Pastoral Migratory Adaptation**

Two dimensions were noted in pastoral migration as indicated in the migration history of respondents. These are (1) the spatial range, and (2) the time-span. Spatial range describes the geographical transition in the pattern of migration. This can be categorised as one of three: interstate, inter-zone, and cross-border forms of migration. On the other hand, time-span describes the to/fro longevity span observed in pastoral relocation to host communities. This occurs in two forms: sedentary and transitory. The chart bellow shows the distribution of migration by spatial range.

Figure 25: Pastoral Migration by Patterns of Movement



Source: Author.

Although migration patterns ranged from intrastate, cross-regional and cross-border movements, all movements showed a vertical geospatial orientation with migrants gravitating southward indicating that the various patterns of migration in the study area were influenced by the ecological gravitation of scarcity-resilience in natural resource availability. Fifty per cent of the respondents moved southward across geopolitical regions, 25% moved southward intrastate, and 25% moved southward across national borders. The data also shows that there is a large presence of foreign pastoralists who migrate into the country. Most of these are undocumented as a result of Nigeria's low border management system. This draws attention to the need for the Nigerian state to reconsider its strategies for immigration policy and border administration in the country.

The data also highlight the importance of eco-climatic transition across the regions as an important factor in pastoral migration. Pastoralists demonstrated broad practical understanding of the different forms of environmental variability including long-term phenological changes in the climate, and the short-term seasonal changes, as well as understanding their various effects on herders' migration. A pastoral farmer noted that:

> */...there are notable changes. You can observe three seasons that affects our profession: the rainy, the dry, and a period in-between that is misty with little rain. In the north, the dry season and the misty*

> *season has become extremely dry. Where we used to be in Kwara State at a point, during the rainy season, streams remain the source of water, but in recent years, the dry season no longer leaves water in the streams. This also applies to the availability of grass. That is the reason why we have to move to this area and I decided to settle permanently since I find grass with relative ease throughout the year (Interview with PH5, EEA, May, 2014)/.*

It may be concluded from the above that climate-related migration extends beyond the north-south transition often assumed in previous studies. Many of the herders were found to be non-Nigerians. Specifically, about 25% of sedentary herders interviewed had their origins in neighbouring countries although their migration span decades in some cases especially among sedentary migrants.

The effect of the ecological declines are often compounded by the dry season which peaks with the harmattan as documented in previous studies (Adekunle and Adisa, 2010; Odjudo, 2010). According to Adekunle and Adisa (2010), the annual herding cycle of the Fulani cattle herdsmen usually begins from October to December marked by a southward movement with the herd along rivers and stream valleys. The need to migrate farther for the herds' survival becomes unavoidable from the months of January or February when the effect of the harmattan season forces herders to embark on longer grazing journeys characterised by herd splitting among groups for transitory migration southward. The volume of southward transitory movement also peaks around this period. Hence, Adekunle and Adisa (2010: 2) observed that "the months of March and April are usually the toughest for the herdsman and his cattle, as it is the hottest period in the grazing calendar". The months of May and June through September marks the end of dry season with the return of vegetation also marks the start of a return northward movement for many transitory herders.

With respect to time-span, the study found an increase in herders' inclination towards sedentarisation in the host community. Of the total number of respondents, only 10% of herdsmen looked forward to a return migration, 65% were already settled or look forward to establishing new settlements while 30% expressed willingness to return granted environmental conditions or adaptation support systems improve in places of origin. It is observed that language plays important roles in the proximity of sedentary camps to host communities and to the likelihood of a transitory group adopt sedentary form migration. Other factors that appear to influence changes in the pattern of movement include: (1) ethno-

tribal proximity of migrant origin—similar groups tend to cluster in the same area; (2) previous history of transitory migration—new settlers tend to become sedentary over time through consolidation of camping tents; and (3) the existence of familiar predecessors—new sedentary camps tend to split from existing ones or new immigrant sedentary settlers trailing the path of existing groups from same place of origin.

6.4.4 Migratory adaptation and Conflict in Host Communities

Research Question 3 addresses the degree to which migratory adaptation constitutes a conflict aggravating factor in the study areas.

1. "The Once Transitory Herders no Longer leave".

Farmers in all four study areas changes in the patterns of migration marked by increased sedentarisation among originally transitory herders. They noted also the increased volume of transitory migration by pastoralists. F7 in Iseyin, Oyo State puts this in context when he stressed that:

> *The Bororo people are no longer migrating back. They have built homes in our community. If you go to Wiligi, you see permanent structures. They are also building structures in Itage. They have built iron-roofed houses, not even thatched ones. That tells you they are not leaving any times soon. They are no longer transitory" (Interview with F7, OS-I, May, 2014).*

Another farmer explained that:

> */The situation became unbearable for us. As they became more in number, they became more destructive. When we call the police, they often ask them to compensate the farmers financially for the damage, but the damage is always far higher than the compensation that is paid. Many of us don't have alternative to farming. Most of us take loans for our farming for the year, and with their damage, you cannot even recover the amount invested, let alone make profit (Interview with NAS F3, Udeni Gida Village, June 2014)./*

It is also noteworthy that herders agree with farmers' claim on the increased rate of migration and sedentarisation of herdsmen in the communities. In Oke-ero, Kwara State, PH3 explained that herds fared better in the area throughout the year when compared with his northern location where the effects of worsening climatic conditions often becomes unbearable during the dry season—a major reason he decided to settle permanently. PH5 in Efon Alaaye in Ekiti State captures this succinctly when he explained that:

> */Where we used to be in Kwara State at a point, during the rainy season, streams remain the source of water, but in recent years, the dry season no longer leaves water in the streams. This also applies to the grasses. That is the reason why we have to move to this area and I decided to settle permanently since I find grass with relative ease throughout the year (Interview with PH5, EEA).*

In Nasarawa, a herder who migrated from Kano state in the north-eastern region explained that "*I moved with my family. They used to come and go back during the seasons, but when the environment there became harsher for the cattle farmers to find feed, they decided to stay permanently here" (Interview with PH5, NAS).* The foregoing shows how herders' observation of changes in the climatic conditions influences the decision to adopt sedentary forms of resettlement as adaptation options.

2. The Bororo Fulani Factor in Farmer-Herder Conflict

The Bororo Fulani largely transitory group were identified by both farmers and herdsmen as the predominant perpetrators of crop damage and hence the major cause of conflict between farmers and herders. Most sedentary herdsmen (65%) attributed escalation of conflict to the activities of the Bororo herders. On the other hand, although farmers see both the sedentary and transitory group as perpetrating acts that lead to conflict, about 37% single out the Bororo group particularly as more destructive, more violent, and mostly ready to use sophisticated arms in conflict situations with their hosts. Reasons for this include: (1) the nocturnal movement of the transitory movement which entails poor knowledge of the terrain and farming-intensive areas. As well as make members difficult to trace. The higher violent inclination of the Bororo-Fulani is also supported by previous studies (see Ofem and Bassey, 2014; Umar, 2002).

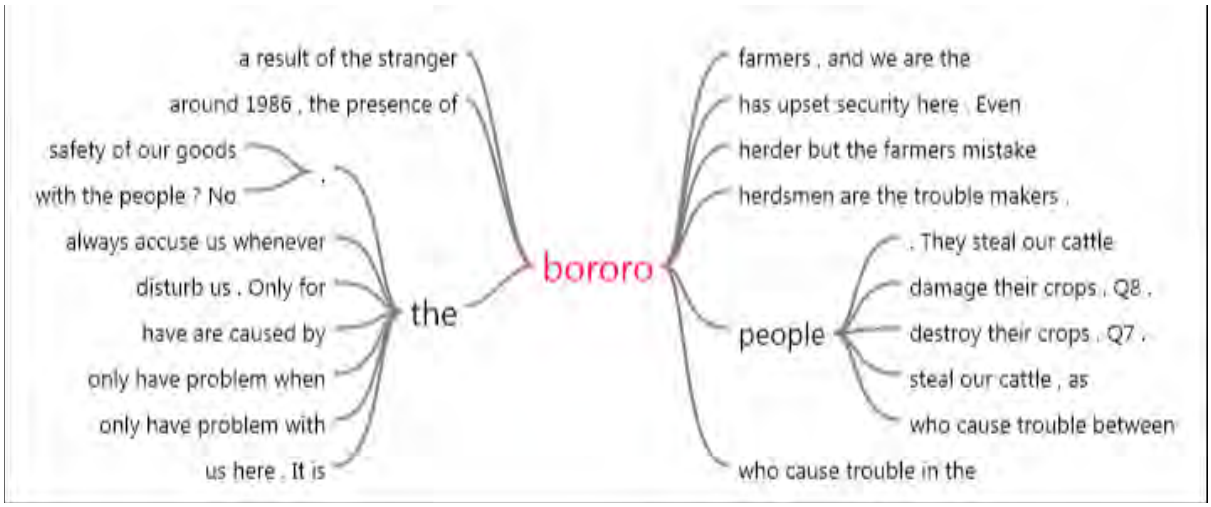
Changes in the community perception of transitory and sedentary farmer shows that over time, sedentary settlers become relatively assimilated into the community, more familiar with grazing routes, and also more accessible to farmers in the event of damages to crops and need for compensation. The transitory groups on the other hand, generally lack adequate understanding of local cattle grazing routes and population concentrated areas thereby heightening the risk of conflicts. Probed on previous outbreaks of violence in the community, a leader in Efon Alaaye explained thus:

> */It has happened but we are not troublesome since we live with the farmers. But there are other herders who do not live here and when*

they are caught damaging farms, they may resort to violence to escape paying compensations. Those groups are not under my control although I know there leader who have also come and decided not to go back because he found succour for his cattle around here. They may even kill the farmers who challenge them since they are not known in the community (EEA, PCH, May 2014).

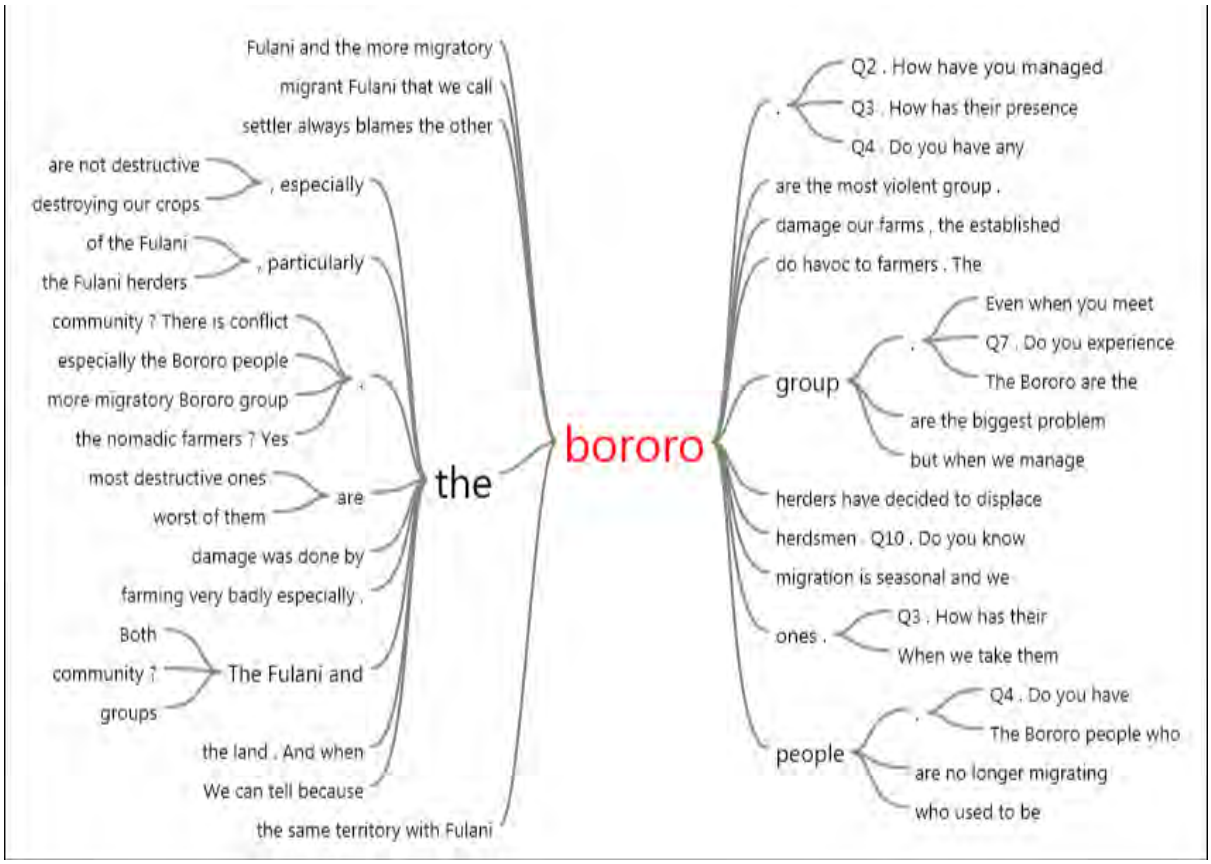
Word query reports below show how sedentary herdsmen and farmers' express perceptions about the role of the Bororo group in farmer-herder conflict.

26: Perception of Sedentary Pastoralist on the Effect of Transitory Migrants on Farmer-Herder Conflict 1



Source: Author.

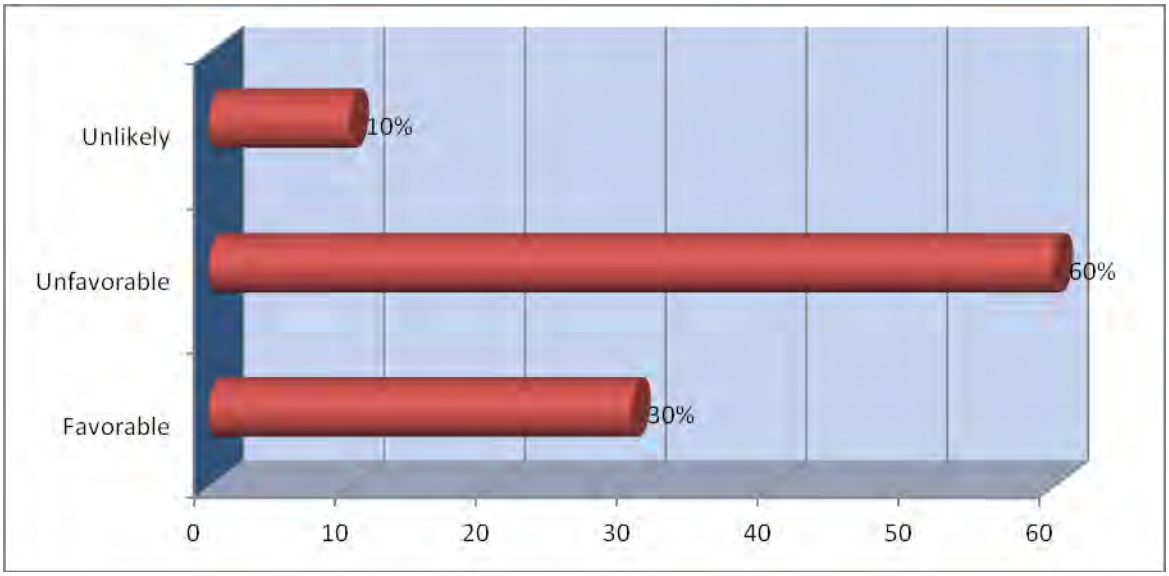
Figure 27: Perception of Sedentary Pastoralist on the Effect of Transitory Migrants on Farmer-Herder Conflict 2



Source: Author.

Furthermore, response from majority of the herdsmen shows that despite the frequent conflict in their relationship with the host communities, few are likely to adopt restricted movements or a ranch-based livestock keeping system. With regard to the possibility of restricting herds to a designated grazing zone, the majority of the herdsmen showed an unfavourable disposition toward limited movements or ranch system. The chart below shows the attitude of herdsmen to the adoption of new herding methods such as restricted grazing range or ranch system.

Figure 28: Attitude of Herdsmen to Modern Livestock Keeping Systems



Source: Author.

3. Arms Proliferation, Regional Security Dynamics and Farmer-Herder Conflict

Are there convergences between broader insecurity, militancy and violent conflict between farmers and herdsmen? To appreciate the potential effect of broader security factors on natural resource conflict in host communities, one needs to understand the nexus between arms proliferation and the hanging character of farmer-herder contestation. Indeed studies have drawn attention to the rise of pastoral militancy and its connection with heightened violence in host agro-pastoral communities (Meier, Bond and Bond, 2007; Odhiambo, 2004; Kratli and Swift 1999; Sayne, 2012; USAID, 2002). It is observed for example that "increasing availability of modern weapons has increased the intensity and violence of these disputes" (Blench, 2003: 2).

Arms proliferation has led to increases in pastoral crimes as well as the escalation of conflicts involving pastoralists. Mwaura and Schmeidl (2002: 40) observed that wide availability of arms has ''altered the cultural foundations of many communities—erosion of traditional conflict-resolution mechanisms in the face of arms-bearing youth being one of the most significant examples.'' In the same light, Meier et al. (2007) argue that easy availability of small arms have seen noticeable increases in the rise of new forms of conflict such as banditry and robberies. Similarly, Kra¨tli and Swift (1999: 22) noted that "small-scale banditry and even fights between individuals, which in a town would fall under the category

of small-scale criminality, can lead to clan raids and escalate into a full scale ethnic war." Highlighting the linkage between levels of crime made all the more ferocious by the availability of arms, some have argued that ‘‘commercial raiding is a more important factor contributing to violence than ecological pressure’’ (USAID, 2002: 52).

The implication of the above is that the availability of assorted modern weaponry to herdsmen results in deadly violence and higher fatalities in farmer-herder conflicts. Weapons are ostensibly acquired for protection as herders face increasing risk of cattle rustling and theft from crime syndicates spurred by increasing cattle value in the urban areas. For example, in 2013, according to officials of the Miyetti Allah Cattle Breeders Association of Nigeria (MACBAN), herders were reported to have lost about 322 members, and 60, 000 cattle to cattle thieves. This threat which forced herders into the acquiring sophisticated weapons for self-defence has resulted in more deadly conflict with farmers in the host communities (Baca, 2015).

External regional conflicts in neighbouring countries also play critical roles in the arms trade and associated heightened risk of violence as conflict-ridden countries are fields for arms smuggling. A report noted the supply of illegal arms to local militias groups including pastoralists, with the cost of an AK-47 ranging between $2,000 at peaks, or as lowly as a few sacks of maize depending on prevailing state of security and flow of arms (AOAV and NWGAV, 2013). This are associated with crises in Libya, Mali and Niger. Blench (2003) also noted the role of the political elite who arm and mobilize youths for violence for political ends. As a result, guns and other weapons not mopped from circulation eventually become available to youths in the rural who use them for criminal activities (Blench, 2003).

It is against this backdrop that the majority of the farmers and youths identify the use of arms by herdsmen as a major source of insecurity in the host communities. In narrating his experience with the herders, a native community youth in Efon Alaaye, Ekiti State puts the fears clearly when he stated that *“they are destructive and violent. They are also aggressive to the community people. They attack and rob our people. Because they are armed, they can machete or shoot the farmer if he challenges them. So we leave the farm for them” (Interview with NCY4, EEA, May 2014).*

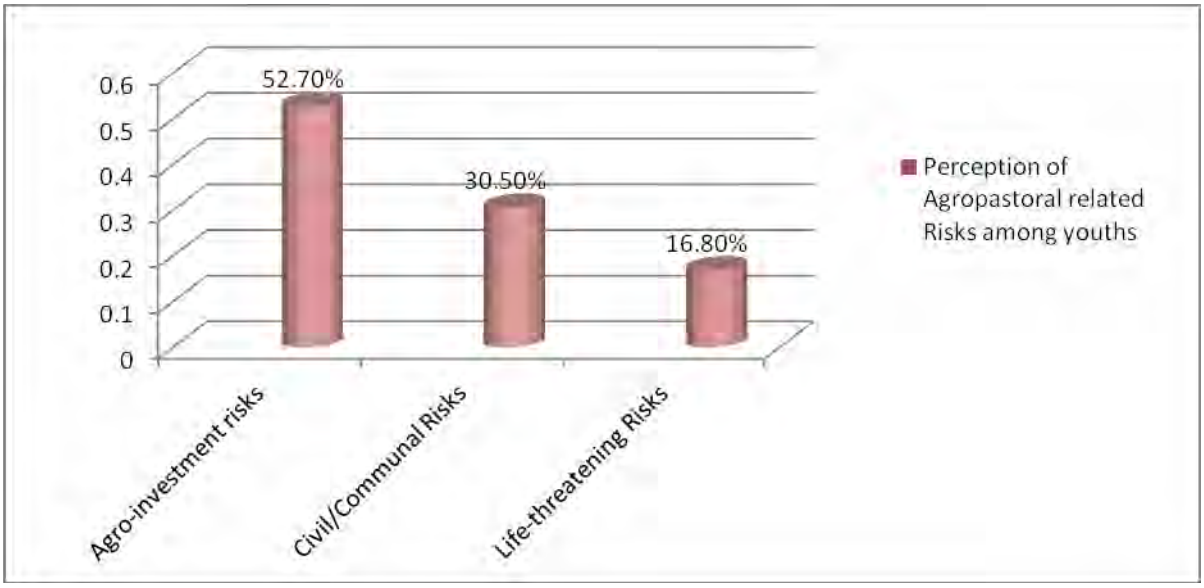
6.4.5 Farmer-herder Conflicts and Rural-urban Migration

Research Question 4 addresses the mechanism by which the effects of climate-induced scarcity and contestations in primary host communities may be dispersed to secondary host communities—that is, in cities and urban centres. It also examines how this form of dispersed vulnerability is replicated across Nigeria. Having explored the redistribution of vulnerabilities to migrant host communities, we now explore links between host community livelihood security dynamics, and security implications in secondary host communities.

1. **Livelihood Insecurity and Rural Outmigration**

From the study, youths in rural areas face a set of closely interrelated but varying level of threats. These range from agro-investment risks, civil or communal insecurity, and experiences of direct threats to life (see bar chart).

Figure 29: Youth Perception of Agro-pastoral Risks in Host Communities



Source: Author.

Report of perceived threats to life associated with armed violence involving pastoralists was higher in Nasarawa (50% of all cases). Kwara and Oyo cases recorded 18.6% each, while Ekiti has 12.8%. A sampling of views among indigenous urban migrant youths on the ranking of motives underlying rural-urban migration shows that factors range from loss of investment associated mainly with pastoral herders encroachment (57.7%), low or nonexistent government support for rural agro-enterprise (15.4%), to poor state of security for young

farmers in the rural areas (15.4%), and other factors not related to pastoral activities (11.5%). The experiences of some of the youths are put into context as follows:

> */My farm has been damaged many times by Herdsmen and they refuse to compensate. When I invest 100 thousand naira and after the labour and time, you make 80 thousand, you cannot come back again next year. Many of my partners have gone to Lagos (Interview with IUMY3, EEA, May 2014).*

> */There is too much uncertainty in farming. It is difficult to raise funds for it, and when you manage to raise funds, and herdsmen destroy the crops we have to move to find other safer things to do. The farm is also risky now. The herdsmen have killed farmers for challenging them in the farm. They may even rob the farmer of the crops they have already harvested (Interview with IUMY4, KOE, May, 2014).*

Challenges faced by youths in host communities also present some discouragement for young herdsmen. This concern regarding threat to security of the herder or arising losses incurred from frequent violent confrontation with farmers was expressed by a young herder in Oyo State. On the motivation for quitting the cattle rearing profession, he explained that *"*as a cattle farmer, there are risks involved when there is always conflict with people in the community. So I decided to use my motorcycle as Okada for business*" (Interview with OS-I NUIMY, June 4, 2014).* Youths in general adopt one of three responses when faced with constraints such as crop failure in their farming: they switch crops, quit farming, or move to other locations. A similar response is noted in young herders, particularly those who are yet to own their herds. This confirms previous finding on the dispersal of vulnerabilities through secondary migration (see Bilsborrow, 2001; Nzeh, 2015; Onyia, 2015).

2. Rural-Urban Migration and Security in Secondary Host Communities

The study found that there is agreement among political and administrative as well as traditional leadership circles, on at least partial linkage between livelihood insecurities in the rural areas and security challenges relating to rural-outmigration of youths to urban, sub-urban and city areas. This linkage has also been suggested in previous studies (Okhankhuele and Opafunso, 2013; Oyeleye, 2013). Although drawing a linear linkage, or quantifying this relationship is confounded by the array of variables which potentially interact with socio-ecological pressures, stakeholders share a consensus on the importance of pastoral conflict to rural outmigration, and its ultimately effects on security in secondary destinations.

According to the Head of Local Government Administration in Efon, Ekiti State, recurrent incidence of violent conflict between pastoralist and the community constitutes a hindrance to rural enterprise especially for the large population of rural youths whose main livelihood opportunities are in agriculture. This he argues is because such incessant conflicts "frustrates them [i.e. youths] and forces them to leave the farm where they are gainfully employed. And when they move to the cities where there are no provisions for their skills, they end up in crimes to survive" (Interview with LGH, EEA, May, 2014).

Affirming that there is an extent to which pastoral influx contributes to poor rural youth retention, the Head of local government administration in Oke-Ero argued that there is need to overhaul the farming system. In his words:

> *If you have a mini mechanized farming system, it will be difficult to have cattle farmers invading their farms. Our youth should organize themselves and also go into animal husbandry. Those are opportunities that can be tapped by local youths instead of allowing themselves to be sacked by Fulani or Bororo. While it true, it will not be fair to totally blame the Fulani for urban migration of youths because it is a national problem, there is need to develop the rural areas with infrastructure that are available in the urban. There is also need to dissociate living in rural areas as a sign of illiteracy, because they are suffering even in the urban areas. Youths need to be encouraged to stay and go back into farming (LGH, Oke-Ero, Kwara State, May 2014).*

This position is echoed in Saki where the local government head noted that farm encroachment and communal conflict with migrant herders hinder youth retention and enterprise in the sense that forcing many of the youths that would have remained in the rural areas to farm are increasingly forced to migrate into the cities and suburban areas. He notes further that most of these youths end up in urban criminal groups because they do not possess the skill requirements to function in the cities (Interview, LGH, Saki East OS-I, June 2014).

In Udeni-Gida where there has been a major devastation, the head of local government administration observed that rural-outmigration were inevitable outcomes of the total desertion of affected communities during a series of violence that have made security unpredictable in the area. He noted that a number of communities were receiving relief materials from the government after peace has been restored, so as to enable farmer and the people return to their homes. Explaining that farming offered a very rich opportunity for the youths and constituted the major income earner, he noted that efforts by the enterprising

youths to invest in the sector were largely constrained by incessant farmer-herder mayhem.

The views expressed by these officials are affirmative of previous studies on the complex interface between environment and security within the Nigerian context. According to Onyia (2015), migration of unskilled youths to urban and suburban has implications for security in the urban areas. Onyia identifies two forms of migration: north-south migration arising from the influence of environmental variability; and two, rural-urban migration as a result of ecological pressures. Both of these pressures, Onyia argues, are linked to the emergence of the Boko Haram since such youths moving from rural to urban areas in their search for better life are not equipped with requisite formal education and training necessary for their survival in the cities hence easy transformation to criminal and insurgent groups amidst weakened capacity of the state to provide basic social services.

The nexus between rural-urban migration and youth related security disturbances is further heightened feelings of frustration resulting from state capacity declines in basic social service delivery particularly for the most marginalized and relatively deprived group—the rural youth. Upon migration, this population sees the affluence and good life of the cities but are unable to meet with skill requirement needed to enable them access jobs and earn living income. Hence, they question the authority and sovereignty of the state and its perceived injustice (Onyia, 2015).

This is also aggravated by pervasive corruption which fuels further disenchantment as demonstrated in the response of a vast majority of the youth most of who expressed dissatisfaction with the performance of the state. A youth in Efon Alaaye, Ekiti expressed this sentiments in stating that *"Unemployment is rampant. Even for the educated ones too. It is the reason for many people wondering about". The youth are angry. We want to fight. I am angry as I am talking to you now"* (Interview with IUMY 2, EEA, May 2014). The figure below shows a model of vulnerability transformation highlighting key trajectory chart from environmental variability to security challenges.

6.4.6 Institutional Perspectives to Conflict Transformation

The following section addresses research question 5. It deals with contextual interpretations of resource contestations and options (if any) for managing climate change related ecological conflict-precipitations towards reducing conflict. Specifically, the researcher examined the

role of relevant institutional structures in the management of environment-conflict transformation in the study area.

The effectiveness of institutions and contextual understanding of vulnerabilities among stakeholders are important factors in climate change response and the potentials for conflict transformation. This is because populations' vulnerability to adverse effects of climate change does not necessarily arise so much from exposure to its hazards as it does to the capacity of existing structures whether social, political, or economic. In this regard, effective intervention by stakeholders is important in that it may provide the necessary support systems which help in absorbing or attenuating emergent negative effects (Barnett and Adger, 2007; Field et al. 2012). More so, effective state structures have among others, the dual duty of providing a stable environment in the midst of environmental vicissitudes within which populations can pursue their livelihoods without hindrance, and in ensuring that populations are protected in the face of contractions in the livelihood systems (Barnett and Adger, 2007). This entails developing strategic policy responses to environmental variability and conflict management.

What are the perspectives of stakeholders in the study area on the causes of farmer-herder conflicts? Is there a holistic understanding of trajectories of environment-conflict transformation and therefore, an awareness of the relevance of climate change and its extended vulnerability to resource scarcity and livelihood conflicts in the study area? What are the approaches being adopted towards reducing conflict-precipitations by stakeholders and how effective have the4se approaches been?

1. Local Government Administration

Institutional actions on environmental vulnerabilities, particularly those pertaining to climate change, occur at different levels, ranging from the global, to the national, state, and local levels (Goulden and Few, 2011). In Nigeria, rural areas receive the immediate impact of climate-related vulnerabilities and adaptation challenges. While these areas are within the jurisdiction of local government administrative authorities, legislative controls rest mostly with the state governments through the ministries of environment. Policies are channelled from the state to local government councils. In this scheme of administration, the local government administrative units often lack the capacity to independently implement far-reaching policies that can help manage risks associated with climate-relate vulnerabilities and

demographic pressures. In the absence of effective coordination and communication, policy frameworks flowing from the national level through the federal ministry of environment often fail to address local challenges experienced by rural communities under the local government councils.

These dynamics are observable in institutional response across the areas studied. The study found for example, that although there is consensus on the contribution of climate change on farmer-herder conflict among heads of local government administration, perspectives vary on the extent to which it influences the socio-political, economic, and security connectives in the areas. For example, the head of local administration in Oke-ero local government area identified two factors which are responsible for conflict between farmers and the communities under his administrative area. To him, conflict in the area has increased due to increased migration arising from increasingly unbearable effects of climate change manifesting as drought and desertification in the northern region.

The second factor which further compounds migration flow is the wave of insurgency in most parts of the northern region where terrorism threatens the security of the largely pastoral population. These two factors combine to force more pastoral farmers into the southern lower part of the country resulting into a "Bororo invasion of our land in recent times". As herders demand for new settlements increase in host communities, noncompliance with regulations by local authorities aimed at restrict cattle movement to areas designated as grazing routes have further frustrated official interventions by the local council administrations. Farmers draw attention to the establishment of new settlements by migrant herders without governments' permission or clearance. This has made it impossible to ascertain before hand, the safety of land portions for pastoral settlement, a process that could ensure more peaceful accommodation between the two groups (Interview with LGH, Oke-Ero, Kwara State, June 2014).

In Efon Alaaye in Ekiti State, the head of local government administration identifies the attitude of herdsmen as the cause of conflict as herders are known according to him, not only for showing little concern for the safety of farmer's crops, but for being aggressive and violent when confronted for damages done. The head of Nasarawa local government where Udeni Gida is located, explained that interpersonal resource struggle often escalate to communal conflict which became an everyday affair in the area until the Governor and LGA chair intervened. Such intervention entailed bringing all the relevant groups together. Such

meetings, according to him, have helped reduce incidence of attacks with machetes, robbery and other crimes which had been rampant in the area. In consonance with his Efon Alaaye counterpart, the head of local government administration in Saki observed that aggressive behaviour among the herders was the most prominent cause of conflict as the only cared for their cattle regardless of the risk that encroachment might poses to the crops which serves as livelihood for the local farmers.

The study also found that government at the local levels have adopted more of a conflict response approach rather than an adaptation support strategy that could proactively and holistically address all sides of vulnerability. For example, probed on measures being adopted towards addressing incessant conflicts, local administrative heads in Efon Alaaye, Oke ero, and Saki East Saki emphasized the need for strict adherence to existing grazing zones while the head of Nasarawa local government area highlighted the importance of peace session and interactions organised between warring groups and prompt intervention in every case of conflict in order to forestall an escalation.

> *The measures have to be holistic from the federal, state and local government levels. One, inasmuch as we can't stop the herdsmen, there is need for grazing reserve that will be followed strictly. Anyone who disobeys the will have to be punished by laid down rules. Secondly, the attitude of our people needs to change towards nature, especially planting and felling trees. There is need for reorientation. There should be law to protect both the immigrant and the indigenous people. At this level, there is a committee we have what is called peace and security committee, which examines issues such as the Fulani and herdsmen invasion. It is headed by the chairman of the local government and comprises all traditional rulers in the local government. There, we discuss all security issues arising. In terms of effectiveness, we have been able to, with the cooperation of the more sedentary Fulani types, identify illegal migrants and expel them, and also resolve issues arising from the sedentary ones. The ones who have become part and parcel of the population are easier to manage. The Bororo are unmanageable. Most of the cattle they lead about belong to the powerful Generals and important politicians at the top and they are shielded by the connection and political network. If you fight them or take them to the police, the officers in charge will be summoned by the high powers and the culprits will be released (Interview with LGH, Oke Ero, June 2014).*

There is also strong consensus among the head of local government councils that a connection exists between youth outmigration from the rural areas and the livelihood effects of migratory adaptation by the herders. According to the Head of council in Efon Alaaye, pressures associated

with herder invasion "hinders the youths a lot because it frustrates them and forces them to leave the farm where they are gainfully employed. And when they move to the cities where there are no provisions for their skills, they end up in crimes to survive".

As an alternative rural outmigration however, his Oke Ero counterpart suggests that youths need to undergo reorientation to stay back and get involved in all forms of agricultural enterprise including pastoral farming. He argues that although it was the reality that youths who were originally involved in agriculture are quitting the trade due to pastoral pressures, it would be unfair to blame herders alone for rural-urban youth migration since such movements occur across the country for different reasons. As such he identified the development of rural areas, provision of infrastructure similar to those of the urban areas, a conscious effect towards dissociating rural lifestyle with poverty and illiteracy. Youths need to be encouraged to stay and go back into farming". He therefore proposed a synergy among youths to take advantage of opportunities in animal husbandry in a mechanized way rather than allowing themselves to be sacked by invading Fulani or Bororo herders.

In Nasarawa, the head identified the conflict arising from such contacts as having the most devastating effect on youth enterprise as many of them often flee in the event of violent conflicts breaking out. In his words:

> *It is because some communities were entirely deserted. Right now, there are communities that government is giving relief materials after they are deserted so that farmer and the people can return to their homes. This place is very rich for farming. So, that is what the people are mostly involved in. In fact, this is the food basket of Nasarawa state. The youth are also enterprising and want to invest in agriculture. But these incidents discourage them. But with our loans and other interventions, things are being brought under control. I am also a farmer myself (Interview with LGH, Nasarawa Local Government Nasarawa State, June 2014).*

The effect of such conflict is that it hinders youth retention and enterprise by forcing many who would have remained in the rural areas as farmers, to migrate into the cities and suburban areas. They therefore take to crimes upon failing to make legitimate living which requires skill. In order to connect the local experiences with centrally conceptualised programs form the federal government, all the four local government heads had communication channels but needed a more sincere and decisive intervention from the federal government to tackle the menace once and for all (interview with LGH, EEA, May, 2014).

It is apparent that while political interventions at the local level have the highest potential for effectiveness, the administrative units at these levels lack the financial resources and administrative autonomy necessary to execute contextually-defined interventions that is tailored to the needs of the local population. When there are structures empowered to respond to environmental impacts like the State Emergency Management Authority (SEMA), the barrage of issues captured as areas of action for the agency's 'emergency' response are often uncertain about the inclusion of response to slow onset effects like desertification that may not fit the nature of other 'emergency' interventions like floods or bush fire.

While the above captured salient points that may underlie recent surge of influx, most of the key actors in the conflict mediation process are unaware of the complexity factors underlying pastoral migration. The absence of a clear understanding of the underlying issues aggravates speculation in receiving communities and further fuel suspicion and conflict. Among policy makers, inadequate understanding makes it impossible to fashion out holistically relevant approaches to not only address ongoing conflicts but institute frameworks that ensure the prevention of future incidence. Interactions with heads of local government administration in the study areas show that much of the interventions have been reactive, focusing on addressing manifest conflicts rather than its underlying causes.

Another factor pertains to the absence of coordinated and synergetic response between federal, state, and local governments. While national policies on climate change mitigation adaptation often have a broad view of impacts and possible responses, there is low transition to the local areas to ensure that policies incorporate both primary and extended vulnerabilities to climate change.

2. Traditional Rulers

Traditional rulers have played major roles in conflict management historically. Over the years however, the power of traditional institutions have come under increased pressure. Baca (2015) rightly diagnosed this transformation when he attributed the decline in the power of traditional institutions to changes in the political economy of power in the occasioned by the changing relationship between the traditional state and the formal political structure which authority flows from the constitution (Baca, 2015). Jurisdictional changes occasioned by the introduction of formal constitutional regulation invested in the state rather than traditional authorities have weakened the relevance of the traditional rulers and at times even conflict

with them. This is put succinctly by Mwaura and Schmeidl (2002: 39) who noted that the "traditional system, is currently under pressure, induced primarily by modern development and related social changes.''

Another important factor which has altered the relevance of traditional authority is the increased scale of deadly violence which in many cases, involves murder and other crimes which are outside the adjudicative jurisdiction of the traditional rulers. It becomes clearer from this angle, the linkage between arms proliferation, increased level of conflict and the capacity of existing native structures to exercise traditional adjudicative control. Mwaura and Schmeidl (2002) bring this to clearer purview when they noted that arms availability alters the cultural foundations of native communities and erodes the relevance of traditional conflict-resolution mechanisms.

In the study areas, traditional rulers are unanimous in their observation that that historical relationship with herders has been cordial until recent years. They also noted that influx of herders have increased over the years heightening discord in the relationship between their communities and herdsmen. In Oyo, the traditional ruler note the damaging effect of herders on native farmers and other security issues such as gun attacks, robbery and alleged rape which has lead to violence in the community. In Nasarawa which has seen the most recurrent violence, the traditional ruler noted that there was a historically symbiotic relationship with herders marked by mutual interdependence. In recent years however, this symbiosis has been overtaken by lots of conflicts between the herdsmen and farmers arising from intentional destruction of farmland and produce by the cattle. In his words:

> *The herdsmen could intentionally drive their herds into farmed or cultivated farmlands. And since the cattle are animal, they don't distinguish between crops. They just eat everything at sight. This is what we have been battling in recent years. When it gets to our knowledge, we bring them together, and ask the herdsmen to compensate farmers. In some cases, these kinds of mediation work out, in others, it doesn't. Sometimes, damages happen in the night. And the next herdsmen seen in the area is accused of the overnight damage. With a little bit of arrogance on either side, it has led to killings and violence (Interview with the TR, NAS LGA, Nasarawa).*

Reviewing the effects of conflict on livelihood and enterprise in their domain, there is a consensus among traditional rulers that the effect of conflict on security and crop yield have led to diminished interest in farming among farmers and constitutes an impediments to youth retention drive in agriculture as the security of their lives and properties are threatened. A

traditional ruler noted that farmers both young and old lack the power to both defend themselves or their crops and are sometimes injured or killed since they don't carry guns to the farm like their armed Fulani adversary. Highlighting fears and discouragements among farmers in the community, he noted fears that:

> *When there is any provocation, he may shoot or machete them. This has affected interest in, and output from agriculture. A lot of farmland that should be cultivated is now left fallow. At a point, it became a kind of mass conflict between Fulani herdsmen and farmers of any tribe. If the rural areas are not at peace, the youths who should be working on the farms are here and in other cities. Without formal or semi-formal skills, most cannot feed themselves outside of the farming and they engage in crime. It has also encouraged mass rural urban migration of youths from our villages to the urban areas (Interview with TR, NAS LGA, June, 2014).*

According to another traditional ruler, economic hardship occasioned by herders' invasion has led to youth losing their joint-ventures and cooperative loans to cattle damages. As a result, many of the youths have been spoiling for vengeance which the traditional council still manage to calm the situation most of the time (interview with TR, Iseyin, Oyo State, June, 2014). Reports from native community leaders also echoed similar views on the effects of migration and resource conflict on farmers and youths. A native community leader explains for example that most of the youths in his community used to be self-sufficient as farmers until the insecurity forced them out of farming. As a result, they have now embraced menial jobs such as conductors for transporters or riding Okada which leads to many becoming victims of road accidents and untimely deaths. Those that have moved to the cities like Abuja and Kano in search of alternative jobs have mostly struggled to survive or taken to crimes (Interview with FCH, NAS, June 2014).

On efforts being made to address the challenges, most initiatives remain reactionary with some mainly at elementary level. In Nasarawa which has the most organised conflict management response, it involves setting up of conflict resolution committees at different levels of the community. These committees often include leaders from relevant groups and stakeholder: farmers, herdsmen, the police, religions groups, youth leaders so as to arrest every incidence in any of the community to forestall escalation. Levels of mediation graduate based on the scale of conflict and may reach the local government council level if resolution fails at other levels. In Iseyin, this involves holding meetings with parties in conflict, in collaboration with efforts by the government and other security agencies.

There is however, no consensus among traditional rulers on the options for addressing pastoral migration and conflicts in their domains, nor on the workability of existing frameworks which is based on delineation of grazing zones. In Nasarawa for example, the traditional ruler noted that while nationwide reforms such as grazing reserves and ranches at both sending and receiving areas could put a stop to conflict, its cost will be unbearable for the state. This to him is in consideration of the costs of acquisition of land that will be required for the construction of ranch, payment of compensation to affected farmers, and managing a transition from an age-long pastoral tradition which may require the services of a large administrative agency nationwide. He believes however that it is achievable provided that it is done in phases and the people are carried along in the planning especially as many of the people in the policy and political process are also involved as farmers with hundreds of cattle held by herdsmen. He concludes that it is a question of the states' commitment to solving the problem. In his words:

> *For herdsmen, if the government wants to solve the problem once and for all, there is a need for grazing reserves. There is need for sustainable integration, and resettlement for the Fulani herdsmen. Most of them at least are Nigerians and we know that they have the right to live where they find conducive in the country. Resettling them however will require due consideration of the interest of the original indigenes to put them where there will be no competition between the two groups. The fervent competition is the problem we have now (Interview with TR, NAS Emirs Palace, Nasarawa, June 2014).*

Expressing doubts on the workability of a grazing reserve, the traditional head of Kajola explained that creating a grazing zone will affect both the herdsmen and the community. The cattle herders and their cattle want to move around to be healthy. Furthermore, there are concerns regarding the availability of land to spare for the thousands of herdsmen and their cattle without impacting adversely on land availability for farming. He stressed that "when a place is allocated, and more migrants come in, they will become too powerful and may even threaten the community" (interview with TR, Iseyin, Oyo State, June, 2014).

The lack of constitutionally assigned roles for traditional rulers in the Nigerian constitution leaves a gap that has undermined the relevance of the institution. The weakened position of the traditional realm of conflict resolution is visible in the helplessness of most traditional rulers. In some of the 'kingdoms', under which jurisdiction conflicts were rampant, the traditional rulers were indisposed to granting interviews due to the sensitivity of farmer-herder conflicts and directs that all authority over the matter belongs to the state through the

local government chairman. However, they have remained a potent force that may be tapped to optimal effect in conflict management. While some played key roles in settling small scale disputes, others participated as parties in state-led conflict mediation processes.

3. Community Leaders

Community-level interventions were also found to play important roles as active units in the conflict-management chain. Community leaders do not only provide mediatory services at the village unit levels, they also see to the implementation of resolutions reached at the traditional council level. The role played by community leaders in environment conflict management becomes clearer viewed in the context of communal land ownership at the traditional society level (Faist and Schade, 2013). Nonetheless, interventions at this level were not always effective as many cases of conflicts are taken the traditional council level. This process is however moderated by the head of the community concerned. As was the case in Oke-ero in Kwara State, oftentimes, disputing parties remained dissatisfied with outcomes of mediation at the community level for poor compensation or recommendations for remedy at the local community are not obeyed by the offending party.

In the study areas, community leaders echo dominant views which speak to resource conflicts. In the case of pastoralists, they are important to understanding migration push factors since community leaders are normally the first settlers in herders' camps. In regards to links between climate change and migration, study shows that pastoral community leaders have a better understanding of links between variability, migration and conflicts. Variability in climatic condition is often expressed in terms of inter-annual changes such as the length of rainy season, the length of dry season, changes in the vegetation patterns in the grazing range. In all four locations, leaders affirm the dominance of climatic variability effects as the major push in sending regions and as such acknowledge its relevance to contestations in the host community.

4. Security Agencies

Security agency perspectives are crucial to understanding the dynamics of crime. Three police spokesperson were interviewed. Interviews aimed at understanding observed linkages or acquire records on distribution of crime suspects if any. While study achieved the former, the latter was unavailable. Views expressed by police spokespersons in the study areas on the connection between rural outmigration ranged from partially affirmative to fully affirmative.

However poor documentation and administrative bottlenecks made acquisition of/or access to police data impossible hence the reliance on an interactive method.

All police informants are affirmative on the potential links between rural-urban migration and crime in urban areas given the close logical connection between criminal dispositions and lack of employment among youths. In Saki for example, the police spokesperson argued thus:

> *...There is no excuse for anyone to go into crime. But looking at it from an African perspective, it is said that an idle hand is the Devil's workshop. That is why government encourages you to be creative with whatever you are studying. When youths who don't have any skills move to the urban or sub-urban centres and face hardship, they tend to go into crime (Interview with Police Spokesperson, Saki Divisional Police Hqtrs, June 2014).*

They also acknowledge increased incidence of conflict between farmers and migrant pastoralists. However, they stress that correlation need to be viewed as a co-causal one rather than linear since there are other factors which mediate between both pastoral influx and youth out-migration on one hand, and rural outmigration and crime on the other hand. They highlight socialised factors such as the need for city exposure, perception of rural-dwelling people as illiterates, and the absence of modern infrastructure in the rural areas as some of the factors that are like influencing outmigration decisions among the rural population, and particularly among youths.

6.4.7 Focus Group Discussions

Ten FGDs were conducted with four clusters of informant. One session of discussion was conducted in each location with a group of farmers, and herdsmen. Two sessions were conducted in the two geopolitical zones: one for native community youth and the other for indigenous urban migrants. The number of participants in FGDs varied across locations. On average, participants ranged from 12 and 22 discussants. The importance of FGDs to this study is that it served as a means to cross-validate individual responses. In general, discussions largely corroborated the major concerns among each group, although individual discussants had various and peculiar encounters

1. **Herdsmen:**

In the discussion session with herdsmen, issues discussed were aimed at understanding the links between climate change and natural resource contestation between farmers and migrant

pastoralists in the communities. Specifically, we sought to differentiate between seasonal variability climate change and inter-annual variability put in plain language as patterns of variability observed over years. In this regard, responses from herdsmen across the four study areas are similar. Pastoralists identified a number of push factors effective in points of origin to include: increasing declines in cattle sensitive vegetation manifesting in the forms of scarcity of grass for their cattle, loss of major water sources such as streams. In the case of Focus Group Discussion session with pastoral herdsmen in Udeni-Gida village in Nasarawa State, PH10, PH3, and PH7 highlighted desert encroachment in Sokoto and Katsina. In Oke-Ero in Kwara, Focus Group Discussion session, PH5 explains that natural rivers and drain ponds which used to serve as water sources have dried up making it difficult to find water.

Herders in general emphasize declines in the capacity of the environment to support herds. They note also the growing size of herds. These factors are probed for seasonality and inter-annual patterns. Study found that changes in herder migration pattern indicate a shifting trend with increasing numbers changing from seasonal transitory movement to longer term sedentary relocation. Herders also have clear understanding of changes in seasonal variations as against inter-annual declines. For example, another herder in the Focus Group Discussion session in Efon Alaaye in Ekiti State, PH1 explained that *"many of us have found everything we need for our cattle here and the supply is all-round the year. So, many of us are no longer comfortable going back due to the distance. Remember we have to return in just matter of months".*

Study found that while other factors often identified as causal to migration are important, the effects of these factors for herdsmen, closely relate to cattle sensitive resources and declines in the carrying capacity of the environment. When asked to differentiate between demographic pressures and inter-annual environmental change pressures for example, a participant Oke-Ero, Kwara, Focus Group Discussion explained that *"over there [place of origin], there are many cattle and grass and water has become less, but here, there are so many cattle, but you can be sure there will be enough grass and water. We don't have to climb trees or peel bark of trees, and we don't have to travel for miles looking for water" (KOE, FGD,* PH8*)*. Herders identified cattle rustling and theft by other pastoralist as some of the security challenges they faced in places of origin. This also forms significant push to areas with lower herder presence.

Probed on the sources of conflict with host community, PH2, in a discussion session with the Oyo Saki-Iseyin Focus Group, argued that there were too many farms, and that farmers have planted in nearly all the community. Another contributor (OS FGD PH8) lamented that the practice among farmers, of planting their crops too close to the road makes it easy for their cattle to encroach into farms causing damage to crops. Another source of conflict highlighted by most of the herdsmen pertained to barricading water sources denying access to cattle passage. The majority argued that relationships between farmers and the community were cordial with strains only associated with crop destruction. Most participants stress the difference between a sedentary herder and 'strangers' or the Bororo who are mostly transitory herders, and maintain that the Bororo are often responsible for damages and other ills for which sedentary herders are accused by the community. There is no trace of ethnic or religious conflict in farmer-herder relations Efon Alaaye, Saki/Iseyin and Oke-Ero. However, narratives of past conflicts in Nasarawa points to ethnic and religious conflations as a factor in most escalated cases of violence.

There is strong emphasis among sedentary herdsmen on the effect transitory herders have on farmer-herder relations. They note that long periods of stay reduces tension between host communities and sedentary herders as they gain knowledge of the terrain which enables them master grazing routes unlike transitory herders. The majority of the herders admit however that many transitory migrants have opted to stay permanently due to increasing difficulties in the supply of vital natural resources. It is noteworthy that no mention was made of regional insecurity in the north as a factor influencing pastoral migration. This may be related more with transitory herders who are mostly unreceptive to researcher interaction. From responses generated in these sessions, we confirm linkages between environmental scarcity, migratory adaptation and contestation in receiving communities.

2. Farmers

Discussion centred on understanding the effects of pastoral migration on farmers' agricultural activities and general livelihood. It helps to understand farmers socialised understanding of the fault lines underlying conflict incidence in the communities. FGD sessions reveal tension points to include concerns pertaining to livelihood and resource constrictions, encroachment into farms and destruction of crops, refusal to pay adequate compensation for damages, unauthorised occupation of land, and pollution of communal water sources by cattle. Other issues relate to security including allegations of attacks on farmers and community people,

harassment of farmers over grazing encroachments, sexual harassment of women and children, alleged armed robberies using sophisticated weapons. Farmers note however that the Bororo transitory migrant herders were more notorious in the latter category of problems.

Session shows that farmers are generally suspicious of motives behind increasing volume of sedentarisation of herders and fear for possible implications in the area over time. Many suspect that herders are either moving away from insecurity in the northern regions or seeking to take over land elsewhere. Inference for this assumption is derived from the news reports. Most herdsmen however did not hint at a correlation between terrorism and pastoral migration although sedentary herders mention the effect of theft by cattle rustlers both in sending and receiving communities—a crime they attribute to other transitory herders, and sometimes, to community youths.

Interactive sessions further revealed that aggressive or violent confrontations between farmers and herdsmen occur more with younger groups of farmers and herders. This trend points to pervasive frustration among the youth as a factor that may increase the frequency of confrontations between herdsmen and youths with a higher tendency towards escalation into violence. Conflict involving farmers aged above 46 years for example were mostly settled at the community and traditional council levels, while most confrontations with farmers within the range of 18-45 years of age were reported to involve the police.

Most farmers blame activities of herders for declining interest in agriculture among the youth. Farmers in Ekiti appear to be the most passive with regard to conflict escalating. Session revealed this to relate with the prevalence of migrant farmers in the study area. While similar cases of damage elicit aggressive reaction among indigenous farmers in Saki, Oke-Ero and particularly Nasarawa, lease holding farmers in Efon showed a higher level of tolerance and trust in traditional conflict resolution and mediation systems.

3. Youth

A Focus Group Discussion session was conducted with native youth at Odo-Owa while another session to sample the opinion of urban migrants was conducted at Iloffa, the headquarters of Oke-Ero Local Government Area of Kwara State. The choice of these areas was informed by palpable tension between the community and herdsmen at the time of the study. This enabled the research team to receive due attention from community members. The session focused on two issues: (a) to understand socialized perceptions on the

implication of herders' activities on rural livelihoods in general, and its effects on the youth in particular, (b) to explore links if any, between such implications and rural outmigration among young farmers. Findings indicate that although other factors have over the years encumbered youth involvement in farming in the area, investment insecurity was among the most significant factors mentioned by the youth as push for outmigration.

Participants argued that herder's activities constituted threats to farmers' security, investments, and property as well as to their community as a whole. These threats according to respondents is due to incessant destruction of their crops which has resulted in the loss of investment and indebtedness as they are unable to recoup capita input in the form of loans. They refer to cases of previous victims of fatal confrontations and machete attacks as pointers to the risk they face if herders are allowed to remain in the community. KOE FGD NCY3 noted that women and children could no longer go to the farms as they face the risk of harassment from herders.

Another respondent argued that herders were encouraged by the failure of the security personal (the police) to enforce justice when called in to oversee compensation for victims—a trend many argued was because the herders bribe law enforcement offices. As a result, the youths have resolved to expel herders from the community. A participant noted that most of them have been forced to look for supplementary jobs as earnings from farming have declined over the last couple of years. The majority of participants believe the lack of support from the state had put the youth under economic pressure. This has been compounded by herders' activities. As a result, there has been increased pressure to relocate to the cities and other towns where alternative jobs may be found. Youths in suburban locations identify political neglect as the most important pressure on youth in the country. They however highlighted the impact of investment insecurity as a significant disincentive to young farmers which further aggravates rural-urban migration among youths.

Plate 1: A FGD Session with farmers at Udeni-Gida Village Nasarawa LGA, Nasarawa State, Nigeria

Source: Author.

The diagram below shows the stages and processes of vulnerability transformation. It indicates how vulnerability progresses from original exposure to climate change impacts, moving to organized violent conflicts. The model captures the forms of primary exposure to climate change impacts including increased natural disaster events, sea level rise and shortage of fresh water, as well as scarcity of livelihood supporting natural resources. These impacts often result in primary ecological vulnerabilities which impose pressures on the livelihood of population groups whose survivals depend on the affected environmental resources.

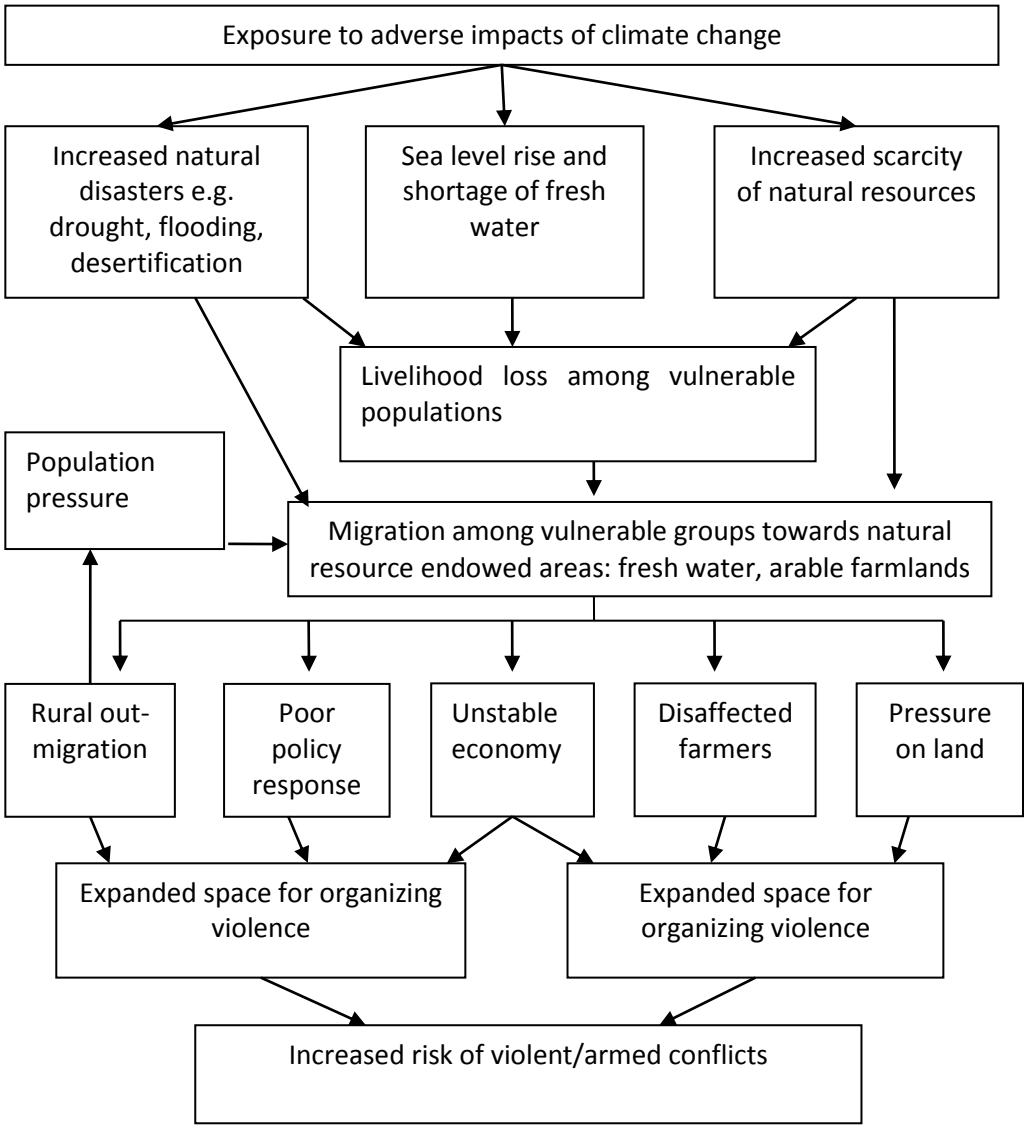
Migratory adaptation results directly from two of the three effects of climate-related ecological declines, and indirectly from the third—sea level rise. These effects are: (1) natural disaster events such as drought, coastal flooding, desertification, and (2), scarcity of natural resources such as water and vegetation and general environmental degradation. Adverse effects arising from these changes have a high tendency to induce migratory adaptation among the vulnerable groups who are forced to seek safe areas with less pressure on their survival. By interacting with socio-economic factors and other contextual drivers,

migratory response results in further pressures relating to such issues as access to land and renewable resources, or disaffection among native groups especially farmers in migrant receiving communities as a result of declines in per capita access to renewable resources.

In addition, the impact of population pressures poses a risk to the stability of the local economy particularly where the state's capacity for adaptation intervention is low. These new exposures give rise to extended vulnerability such as organized violent activities which often revolve around vulnerability of major groups including conflict between natives and migrants over economic disruptions and declines in the receiving communities, rural outmigration, and pressures on local administrative structures.

With regard to the above, the pattern of migration can take two forms: migration induced by primary climatic vulnerabilities, and secondary migration spurred by secondary vulnerability pressures. While the former mostly induces migratory adaptation to areas where there are alternative supplies of the degraded environmental resources, the latter often results in non-resource driven forms of migration (rural-rural or rural-urban migration). Rural-outmigration arising from occupational displacement has the tendency to give rise to demographic pressure in receiving areas. By extension, it may further aggravate unemployment and the propensity towards crime and unrest among migrant population.

Figure 30: Model of environment-conflict vulnerability transformation



Source: Re-modelled from Odoh and Chilaka (2012).

6.5 Conclusion

This chapter presented a spatial and socio-demographic background to the study as well as the interpretation of field data. It discussed thematically, major issues raised in the research questions in line with the objectives of the study. The data presented showed that socio-economic, cultural, demographic and political dynamics are all factors which play important roles and as such needs to be taken into consideration in order to understand climate change-related vulnerability transformation. As summarized in the model presented in Figure 28 above, climate-change related vulnerabilities have a strong co-causal influence on increasing spate of resource related contestations and violent conflicts in the study area.

CHAPTER SEVEN

SUMMARY, RECOMMENDATIONS AND CONCLUSION

7.1 Introduction

This chapter aggregates thematic issues covered so far with regard to the objectives of the study. It presents a summary of each chapter and also presents a discussion of findings derived from field data. It highlights key casual factors in farmer-herder conflict in the communities studied, and their wider national dimensions. Furthermore, the chapter critiques current policy against the backdrop of these findings in order to identify gaps that need to be filled to ensure conflict-sensitive adaptation intervention on the part of the state and other stakeholders. The chapter concludes with recommendations for policy makers and future research.

So far, this study has been preoccupied with the task of investigating and explaining the relevance of climate change in resource conflicts in Nigeria, aiming primarily to highlight mediating factors and to establish patterns of and mechanism vulnerability redistribution across socioe-cological systems. In understanding vulnerability transformation dynamics widely suggested in the climate change-conflict linkage, the study utilised a combination of theoretical lenses comprising eco-violence, relative deprivation and frustration-aggression constructs. A highlight of preceding sections will help illumine the further.

7.2 Overview of Chapters

Chapter one introduced the research problem and set the tone for the study. It presented the research aims and questions. The aim was to highlight the importance of the study against the backdrop of climatic variability pressures on nature-sensitive livelihoods in Nigeria. Situating the environment-conflict linkage within the context of farmer/herder conflict provides opportunities to contextually appraise environmental influences and social contexts.

Chapter two examined a wide ranging literature on the subject. Contending analytical positions in the literature is evidence that a consensus is yet to emerge on the interface between climate change and conflict which currently reflects the divide between two potentially reinforcing narratives—pedagogy and policy. This study therefore adopted the two lines of thought in the literature review, examining the policy-driven narrative and the pedagogy-driven perspectives. On the one hand, policy oriented research emphasizes

generalized conflict risk multiplier effects associated with climate change and the implications of these on critical social valuables known to generate conflict in vulnerable societies. Proceeding from the validity of syllogistic reasoning on the primary impacts of climate change on natural resources, policy-driven studies highlight its potentials as a contributory factor to social conflict under certain conditions, especially in contexts where natural resources form a critical object of social struggle.

On the other hand, the pedagogy-oriented literature looks towards establishing a more direct and generally replicable causal explanation between climate change and conflict. Much of the research done in this regard has been theoretically broad-ranged, producing at best, sceptical results with little or no influence in the climate change adaptation policy planning. Debates on the subject were critically examined and three arguments in relation to the causal significance of climate change in conflict transformation were identified. These include causal rebuttal, causal association and causal affirmation.

In recognition of the importance of these broad orientation, chapter two attempted to integrate literature from both points of view: the theoretical debate, and the vulnerability intersection prisms. By incorporating the two narratives, the review put in proper perspectives, the need to bridge the gap between policy priorities and theory building in the climate change conflict discourse. This study found that the socioeconomic and political context holds the key to understanding the relevance of environmental factors to social conflict.

Chapter three grounded the study within an eclectic blend of theoretical frames by combining eco-violence, relative deprivation and frustration-aggression constructs. As is evident in previous studies on the subject, drawing upon these frames helped to situate and dissect the various dimensions of contextual stimuli which come to play in the transition from geophysical to ecological vulnerabilities as seen in vulnerability of pastoral populations, migratory adaptation pressure on resources scarcity and increasing incidence of conflict in migrant receiving communities. The integration of ecological and socio-psychological variables in the theories provided a valid tool for understanding experiences derived from the field data by highlighting how psycho-social processes developed in the context of conflations between ecological and socio-systemic exposures.

In chapter 4, the study presented broad socio-political and geographic dimensions to understanding environment conflict precipitations in Nigeria. Offering an overview of geo-

ecological transitions and regional climatic compositions across Nigeria's regions, the section situated farmer-herder conflict within the context of comparative geographic characteristics and agro/pastoral opportunities across the country. The chapter also gives a comparative ethnographic background to pastoral and arable cultures in Nigeria, paying attention to recent observed changes in the dynamics of pastoral transhumance. In closing, the chapter explored social and demographic factors which have potentials to amplify or attenuate the potentials for conflict arising from climate change impacts in host communities.

Chapter five sets the stage for the empirical component of the study by discussing research methods and underpinning philosophy behind methodological choices adopted in the study while chapters six presented a background to study areas and findings in regards to four of five research questions posed in this study. Questions addressed in chapter six aimed at the following: one, explaining linkages between climate change and natural resource contestation in the study areas; two explaining the role of socio-systemic factors in the transformation of climate-related vulnerability in the affected communities and the to understand the dispersal of these vulnerabilities to non-climatically exposed areas; three, examining the degree to which migratory adaptation redistributed vulnerability to migrant receiving communities and therefore constitutes a conflict precipitating factor as a result of environmental pressures; and four, to highlight ways by which vulnerabilities are dispersed to secondary host communities in cities and urban centres in ways that may constitute as socio-demographic security problem with wider implications across the country.

7.3 Re-appraising the Climate Change, Migration and Conflict Nexus

The nexus between climate change and resource contestations in Nigeria has been examined using resource scarcity, human migration and farmer-herder conflict as contextual analytical lenses. The study sought to achieve the following objectives: one, to establish the connection between climate change and resource conflicts in the study area—Efon-Alaaye in Ekiti, Iseyin/Shaki in Oyo, Udeni-Gida in Nasarawa, Nasarawa state, and Oke-Ero in Kwara; two, to examine the contributions of socio-contextual: cultural, institutional, economic, and systemic factors in the transformation of climate-related scarcity and contestations; three, to demonstrate the connection between climate change-induced scarcity, migration and insecurity in the study area (Efon-Alaaye in Ekiti, Iseyin/Shaki in Oyo, Udeni-Gida in Nasarawa, Nasarawa state, and Oke-Ero in Kwara, states in Nigeria); four, to examine the transformation, dispersal, and broader security implications of climate-induced scarcity and

migration in primary and secondary host communities; and five, to make policy recommendations towards reducing climate-induced migration, communal conflicts and related security challenges in Nigeria.

Towards achieving these objectives, the study adopted an eclectic approach in its theoretical construct by combining three theoretical frameworks, namely: Eco-violence theory, Frustration-Aggression theory and Relative Deprivation theories. The choice of an eclectic approach was informed by the conflation of influences which come to play in the climate change-conflict discourse. These influences range from the ecological, politico-economic, to the psychosocial variables which combine to shape the climate change-conflict transformation process. The following section re-appraises the objectives of the study against the backdrop of the theoretical models used, and also offers a synoptic digest of the literature.

In drawing a link between climate change and violent conflicts in the study area, this study highlighted the impact of climate change on the sustainability of the natural resource base and this affects population livelihood in the resource-dependent area. Theoretical linkages for the climate change-livelihood interaction has been established in series of studies (see for example: Breusers, 1999; Buseth, 2009; Fabusoro, 2007; Majekodunmi et. al, 2014; Nzeh, 2015), in view of the importance of renewable natural resources as an important "ecological capital" (Committee on Abrupt Climate Change et al. 2002: 130; UNEP, 2016: n.p) in the study area.

Scarcity of ecological capital is a central thesis in the ecoviolence construct on environment-conflict transformation. According to theorists of this persuasion, in the face of wide-ranging livelihood constraints, as has been posited by proponents of the ecoviolence theory, competition will necessarily arise as a result of scarcity of depleted renewable resources given the reliance of the population on those resources (Clark, 1999; Gleditsch and Urdal, 2002; Homer-Dixon and Blits, 1988). While it is acknowledged that several factors combine in determining the transformation of environmental pressures, it notes the importance of the scarcity of renewable natural resources as one of the factors which play a central role in the environment-conflict nexus in Nigeria where many depend on climate sensitive resources (Ibrahim, 2012; Joshua, 2013).

The study therefore presented a review of literature from two broad research orientations: from a pedagogy-motivated discourse and a human security/policy-oriented discourse on the

impacts of climate change. While the first represented key academic contentions between conflict rebuttal, conflict affirmation and conflict-society associationist perspectives, the latter consist of human security and policy oriented discourse and highlights different levels of vulnerability transformation and linkages in the climate change-conflict nexus.

In capturing the social-demographic dimension of the problem, the study also brought to the fore, the nature, and contributions of socio-contextual factors including cultural, institutional, economic, and systemic factors, highlighting the roles these factors play in the transformation of climate-related scarcity, migration, and security in Nigeria. It found that beyond climate change, the nature of the society contributed to the incidence of conflict. In providing a theoretical backdrop to this conflation of factors, the relevance if a theoretical convergence of eco-violence, frustration-Aggression, and Relative Deprivation theories becomes apparent.

Socialising the conflict transformation trajectory, the study reviewed the literature from a security research perspective highlighting stages in the vulnerability progression which have been established in previous studies. A socio-demographic appraisal of the dynamics of vulnerability progression helped in demonstrating the connection between climate change-induced scarcity, migration and insecurity in Efon-Alaaye in Ekiti, Iseyin/Shaki in Oyo, Udeni-Gida in Nasarawa, Nasarawa state, and Oke-Ero in Kwara, states. As seen in the response of informants, through the combination of theoretical frameworks, we are able to understand how migration arising from environmental decline results in resource struggle in host communities, as well as how struggle for access to natural resources result in frustration among the local population leading to recourse to 'self-defence' and violent conflicts.

Another important contribution of this study is seen in the link drawn between ecological pressures and broader national demographic pressures including youth unemployment, civil crime, propensity towards insurgent activities, and poverty. The connection between unemployment and crime in Nigeria has been well documented in relevant literature (see for examples: Akande, 2014; Emeh, 2012; Osakwe, 2013). It also showed how population vulnerabilities to climate change impacts can be redistributed from environmental degradation to ecological pressures, producing demographic problems through human migration. The mechanism by which can be redistributed are situated in the conflation of socio-political and ecological context which underpin the scope of security risks that may arise from environmental change through, resource scarcity and migration, to communal conflicts and other security challenges. It is necessary to recap this progression.

7.4 Understanding Climatic Pressures in Farmer-Herder Conflicts

Identifying individual elements which underpin social conflict have long been identified by social conflict theorists as an onerous task (Suliman, 1999; Barnet, 2001). Highlighting the complexity, Suliman (1999: v-vi) argued that "social conflict is produced in the contexts of "complex social processes and phenomena [which are] themselves dependent on a multitude of objective and subjective factors, impart uncertainty to the course of violent conflict as well as to our attempt to understand and judge it as the actual behavior of actual people". Disaggregating this connective is even more difficult in the climate change-conflict interface in which the goals of "reliably measuring an effect of climatic conditions on human conflict is complicated by the inherent complexity of social systems' (Hsiang, Burke, and Miguel, 2013: 1). As Homer-Dixon, Boutwell and Ratjens (1993: 42) put it, "irregularities in contextual attributes account for the differences in causal pathways in different parts of the world" (Homer-Dixon, Boutwell and Ratjens, 1993: 42).

In view of these complexities, researchers have been advised to focus on examining narratives of a particular conflict situation in relation to climate change as this provides a better guide to policy than aiming at a generalised model to show simple chains of causality between climate change and social conflict (IDS, 2010). Accounts from migrant pastoralists attest to the fact that there are notable inter-annual changes in the ecological characteristics marked by the decline in the natural support capacity of places of origin. Hence, pastoralists identify these changes as the principal push factors compelling them to explore the advantages of climatic diversity in more cattle-friendly regions. As a result, migratory adaptation is a coping strategy adopted by pastoralists in response to drought, desertification and heat which affects the supply of water grass, shortage of pasture and loss of cattle. Migratory adaptation therefore serves as the intervening variable which bridges climatic exposure in physically affected areas to socio-demographic and ecological exposure manifest in social conflict in rural host communities.

The study also shows that herders are aware of changes in the patterns of pastoral transhumance informed by adverse effects arising from worsening environmental conditions in sending areas. This validates findings by Azuwike and Enwerem (2010) and Okunola and Ikuomola (2010) whose study noted that seasonal migration among pastoralists was increasingly being replaced by an all-year-round influx of herders down south, as well as increased rate of sedentary settlement in southern communities where arable farming remains

the major agricultural practice. The consequence is heightened risk of farmer-herders conflict as cattle encroachment on farmers' crops aggravates tension between the two groups. In consonance with field reports in the preceding chapter, it is important to note that herders acknowledge scarcity of vital environmental resources such as water and grass as top among the most compelling push factors explaining their decision to relocate.

Furthermore, it is noted that socioeconomic contexts and circumstances in host communities play important roles in determining sensitivity and by extension, the populations' attitude towards pastoral migrants. In the study areas for example, reliance on farming among the majority of the population meant that migration by herders had direct impacts on the base of the livelihood of the population in the host community. Similarly, study found that the tendency towards violence reflect broader issues of youth deprivation and frustration that is pervasive among Nigerian youths. As such, widespread feelings of alienation and exclusion have the potential to further increase the risk of conflict.

Findings also indicate that resource strife and farmer-herder conflict in host community constitute significant strains on agricultural enterprise in the rural areas and may have some effect on rural-outmigration in the study areas. In line with previous studies, this research agrees considering feedback from field interviews that there is an indirect relationship between pastoral-related risks and rural outmigration in the study areas. It should be noted however that there is no necessary causal association established. Similarly, although incidence of conflict were rampant, the study finds that no necessary causal linkage between pastoral migration and conflict between farmers and herdsmen in the study area.

In the context of our case studies in this research, the researcher identifies four levels at which factors may precipitate conflict, particularly as it affects farmers-herder contestation in migrant receiving communities: One, there is the operation of some remote causal factors: feedback from herders on the driving factors underlying the decision to migrate shows that there is a strong relationship between climate change and migration among pastoralists. The effect of climate change among other factors stressors, impact the sustainability of pastoral ecologies and forces increase in the rate of migratory adaptation among herdsmen. Over time, increasing deterioration of the environment, and declines in its support capacity, will pushes more vulnerable groups into supportive ecologies and results in increased sedentarisation despite imminent conflict risks.

Migratory adaptation therefore bridges the distance that may exist in spatial geophysical vulnerability and by transforming these in socio-ecological vulnerabilities. Such adaptive strategies have imposed pressures on sensitive resources in the receiving communities. In some cases, conflict risks arising from migratory adaptation may be heightened by a conflation of historical, religious or cultural or other remote drivers which inflame relationships. Where there are significant tenuous points in inter-group relations, the occurrence of conflict may not be farfetched.

This relationship is however indirect and co-causal in the sense that causally validity is stronger in situations where direct causal connections can be established and where a holistic understanding of the multiple dimensions of operative causal relationships can be drawn. Given the range of socio-contextual variables which can rarely be fully identified in the context of climate change conflict interaction however, a co-causal proposition need be maintained. Wallis (2006: 3) described a co-causal relationship as one in which "each dimension may be understood as being related to all the other dimensions in a given model in such a way that a change in one dimension will lead to a change in another". In this case, the significance of each causal agent is better understood in the specific context of from which holistic examinations is made (see Wallis, 2006; 2009; Cook, Tang and Diamond, 2014; Stephen and Wallis, 2010).

A second level relates to the actuation of immediate trigger functions: as shown in the feedbacks from respondents, a number of events across farmer/herder divides including destruction of farmers' crops by cattle, polluting communal water wells and the unwillingness of herdsmen to pay compensation for damages done, or according to pastoralists, poisoning, attack on herders, or theft of cattle, have all been identified as some of the immediate causes of conflict. The mere occurrence of these factors are however not sufficient grounds for conflict.

A third factor relates to the presence of socioeconomic and demographic aggravators: As shown in the socio-demographic background to the study areas, high levels of environmental dependency, high poverty rates, illiteracy and social stereotyping among groups have the potentials to aggravate disputes into large-scale conflicts. Similarly, in the context of increasing overlap between conflicting natural resource sensitivity patterns, population increases is bound to breed conflict in the absence of proper interventions. Resource availability and use heightens the scale of contestations that may result between groups. It is

instructive to note that the adverse effects that are likely to be associated for example, with pastoral influx appears to be proportionate to the socioeconomic relations between the populations and the environment in the communities, highlighting the import of environmental dependency, population growth and resource scarcity as argued severally by eco-violence theorists.

Last is the presence of systemic amplifying factors such as the nature and capacity of institutional interventions, the effectiveness or otherwise of conflict mediation systems, the integrity if the mediating institutions and its capacity arbitrate deputes. For example, distrust among herders for security agencies suspected to be corrupt, availability of arms to herdsmen, the absence of effective and thoroughly implemented legislations all contribute to aggravate conflict risks. All of these were observed to embody the socio-contextual and institutional dynamics which aggravated the potentials for conflict escalating between farmer and herders in the study areas.

7.5 Famer-herder Conflicts and Redistribution of Vulnerabilities

It is also established from the study that beyond the more apparent nexus between climate change and pastoral migration, the effects of livelihood constrictions in migrant host community is an important factor in rural outmigration among youths. Substantial amount of literature already establish that the migration of unskilled rural youth population to cities and urban areas has potential to result into higher crimes risks in the urban areas although in terms of statistical disaggregation and significance, this linkage remains conjectural, it buttresses amplifies a widely held position (see Ezra and Kiros, 2001; Abbass, 2011; Fabusoro, 2007; Folami, 2010), and raises higher the imperative of adaptation interventions).

7.6 The State's Approach to Farmer-herder Conflict: Imperatives of Policy Review

Finding a convergence between theory and practice in the climate change-conflict nexus lies in bridging the gap between scholarship and policy making. Understanding the institutional context is therefore important for planning conflict-sensitive adaptation. Towards achieving this, the examination of specific cases are necessary since the narrative of particular conflict and local response to climate change offers "a better guide for policy than generalised models showing simple chains of causality between climate change and conflict" (IDS, 2010: 1).

In Nigeria, although conflicts between migrant herdsmen and their host has raised fresh controversies in recent times, the constitution of the Federal Republic guarantees the right to

reside unhindered, in any region of the country as citizens whether native/settler. This right is also enshrined in the Land Use Act of 1978, and was a major departure from the 1962 Land Tenure Act. The 1978 law also empowers the Federal government to redefine boundaries including demarcating between farmlands, cattle routes, and range lands in order to enhance mutual co-existence of various groups within the country (Nzeh, 2015; Rasak, 2011).

It was in consideration of this imperative that the Nigerian Grazing Reserve Act of 1964 came into law in order to make access to grazing lands available to pastoralists, promote sedentarisation as a way of integrating the population while increasing productivity development of social amenities in pastoral areas (Ibrahim, 2012; Nzeh, 2015; Awogbade, 1978). In order to reduce the country's high reliance on foreign livestock markets amounting to about 23% particularly from the Sahel neighbours, the 1988 National Agricultural Policy aimed to increase local production by allocation a minimum of 10% of the national territory amounting to 9.8 million acres as grazing reserves, similar implementation challenges have kept functional grazing reserves at only 2.82 % (Ibrahim, 2012).

Similarly, the National Grazing Route and Reserve Commission bill of 2011 aimed at allocating grazing routes and reserves across the 36 states and the FCT has been stalled by divisions and opposition among legislators and sections of the country (Nzeh, 2015). Although these legislation were progressive in purpose, haphazard implementation or the lack of the will to move from legislation to action have seen the population of herders unleashed unregulated in farming communities giving room to incessant conflicts. Failure on the part of the government to enact and implement laws to define and effectively manage grazing reserves casts doubt on the government's priorities in regards to farmer-herder conflict. It may also call to question, the level of understanding within the various levels and tiers of government, of the implications of climate change for conflict in an unregulated pastoral system.

7.7 Conclusion

This study examined the relevance of climate change to migration, resources contestations and conflict in Nigeria. These linkages were examined within contextual prisms of pastoral migration and farmer-herder conflict in four migrant host communities in Nigeria. The study identified socio-contextual factors which amplify insecurity as a result of climate-related resource scarcity and changing nature of pastoral migration. It shows how scarcity exacerbated by climate change contributes to changes in migration patterns, resource struggle

and conflict between rural farmer and migrant herder in the study areas, bringing to the fore the implications of this for broader issues of security in Nigeria.

As findings from this study show, the effects of climate change and particularly, its potential to aggravate conflict are influenced by many factors, and as such, conditioned by the socioeconomic, cultural, and political contexts of vulnerability. In essence, the dynamics and processes of conflict transformation are not only intertwined but also shaped by the varied contextual forms. This linkage is easy therefore, to become confounded by the complex nature of the various factors especially the fluid nature of the phenomenon of social conflict itself, in terms of the array of factors that are likely to influence, deflect or aggravate its processes. This makes any conclusion beyond a contextual and co-causal linkage nearly impossible if conclusions in the analysis are to be robust and relevant for policy interventions especially peace-building.

The study therefore examined specific contexts of conflict as well as the broad socio-contextual circumstances which underpin climate change-conflict linkages in Nigeria. It sought to bring to clearer view, the epistemological gaps between predominant universal academic theory on the subject on one hand, and the exigencies of context-specific policy imperatives of adaptation policy interventions that are highly needed in the contexts of vulnerability. Specifically, it highlighted flaws in current academic preoccupation with proving or disproving linear causal pathways between climate change and conflict risks, and indicated that this approach is impedes the evolution of policy-relevant scholarship even as the global community seeks to deal more effectively with the climate change both in its geophysical and social dimensions.

In the context of the study, it is clear that conflict transformation revolves around the effect of climatic variability on resource scarcity and migration pressures among vulnerable populations thus accounting to a large extent, for increased resource competition in host communities. This is so because demographic shock arising from population influx increases competition over existing resources as well as aggravate social tension among contradictory resource use cultures as those observed between arable farmers and nomadic herders.

Furthermore, the study shows that rarely does any single factor unilaterally explain social conflict which on the contrary, is often a product of many interacting co-causal factors. In other words, violent conflicts are more often than not, produced in a systemic interface

among multiple causal agencies in which the significance of individual agent is context-defined. The consequence of poor or absent technological support systems capable of mitigating adverse effects and aiding adaptation in the context of primary vulnerability, the poor state environmental governance border control, socio-political as well as other tension points can therefore be seen as a significant factors relevant to understanding the dynamics climate change-conflict transformation in Nigeria. The study therefore advances a holistic approach which commences from the examination of the validity of contextual connectives, in order to serve the purpose of advancing context-relevant knowledge for conflict prevention and management.

In addition, the study shows that climate change vulnerability is socially dispersible especially through primary and secondary forms of migratory adaptation as redistribution of risks from points of geo-physically exposure extends into demographic risks in other regions (migrant receiving communities). It also brings to the fore, the fact that such risk redistributions may traverse national borders. As such, it impresses that in the mapping of climate change vulnerability, future studies need to integrate the socio-demographic dimensions with the geophysical aspects. Using findings on the effect of population exposure to dispersed vulnerability as a factor in secondary scale migration, the study highlighted the potential contribution of such dispersal to broader security challenges in locations other than those geophysically affected by climate change. This is evident specifically, in the rate of rural-urban outmigration in the study areas as linked by the subjects of research exposure to secondary risks: herders' influx and farm losses in the migrant receiving rural communities.

As shown by the data analysis presented, there is no doubt that the relationship between climatic change and social conflict is a complex one in which many factors potentially conflate in the conflict transformation process. At the same time, it is clear that more accurate albeit contextually limited linkages can be drawn from examining particular scenarios. Hence, case studies provide a better analytical ground for syllogised thinking about the interaction between various levels of exposure such as those experienced by pastoral herders' as well as its implications for their receiving communities. It is considered apt in this context to view migratory adaptation as bridging function in vulnerability transformation from environment change to social conflict.

For peace in Nigeria, considering her status as a developing country in which the highest level of vulnerability to climate change will be borne by the vast number of poor already

living below the poverty line, it is pertinent that the Nigerian government broadens its approach to climate change from its current global diplomatic conformity focus, to one which incorporates localized socio-demographic dimensions and also promotes expedited development and implementation of conflict-sensitive climate change intervention frameworks to promote violence-free climate change adaptation.

7.8 Recommendations for policy-makers and the government

The following are some specific interventions that may be considered by the Nigerian government towards arresting conflict transformation associated with climate change:

1. There is need for the government to develop a comprehensive framework for climate change impact assessment in Nigeria. This will drive risk assessment away from current limited lens in which climate change is viewed in its narrow economic cum scientific terms. A socio-demographic understanding of the effects of environmental change will enhance the speedy evolution of conflict sensitive adaptation strategies and help solve local problems created by climate change while the Nigerian state advances its role in the global agenda on climate change mitigation.

2. There is the need to revisit legislations on land use in Nigeria in order to address conflict precipitations in current practices occasioned by legislative vacuum and poor policy implementation. This is critical to putting in place, an effective regulatory framework as well as structures to be saddled with the task of managing the cohabitation of arable and pastoral farming practices in Nigeria. This has become imperative in view of climatic variability and increasing demand for climate-sensitive natural resources. Muhammed, Ismaila and Bibi (2015) note for example, the decline of pasture land and increase in livestock over the years as a factor influx of pastoralists into farming areas setting the stage for land use conflicts.

3. The Federal Government needs to commence the development of a longer-term post-transhumance practice in livestock production in the country since the objectives of growing livestock market to encourage local self sufficiency appears by all indicators, to inconsistent with challenges of orthodox open-field livestock production system.

4. In view of the interface between climate change and harmonious operation of these two all-important agricultural sectors, the Nigerian government needs to reappraise it

strategic plan of action towards climate change. Specifically, there is the need to shift national focus to the social dimensions of climate change.

5. Nigeria must spearhead a change in the current regime of environmental security by mobilizing other highly vulnerable countries especially in Africa where the most affected countries remain at the fringe of global environmental security agenda setting as policy-receiving countries. This can be done by initiating platforms for problem-driven action in conflict-sensitive knowledge production on climate change impact assessment with a view to humanizing rather than commercialising the environmental security agenda. This will help developing countries in developing mechanisms for adaptation intervention against social and demographic risks by advancing localised solutions to problems arising from climate change impacts.

6. An important strategy towards reducing conflict in Nigeria would be addressing the long-overdue economic diversification, industrialisation and the development of rural areas in the country. This will enable the state to positively engage youths through employment generation across skilled and semi-skilled cadres, thereby minimising pervasive feelings of neglect, deprivation and frustration which fuels the embers of violence in Nigeria.

7. There is an urgent need to take education to pastoral communities, as well as ensure the provision of necessary infrastructure in rural areas.

8. Given their generic rating in legitimacy, traditional institutions should be strengthened through relevant legislations so as to be able to contribute to conflict mediation and management in Nigeria.

9. Corruption delegitimizes public institutions and depletes public trust in their ability to ensure security of lives and properties. There is need for massive national reorientation against corruption in Nigeria.

10. The large presence of unregistered pastoralists who migrate into the country as indicated in figure 23 also shows that the Nigerian state must place a premium on effective border control in order to prevent migration-related conflict. this is all the more important as Nigeria remains a choice destination both as market for

pastoralists, and as an ecologically diverse country which attracts herdsmen thereby exposing citizens to higher risks of demographic pressures.

7.9 Recommendations for future research

In order to compliment government efforts at the policy level, academic research on climate change impacts must advance knowledge on conflict-sensitive climate change adaptation. These following are measures that can be adopted in future research to advance conflict-sensitive climate change adapation:

1. Academic research, especially in developing countries, must broaden the scope of the discourse on climate change to adequately capture its socio-demographic, cultural, economic, and other dimensions.
2. Furthermore, while quantitative methods are necessary in contemporary process tracing, scholars must be aware of their limits as an explanatory technique in complex social process. The disaggregation of causal linkages in climate change-conflict transformation imposes huge limitations to the understanding of conflict linkages in complex scenarios as is seen in Nigerian case.
3. Further to the above, there is need to expand definitions of vulnerability to reflect contextual peculiarities in order to capture extended impacts such as those emerging from or evident in Nigeria's unique context of climate change sensitivity.
4. Finally, academic discourse on climate change impact needs to reflect socio-contextual realities and adapt theory to human experiences in other to solve societal problems.

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Appendixes

A. Interview Guide

This is a structured interview. Participants are categorized into two main spatial domains: rural primary host communities, and urban/Secondary host communities. All have been divided into 4 clusters/categories which are further divided into groups according to roles and relevance in the study. Each sub-group identified is engaged with the same set of questions as set out in this guide across all the four locations.

Local Host Community Category

Farmers

1. Are you aware of the presence of cattle farmers in this community?
2. How have you managed with their presence so far?
3. How has their presence affected your normal farming and other activities in your community?
4. Do you have any problems sharing things with the nomadic farmers?
5. Has your farms, water been affected by their activities?
6. Is there any dispute on right of ownership or settlement between the nomads and the people of the community?
7. Do you experience any interference in normal traditional activities because of the cattle farmers?
8. Do you think the community will cope better if modern farming support like fenced plots for cattle farmers, tractor for crop farmers, water supply, big market space, and so on, are provided in your community?
9. Would you support modern cattle farms to be created for the cattle farmers in this community?
10. Do you know why they have moved here?

Native youths:

1. Are you aware of the presence and activities of nomadic pastoral farmers in your community?
2. Does their presence and activities constitute any threat to your community?
3. Do you have any problem participating in farming because of their presence?

4. Do you think their activities reduce survival opportunities in your community?
5. Would you prefer to stay in the community and do farming if basic support like water supply, electricity, good road, social, and medical care facilities are provided?

Community leaders:

1. What has been the nature of relationships between nomadic farmers and community members, especially farmers?
2. Does the presence of nomadic pastoral farmers affect resource, and security in your community?
3. Does resource shortage contribute to low youth involvement in agriculture and their movement to town areas?
4. What efforts have been, or are being made at the community leadership level, to address any problems with the cattle farmers?
5. Do you think that the community will cope better with cattle farmers if farming support and basic needs like water supply, electricity, good road network, modern tools, and fenced cattle farms are provided?

Traditional Rulers:

1. What has been the nature of relationships between nomadic farmers and community members, especially farmers in your community?
2. How does the presence of nomadic pastoral farmers affect natural resource availability, and human security in your community?
3. What effects does recurrent violent conflict have for youth involvement in agriculture and how does this affect youth urban drift?
4. What efforts have been, or are being made at the traditional leadership level, to resolve areas of conflict and prevent future occurrence?
5. Do you think that that development of the rural areas in terms of provision of infrastructure: water supply, electricity, good road network, social and medical care facilities, and the modernization of the farming system by provision of modern tools, ranch pastoral system, will reduce reliance on the natural environment, halt conflict, and increase rural retention of the youths?

Migrants Group Category

Peripatetic pastoral farmers:

1 From where have you moved here?
2 Why did you move here? How were your herds thriving in your original community compared with their performance here?
3 Do you know about climate change, or have you noticed any bad changes in weather conditions?
4 Have you experienced serious droughts, food shortage or any similar situations causing you to move here?
5 Do you find the people like farmers and community people here friendly?
6 Do the people here share the resources like land, water, roads, markets, with you easily?
7 Do you have any difficulties sharing thing with the people?
8 Since nomadic farming is your custom, do you think you can keep your herds in a closed place where feeding is provided?
9 Do you wish to return home is government helps you to be able to take care of your herds there?
10 Are you able to observe your cultural and religious activities without disturbances from the community people?

Pastoral Community leaders:

1. Do you have any difficulty living in this community especially farmers?
2. Does farming activities affect your cattle welfare?
3. Do you have witness any disturbances from the community people?
4. What efforts have been, or are being made by your leaders to address these disturbances?
5. Would you like to return to your homes if your herds are can feed well at home or would you like to stay here permanently?

Secondary Host Communities Category

(proximate towns/cities used include: Efon Alaaye township, Oke-Ero township, Nasarawa township, and Saki township.)

Indigenous (native tribes) migrant (8):

1. Where are you from?
2. What has been your previous occupation (s) in your original rural community?

3. What factors led to your decision to move to the city/urban area?
4. Is this factor related to diminishing livelihoods and rising risks of agricultural enterprise in the rural community?
5. Would you return to the rural area if infrastructural amenities like regular water supply, electricity, good road network, social and medical care facilities, and the modernization of the farming system by provision of modern tools, ranch pastoral system are provided?
6. What is your assessment of the performance of the government in terms of helping the youth to fulfill their aspirations to escape poverty and maintain a good living condition?
7. What do you think about youth unemployment and socio-economic inequality in Nigeria?
8. Would you support that the present system of government be discarded?

Non-indigenous migrant (Migrant tribe) (2):

1. Where are you from?
2. What has been your previous occupation (s) in your original rural community?
3. What factors led to your decision to move to this city/urban area?
4. Is this factor related to diminishing livelihoods and rising risks of agricultural enterprise in your original rural community?
5. Would you return to your original rural community if infrastructural amenities like regular water supply, electricity, good road network, social and medical care facilities, and the modernization of the farming system by provision of modern tools, ranch pastoral system are provided?
6. What is your assessment of the performance of the government in terms of helping the youth to fulfill their aspirations to escape poverty and maintain a good living condition?
7. What do you think about youth unemployment and socio-economic inequality in Nigeria?
8. Would you support that the present system of government be discarded?

The State, Law and Order Enforcement Category

Local Government Head:

1. Are you aware of the conflict-ridden relationship between migrant pastoralist and famers in parts of your local government?
2. What are the perceived threats recognized by the government as causes and resulting effects of the prevalent violent conflicts between communities and nomadic migrants?

3. What institutional, political or other measures have been taken so far to halt the trend, and prevent reoccurrence?
4. Would you consider the resource constriction, prevalent conflict and violence as a disincentive for youth enterprise and rural youth retention in your local government?
5. What channels exist to both communicate the problem governments at the state and federal levels, and how effective are these efforts, and the resulting interventions if any?

Top police personnel:

1. Do you think rural-urban migration is a factor in rising insecurity in the country?
2. Do you consider youth unemployment as a trigger factor for crime and insecurity?
3. How would you rate the distribution of crime statistics in terms of active jobs engagement, or joblessness of people arrested for criminal activities: is propensity to crime even, higher or lower in unemployed persons?
4. Do you see resource scarcity and loss of rural livelihood as an important factor in rising insecurity in the urban areas?
5. Do you think that that development of the rural areas in terms of provision of infrastructure: water supply, electricity, good road network, social and medical care facilities, and the modernization of the farming system by provision of modern tools, and ranches for pastoral farmers, will reduce the prevalence of crime and enhance security in urban areas?

B. ETHICAL CLEARANCE LETTER

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

18 February 2014

Mr Temitope Edward Akinyemi 213570643
School of Social Sciences
Pietermaritzburg Campus

Dear Mr Akinyemi

Protocol reference number: HSS/0042/014D
Project Title: Climate Change, Migration and Resource Contestations: A case study of North-South Migration in Nigeria

Full Approval – Expedited

This letter serves to notify you that your application in connection with the above has now been granted **Full Approval**.

Any alterations to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach/Methods must be reviewed and approved through an amendment /modification prior to its implementation. Please quote the above reference number for all queries relating to this study. PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

Best wishes for the successful completion of your research protocol.

Yours faithfully

Dr Shenuka Singh (Chair)
Humanities & Social Science Research Ethics Committee

/pm

cc Supervisors: Dr Alison Jones & Dr Sagie Narsiah
cc Academic Leader: Professor Sabine Marschall
cc School Admin: Ms Nancy Madlau

C. INFORMED CONSENT LETTER

Temitope Edward AKINYEMI,
Number: 213570643.
Social Sciences, College of Humanities,
University of KwaZulu-Natal,
Pietermaritzburg Campus,
August 20, 2013.

Dear Participant

INFORMED CONSENT LETTER

My name is Temitope Edward Akinyemi. I am a Political Science PhD candidate studying at the University of KwaZulu-Natal, Pietermaritzburg campus, South Africa.
I am interested in learning about how climate change causes scarcity of natural resources, movement of people, and struggle for resources in Nigeria. I am studying cases from Ekiti, Oyo, Kwara, and Nasarawa States. Your community is one of my case studies. To gather the information, I am interested in asking you some questions.
Please note that:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person, but reported only as a population member opinion.
- The interview may last for about 1 hour and may be split depending on your preference.
- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage and destroyed after 5 years.
- You have a choice to participate, not participate or stop participating in the research. You will not be penalized for taking such an action.
- The research aims at knowing the challenges of your community relating to resource scarcity, peoples' movement, and effects on peace.
- Your involvement is purely for academic purposes only, and there are no financial benefits involved.
- If you are willing to be interviewed, please indicate (by ticking as applicable) whether or not you are willing to allow the interview to be recorded by the following equipment:

	willing	Not willing
Audio equipment		
Photographic equipment		
Video equipment		

I can be contacted at:
Email: te.akinyemi@ymail.com
Cell: +2348141247352 or +27611941846.

My supervisor is Dr. Alison Jones who is located at the School of Politics, Pietermaritzburg campus of the University of KwaZulu-Natal.
Contact details: email: jonesa@ukzn.ac.za Phone number: +27332605181.

My Co-supervisor is Dr. Sagie Narsiah,

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