Conflict, Climate Change and Migration in the Lake Chad Basin with Focus on Resource Scarcity and Insecurity in Northeast Nigeria

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Eidesstattliche Erklärung

Hiermit erkläre ich, dass die vorliegende Arbeit ohne fremde Hilfe, selbstständig und lediglich unter Benutzung der aufgeführten Hilfsmittel angefertigt wurde.

Frederic Noel Kogoui Kamta, Hamburg, den 7. Dezember 2020

I dedicate this thesis to my beloved mother Jacqueline Kamta and to my beloved belated father, Lucas Kamta.

Abstract

The impacts of climate change are felt worldwide and manifest differently in various parts of the globe. While extreme weather events such as monsoons, hurricanes, torrential rains, wildfires, droughts and heat waves with the resulting impacts on human lives and settlements are common, climate change also manifests in slow onset events such as sea level rise, increasing temperatures, ocean acidification, glacial retreat, salinization, land and forest degradation, loss of biodiversity, and desertification. It is found by the United Nations Framework Convention on Climate Change (UNFCCC) that the adverse effects of slow onset events are already affecting developing countries, resulting in loss of fertile land and the scarcity of water resources. In many parts of developing countries where farming constitutes the main livelihood and source of income, changes in the natural environment and in the distribution and availability of water resources may induce social disturbances that may range from migration to social instability and even violent conflicts.

Lake Chad Basin and Northeast Nigeria in particular are seen as a climate hot spot partially due to the high variability of precipitations in the region. The Lake Chad that offers livelihood to millions of people in the region has been highly affected by climate change, losing up to 90% of its size between the early 1960s and today. Political issues have also emerged in the region with the birth of the islamist insurgent group Boko Haram in 2009. Since then, social structures have been highly disturbed, with millions of people leaving their homes in search of safety and the fulfilment of their basic needs, therefore becoming Internally Displaced Persons (IDPs) in their countries or crossing the border to become refugees in neighbouring countries. While the insurgency of the Boko Haram group and the response by various governments of the Lake Chad region including Nigeria, Cameroon, Chad and Niger may seem to be the main cause of migration in the region, understanding migration in the Lake Chad Basin is made complex for a few reasons: on the one hand, the link between conflict and migration is easily made by conflict experts; on the other hand, environmental scientists easily establish a correlation between environmental degradation and migration. Meanwhile, conflict and environmental degradation have not been treated simultaneously as causes of migration.

To close this gap, this thesis divides into four studies, in which a multitude of research methods and empirical data are used. After the analysis of historical, socioeconomic and the environmental

root causes of the crisis in northeast Nigeria in the first study, the second study introduces a comparative analysis of political factors (the conflict) and environmental factors (loss of fertile land and water scarcity) as causes of migration in northeast Nigeria. More explicitly, the role that environmental factors play on migration is dissociated from the role that conflict plays on migration in the study area. The next study examines how water scarcity contributes to migration in the region by studying the association between the local residents' intention to migrate and water related factors. Furthermore, since migration creates new social structures, the last study introduces a Social Network Analysis (SNA) of IDPs in Maiduguri. This approach allows to understand the networks in which IDPs are involved in Maiduguri, the main city in northeast Nigeria where most IDPs are found. It also allows to predict the potential of tensions between IDPs and host communities in the long term. To better address these issues, 204 IDPs in the Bakassi IDP camp located in Maiduguri, 100 members of the host community in the close proximity with the Bakassi IDP camp and experts in various governmental, non-governmental and international organizations based in Nigeria were interviewed.

Findings reveal that conflict is the main push factor of migration in the region. However, the time of migration or the time that people spent in conflict before migrating varies from one community to another community. While in some communities people migrated very early after the community was affected by the conflict or even before conflict arrived, in other communities, people stayed several months or years with the conflict before migrating. Findings in this study also reveal that other factors including income, land ownership, occupation, and history of previous resource scarcity have a medium to large effect on the time of migration in some of the communities. Furthermore, the SNA in the Bakassi IDP camp and the host community reveal that the relationships between IDPs within the Bakassi IDP camp were usually friendly, while only few relationships between IDPs and host community members were reported. Host community members were connected to IDPs in other camps far away from their community rather than IDPs in the Bakassi IDP camp that was closer to them. This behaviour is seen in the fourth study in this thesis as a way of securing the few available resources and income generating opportunities that are available to the host community. Even though the network of friendly relationships between IDPs and host community members is denser than the network of conflicting relationships, suggesting a dominance of friendly relationships in the community, most experts believe that the

friendly nature of the relationships between IDPs and their host communities may quickly turn conflicting or even violent as the pressure on resources grows and the IDPs population keeps rising.

In conclusions, solving the crisis in the Lake Chad Basin and especially in northeast Nigeria is a complex task to the Lake Chad Basin governments, given the complexity of the crisis itself. Besides efforts by the international community to reduce greenhouse gases emissions in order to mitigate global warming and reduce the impact on vulnerable regions such as the Lake Chad Basin, local efforts are needed in the short and long term to address the crisis in the Lake Chad Basin. In the short term, improving humanitarian assistance to IDPs and extending it to poorer households in host communities will not only reduce pressure on the resources in the host communities, but also reduce the potential of tensions between IDPs and members of host communities. In the long term, creating additional income generating opportunities by industrializing the region will reduce the chronic poverty that pushes many young people to join armed groups. The protection of water resources through the construction of boreholes and the regulation of irrigation activities will ensure a sustainable use of water and increase food security in the region.

Zusammenfassung

Die Auswirkungen des Klimawandels sind weltweit spürbar und manifestieren sich unterschiedlich in verschiedenen Teilen der Erde. Während extreme Wetterereignisse wie Monsun, Wirbelstürme, sintflutartige Regenfälle, Waldbrände, Dürren und Hitzewellen mit den daraus resultierenden Auswirkungen auf Menschenleben und Siedlungen weit verbreitet sind, zeigt sich der Klimawandel auch in langsam einsetzenden Ereignissen wie dem Anstieg des Meeresspiegels, steigenden Temperaturen, Versauerung der Ozeane, Rückzug der Gletscher, Versalzung, Land- und Walddegradierung, Verlust der biologischen Vielfalt und Wüstenbildung. Die Klimarahmenkonvention der Vereinten Nationen (UNFCCC) stellt fest, dass die nachteiligen Auswirkungen langsam einsetzender Ereignisse die Entwicklungsländer bereits treffen und zum Verlust von fruchtbarem Land und zur Verknappung von Wasserressourcen führen. In vielen Teilen der Entwicklungsländer, in denen die Landwirtschaft die wichtigste Lebensgrundlage und Einkommensquelle darstellt, können Veränderungen in der natürlichen Umwelt sowie in der Verteilung und Verfügbarkeit von Wasserressourcen Auswirkungen auf das soziale Gefüge haben und zu Migration, sozialer Instabilität und gewaltsamen Konflikten führen.

Insbesondere die Lake Tschad Region und der Nordosten Nigerias gelten als klimatische Brennpunkte. Dies ist teilweise auf die hohe Variabilität der Niederschläge in der Region zurückzuführen. Der Tschadsee, der Millionen von Menschen in der Region eine Lebensgrundlage bietet, wurde vom Klimawandel stark in Mitleidenschaft gezogen und verlor zwischen dem Anfang der 60er Jahre und heute bis zu 90% seiner Größe. Mit dem Erstarken der islamistischen Rebellengruppe Boko Haram im Jahr 2009 sind in der Region auch politische Fragen aufgeworfen worden. Seither sind die sozialen Strukturen in hohem Maße gestört, da Millionen von Menschen auf der Suche nach Sicherheit und der Befriedigung ihrer Grundbedürfnisse ihre Heimat verlassen und deshalb zu Binnenvertriebenen (engl. Internally Displaced Persons - IDPs) in ihren Ländern werden oder die Grenze überqueren, um als Geflüchtete in die Nachbarländer zu gelangen. Während der Aufstand der Boko-Haram-Gruppe und die Reaktion verschiedener Regierungen der Lake Tschad-Region, darunter Nigeria, Kamerun, Tschad und Niger, als Hauptursache für die Migration in der Region erscheinen mögen, wird das Verständnis der Migration in der Lake Tschad

Region aus mehreren Gründen kompliziert: Einerseits wird eine klare Verbindung zwischen Konflikt und Migration von Konfliktexperten gesehen; andererseits stellen Umweltwissenschaftler einen Zusammenhang zwischen Umweltzerstörung und Migration her. Jedoch sind Konflikt und Umweltzerstörung bisher nicht zusammen als Ursachen von Migration behandelt worden.

Um diese Lücke zu schließen, ist diese Arbeit in vier Studien unterteilt. Nach der Analyse der historischen, sozioökonomischen und umweltbedingten Ursachen der Krise im Nordosten Nigerias in der ersten Studie führt die zweite Studie eine vergleichende Analyse der politischen Faktoren (der Konflikt) und der Umweltfaktoren (Verlust von fruchtbarem Land und Wasserknappheit) als Ursachen der Migration im Nordosten Nigerias ein. Dabei wird die Rolle, die Umweltfaktoren bei der Migration spielen, expliziter von der Rolle abgegrenzt, die der Konflikt für die Migration im Untersuchungsgebiet spielt. In der nächsten Studie wird untersucht, wie Wasserknappheit zur Migration in der Region beiträgt, indem der Zusammenhang zwischen der Migrationsabsicht der Einheimischen und wasserbezogenen Faktoren untersucht wird. Da Migration zudem neue soziale Strukturen schafft, führt die letzte Studie eine soziale Netzwerkanalyse (SNA) der Binnenvertriebenen in Maiduguri ein. Dieser Ansatz ermöglicht es, die Netzwerke zu verstehen, in die die Binnenflüchtlinge in Maiduguri eingebunden sind und das Potenzial von Spannungen zwischen Binnenflüchtlingen und Aufnahmegemeinschaften langfristig vorherzusagen. Zu diesem Zweck befragte ich 204 Binnenvertriebene im Binnenvertriebenenlager Bakassi in Maiduguri, 100 Mitglieder der Gastgemeinde in unmittelbarer Nähe des Binnenvertriebenenlagers Bakassi sowie Experten verschiedener staatlicher, nichtstaatlicher und internationaler Organisationen mit Sitz in Abuja, der Hauptstadt Nigerias.

Die Ergebnisse zeigen, dass der Konflikt der wichtigste Push-Faktor für Migration in der Region ist. Die Zeit der Migration oder die Zeit, die Menschen vor der Migration im Konflikt verbrachten, variiert jedoch von einer Gemeinschaft zur anderen Gemeinschaft. Während in einigen Gemeinschaften die Menschen schon sehr früh migrierten, nachdem die Gemeinschaft von dem Konflikt betroffen war oder sogar bevor der Konflikt eintraf, blieben die Menschen in anderen Gemeinschaften mehrere Monate oder Jahre innerhalb des Konfliktkontextes, bevor sie migrierten. Die Ergebnisse dieser Studie zeigen auch, dass andere Faktoren wie Einkommen, Landbesitz, Besatzung und die Geschichte früherer Ressourcenknappheit in einigen der Gemeinschaften einen mittleren bis großen Einfluss auf den Zeitpunkt der Migration haben. Darüber hinaus zeigt die

Analyse des sozialen Netzwerks im Binnenflüchtlingslager Bakassi und der Gastgemeinde, dass die Beziehungen zwischen den Binnenflüchtlingen innerhalb des Binnenflüchtlingslagers von Bakassi in der Regel freundschaftlich waren, während nur über wenige Beziehungen zwischen Binnenflüchtlingen und Mitgliedern der Gastgemeinde berichtet wurde. Die Mitglieder der Gastgemeinde standen eher mit Binnenvertriebenen in anderen Lagern in Verbindung, die weit von ihrer Gemeinde entfernt waren, als mit Binnenvertriebenen in dem ihnen näher gelegenen Binnenflüchtlingslager Bakassi. Dieses Verhalten wird in der vierten Studie dieser Arbeit als eine Möglichkeit gesehen, die wenigen verfügbaren Ressourcen und Einkommensmöglichkeiten, die der Gastgemeinde zur Verfügung stehen, zu sichern. Auch wenn das Netz der freundschaftlichen Beziehungen zwischen Binnenvertriebenen und Mitgliedern der Gastgemeinde dichter ist als das Netz der konfliktreichen Beziehungen, was auf eine Dominanz freundschaftlicher Beziehungen in der Gemeinde hindeutet, glauben die meisten Experten, dass der freundschaftliche Charakter der Beziehungen zwischen Binnenvertriebenen und ihren Gastgemeinden mit zunehmendem Druck auf die Ressourcen und steigender Zahl der Binnenvertriebenen schnell in konfliktreiche oder sogar gewalttätige Beziehungen umschlagen könnte.

Zusammenfassend ist die Lösung der Krise in der Lake Tschad Region und insbesondere im Nordosten Nigerias angesichts der Komplexität der Krise selbst eine komplexe Aufgabe für die Regierungen in der Lake Tschad Region. Neben den Bemühungen der internationalen Gemeinschaft, die Treibhausgasemissionen zu reduzieren, um die globale Erwärmung einzudämmen und die Auswirkungen auf gefährdete Regionen wie der Lake Tschad Region zu verringern, sind kurz- und langfristig lokale Anstrengungen erforderlich, um die Krise in der Lake Tschad Region zu bewältigen. Kurzfristig wird die Verbesserung der humanitären Hilfe für Binnenvertriebene und ihre Ausweitung auf ärmere Haushalte in den Gastgemeinden nicht nur den Druck auf die Ressourcen in den Gastgemeinden verringern, sondern auch das Potenzial von Spannungen zwischen Binnenvertriebenen und Mitgliedern der Gastgemeinden reduzieren. Langfristig wird die Schaffung zusätzlicher Einkommensmöglichkeiten durch die Industrialisierung der Region die chronische Armut verringern, die viele junge Menschen dazu treibt, sich bewaffneten Gruppen anzuschließen. Der Schutz der Wasserressourcen durch den Bau von Bohrlöchern und die Regulierung von Bewässerungsaktivitäten wird eine nachhaltige Wassernutzung sicherstellen und die Ernährungssicherheit in der Region erhöhen.

List of publications:

Chapter 2 of this thesis has been published the Mediterranean Journal of Social Sciences, chapter 3 has been published in Sustainability, chapter 4 has been resubmitted to the journal Land for the second round or reviews and Chapter 5 has been submitted to the journal Geojournal for peer review.

Published manuscripts

- Kamta, F. N., Hossein, A., Scheffran, J. (2020). The Root Causes of the Crisis in Northeast Nigeria: Historical, Socioeconomic and Environmental Dimensions. *Mediterranean Journal of Social Sciences,* 11(3), 95-104. doi:10.36941/mjss-2020-0033.

As the lead author, Frederic N. Kamta contributed about 80% of the chapter's content. His contribution consisted in collecting data analyzing the data and preparing the original draft. Hossein Azadi and Jürgen Scheffran each contributed about 10% by reviewing and editing the original draft.

- Kamta, F. N., Schilling, J., Scheffran, J. (2020). Insecurity, Resource Scarcity, and Migration to Camps of Internally Displaced Persons in Northeast Nigeria. *Sustainability*, 12(17), 1-15. doi:10.3390/su12176830.

As the lead author, Frederic N. Kamta contributed about 80% of the chapter's content. His contribution consisted in collecting data analyzing the data and preparing the original draft. Janpeter Schilling and Jürgen Scheffran each contributed about 10% by reviewing and editing the original draft.

Manuscripts under Review:

- Kamta, F. N., Schilling, J., Scheffran, J. The nexus of water, migration and violence in the Nigerian part of the Lake Chad Basin.

As the lead author, Frederic N. Kamta contributed about 80% of the manuscript's content. His contribution consisted in collecting data analysing the data and preparing the original draft. Janpeter Schilling and Jürgen Scheffran each contributed about 10% by reviewing and editing the original draft.

- Kamta, F. N., Scheffran, J. A Social Network Analysis of Internally Displaced Communities in Northeast Nigeria: Potential Conflicts with Host Communities in the Lake Chad Region.

As the lead author, Frederic N. Kamta contributed about 80% of the manuscript's content. His contribution consisted in collecting data analysing the data and preparing the original draft. Jürgen Scheffran contributed about 20% by reviewing and editing the original draft.

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List of Acronyms

AD	anno Domini
AFP	Agence France Presse
AGRA	Alliance for a Green Revolution in Africa
ANOVA	Analysis of Variances
CRS	Catholic Relief Services
GACGC	German Advisory Council on Global Change
GCT	Global Conflict Tracker
ICRC	International Committee of the Red Cross
IDP	Internally Displaced Person
IED	Improvised Explosive Device
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
IPCR	Institute of Peace and Conflict Resolution
ISSA	International Social Security Association
ISWAP	Islamic State in the West African Province
ITCZ	Inter Tropical Convergence Zone
JICA	Japan International Cooperation Agency
LCB	Lake Chad Basin Commission
LCBC	Lake Chad Basin Commission Countries
LGA	Local Government Area
NCFRMI	National Commission For Refugees, Migrants and Internally Displaced Persons
NEMA	National Emergency Management Agency
NGO	Non-Governmental Organization

NSCDC	Nigeria Security and Civil Defence Corps
PRB	Population Reference Bureau
SNA	Social Network Analysis
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commissioner for Refugees
WFP	World Food Programme

Chapter 1: Introduction

1.1. Background

1.1.1. Definition

According to the Lake Chad Basin Commission (LCBC, 2015), the Lake Chad Basin (LCB) is a shallow endorheic basin located in the Sahel region on the southern fringe of the Sahara Desert. Lake Chad itself is the fourth largest lake in Africa after Lake Victoria, Lake Tanganyika and Lake Malawi (and the sixth largest lake in the world). The LCBC (2015) estimates that the LCB provides livelihood to 50 million people in 2020 and plays a role in wildlife conservation, with its rich ecosystems within a markedly arid environment, and is therefore listed among the Ramsar Wetlands of International Importance. The Lake Chad is located at the crossroads between four countries including Nigeria, Cameroon, Chad and Niger, while the basin additionally includes parts of the Central African Republic, Algeria, Sudan, and Libya (Policelli et al., 2018). The lake's area varies from season to season and from year to year. When the surface is at approximately 280m above sea level, its area is about 17,800 km^2 (Gritzner, 2019). Lake Chad is a complex hydrological system with its drainage basin covering approximately 2.5×10^6 km^2, representing approximately 8% of the African continent (Pham-Duc et al., 2020). Furthermore, it is explained by Pham-Duc et al. (2020) that Lake Chad is characterized by a south to north climatic gradient as a consequence of latitudinal rainfall decrease.

1.1.2. Climate change and environmental impacts in the Lake Chad Basin

Global temperatures and precipitations have largely been impacted by the presence of greenhouse gases in the atmosphere (Nicholson, 2010; Gemeda and Sima, 2015; Kweku et al., 2018). The increase of atmospheric greenhouse gases is mainly caused by anthropogenic factors such as the burning of fossil fuels like coal, petroleum and natural gasses and widespread deforestation (Gemeda, 2015). According the IPCC (2014), the earth's surface temperatures have increased by

0.5°C or more during the last 50 to 100 years over most parts of Africa, with minimum temperatures warming more rapidly than maximum temperatures. Still, projections predict a rise in African temperatures, faster than the global average increase over the 21st century (IPCC, 2014).

Among the impacts of global warming in Africa, droughts have largely been observed, with east Africa and the Sahel being most affected. In the Sahel Region, rainfall has experienced an overall decrease over the course of the 20th century with a large number of droughts recorded during the 1970s and 1980s (IPCC, 2014). Among the observed impacts of these droughts, freshwater ecosystems are highly affected (Bond et al., 2008). Droughts are likely to increase evaporation and also has the potential to contribute in dropping the water level in the channel of rivers and streams, and the weakening of lateral connectivity as the water recedes from the riparian and littoral zones and from backwaters (Boulton, 2003; Bond et al., 2008). The Lake Chad waters are recharged through runoff and river discharge generated predominantly in the southern portion of its drainage basin and transported via the Chari/Logone river system to the lake, therefore constituting more than 90% of the recharge capacity, and the remaining waters coming from the Komadugu Yobe River and precipitation on the lake surface (Pham-Duc et al., 2020). With the recent droughts recorded in the LCB, a significant decrease of water flow into Lake Chad can be anticipated.

Because of its shallow nature hardly reaching seven meters depth, Lake Chad is extremely sensitive to climate variations. Surface waters of Lake Chad have incredibly reduced and the Lake has lost more than 90% of its size between 1963 and 2018 (Buma et al., 2018). Lemoalle (2005) suggests that Lake Chad may now be regarded as a seasonal wetland since 1976, after the onset of the present dry climatic phase which started in 1973 in the African Sahel. As a result of the dry phase, the inundated areas have seasonally varied between 4,000 and 9,000 km^2 in the southern basin of the lake and between 50 and 7,000 km^2 in its northern basin. Figure 1.1 illustrates the changes on the water area of Lake Chad between 1963 and 2018.

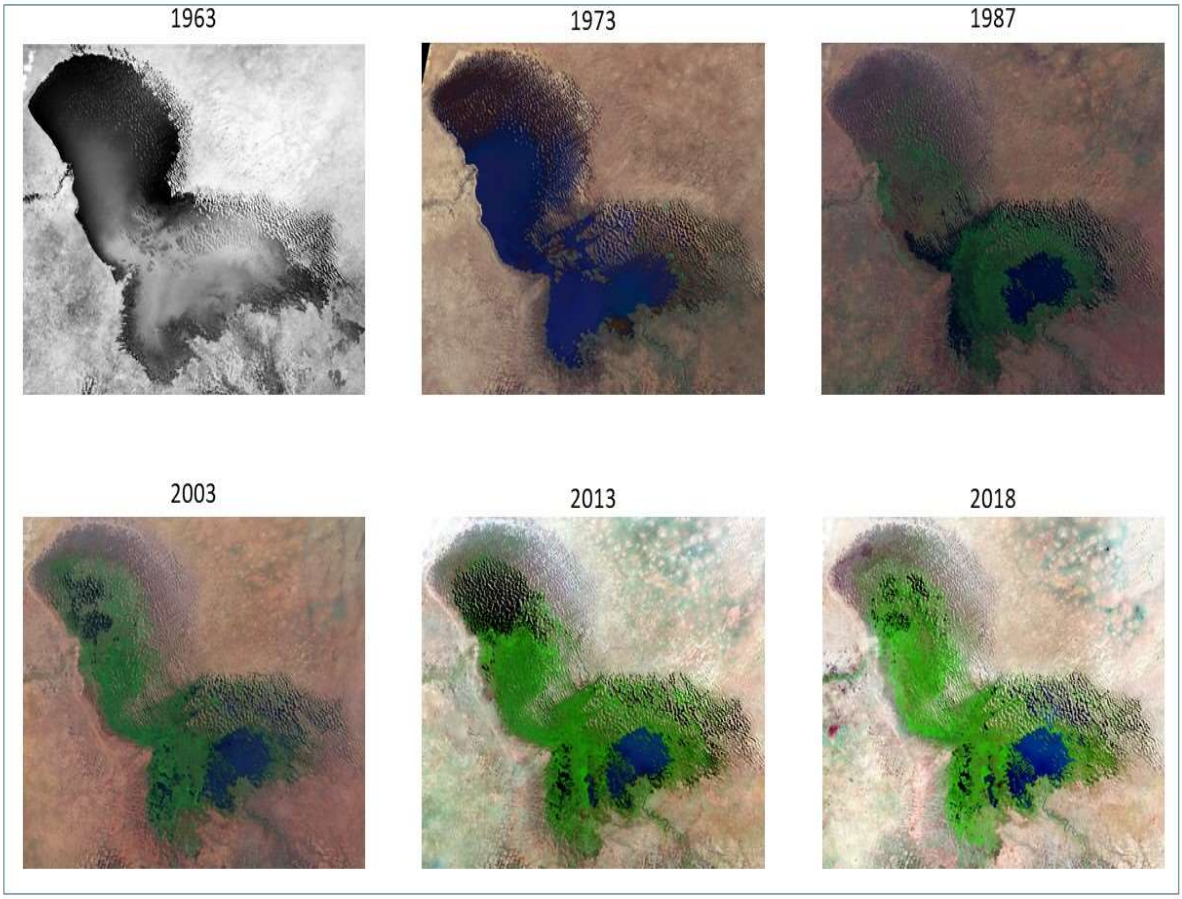

Figure 1. 1. Lake Chad water change between 1963 and 2018. Source of images: United States Geological Survey (USGS, 2020).

Among other impacts of climate change in the LCB, land desertification is well documented (Ikusemoran et al., 2018; Spiess, 2005). Due to its proximity with the Sahel, northern Nigeria is particularly affected by desertification. Desertification phenomenon has been reported in northern Nigeria since the 1920s, but the impact has been more glaring since the famine of 1971 to 1973 in this part of the country (Olagunju, 2015). Land desertification and drought in the region according to Olagunju (2015) can be attributed to climatic variability. Northeast and northwest Nigeria are particularly vulnerable to the variations of the climate system. The combination of rising heat and less rain has hastened desert encroachment, with loss of the wetlands, and fast reduction in the amount of surface water, flora and fauna resources on land in these regions (Haider, 2019). The states of Adamawa, Gombe, Kwara, Kogi, Nasarawa, Niger, and Plateau have been affected by the desert encroachment phenomenon, resulting in loss of arable land and pasture in the region

(Abdulkadir et al., 2017). Desertification in northern Nigeria and in the LCB in particular may also be aggravated by the unsustainable anthropogenic activities such as deforestation for industrial purposes and fuel wood, urbanization, bush burning, agro-activities on marginal land and other agricultural activities (Olagunju, 2015).

Desertification is not the only impact of climate change in the region, water resources are also affected. The direct effect of climate change on groundwater resources is still understudied, hence the lack of knowledge on this issue (Green et al., 2007). It is however known that in arid regions such as northern Nigeria, the scarcity of surface water is likely to induce a strong reliance of the populations on groundwater resources, which may lead to rapid depletion and pollution of the groundwater resources (Aizebeokhai, 2011). Green et al. (2007) found that climate change was susceptible to influence recharge of groundwater, but whether the influence was negative or positive was a function of many other factors such as vegetation cover, soil properties and local climate. Omole (2013) notes however that surface water and groundwater are from a single system and therefore, changes in one component affects the other. In this logic, climate impact on surface water in northern Nigeria and in the LCB in general may also apply to groundwater resources. Omole (2013) further explains that despite the differences in annual rainfall between northern Nigeria and southern Nigeria (250 mm in the north and 4000 mm in the south), the economy in the north is paradoxically more agriculture-based than in the south. Therefore, the northern part of the country requires more irrigation for the cultivation of crops that are sold in the entire country. The USAID (2010) therefore sees the lack of national capacity to supply piped water coupled with low precipitation as an explanation for the increased use of groundwater in northern Nigeria.

The low rainfall recorded in northern Nigeria and in the LCB may be explained by the movements of the Inter-Tropical Convergence Zone (ITCZ). The ITCZ is in the southernmost location within January - February, during which the dry season sets in over Nigeria under the influence of the northeast winds, while there is a long rainy season between March - July as the ITCZ moves towards north. The precipitation is reduced in July through August, during which the ITCZ is in the northern-most position. This is followed by a short rainy season as the ITCZ migrates towards south around September to October. Thereafter, the long dry season prevails while the rainy season covers June to September in the region due to the presence of the ITCZ (Salau Et al., 2016). The movement of the ITCZ as indicated above and illustrated in figure 1.2 below, indicates why

northern Nigeria only has a few months of rainfall in a year while southern regions are oversaturated.

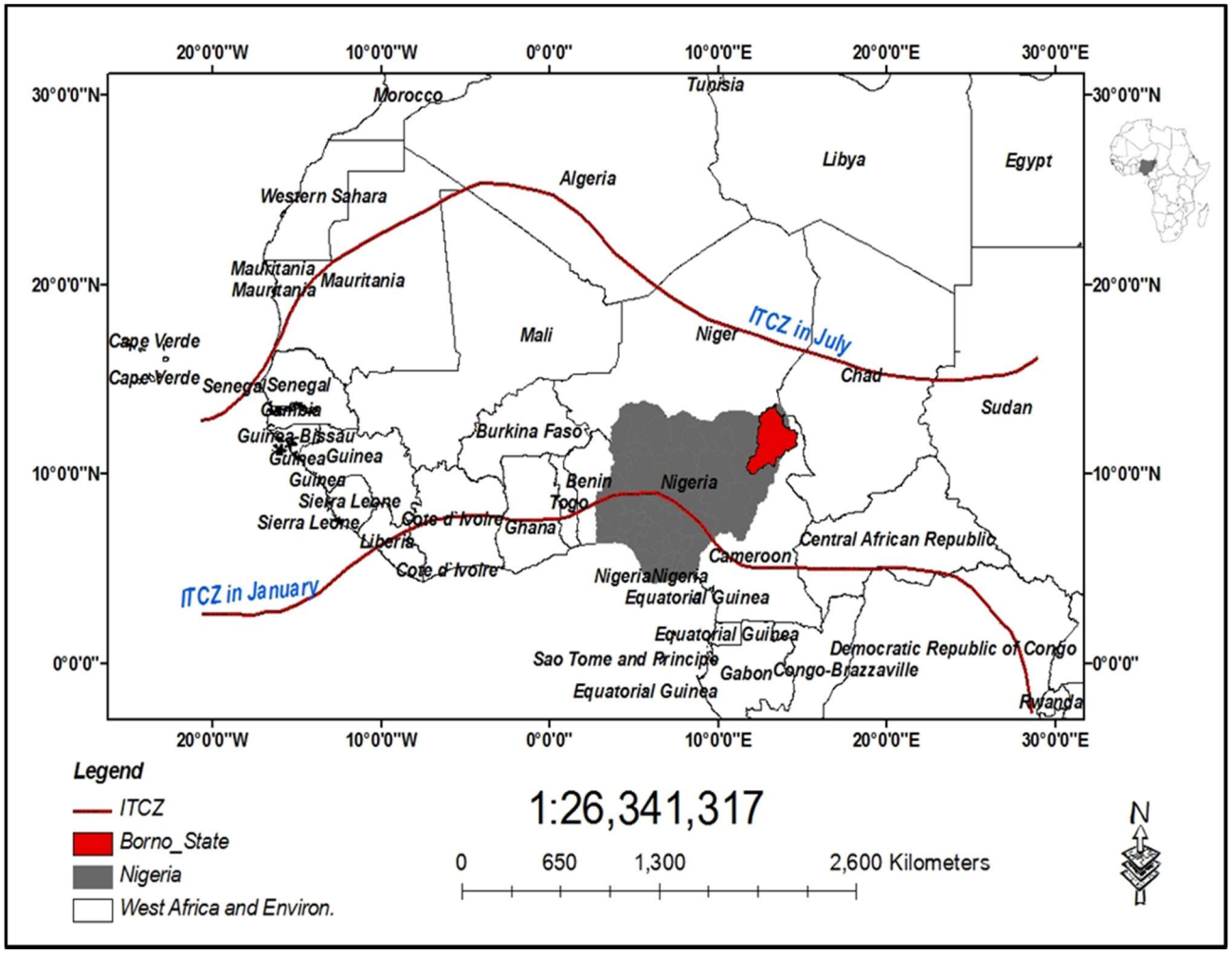

Figure 1. 2. Locations of the ITCZ over the year across Nigeria and the Lake Chad Basin.

1.1.3. Socioeconomic context

The Lake Chad region is marked by low socio-economic development indicators, low levels of education, high levels of poverty, low levels of national integration, historical government neglect and perceived and actual marginalisation (Nagarajan et al., 2018). In all LCB countries, the areas belonging to the LCB are some of the poorest in the respective countries. This is true for Nigeria, Cameroon, Chad and Niger. This region is known as one of the poorest and drought-prone

regions in the world and because of its condition, it is described by the World Bank as "a productive yet poor and vulnerable socio-ecosystem" (WFP, 2016 p6).

Before the LCB was affected by the current political crisis involving Islamist insurgents and government forces resulting in one of the worst humanitarian crisis in the world, the regions was already subject to acute poverty, resulting in high rates of youth unemployment, low school attendance rates and food insecurity. The WPF (2016) explains that millions of people between Cameroon, Chad, Niger and Nigeria depend on the Lake Chad resources for their livelihood, mainly through the practice of agriculture as the main economic activity. However, increasing pressure on the soil and diminishing water resources have increasingly threatened the sustainability of these vital economic activities as the Basin's natural capital has been degraded. Besides the environmental impacts on the people's livelihood in the LCB, the lack of institutional capacity and lack of interest from the politics have been widely mentioned.

Among other causes of poverty in northeast Nigeria, the WFP (2016) mentions the corrupt nature of the federal government and of other institutions, and the lack of infrastructures and social services. Nigeria is poor not because it is not richly endowed with resources but due to poor management of these resources by its political leaders (Usman, 2015). In other words, Usman (2015) emphasizes that the abundant resources, materials and human capital that the country possess ironically underpin the basis of profound misery of the vast majority of the populace. Corruption at the state and local government levels appear to be one of the major challenges to development in Nigeria. The country has adopted a federal system of governance and the resulting fiscal decentralization provides Nigeria's states and local governments considerable autonomy including control over 50% of government's revenues as well as responsibility for providing public services. The lack of a stringent regulatory and monitoring system, however, has allowed for rampant corruption and resources which could pay for public good or directed towards investment, therefore creating employment and other opportunities for citizens are being misappropriated (Ngbea and Achunike, 2014). Furthermore, Nigerian politics have fostered infrastructure development on cities, therefore leaving rural areas with inadequate infrastructures. Rural communities, especially those in northeast Nigeria lack roads, proper water, hospitals, schools and many more infrastructures (Abiodun et al., 2019).

In Cameroon, the northern part of the country belongs to the LCB, and the socioeconomic circumstances are similar to those of northeast Nigeria. The far-north region of Cameroon is one of the most densely populated regions in the country. A study by Fambon et al. (2014) found that the proportion of the population below the poverty threshold is significantly high in the entire northern Cameroon, with particularly high rates in the north and the far-north regions. Unlike in Nigeria, the government system in Cameroon is not federal and is more centralized in the capital city Yaoundé. A study by Sikot and Teke (2012) found that development in Cameroon has been delayed by poor governance. More specifically, the study identified corruption and the interest for personal enrichment as some of the main factors delaying development in the country. Such shortcomings of the Cameroonian governance system have worsen the state of poverty in the northern parts of the country.

1.1.4. Political context of the Lake Chad countries

Political dynamics are similar in Cameroon, Chad, Niger and Nigeria, the countries that form the LCB. Chad, Niger and Nigeria have experienced periods of military rule, with Chad and Nigerian politics shaped by oil exploration (Nagarajan et al., 2018). In both Cameroon and Nigeria, political issues have often led to social unrest, sometimes turning into separatist movements. In 1967, after various contradictions within the Nigerian state, people of southeast Nigeria, created a separatist group called the Biafra, which led the country into 30 months of civil war between 1967 and 1970 (Alumona et al., 2019). In Cameroon, since 2017, the central government of Yaoundé is engaged in a fratricidal war against a separatist group in the northwest and southwest regions of the country, following the proclamation of a virtual state called ‘Ambazonia’ in these two regions (Awasom, 2020). These regions, out of the ten that the country has, are the only ones where English is spoken as the main language as a result of the British colonial occupation. The crisis emerged mainly as a result of the political, economic, social, cultural, and linguistic marginalization of the English speaking regions by the central government.

Coming back to the LCB, the birth of the Islamist terrorist group Boko Haram, comes as no new phenomenon to Cameroon or Nigeria. The genesis of the Boko Haram group presents similarities with that of other separatist groups in Cameroon and Nigeria. The examples of the Biafra war in

Nigeria between 1967 and 1970 and that of the Ambazonia war in Cameroon since 2017 and still going on today are illustrative. The origin of the Boko Haram group goes back to 2002 when a group of people Committed to the Propagation of the Prophet's Teachings and Jihad emerged in Maiduguri under the leadership of its founder and leader, Muhammed Yusuf (Nagarajan, 2018). It is further explained by Nagarajan (2018) that the group protested against the corruption and inequality produced by state structures and calling for a return to a 'purer', more Islamic way of life. As a result, they garnered substantial support among the population, disenchanted with Nigeria's fledgling democracy, in its early day. Although the movement was hostile to the Nigerian state and rejected western education that was treated as non-Islamic, it remained generally non-violent until 2009 (Campbell, 2014). After the extra judiciary killing of Yusuf Mohammed in 2009 and hundreds of his followers following altercations between his group and the local authorities over some misunderstandings, the group wend underground and emerged in 2010 under the leadership of Yusuf's deputy Abubakar Shekau as a violent movement (Campbell, 2014; Aliyu, 2015).

Under the new mandate that Boko Haram had given itself, as of 2010, their operational mode included direct armed confrontation with security agents, drive-by-shooting, targeted assassinations, suicide bombing, use of improvised explosive devices (IEDs), and kidnapping (Onuoha, 2014; Aliyu, 2014). As a result, civilian populations have paid a big prize. The Global Conflict Tracker (GCT, 2020) estimates that 37,500 people have been killed since May 2011 and 2,5 million people displaced in the LCB. Figure 1.3 shows the fatalities caused by conflict in northeast Nigeria between 2014 and 2018.

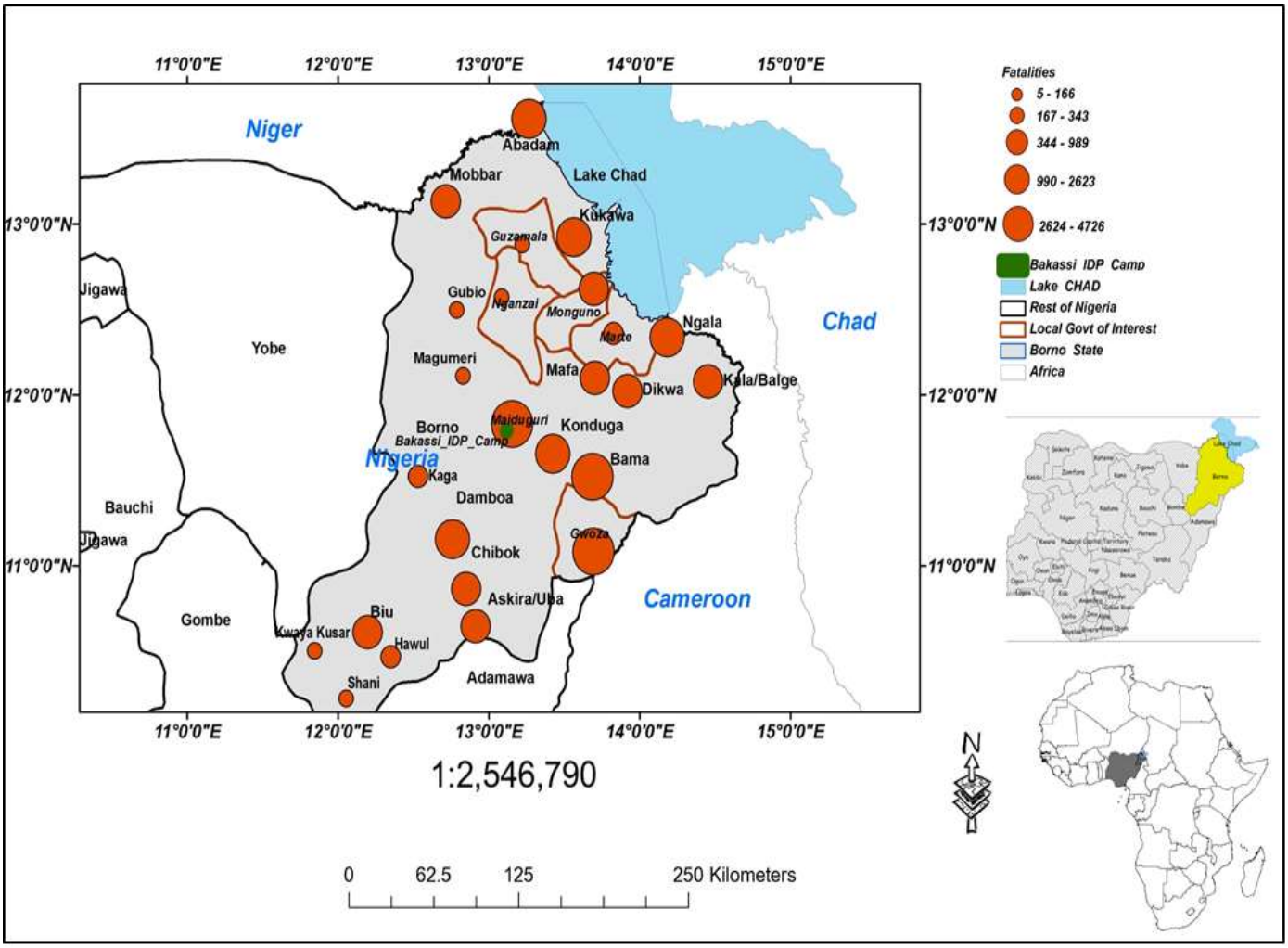

Figure 1. 3. Fatality map of Borno state between 2014 and 2018. Source of data: the Nigeria Watch project.

1.1.5. Historical overview

The area around Lake Chad was once home to the Kanem-Bornu Empire, one of Africa's most influential empires along with the empires of Ghana, Mali and Songhai (Hiribarren, 2016). The Kanem-Bornu empire lasted from the 9th to the 19th century and was known as the centre of trade between northern and central Africa, which was one of the best trade routes between both parts of Africa as it was well-served by the regular oases that dotted the Fezzan region (Cartwright, 2019). According to Bilow (2008), the area occupied by the Kanem-Bornu Empire throughout its existence corresponded to the modern-day countries of Niger, Chad, Cameroon, and Nigeria. At

its origin, the Kingdom was known as the Kanem and located at the east side of Lake Chad. It was governed by a leader called the *mai* and in the late 14th century, the Saifawa dynasty that ruled the Kanem for 771 years was forced to retreat west across Lake Chad and established a new kingdom called Bornu, hence the name Kanem-Bornu (Bilow, 2008).

Throughout its existence, the Kanem-Bornu faced multiple external attacks. One of the major attacks came in 1808 when the jihad proclaimed by Osman dan Fodio, the sultan of Sokoto tried to conquer Bornu to integrate it within the Sokoto Caliphate. After an organised defence led by El Kanemi, a learned man from Kanem, the empire won a diplomatic and religious battle (Hirribaren, 2016). Hirribaren (2016) further explain that Rabih az-Zubayr, a Sudanese warlord, invaded Bornu in 1893 and put an end to the independence of the empire and after World War I, the territory of Bornu was reunified under British administration and was officially reunited within independent Nigeria in 1961.

Long after the fall of the Kanem-Bornu Empire, memories of its influence and impact in the region are still fresh in the LCB. Barkindo (2016) reports that most people in northeast Nigeria are familiar with the history of the Kanem-Bornu to some degree. The memories of the Kingdom were earlier mentioned in Boko Haram publications, such as Mohammed Yusuf's *Tarihin Musulmai*, where reference is made to the aforementioned historical narrative and it has also featured prominently in *tafsir* and talks by Boko Haram's most prominent ideologues (Barkindo, 2016). As a reminder, Yusuf Mohammed was the founder and former leader of the Boko Haram group. Yusuf was first known as a charismatic preacher who was largely followed by young people of Maiduguri. After been arrested, detained, charged and released on several occasions prior to the incident that led to the group's insurgency, Yusuf was killed in police custody in 2009 (Salaam, 2013; Barkindo, 2016).

Among the grievances that led to the formation of the Yusufiyyan group (followers of Mohammed Yusuf) and later to Boko Haram, there was the recreation of the ancient Kanuri-led Kanem-Bornu empire (Omenma et al., 2020). Furthermore, Omenma et al. (2020) explain that the grievances permeated the social fabrics of local population and were exploited by Yusuf Mohammed to call for religious revival based on the traditional and true doctrines and practice of Islam, as it was in the fallen Kanem-Bornu Empire. Scholars claim that Boko Haram has made a selective use of history to galvanize its fighters. Barkindo (2016) believes that the history of the Kanem-Bornu

Empire embraced by Boko Haram is essential to the region and fundamental to its objectives, not least because it underpins the collective ethno-religious identity of the descendants of the Kanem-Bornu Empire and instils a shared sense of victimhood and mission. Barkindo (2016) concludes that Boko Haram leaders have been strategic in their selectivity, choosing details that best suit their agenda and embellishing the narrative to appeal to listeners and mobilise them.

1.1.6. Conflict related migration in the Lake Chad Basin

As a result of the activities of Boko Haram in northeast Nigeria and their expansion into Cameroon Chad and Niger, millions of people are forcibly displaced in the LCB (Reliefweb, 2017). According to Rizzo (2015), reaching a peak in 2014, the activities of Boko Haram in northeast Nigeria triggered huge flows of forced migration and contributed to Nigeria having one of the highest amounts of internally displaced persons in the world. Cross-border migration has also accelerated due to the violence. Numbers of people displaced because of the insecurity created by the insurgency of Boko Haram keep rising and in 2020, the UNHCR (2020) reports that the number of people displaced in the LCB have reached 3,4 million, including over 2.7 million IDPs in northeast Nigeria, over 684,000 IDPs in Cameroon, Chad and Niger and 294,000 refugees in the four countries. Insecurity in the LCB is certainly the main cause of displacement in the region, but displacements are also exacerbated by the low capacity of local populations to cope with other impacts of the conflict such as food insecurity causing malnutrition (UNHCR, 2020). The impact of violence in migration in the LCB is also increased because of the underlying impacts of environmental degradation, a growing population, poor governance, and social factors (Rizzo, 2015).

1.1.7. Environmental factors and related migration in the Lake Chad Basin

According to Metivier (2015), Desertification is likely to be the biggest environmental problem for northern Nigeria. The Sahara desert currently already covers a third of the national territory, and It is estimated that because of desertification, Nigeria is losing between 2,000 and 3,500 square kilometres of land each year (Conroy, 2014; Mohammed, 2015). In response to such environmental degradation, local residents of northeast Nigeria that mostly practice agriculture or fishing to generate income usually migrate in search of better environmental conditions (Rizzo, 2015) It is reported that environmental changes in the LCB have drawn many farming households to the more fertile soil around Lake Chad in order to sustain their livelihoods (Lemoalle et al., 2012; Rizzo, 2015). A study by Abbas (2017) found a linkage between Climate Change and forced migration in northeast Nigeria. The same study found that even though the majority of migrants may relocate to areas with better environmental conditions within Nigeria, many actually migrate to neighbouring countries in the LCB. Brown (2008) adds that for migration to be considered as environmentally driven, there has to be pull factors in the receive location. In other words, there has to be hope for a better life at the destination of migration.

1.1.8. IDP-host community dynamics

After being forcefully displaced by the conflict, many IDPs in the LCB and northeast Nigeria in particular relocate to host families in the city or to camps operated by the government. According to Davies (2012), the decision by IDPs to reside with host families may be due to factors such as the absence of camps in many situations of internal displacement, the opportunity to pursue local integration, the willingness of some IDPs to seek employment and stay independent, the issue of insecurity inside camps or simply the presence of a relative in a host community. The factors described by Davies (2012) may however have evolved since 2012 as more camps were created to host IDPs and the capacity of host families in host communities may have become limited.

Whether IDPs are hosted in camps or in the host community, the potential of contacts between them and members of the host community in northeast Nigeria still exist. Due to the fact that Nigeria is a much diversified country with over 200 recognized ethnic groups, contacts between

IDPs and host communities may present security risks (Mohammed, 2017) Issues related to IDPs have existed in Nigeria before, but were only brought to the fore with the crisis in the northeast due to the sheer number of people affected (Mohammed, 2017). Challenges related to the management of IDPs in Nigeria according to Akume (2015) include institutional decay occasioned by state complacency coupled with corruption. Akume (2015) further explain that IDPs in Nigeria face depravation which is intended by their host community to undermine their aspirations and facilitate their exclusion. Added to that, joblessness in IDP camps and the undue pressure which the displaced persons have brought to bear on the few existing social infrastructures in their host communities may also contribute to social tensions between IDPs and host communities (Itumno, 2016).

1.2. Problem definition

Climate change has become one of the most challenging issues that the world faces today (Feulner, 2015; Bustamante et al., 2019; Moomaw et al., 2019). Human interference with the climate system (mainly through the emission of green-house gases and changes in land use) has increased the global and annual mean air temperature at the Earth's surface by roughly 0.8°C since the 19th century and it is expected that average global temperature will continue to increase, reaching around 1.5°C by the middle of the twenty-first century (IPCC, 2013; AGRA, 2014). The world at large is subject to the impacts of climate change, but developing countries are more vulnerable due to their low coping capacity. In Africa, droughts are common, and the Sahel region is one of the most affected. Some of the main impacts include loss of life, crop failure, food shortages which may lead to famine, malnutrition, health issues and mass migration (Masih et al., 2014).

The Lake Chad has provided a livelihood to millions of people, but for the past half century, is has reduced in size by more than 90%, leaving millions of people that live on its resources without local alternatives to adapt to the changes (Buma et al., 2018). In response, migration has been observed, with large scale movements of people from rural areas to urban centres (see also Hassan and Tularam, 2018). Added to these environmental challenges, the insurgency of the Islamist terrorist group Boko Haram has also pushed millions of people to migrate in response to the

insecurity created. In this region that is already exposed to the impacts of climate change and where livelihoods have been severely affected, the presence of conflict between the Islamist insurgents and the governments of the LCB countries makes it difficult to disentangle the roles that conflict and environmental degradation each play in migration. Also, the nature of the relationship between IDPs and host communities is still understudied.

1.3. Objectives and research questions

One of the priorities in relation to climate change and conflict in developing countries is to manage migration (see Danziger, 2019). Doing this requires an understanding of the root causes of migration and an understanding of environmental conditions under which people are prone to migrate, and the impacts of such migration on societies. A direct link between environmental change and migration has been established in several studies (e.g. Flavell et al., 2020) but migration remains a complex issue as human responses to environmental factors may vary from one group of people to another group of people. In chapter 4 for example, it is demonstrated that under the same environmental conditions, factors that determine migration may differ from one community to another community in northeast Nigeria. In addition, the presence of insecurity created by the conflict between Boko Haram insurgents and military forces may trigger migration. Such migration may appear to be the result of the insecurity alone, but the role of pre-existing environmental factors cannot be overlooked. The literature usually treats environmental related migration separately from conflict related migration (e.g. Yusuf, 2019; Aremu and Abraham, 2020; Amusan et al., 2017).

In this thesis, a comparative analysis of environmental and political factors is made in order to understand migration in the LCB. Furthermore, this thesis seeks to understand through the analysis of social networks how displaced persons in Maiduguri connect between themselves and with host communities. Such connections include cooperation or friendly relationships as well as conflicting relationships. The data analysis method employed is based on a mixed method approach (see method section). The analysis is made with an aim to understand the role that environmental and

socioeconomic factors play in migration in a context of conflict and insecurity, to understand how IDPs connect between themselves and with the host community, and to determine the potential of further conflicts between IDPs and host communities.

The LCB in general and northeast Nigeria in particular are subject to a humanitarian crisis caused by the insurgency of Boko Haram and the counter-insurgency by the neighbouring governments (Hamid et al., 2017; Momoh, 2018). The conflict has sparked international reactions, and reports from international organizations, NGOs and the media on the humanitarian crisis in the region are abundant (e.g. Obasi, 2017; Casola and Locchi, 2018). Several studies have also been published on the causes of the crisis and its impacts (e.g. Bertoni et al., 2019; Adelaja and Geaorge, 2019). Yet, true and relevant policy that may contribute to resolving the crisis is still missing. This study seeks to understand how environmental factors in combination with the insecurity contribute to the current crisis, and the potential of new conflicts as a result of the migration. To achieve this aim, the following research questions are answered:

1- What role does insecurity/violent conflict play in the decision of people to migrate to Maiduguri?
2- What role does environmental change and resource scarcity (in the sending area of the migrants) play in the decision of people to migrate to Maiduguri?
3- What are the key networks of migrants and their links with members of the host community in Maiduguri?
4- What is the potential of the migration to lead or contribute to conflict between migrants and the host community?

To address these questions, the analysis methods defined in the method section have been applied to empirical data collected in northeast Nigeria and in Abuja, the federal capital of Nigeria.

1.4. Methods

To address the above research questions, a multitude of methods are used. Methods used are both qualitative and quantitative and include statistical analysis, Social Network Analysis and qualitative analysis of interviews. Several software packages are used to analyse the data including the IBM SPSS Statistics software package, the Ucinet software package by Borgatti et al. (2002), the Netdraw software package by Borgatti (2002) and the MaxQDA software package.

The Chi-Square test of association is used to test the association between the intention of rural community members in northeast Nigeria to migrate in case of water scarcity and water related variables. The Chi-Square test indicates whether the association is statistically significant or not. In case the test is statistically significant, the test result displays the count of the proportions of each category of respondents. Therefore, it is possible to see for example, to which category most people who are willing to migrate in case of water scarcity belong. The Chi-Square test is also used to test the association between the opinion of the members of the host community on the presence of IDPs in their community. Therefore, the test result reveals what people who are opposed to the presence of IDPs have in common and what those who are in favour of the presence of IDPs have in common. Such links can be for example, that the people previously migrated or that they experienced conflict before.

The effect of environmental factors on the time people spent in the conflict before migrating is calculated using the one way analysis of variances test (ANOVA). The one way ANOVA calculates the effect size of an independent variable on a dependent variable. The independent variable is a categorical set of data (or yes/no data) and is represented in a binary scale (0,1). The dependent variable is a continuous set of data and can take any value. In this study, the dependent variable is the amount of time (in weeks, months or years) that people spent in their communities before migrating, after it was affected by the insecurity caused by the insurgency of Boko Haram. To compute the size of the effect of the independent variable on the dependent variable, a univariate general linear model test is performed and the value of Partial Eta Squared (in %) is calculated. This value indicates the proportion of variance in the dependent variable. It is the measure of the effect size and indicates how important the difference is. It indicates the strength of association between the dependent variable and the independent variable. According to the

Cohen (1988) guideline, for the one way ANOVA approach, a Partial Eta Squared value (the effect size) of more than 0.14 or 14% is considered large, 6% to 14% is medium, and 1% to 6% is small.

To assess the networks used by IDPs in Maiduguri, a social network graph of their relationships is constructed using the Ucinet software package by Borgatti et al., (2002) and Netdraw by Borgatti (2002). In a social network graph, each actor (or node) is represented and relationships (or ties) with other nodes are drawn. In this study a 2-mode network is used, which according to Borgatti (2009) refers to data recording ties between two sets of entities. The first mode in this study is made of individual actors (IDPs and host community members), and the second mode is made of groups of people such as IPDs members of a given community, members of the host community as a whole, IDPs in other camps etc.

The relationships between actors are separated in three different categories: friendly relationships, neutral relationships and conflicting relationships. Because neutral relationships do not inform on the social dynamics of the studied population, they are of least importance in this study. Therefore, only conflicting and friendly relationships are represented in the social network graphs. The betweeneness centrality of each node is calculated and counts the number of network pathways passing through an actor, and is used to measure how much potential control an actor has in disseminating accurate and relevant information across the community network (Ngaruiya and Scheffran, 2016). More details on this method are given in chapter 5.

1.5. Study Area

Data for the current thesis were collected in Maiduguri (11°50′N 13°09′E), the capital city of the Borno state and main city of northeast Nigeria, and in Abuja (9.0765° N, 7.3986° E), the federal Capital of Nigeria. In Maiduguri, IDPs were interviewed in the Bakassi IDP camp located at the South-west entrance of Maiduguri on the Maiduguri-Numan road. The camp is one of the oldest in Maiduguri and was originally built as part of the Borno State housing project. It was opened to host IDPs for the first time in 2015. IDPs in the Bakassi IDP camp came from five different Local Government Areas (LGA) including Guzamala, Gwoza, Marte, Monguno and Nganzai. The population of the camp at the time of data collection in 2019 was 39,176 IDPs including 8,578

men, 11,327 women, 9,057 boys and 10,214 girls within 7,339 households. Among the camp's population, 3,024 came from Guzamala, 12,042 from Gwoza, 13,638 from Marte, 9,704 from Monguno and 758 from Nganzai. Figure 1.4 is a map of the study area, showing the city of Maiduguri, the Bakassi IDP camp and the LGAs of origin of the IDPs.

Guzamala

Guzamala is located north of Maiduguri, at about 125 km from Maiduguri and is a small LGA of 2,517 km². According to the 2006 population census, Guzamala had a population of 95,648 inhabitants. There are very little information available on Guzamala and according to the Reliefweb (2018), Guzamala has been inaccessible to humanitarian actors since 2014 when the conflict escalated, and reports consider Guzamala as one of the hard to reach areas in northeast Nigeria, with thousands of people still living there.

Gwoza

Among all LGAs in this study, Gwoza (11°5′10″N 13°41′29″E) is the only one located south of Maiduguri, at a distance of about 135 km from Maiduguri. Gwoza is also the furthest LGA to Lake Chad at a distance of approximately 200 km from Lake Chad. Its population according to the 2006 population census was 276,312 inhabitants for an area size of 2,883 km^2.

Marte

Marte is located northeast of Maiduguri and is one of the closest to Lake Chad. The northern part of the LGA opens on Lake Chad waters. Its size is estimated at 3,154 km^2 and according to the 2006 population census, its population was 229,370 inhabitants. It is therefore the most densely populated among the five LGAs in this study.

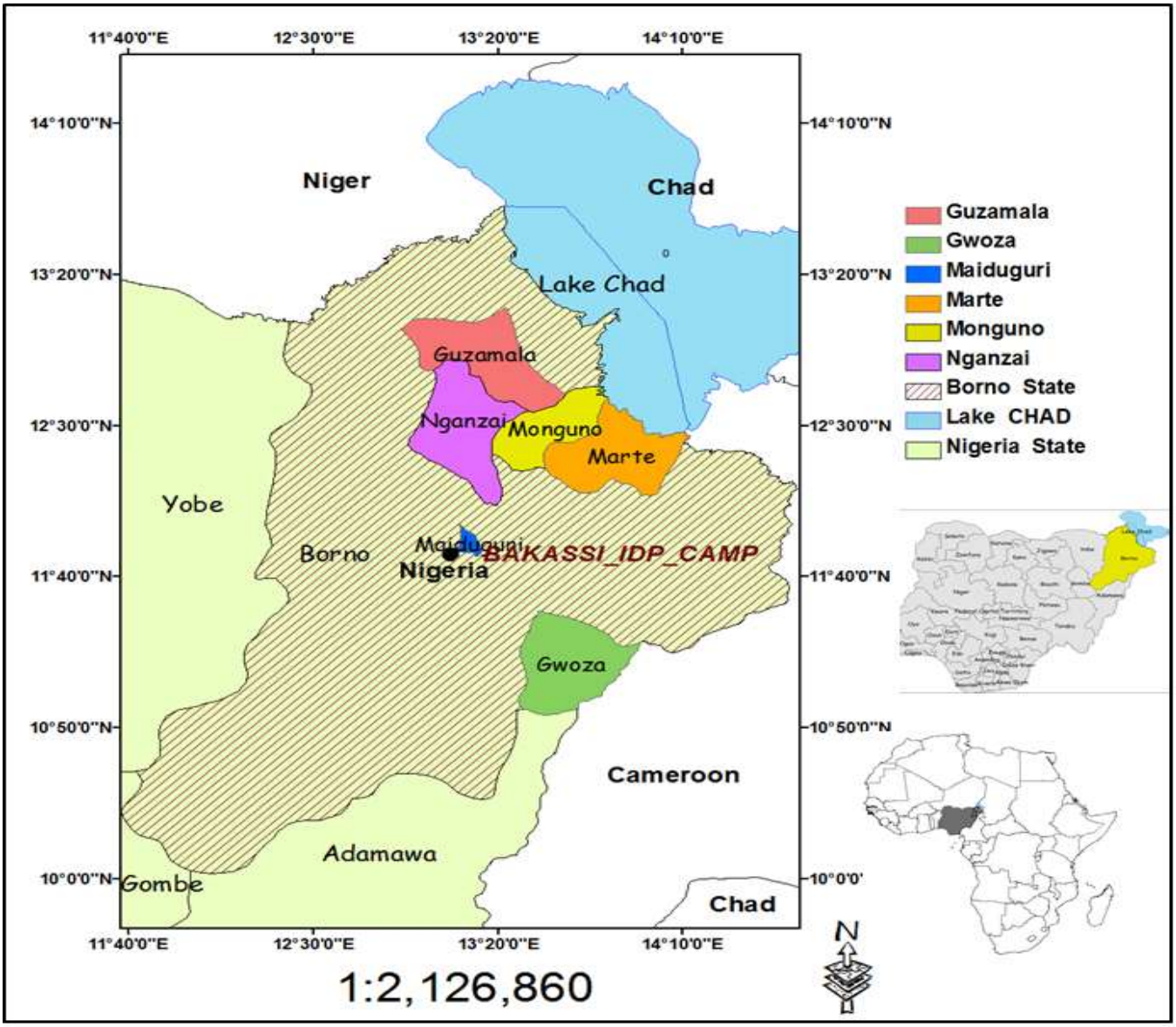

Figure 1. 4. Map of the study area, showing the Local Government Areas of origin of the migrants, the Bakassi IDP camp and Maiduguri.

Monguno

Together with Marte, Monguno (12°41′0″N 13°36′0″E) is one of the closest to Lake Chad, with parts of the LGA opening on Lake Chad waters. Of all five LGAs, Monguno is the smallest in size

with an area of just 1,913 km². Its population according to the 2006 census was estimated at 109,851 inhabitants.

Nganzai

Located, north of Maiduguri, Nganzai is the closest to Maiduguri at about 80 km from Maiduguri. Nganzai has an area of 2,467 km² for a population of 99,799 inhabitants according to the 2006 population census.

Across the study area, the insurgent group is still very active. On June 14th 2020 twin attacks in Monguno and Nganzai that killed 20 soldiers and 40 civilians and injuring hundreds, were reported (Aljazeera, 2020). These LGAs and other surrounding LGAs in northeast Nigeria have suffered sporadic attacks by the Islamist insurgents since 2014 and the area has remained unstable. Therefore, it was unsafe for the research team to travel to these locations for data collection.

1.5. Data collection

Data for this study were collected by means of interviews. Respondents located in the Bakassi IDP camp were randomly selected among each of the five communities hosted in the camp. A questionnaire with four sections was given to each respondent. 204 respondents were interviewed in the Bakassi IDP camp. After the introductory part where the respondent's sending community, gender, and age were asked, the remainder of the questionnaire was subdivided as follows:

- Section 1: questions related to the respondent's experience with the conflict and their time of migration. In this group, respondents were asked why they left their local community, if they experienced conflict and who were the main conflict actors, if they had lost relatives, property or goods including animals in the conflict, and how long they stayed in their community before migrating after it was affected by the conflict.

- Section 2: questions in this section were related to the role that environmental and socioeconomic factors played in creating vulnerability or resilience to external disturbances such as conflict in the respondent's community. Respondents were asked about their sources of income, main activity, sources of water and land ownership, as well as their history of migration and intention to migrate in relation to resource scarcity.
- Section 3: questions in this section were related to the potential of conflict or tensions between IDPs and the host community. IDPs were asked about their feelings of safety outside the camp, their occupation since joining the camp, access to land and other resources in the community and their intention to resume their previous activities.
- Section 4: questions in section 4 were related to the social networks data of the IDPs. On a scale from 1 to 5 with 1 being poor or bad and 5 being good or friendly, IDPs were asked to rate their relationships with different groups including other IDPs from the same LGA, IDPs from different LGAs within the same camp, IDPs in other camps, members of the host community, humanitarian organizations and NGOs, and finally with security institutions such as the military, the police and the civil defence force active in the camp.

Respondents in the host community were also randomly selected within the close proximity of the Bakassi IDP camp. Questionnaires were given to 100 respondents in the host community and were also divided in four sections as follows:

- Section 1: questions on the history of conflict and conflict related migration were asked to the respondents. Respondents were asked if they have ever experienced conflict before. If so, who the actors were and if as a result, they migrated.
- Section 2: questions in this section were related to resource availability in the host community. Respondents were asked about their sources of water, land ownerships and their history of resource related migration.
- Section 3: this section was based on the potential of conflict or tensions with IDPs. Respondents were asked about their contacts with IDPs as well as their opinions on the presence of IDPs in the community.
- Section 4: This section collected social networks data. Respondents were asked is they were in contact with IDPs from any of the five LGAs in the Bakassi IDP camp, or with IDPs located in any other camps in or around Maiduguri.

Both questionnaires ended with an open question where respondents were asked if they had anything in addition to the questions asked, that they would like to bring to the attention of the research team. This part allowed respondents to raise some issues that were not covered by the previous questions.

Additional data were collected by interviewing experts in various organizations in Abuja. They were from the following institutions or organizations:

- The Institute of Peace and Conflict Resolution (IPCR).
- The National Commission for Refugees, Migrants and Internally Displaced Persons (NCFRMI).
- The National Emergency Management Agency (NEMA).
- The Federal Ministry of Environment, Department of Climate Change.
- The Federal Ministry of Labour and Employment.
- The Federal Ministry of Water Resources.
- The United Nations High Commissioner for Refugees (UNHCR).
- The International Committee of the Red Cross (ICRC).
- The M.O.B foundation (an NGO for assistance to IDPs).

Experts where interviewed on the role of conflict in migration in the region, the links between resource scarcity and migration and the potential of conflict between IDPs and host communities. Experts where from different backgrounds. Therefore, each interview was more specific and focussed on the area of expertise of the respondent.

1.6. Structure of the thesis

This thesis is structured into four journal articles for which the author of this thesis is the first author. All four papers, published or submitted contribute to answering the research questions presented earlier in this chapter. The journal articles are presented in this thesis as chapters and a detailed description of each chapter is given below.

Chapter one which is the current chapter introduces the thesis with a background of the crisis in the LCB, the research problem and research question are also determined. Methods used to collect and analyse the data are also given in this chapter.

Chapter two introduces the problem at the origin of the humanitarian crisis taking place in the Lake Chad Basin. After presenting a general background to the problem, this chapter revisits the root causes of the crisis and presents some of the main factors that contributed to the creation of the Islamist terrorist group Boko Haram, to its expansion and survival to date, and to the humanitarian crisis playing out in the region. The root causes examined in this chapter include historical root causes, socioeconomic root causes and environmental root causes.

After the root causes of the crisis have been analysed in chapter two, chapter three looks at the role that the insecurity created by the insurgency of Boko Haram and the counter-insurgency by the government of Nigeria, as well as the existing resource scarcity in the region play in the decision of local residents to migrate to IDP camps in Maiduguri. This chapter makes a comparative analysis of political factors (the conflict) and environmental factors (resource scarcity) as push factors of migration in the region.

Chapter four makes an analysis of how water related issues contribute to migration and conflict in the region. Data for this chapter were collected in the Bakassi IDP camp, but mostly relate to the living conditions of the IDPs in their home communities before they were displaced. The potential of conflict or tensions between IDPs and their host communities in Maiduguri is also analysed in this chapter.

Chapter five presents a social networks in which IDPs in Maiduguri are involved, how they connect with each other and with the host community. Likewise Social Network analysis is also used to analyse the way host community members connect with IDPs in their community or in other IDP camps in and around Maiduguri. The analysis of such networks allow to identify possible disconnect between IDPs and host communities and if this could be a cause of future conflicts.

Finally, chapter six summarizes the findings from the previous chapters to answer the research questions associated with the overall study. General conclusions are drawn and directions for further studies are given in this chapter.

Chapter 2: The root causes of the crisis in Northeast Nigeria: historical, socioeconomic and environmental dimensions[1]

Abstract

Nigeria is confronted with numerous conflicts throughout the country. In the northeast part, a humanitarian crisis has been playing out for the past ten years, mostly caused by the insurgency of the Islamist terrorist group Boko Haram. In this paper, we examine the root causes of the crisis based on its historical, socioeconomic and environmental dimensions. We examine available literature and draw conclusions and recommendations based on interviews that we conducted with experts in Nigeria. The results show that even though poverty may constitute a strong reason for many youths to join the insurgency, it is not a sufficient factor to explain the conflict. Furthermore, the results also show that the historical legacy of northeast Nigeria as well as the socioeconomic neglect of the region and its harsh environmental conditions may have created favourable conditions for the current crisis. We recommend a reinforced education system that significantly increases school attendance and that aims at educating young individuals on the historical legacy of the region. The identification of the various conflict actors in order to better understand the reasons behind their involvement is also recommended. In conclusion, the causal link between poverty, environmental change and past history contributing to the region's crisis is not easily drawn, but the evidence suggests that the lack of economic opportunities and the lack of education may contribute to the development of the conflict that leads to the crisis.

Keywords: Crisis; Conflict; Insurgency; Historical; Socioeconomic; Environmental; Nigeria; Climate Change; Poverty.

[1] This chapter has been published in the peer reviewed ***Mediterranean Journal of Social Sciences*** as Kamta, F. N., Hossein, A., Scheffran, J. (2020). The Root Causes of the Crisis in Northeast Nigeria: Historical, Socioeconomic and Environmental Dimensions. *Mediterranean Journal of Social Sciences*, 11(3), 95-104. doi:10.36941/mjss-2020-0033. As the lead author, Frederic N. Kamta contributed about 80% of the chapter's content. His contribution consisted in collecting data analyzing the data and preparing the original draft. Hossein Azadi and Jürgen Scheffran each contributed about 10% by reviewing and editing the original draft.

2.1. Introduction

Over the past decade, northeast Nigeria has been subject to a humanitarian crisis that has caused millions of people to seek humanitarian assistance (WHO, 2018). The states of Borno, Adamawa and Yobe are the most affected (UNHCR, 2018). Since September 2018, based on UNHCR estimations, 1.8 million people were internally displaced, and further 5.8 million people were in need of assistance. Furthermore, over 80 % of Internally Displaced Persons (IDPs) were in Borno State, the epicentre of the crisis and over 60 % of them were living in host communities, exerting pressure on the already stretched resources of these communities (UNHCR, 2018). These numbers of IDPs have been constantly increasing since 2014 as it has been impossible for them to return to their communities (Sydney and Onwuemele, 2019). The study by Sydney and Onwuemele (2019) found that around a third of IDPs in northeast Nigeria had tried to return to their homes, only to be displaced again by further violence. The UNHCR (2018) further reported that from November 2017 to mid-August 2018, nearly 153 000 new IDPs and 36 000 returnees were numbered in Adamawa and Borno states, keeping the overall population of IDPs in the region on the rise.

In this paper, we seek to examine the root causes of the crisis in northeast Nigeria. Such root causes include the historical legacy of the region, its socioeconomic conditions and the gradual environmental degradation in the region. We consider lessons from past studies and provide recommendations for policy makers. Such policy may seek to address the root causes of the current crisis, which will prevent future crisis in the region. We draw on the results of qualitative interviews that we conducted with research experts in Nigeria, and supplemented by a review of available literature to validate findings.

The crisis in northeast Nigeria owes its origins mostly to the insurgency of Boko Haram, a terrorist group responsible for attacks on local communities across Nigeria, Chad, Cameroon, and Niger (UNHCHR, 2015). The activities of this terrorist group and the counter-insurgency by the Nigerian state caused the worse humanitarian crisis in the history of Nigeria (Hamid et al, 2017). The precarious socio-economic conditions of this region caused by its sensitive climate conditions and neglect by the central government are suspected to have created a fertile ground for Boko Haram to prosper (Rizzo, 2015). The strategic location of the area occupied by Boko Haram's troops did not only provide them with shelter away from state security forces, but also available manpower

from the desperate youths that struggled to make a living. Boko Haram recruits its members mainly amongst disaffected youths, unemployed high school and university graduates, and destitute children, mostly from but not limited to northern Nigeria (Onuoha, 2014).

The debates on the underlying causes of the rebellion have revolved around climate and environmental issues, poverty, Islam, community allegiance, poor governance, and corruption (Magrin and de Montclos, 2018). Furthermore, although the work by Magrin and de Montclos (2018) failed to reach shared conclusions, it has largely inspired the responses of civilian and military authorities, including at international community level, where antiterrorist experts have opted for a religious interpretation of the conflict by promoting a "deradicalisation" strategy to get Muslims back into mainstream Islam. It is believed that the history of the region occupied by Boko Haram today played a key role in the genesis of the crisis and that Boko Haram draws, among other things, upon historical references to the Islamic empire of Dan Fodio's Sokoto Caliphate in the 19th century (Cold-Ravnkilde and Plambech, 2015) which is said to have introduced and institutionalized Islam in northern Nigeria. To a certain degree, the emergence of Boko Haram can be traced back to the historical antecedent of a Muslim state controlling northern Nigeria during the 19th century (Torbjörnsson and Jonsson, 2017).

Northeast Nigeria and the Lake Chad basin in general once hosted a kingdom that served as the center of trade in the region and where a pure form of Islam was practiced (Hiribarren, 2016; Doi, 2006; Seignobos, 2015). The fall of this kingdom marked the end of its long-lasting influence over the region and somehow the end of good Islam practice as it was claimed by its successive leaders (Seignobos, 2015). It is therefore important to understand the role that the historical legacy of this region along with environmental and socioeconomic factors played in the current crisis.

While violence in this region is still causing a lot of harm to the local populations, there is very little research available on the causes of violence in the region. Several studies have previously assessed the environmental change in the region and its socioeconomic condition, while many have also narrated the history of the region and its influence up until the 19th century. So far to our knowledge, only few studies have attempted to link the historical legacy of the region to the current crisis. In this study, we attempt to create a link between the daily living conditions of the people in the region in relation with their socioeconomic and environmental conditions, and the history of the region to the current crisis.

2.2. Historical Dimension

Northeast Nigeria was once home, or rather partially home to one of the longest-lasting and influential empires Africa has ever known, the Kanem-Bornu Empire. First known as the Kanem Empire (700 AD – 1617 AD) and later came to be known as the Kanem-Bornu Empire (1617 – 1893 AD), this empire existed over a thousand years (Singh, 2017). The Kanem-Bornu was extended on the areas belonging to today's southern Chad, northern Cameroon, northeast Nigeria, eastern Niger, and southern Libya.[2] A royal artefact of the Kanem Empire called the 'Girgam' has provided a written historical record of the Empire, which includes the names of Kings and Queens, the length of their reigns and the major events within the Empire. The Girgam claims that the Kanembu people, the main tribe in the kingdom, moved from their land to the land around Lake Chad for two key reasons. First, the lands around Lake Chad were fertile unlike their previous lands, which suffered from dryness and second, because there was political pressure. The lands around Lake Chad were also attractive because of the existing infrastructure and walled cities that belonged to the Sao civilization (Singh, 2017). The Kanem kingdom was first ruled by the Sayfawa dynasty for 771 years, the longest known reign in the history of the empire (Bilow, 2008).

Throughout its existence, the Kanem-Bornu or the Kanem Empire shifted geographically quite significantly. These shifts were triggered by events such as war or changes in environmental conditions. Between c. 700 – 1376, the empire occupied an area corresponding to Chad, Nigeria and Libya (Sindima, 2017). The Sayfawa Dynasty and their subjects later fled to Birnin Gazargamu when the Bilala or Bulala people attacked them (Abubakar, 2017). Birnin Gazargamu remained as capital even after the reclaiming of the city of Njimi in the 16th Century. However over the years, towns and cities like Monguno, Kukawa, Dikwa, Old Maiduguri and now Yerwa (Maiduguri) were all capitals of the Kanem-Bornu Empire at different times since the last 1000 years back (Abubakar, 2017).

On its socio-economic structure, the Kanem-Bornu gathered agriculturalists and pastoralists, from various ethnic groups and ruled by the Duguwa, an aristocracy who chose a king among themselves (Hiribarren, 2016). The Kanem-Bornu became very powerful due to its strategic location at the

[2] Kanem-Bornu Kingdom: New World Encyclopedia http://www.newworldencyclopedia.org/entry/Kanem-Bornu_Kingdom Retrieved 05 April 2019.

crossroads between northern Africa and Sub-saharan Africa (Hiribarren, 2016). In the 13th century, due to deteriorating climate conditions and the continued progress of the Sahara Desert, the center of the empire shifted from the north of Lake Chad to the west of Lake Chad in the Bornu, where the land was more fertile. The Bornu was already the economic center of the empire by the 14th century despite the fact that the Sayfawa still reside in Njimi, north of Lake Chad. They will finally leave Njimi in the second half of the 14th century after this old capital being captured by the Bulala warrior aristocracy (Hiribarren, 2016).

Table 2.1 summarizes some of the major events and achievements in the Kanem-Bornu Empire between the 11th and the 19th century. Such achievements and events illustrate the economic, religious and military domination of the empire over the region and subsequently its downfall. It is later shown how such events relate to the current crisis in the region.

The Agence France Presse (AFP, 2015) reports that Boko Haram in its propaganda sometimes mentioned the legacy of the empire to justify attacks on targets that were considered to be un-Islamic. Boko Haram claims to embody the authentic legacy of the early Muslim community (al-salaf al-salih, or "pious predecessors," the phrase from which the term "Salaf-ism" derives) and as such, they reject several aspects of mainstream Sunni identity, such as adherence to recognized legal schools, which refers to western civilization (Thurston, 2016). Although the kingdom of Bornu has disappeared, its symbolic grandeur and founding pedestal, namely Islam, remains unique in a largely animist world (Seignobos, 2015).

P. Gwaza, a researcher from the Institute of Peace and Conflict Resolution in Abuja interviewed by the authors on May 15, 2019 states that "***the area where Boko Haram mapped its caliphate corresponds almost perfectly to the area occupied by the ancient Kanem-Bornu empire***". This correlates with the assumption that Boko Haram leaders are driving towards the formation of the old Kanem-Bornu Empire. Furthermore, most Boko Haram soldiers are recruited from the Kanuri tribe, the same tribe that was dominant in the Kanem-Bornu Empire. Testifying on the complexities of the genesis of Boko Haram, P. Ochogwu also from the Institute of Peace and Conflict Resolution interviewed on March 21, 2019 argues that "***societies in northeast Nigeria are formed on a specific social networking system generated from the Kanem-Bornu Empire and conflict evolves from this traditional networking system which is different from the modern networking system that we understand***".

Table 2. 1. Major events and achievements in the Kanem-Bornu between the 11th and the 19th century

Period	**Major event/achievement**
End of the 11th century	Islam was accepted for the first time by the Kanem ruler, Umme-Jilmi, through a scholar named Muhammad B. Mani, credited for bringing Islam to Kanem-Bornu (Doi, 2006).
Around 1460	Ali Gazi, the leader of the Bornu, traditionally called the *Mai*, after a major victory, built a fortified capital at Ngazargamu, to the west of Lake Chad at present Nigeria (Lovejoy, 2011).
16th century	The Sayfawa had conquered the Bornu and reconquered the Kanem, hence the name Kanem-Bornu (Lovejoy, 2011).
Late 16th century	The Sao merged with the Kanembu giving birth to the Kanuri tribe that became the largest tribe in the Kanem-Bornu (Hiribarren, 2016). Today, the Kanuri still form the majority ethnic group in northeast Nigeria.
Early 19th century	The practice of pure Islam was subject to controversy and conflict in the region. In 1808, Osman dan Fodio who was the sultan of the Sokoto caliphate, carried on a Jihad that failed to conquer and integrate Bornu within the Sokoto caliphate (Hiribarren, 2016).
Late 19th century	The Kanem-Bornu Empire had the reputation of a powerful Islamic empire, known for religious piety and unity. Its remarkable cohesion over a millennium is said to partly have been forged through a commitment to Islam (Hiribarren, 2016).
1893	The influence of this long-lasting empire ended after its invasion by a Sudanese warrior. The kingdom was then divided between Cameroon that was under German administration and the British colony of Nigeria (Hiribarren, 2016).

The Kanuri intellectuals and the Kanembu-Kanuri in the broader sense had earlier dreamt of a Bornu Empire, reinvigorated by a new wellspring of faith around Lake Chad that could encompass the former Bilad al-Sudan to lead the Umma (all Muslims) (Seignobos, 2015). Seignobos (2015) further argues that the Kanuri and the Kanembu-Kanuri experienced a kind of religious surge, a veritable conflagration of which Boko Haram is only the most visible and violent component.

2.3. Situation Analysis

2.3.1. Socioeconomic dimension

In Nigeria, income inequalities between rural communities and urban communities are suspected to be very high. Agriculture as the main source of income in rural communities is today not a thriving sector due to the fact that oil has taken over the economy of Nigeria (Ucha, 2010). As such, uneven distribution of natural resources, difference in climate across the country and a weak institutional capacity all contributed to inequalities between regions of the country (Raheem et al., 2014). Furthermore, Raheem et al. (2014) explain that regional problems get manifest through several symptoms such as difference among capital development, access to education, property acquisition and so on.

A study by Akpoilih and Farazibi (2012) found that the northeast of Nigeria had the highest poverty index in the country of about 49%. Meanwhile, the south presented the lowest poverty rates in the country between 21.5 and 26.6%. Such disparities between regions of the same country can partly be explained by the uneven distribution of natural resources in the country (Raheem et al., 2014). Also, the role of education on development especially for a highly populated country like Nigeria cannot be dismissed. Ada and Ojone (2018) state that education certainly is one of the ways through which a nation develops. One of the objectives of education is to adequately equip learners with the necessary skills and knowledge needed for effective participation and contribution to national development (Chima, 2006). Northeast Nigeria is characterized by a very low access to education. According to the Nigeria National Population Commission (NPC, 2016), the literacy rates were 56% for secondary school attendance in 2015 for the whole of Nigeria, and 31% across the northeast states (Borno, Yobe, Gombe, Bauchi, Taraba, and Adamawa). Northwest (32%) and northeast (31%) show the lowest national school attendance ratio.

The correlation between education and poverty cannot be dismissed. Statistics on employment in Nigeria show categorization of unemployed persons on the basis of age groups, educational qualifications and occupation (Danaan, 2018). Unemployment according to Danaan (2018), has a strong correlation with poverty. This may explain the fact that in northeast, northcentral and northwest Nigeria where education rates are very low, the poverty rate is higher (JICA, 2011). With regards to the analysis, it is safe to assume that the rate of poverty in a region at least for the Nigerian case, is a function of the education attendance ratio.

Based on an economic analysis report of the World Bank (2016), it can be noticed that in 2004, northern Nigeria was the poorest region of the country, widening the gap between north and south in the last decade (2006-2016) (World Bank, 2016). Within the same period in the northeast, poverty reduction stagnated, while poverty levels remained particularly high at 47.6% (World Bank, 2016). It is also noticed by the World Bank (2016) that 75% of households that are in chronic poverty reside in the north, while only 25% are found in the south. Furthermore, chronic poverty is very rampant in the northeast at 22.2%, making northeast the second highest in the country followed by north central (19.3 %). Meanwhile, all southern regions show much lower chronic poverty rates, below 10% (World Bank, 2016).

Peace can be achieved by addressing the structural imbalances in the socio-economic conditions of the people (Hettne, 2010). Furthermore, Katsina (2012) emphasizes that root causes of conflict such as inequality and poverty should be identified and removed from the society. To establish a clear nexus between development and security, there is a need to remember that it is impossible to establish peace and order in any society in which there exists fundamental contradictions in its economic structure (Katsina, 2012). Such contradictions are suspected to sustain feelings of alienation, marginalization, frustration and resentment among the poor class of the society, with the potential of translating into anger, radicalization and violence (Oyeshola, 2005). While the latest statement may still be subject to argument among researchers, the evidence suggests that economic factors (such as poverty and low income) that lead to rebellion have a greater impact on the occurrence of conflict than those associated with political grievances (Braithwaite et al., 2014). Among causes of terrorism, poverty and unemployment have frequently been identified (Usman, 2015). However, several studies have found no link between poverty, unemployment and terrorism (Krueger and Maleckova, 2003), the general belief is that people who are economically

disadvantaged are more prone to resolve to violence as a way to express their grievances (Adelaja et al., 2018). A. Garba, a senior officer at the Ministry of environment in Nigeria, interviewed by the authors on May 7, 2019 stated that "***while the government has not been comfortable talking about issues related to youth allegiance to Boko Haram and poverty in northern Nigeria, civil society organizations have been able to put to light such issues. It then came to light that many people join the insurgency because of the poverty level***".

The demography of northern Nigeria is also seen by some experts as a factor contributing to the poor socioeconomic conditions of the region and to the crisis. Dr S. Onazi from the ministry of Labor in Nigeria, interviewed by the authors on May 6, 2019 addresses the demographic pressure in northern Nigeria in the following terms: "***Nigeria is highly populated. According to the World Bank, poverty indices in Nigeria indicate that the poorest people in Nigeria are in the north. As such, poverty can be considered as a push factor for the crisis***".

The CLEEN Foundation (2014) argues that the sympathizers of the Islamist group in northeast Nigeria are usually unemployed youths who live in hostile environment and suffer economic, social, and political deprivations. A study by Ewi and Salifu (2017) also shows that most Nigerians believe that many youths join the insurgency in the northeast of the country for financial reasons. Basically, they do so as they lack economic opportunities and want to make money by all means. Ewi and Salifu (2017) found that the majority of those who joined Boko Haram voluntarily were significantly influenced by financial incentives, and not by religion. Furthermore, a survey conducted by Adelaja et al, (2018) found that the leading personal causes for joining terrorism in Nigeria were poverty, unemployment, extreme religious ideology and ignorance. Socioeconomic factors with their potential to trigger conflict can be accentuated with poor environmental conditions leading to resources scarcity which in turn will have direct implications for the functioning of the economy and the cost of essential products (ISSA, 2014).

2.3.2. Environmental dimension

In Nigeria, the majority of rural populations are employed in the agriculture sector and as such, the dominant role of agriculture makes it obvious that even minor climate deteriorations can cause

devastating socioeconomic consequences (Olaniyi et al., 2013). The Sahara Desert is observed to be expanding to all directions with an annual expansion of 1-10 km, engulfing the Sahelian region of Africa (Odjugo, 2010). This makes northern Nigeria the most climate sensitive region in the country. Northeast Nigeria therefore faces the issue of how to reduce desert encroachment that renders most land unusable for agriculture (Agbebaku, 2015). These challenges directly impact on the activities of the local populations that are either forced to migrate or to seek for alternative sources of income. C. Nwanelo from the National Commission of Refugees, Migrants and Internally displaced Persons, interviewed by the authors on April 4, 2019 declares: "***desertification is approaching faster and wider into northern Nigeria. The side effect is that drought hits these communities and in terms of sustaining themselves, they would embark on gradual movement from one community to another community. This movement could also be international in the sense that this region of Nigeria shares borders with Cameroon, Chad, Niger and some of them could easily cross borders and sometimes becoming asylum seekers in these countries***".

Crop production in northern Nigeria is heavily vulnerable and affected by climate change through droughts (Dahiru and Tanko, 2018). The World Bank Group (2017) estimates that the regional concentration of poverty in northern Nigeria is likely explained by factors such as the poor climate condition characterized by low rainfall and high temperatures, distance from the sea, and poor and dilapidated infrastructures. It was also found that migrating sand dunes have buried large expanses of arable land, thus reducing viable agricultural land and crops production in northern Nigeria (Odjugo, 2010). Scarcity of land and water in areas where agriculture is the principal activity and source of income can have direct impacts on the quality of life. Dingyadi, (2012) estimates that over 154,725 people in five frontline states in northern Nigeria lost their farm land within seven years. Local populations consisting mostly of farmers and nomad herdsmen largely depend on these land and water. As a result of resources scarcity, the young generation is despondent and frustrated, hence abandoning farming for alternative activities (Nwokoema and Kingsley, 2017).

In response to environmental degradation, young people in northeast Nigeria begin by migrating from rural to urban areas in search of a better life (Onyia, 2015). However, their lack of formal education and skills necessary to integrate the urban life system, added to the poor institutional capacity and sovereignty across the country makes it quasi impossible for them to gain employment in the blue collar sector (Onyia, 2015). The induced poverty according to Onyia

(2015) forces them to turn to mosques and their resident imams who provide them with basic needs, including shelter, food and clothing, thus presenting themselves as their only hope for survival. This fortune situation presents ample opportunities for discontented religious bigots to indoctrinate these poor people with anti-state, anti-western semantics (Onyia, 2015).

A Garba, believes that "***as northeast Nigeria is characterized by high humidity and lower rainfall due to global warming, agriculture as the highest employing sector in the region has become less and less rentable. As a result, young people involved in agriculture tend to abandon this sector to join the Islamic insurgency to reduce their poverty level***". Furthermore, P. Gwoza emphasizes that "***across northeast Nigeria, impacts of environmental change are visible through animal's carcasses and dryer land, which deems many people jobless and turning many into street beggars***". These people, according to S. Onazi, "***easily fall under the temptation of making some money by joining Boko Haram as farming is no longer profitable***".

2.4. Discussion

2.4.1. On the historical dimension

This study found that in northeast Nigeria, the historical past of the region coupled with the strong Islamic ideology portrayed by the insurgent group may have contributed to the current conflict situation. It was also found that the charismatic leader of the Boko Haram group Abubakar Shekau at times exploited the legacy of the former Kanem-Bornu Empire to reinforce his ideology. The region's Kanuri language born from the merge between the Sao and the Kanembu in the Kanem-Bornu has also been used by the leader of Boko Haram as a tool for his propaganda. P. Gwaza goes a step further and emphasizes that "***when Abubakar Shekau took over the leadership most fighters were recruited among the Kanuri tribe to which he belongs himself***".

Under the leadership of Abubakar Shekau, the group has carried out most of its attacks in a region that corresponds to the territory of the former Kanem-Bornu Empire (Barkindo, 2018). Furthermore, Barkindo (2018) argues that Abubakar Shekau presented the Kanem-Bornu Empire as a perfect Islamic state, governed on the principles of sharia, equity, and justice. He further emphasized the socio-economic and political dominance of the empire and constantly referred to

the influence of the Kanem-Bornu's Islam outside the empire. It can therefore be strongly assumed that the historical legacy of the region as claimed by Boko Haram is relevant in the context of the current crisis, even if the relevance is limited to a propagandistic level.

2.4.2. On the socioeconomic dimension

This paper showed that northeast Nigeria being the poorest region of the country with underdeveloped and decaying infrastructures, has a high concentration of unemployed youths. This region also presents low school attendance rates among male and female household members. While the nexus between poverty and conflict is very complex, areas with most people living under the poverty line can be more vulnerable as the survival instinct may create tendencies of violence. Braithwaite et al. (2014) finds a causal relationship between poverty and conflict. Sub-Saharan Africa is quite illustrative with many conflict frontlines. In 2002, 38 low-income countries identified in sub-Saharan Africa were all curiously involved in conflict (Draman, 2003). In Somalia for example, Somali clans had often clashed over resources such as water, livestock and grazing land, long before Somalia became a sovereign country (Lewis, 2002). In the Horn of Africa in general, the spatial distribution of conflict indicates that poverty and youth unemployment are predominant in areas with conflict (Mengistu, 2015). Although, poverty may not be the only reason behind radicalization in northeast Nigeria, the evidence suggests that poverty may have played as an important factor for young people's decision to join the insurgency, given the subsequent financial reward.

2.4.3. On the environmental dimension

Opinions on the nexus between climate change and the resulting impact on resources and conflict or instability are still very variable. While media and NGOs have easily proclaimed such a link, none of the studies finds a simple causal link between climate change and societal instability. However, this paper showed that in northeast Nigeria where most youths are uneducated and depend on agriculture for survival, environmental change that rendered most of their land unusable

and water unavailable can actually be a push factor for them to seek for other sources of income. In an area with less economic opportunities, these youths can easily become soft targets to Islamist ideologists who offer them small stipends in exchange of their manpower. This may explain why the insurgent group in the region managed to enroll a large number of fighters (Ewi and Salifu, 2017).

The causal link between environmental change through its economic effects and conflict is often dismissed by many scholars, arguing that poverty may lead to conflict when other factors are present and that poverty alone is not a sufficient condition for conflict (Goodhand, 2001, Ganepola and Thayasingam, 2004, Scheffran et al., 2019). A two-way causality between poverty and conflict exist in the sense that poor countries have a greater disposition to conflict and poverty is also a probable outcome of conflict (Ganepola and Thayasingam, 2004). This is because different factors matter in different regions of Africa and the overall link between climate change (and the adjacent poverty) and violent conflict in Africa is likely to be indirect, complex, and related to multiple political, economic and social factors (Scheffran et al., 2019).

2.5. Conclusion

The aim of this paper was to determine whether the history, the socioeconomic status and environmental changes in northeast Nigeria significantly contributed to the development of the current crisis in the region. The causal link between poverty, environmental change and past history as factors of conflict in this region is not easily drawn, but the evidence suggests that the lack of economic opportunities and the lack of education may contribute to the development of conflict hence accentuating the crisis. It is often argued by scientists that the reasons for joining arm groups are usually external, rather than internal to the individuals and that a reason why people join conflict may differ from county to country. In the case of northeast Nigeria, it is safe to assume based on findings in this paper that the historical heritage of the Bornu, the low socioeconomic standard of the region and the existing poverty may have created a good breeding ground for an insurgent group.

The findings in this paper also highlighted the opportunistic nature of the Boko Haram group. They are opportunistic in the sense that even though the historical heritage of the region might not have been the principal cause for their radicalization, they make use of it in a propagandistic manner to indoctrinate young people. They are also opportunistic in their ability to enroll economically vulnerable people in their troops in exchange of small stipends. Finally, in an area where school attendance is the lowest in Nigeria, Boko Haram found uneducated youths that can easily be manipulated and indoctrinated, and given weapons to fight for a reason they often do not understand themselves. This may explain why most attacks by this group have been turned against local communities, churches and mosques alike.

The need for further studies in understanding the driving factors of insurgency in Nigeria and around the world arises. A throughout assessment of the various conflict actors can significantly contribute in giving a better understanding of the conflict drivers and its root causes. In addition, the following policy recommendations can be essential in preventing future crisis of the same nature in the region:

- Education: the education system in the region needs to be improved significantly in order to increase attendance among young men and women. This can be achieved through the creation of schools in all local communities. The education system should be able to educate young pupils on the historical legacy of the region.
- Agriculture: a throughout transformation of the agriculture system is necessary, given the current environmental conditions in the region. New crops with a shorter cycle should be introduced and local communities are to be trained on new farming techniques. It is also very important to create seed banks where farmers will deposit their seeds for the next sowing season.

Chapter 3: Insecurity, Resource Scarcity, and Migration to Camps of Internally Displaced Persons in Northeast Nigeria[3]

Abstract

For almost two decades, the Lake Chad Basin (LCB) in general and northeast Nigeria in particular have been subject to the insurgency of the Islamist terrorist group Boko Haram. This region is also known for its poor environmental conditions that mostly manifest in land desertification and water scarcity. We analyse the impact of the insecurity and conflict in migration from the most affected rural areas of northeast Nigeria to Maiduguri. We also explore the role that water scarcity and land desertification play in the decision of local people to migrate. Data were collected by interviewing 204 internally displaced persons (IDPs) in the Bakassi IDP camp in Maiduguri between March and May 2019. Experts were also interviewed in various governmental, non-governmental, and international institutions in Abuja. Respondents in the Bakassi IDP camp came from Guzamala, Gwoza, Marte, Monguno, and Nganzai. Though insecurity created by the conflict between Boko Haram insurgents and government forces was mentioned by all respondents as the main factor that triggered migration, this study shows that the decision to migrate was also a function of other factors that differ between communities. These factors include the geographical location of the community, land ownership, the socioeconomic status of the migrants, access to water and land, and wealth. This study reveals that in some communities, it was possible for people to live with conflict if they were still able to practice farming or if they had additional sources of income such as small businesses. The decision to migrate was only taken when the practice of such activities was no longer possible and they had nothing to hold on to.

Keywords: conflict; migration; insecurity; resource scarcity; Lake Chad Basin; Nigeria

[3] This chapter has been published in the peer reviewed journal ***Sustainability*** as Kamta, F. N., Schilling, j., Scheffran, J. (2020). Insecurity, Resource Scarcity, and Migration to Camps of Internally Displaced Persons in Northeast Nigeria. Sustainability, 12(17), 1-15. doi:10.3390/su12176830. As the lead author, Frederic N. Kamta contributed about 80% of the chapter's content. His contribution consisted in collecting data analyzing the data and preparing the original draft. Janpeter Schilling and Jürgen Scheffran each contributed about 10% by reviewing and editing the original draft.

3.1. Introduction

The Lake Chad Basin (LCB) covers 2,434,000 km2 in the Sahel and spreads across eight different countries (Rizzo, 2015). At the centre of the basin lies Lake Chad itself, a shallow, freshwater lake shared between Cameroon, Chad, Niger, and Nigeria (Rizzo, 2015). The water resources of the LCB provide livelihoods to a population of more than 45 million people, of which 60% rely on agriculture (Mahmood et al., 2020). While the overall surface area of Lake Chad is extremely sensitive to short and long-term climate variations as well as to anthropogenic interventions, the northern pool of the lake has shown higher sensitivity, with surface water decreasing faster than in the southern pool. This can be explained by the decrease of the discharge from the Komadugu Yobe River and the increase of permanent vegetation cover within Lake Chad (Pham-Duc et al., 2020). Due to such external disturbances, Lake Chad, one of Africa's largest freshwater lakes, lost about 90% of its size between 1963 and 2018 (Buma et al., 2018). The LCB has further become subject to several security issues over the past few decades (Okpara et al. 2018). Among the causes of livelihood insecurity in the region are water scarcity and land desertification (Gusikit and Lar, 2014; Olufemi et al., 2012).

Of all states in the LCB, Nigeria has the largest population, currently estimated at 201 million (PRB, 2020). Particularly, the northern states of Nigeria are affected by desertification due to their location inside the Sudano-Sahelian belt, and more than half of the country's land area is at risk of desertification (Olagunju, 2015). Besides the environmental issues observed in the LCB that may be a potential cause of conflict in the region, Islamic terrorism is also present. Since 2009, the Islamist group Boko Haram is responsible for human right abuses in the region. Boko Haram benefits from the socioeconomic aspirations of most ordinary citizens in the northeast of Nigeria who feel excluded from the socioeconomic opportunities that may help them climb the social ladder (Anugwom, 2018; Scheffran et al., 2019 p. 21). Islamic insurgency first emerged in northeast Nigeria around 2002. It was a self-styled group calling itself the "Yusuffiyya" in apparent reference to its youthful leader Mohammed Yusuf (Anugwom, 2018). The group was non-violent between 2003 and 2009 and was based in the railway quarters in Maiduguri in Borno state, which subsequently became its operational headquarters (Anugwom, 2018; Campbell, 2014). Members and sympathizers of the group were first portrayed as either young Islamist activists, a largely peaceful Islamic dissident sect, a peaceful Islamic splinter group, or students from the city of

Maiduguri who preached a cultural revolution, which implies that the group was primarily not violent (Zenn, 2020). The group gradually became violent, and Voll (2015) argues that even though this trend of violence is seen by most Nigerians as being outside of acceptable Islamic traditions, it follows a long tradition of violence by militant jihad in West and Central Africa.

Boko Haram insurgency and the counter-insurgency by the Nigerian security forces is the primary cause of forced displacements in Nigeria (Gwadabe et al., 2018). Since 2009, the crisis caused by this conflict has forced more than two million people to flee for safety within Nigeria. Others crossed the border into countries neighbouring Nigeria in the Lake Chad region and became refugees. The insurgency of Boko Haram has not only caused people to flee for safety, it has also created difficult conditions for agriculture as the main income-generating activity in the region. The effect of terrorism on the agricultural sector is largely based on a perceived fear by farmers of being attacked by insurgents (Ogbonna and Jiménez, 2017). The fear is also exacerbated by the fact that farmlands have become a hideout for insurgents, who then target the agricultural sector for daily supplies (Ogbonna and Jiménez, 2017). Environmental change has also been widely mentioned as a cause of migration, especially in climate sensitive regions like northeast Nigeria (Piquet et al., 2011; Martin, 2013; Akubor, 2017). The pathways by which environmental change leads to migration or conflict are complex (Freeman, 2017). Thus, social, political, economic, and cultural factors have been taken into account when trying to analyse the potential causal links between environmental change and migration or conflict. The evidence suggests, however, that climate change leads to environmental disturbances, resulting in events such as intermittent droughts, desertification, and deforestation (Abbas, 2017). Other consequences are low water tables and the establishment of dams upstream across the courses of the main sources of water supply to the Lake Chad, resulting in low agricultural production especially when rain-fed. This drives many people in northeast Nigeria to either migrate to Cameroon, to nearby water points within Nigeria, or even as far as to southwest Nigeria (Abbas, 2017).

Migration is seen in the LCB as a response to the violence perpetrated by the insurgency of Boko Haram and counter insurgency by state military forces. Although internal forced migration is not a new phenomenon in Nigeria, increased numbers of internally displaced persons (IDPs) and their concentration in refugee camps and host communities were only observed after the emergence of the Boko Haram insurgent group (Mukhtar et al., 2018). However, other factors have also been

identified as causes of migration in the LCB, including environmental factors. Environmental problems connected to drylands and scarcity of water resources may serve as causal factors of conflicts, but also as environmental push elements causing migration (Rudincová, 2017).

Many local residents of northeast Nigeria who base their livelihood on farming are expected to be prone to migrating from their homes in search of safety as a result of the ongoing conflict in the region (Arhin-Sam, 2019). Such movements are also exacerbated by the poor environmental conditions of the region (IOM, 2009). However, little is still known about the factors that truly determine migration from the most affected rural areas to urban centres and IDP camps. This paper will address the following questions: What is the role that the insecurity created by the insurgency of Boko Haram plays on the decision of people to migrate from their homes to IDP camps in Maiduguri? What role does the scarcity of water resources and fertile land play on such decisions? To answer these questions, we have collected data through questionnaires given to residents of the Bakassi IDP camp in Maiduguri, northeast Nigeria, and interviews with experts from various institutions in the capital city, Abuja. This study is innovative in that it introduces a quantitative approach to environmental change and perceived insecurity as factors leading to migration. Existing studies have primarily focused on one of the factors and hardly used survey data (e.g., Gwadabe et al., 2018; Akubor, 2017; Abbas, 2017). The current study provides a comparative analysis of political and environmental factors as drivers of migration.

This paper is organized as follows: Section 2 provides the methods used including a conceptual framework for the paper, the study area, data collection, and data analysis. Section 3 presents results of the study. Section 4 discusses the main findings. Section 5 draws conclusions and provides some recommendations on how scarce resources (mainly water) can be addressed and how the insecurity in the region can be addressed to reduce migration.

3.2. Method

3.2.1. Conceptual Framework

The conceptual framework used in this study is based on a push-pull approach with the aim to identify factors that create resilience to conflict or anticipate migration from the sending location.

The push–pull theory of migration developed by Ravenstein (1989) stipulates that unfavorable conditions in rural areas 'push' people away from their original place of living towards favorable conditions that 'pull' them into new places of residence with better living conditions. This theory evolved from the neoclassical approach to migration (Morales-Muñoz et al., 2020 p. 3) and has regularly been used as analytical framework for migration research (e.g., Beck et al., 2017; Antwi-Boateng, 2017; Obi-Ani and Osiani, 2020)2. In the present study, possible push factors identified in the sending location of migrants include conflict, water scarcity, and land desertification. Possible pull factors at the receiving location include safety and availability of humanitarian assistance. Such factors may be exacerbated by the fact that civilian populations are particularly vulnerable in violent conflict situations, and this is even more so in a context of challenging environmental conditions (see El Ghamari and Bartoszewicz, 2020 p. 3). In this study, we focus more on the push factors at origin and how they affected the decision to migrate in the various communities at the sending location. As such, the push-pull approach used in the current study is supplemented by theories related to a human security framework (El Ghamari and Bartoszewicz, 2020; Vivekananda et al., 2014). This will allow a proper structuring of resource-related human interactions and assessment of risk posed to civilians at the sending location by the insurgency of Boko Haram. For such a study, a proper definition of the key terms is necessary.

Migration in this paper is more related to forced displacements than to any other form of migration. Forced migration has been defined as the movement of people, displaced by conflict, natural or environmental disasters, or the consequences of the previous factors such as famine (Gwadabe et al., 2018). The intensification of attacks by non-state armed groups in northeast Nigeria since 2015 has resulted in prolonged insecurity, exacerbating the plight of vulnerable civilians, and triggered waves of forced displacement as well as violations of human rights (IOM, 2019). Conflict and the resulting insecurity appears to be the main push factor for displacement in the region, either directly through the threat it poses to human lives and the recorded death tolls, but also indirectly through the forced secession of economic activities (Arhin-Sam, 2019).

Conflict is a broad term, and definitions vary widely. It is suggested that conflict is the interaction of interdependent people who perceive incompatible goals and interference from each other in achieving those goals (Lewicki et al., 1997). Similarly, conflict is understood to be a situation in which at least two social groups perceive their interests as mutually incompatible and act based on

these perceptions (Ide et al., 2020). The challenge remains to determine at what point the interaction suggested by Lewicki et al. (1997) becomes violent. The next definition of conflict directs us more to the causes that lead to violent conflict. According to Jeong (2000), conflicts exist when two or more groups engage in a struggle over values and claims to status, power, and resources in which the aims of the opponents are to neutralize, injure, or eliminate the rivals. In this study, conflict as a push factor for migration may not directly refer to the violent activities of the insurgent group Boko Haram or to the counter insurgency by the state military forces, but to the sense of insecurity such activities create in the local communities. People may migrate because they fear for their lives, but not necessarily because they were caught in the crossfires.

McSweeney (2019) defines desertification as land degradation in arid, semi-arid, and dry sub-humid areas resulting from many factors, including climatic variations and human activities. Such degradation in the case of northeast Nigeria, where the majority of rural community members practice agriculture as the only source of income, is also considered in the present study as a push factor. Water resources that are mandatory for agricultural practices as well as fertile land quickly become scarce. It can be hypothesized that climate change will have its most immediate adverse effects on agricultural economies, which are over-represented in the poor and conflict-prone regions of the world, and therefore it will amplify conflict and insecurity (Matthew, 2008; Madu and Nwankwo, 2020). The degradation of freshwater and the decline of food production with the resulting socioeconomic impacts have also been identified by the German Advisory Council on Global Change (GACGC, 2007) as factors that may lead to conflict.

3.2.2. Study Area and Data Collection

Interviews were conducted at the Bakassi IDP camp located in Maiduguri, the capital of Borno state in Nigeria. Being the closest urban center to most rural areas of northeast Nigeria, Maiduguri received large numbers of IDPs from 2009. The Bakassi IDP camp, one of many camps set up by the Nigerian government to accommodate IDPs, is the largest in the region, and hosted approximately 39,000 IDPs at the time of our visit in 2019. IDPs in the camp were from Guzamala, Gwoza, Marte, Monguno, and Nganzei, five Local Government Areas (LGAs) located north, northeast, and southeast of Maiduguri, close to the border with Cameroon. These communities

were largely affected by the activities of Boko Haram, resulting in local residents migrating to Maiduguri. Figure 3.1 shows the study area, including the Bakassi IDP camp and LGAs of origin. Among LGAs whose members were present in the camp, Marte was the largest with 13,600 members, followed by Gwoza with 12,000 members, Monguno with 9700 members, Guzamala with 3000 members, and Nganzai with 750 members.

A questionnaire was used by the research team to collect answers from respondents at the Bakassi IDP camp. Due to security reasons, it was impossible to travel to the LGAs in the study area. Therefore, respondents from the study area were hosted at the Bakassi IDP camp. Among the respondents that were interviewed by the research team during this study, 43 were from Marte, 60 from Gwoza, 41 from Monguno, 38 from Guzamala, and 22 from Nganzei. Respondents were 39% males, 61% females, and between 20 to 80 years old. Interviews were conducted between March and May 2019.

Between March and May 2019, two trips were made to the Bakassi IDP camp, and several experts focusing on conflict, climate change, water resources, and humanitarian assistance were interviewed at various organizations in Abuja including the Institute of Peace and Conflict Resolution, The National Commission for Refugees, Migrants and Internally Displaced Persons (NCFRMI), the Federal Ministry of Environment, the Federal Ministry of Water Resources, the Federal Ministry of Labor, the International Committee of the Red Cross (ICRC), the United Nations High Commissioner for Refugees (UNHCR), The National Emergency Management Agency (NEMA), and the M.O.B foundation (an NGO providing assistance to IDPs).

3.2.3. Data Analysis

Data collected at the Bakassi IDP camp were analyzed using IBM SPSS Statistics software package, testing the relationship between the time people spent in conflict and other factors, including gender, occupation, income, land ownership, access to water, previous water scarcity, and previous migration. Qualitative interviews conducted with experts were analyzed using MaxQDA, to classify the answers per category. Access to water refers to surface water sources in

contrast to underground water sources that were usually accessed by means of boreholes or shallow wells.

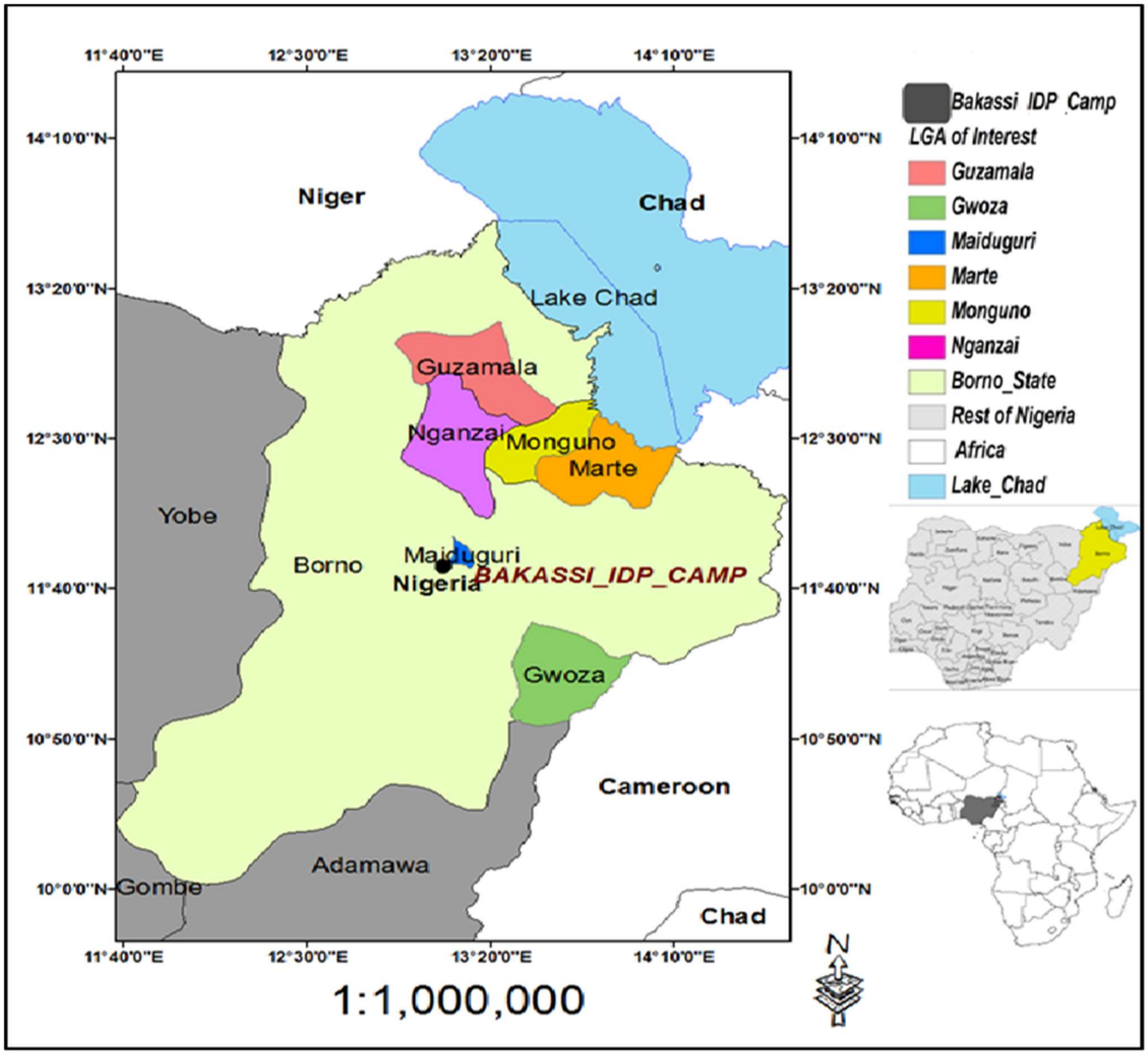

Figure 3. 1. Map of the study area. Source: Blessing Fabeku for the authors.

Migration was the dependent variable and expressed by the amount of time people stayed in their communities before deciding to migrate after the communities became insecure as a result of the activities of Boko Haram. It is represented by 'time spent in conflict'. This was a continuous set of data. The other factors listed above were independent variables and were categorical data (yes/no), presented in a binary scale (0, 1).

The effect size represents the weight of the independent variables on the dependent variable and was calculated for each independent variable using the formula:

$$\eta^2 = SS_{between}/(SS_{between} + SS_{error}) \quad (1)$$

where η^2 is the Partial Eta Squared (Partial Eta Squared being equal to Eta Squared in one way ANOVA), $SS_{between}$ are the sums of squares for the independent variable under study, SS_{error} is the sum of squares for the error in ANOVA (Levine and Hulett, 2002).

For example, in the case of land ownership (independent variable), the effect size represents the importance of the role that being a land owner (or not) played on the decision of a local community member to migrate. The calculation of the effect size was done by performing the Analysis of Variances (ANOVA). A univariate general linear model test was performed and the value of Partial Eta Squared (in %) was calculated. This value indicates the proportion of variance in the dependent variable. It is the measure of the effect size and tells us how important the difference is. It indicates the strength of association between the dependent variable and the independent variable.

For the one way ANOVA approach, a Partial Eta Squared value (the effect size) of more than 0.14 or 14% is considered large, 6% to 14% is medium, and 1% to 6% is small (Cohen, 1988).

3.3. Results

3.3.1. Statistical Results

Results show that the time spent in the conflict before migrating varies between communities. Gwoza was the community where people showed the highest resilience to conflict. 35% of the

people from Gwoza spent more than a year after conflict started in their community before migrating. In Monguno, Guzamala, and Nganzai, a low resilience to conflict was observed, with 68%, 72%, and 63% of the people, respectively, migrating within one to seven days in conflict. In Marte, 35% of the people migrated before conflict arrived in their community. Table 3.1 summarizes the time that people spent in conflict before migrating.

Table 3. 1. Time spent in conflict before migrating.

	Time spent in Conflict					
	≥ 1 year	6 months - 1 year	1 - 6 months	1 - 4 weeks	1 - 7 days	Migrated before conflict started
Gwoza	35%	13.33%	3.33%	33.33%	10%	5%
Marte	6.97%	9.30%	2.32%	11.63%	34.89%	34.89%
Monguno	2.44%	0%	9.75%	9.76%	68.30%	9.75%
Nganzei	4.54%	0%	4.54%	0%	72.72%	18.20%
Gouzamala	7.89%	0%	5.26%	7.89%	63.16%	15.79%

Among activities that were practiced in various communities, agriculture was most frequently stated, with up to 86% of farmers in Gwoza and Nganzai, followed by small businesses and workers that were mostly manual workers such as tailors, fishermen, and a few government workers, mostly teachers. Most of those who indicated not having an activity were elderly people. Figure 3.2 shows the distribution of activities in the area of origin.

Results from the questionnaires were analysed as indicated in the method section. Among other values, the output indicated the *p* value, which is defined as the probability of observing the given value of the test statistic, or greater, under the null hypothesis (Ferreira and Patino, 2015) and the Partial Eta Squared value which in percentage, is the effect size. Table 3.2 is an excerpt of the output of the one way ANOVA calculated to determine the relationship between the time spent in conflict and land ownership in Gwoza.

Statistical results in Gwoza show that gender, access to water, and previous migration as independent variables had a low effect on the time spent in conflict. Meanwhile, land ownership,

previous water scarcity, and occupation showed a medium effect on the time spent in conflict. Finally, income showed a large effect on the time spent in conflict. The effect sizes for the effect of the independent variables on the dependent variable for Gwoza and other LGAs are shown in Table 3.3.

Table 3. 2. Output table from SPSS for one way ANOVA in the case of land ownership as the independent variable.

Tests of Between-Subjects Effects

Dependent Variable: Time_spent

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2183746.97[a]	1	2183746.97	4.408	0.042	0.091
Intercept	14788287.49	1	14788287.5	29.851	0	0.404
Land_ownership	2183746.968	1	2183746.97	4.408	0.042	0.091
Error	21798034.97	44	495409.886			
Total	44314823	46				
Corrected Total	23981781.93	45				

Note: df is the degree of freedom, F represents the ratio of two mean square values, and sig., which is the significance, represents the *p* value. R Squared = 0.091 (Adjusted a. R Squared = 0.070).

Table 3. 3. The effect size between time of migration (dependent variable) and all independent variables in all Local Government Areas (LGAs).

	Gender	Income	Land Ownership	Occupation	Access to Water	Previous Scarcity	Previous Migration
Gwoza	2.60%	14.50%	9.10%	7.40%	2.60%	9.90%	5.60%
Marte	1.10%	2.40%	1.90%	2.40%	0.40%	2.80%	1.30%
Monguno	3.20%	1.60%	1.30%	1.20%	/	0.10%	0.00%
Guzamala	0.70%	0.10%	18.00%	1.90%	/	0.20%	0.20%
Nganzai	1.90%	2.30%	5.00%	0.80%	/	31.50%	0.20%

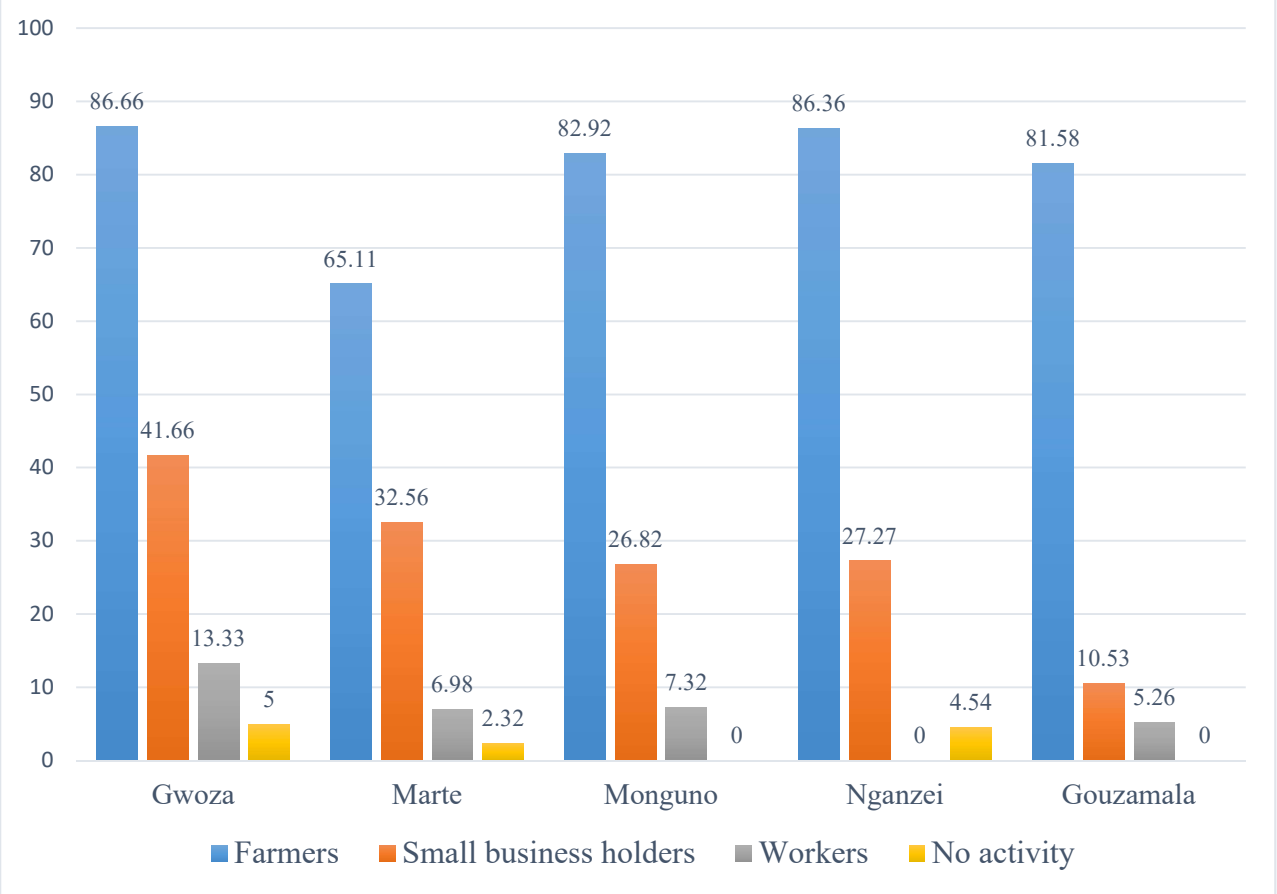

Figure 3. 2. Distribution of activities in the area of origin (the authors).

In Marte, no test of relationship between the dependent variable and the independent variables showed a statistically significant result. The effect size was usually lower than 2.8% (see Table 3.3). As shown in Table 3.1, in Marte, people mostly migrated before conflict arrived in the community (34.89%). An equal percentage of the people migrated within 1 to 7 days of conflict in the community.

In Monguno, none of the tests showed a statistically significant result. The effect sizes of the dependent variable measured against the independent variables were small in all cases. Most respondents from Monguno indicated having no access to surface sources of water. Only 5% of them had access to surface water sources, precisely rivers. All other respondents used shallow wells for water.

In Guzamala, land ownership played a significant role on the time that people spent in conflict before migrating. The effect size as defined by Cohen (1988) guideline was large (18%). Besides land ownership, none of the other tests returned a significant result. The effect size was very low in all other tests. Respondents from Guzamala reported having no access to surface sources of water. They all indicated making use of hand dug shallow wells and constructed boreholes to access groundwater. For this reason, there was no value of the effect size for access to water.

Statistical results for Nganzai show that for some respondents, having previously experienced water scarcity had a significant effect on the time they spent in conflict before migrating. The e ect size was very large (31.5%). There was no value of the effect size for access to water for the same reason as in Guzamala. Any other tests returned no significant results with low effects sizes as seen in Table 3.3.

It was found that the sense of insecurity created by the activities of Boko Haram or the counter insurgency by state military forces was the main push factor for migration. However, the decision to migrate was taken at different moments. In Marte, Monguno, Guzamala, and Nganzai, this decision was taken very early into the conflict, or before the communities were affected by the conflict. In Gwoza, people stayed longer in the community despite the state of insecurity created by Boko Haram. The hypothesis therefore is that there were factors other than the insecurity itself that affected the time spent in conflict. Figure 3.3 shows how these factors vary between the communities.

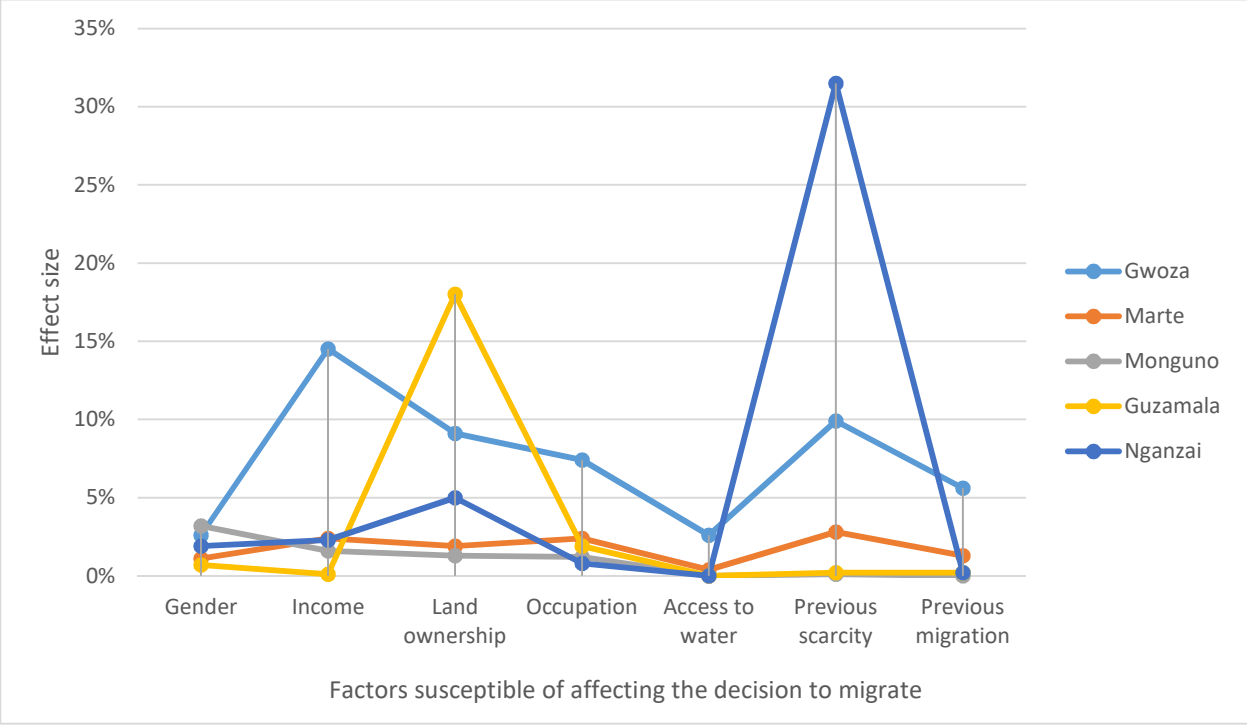

Figure 3. 3. Variation of factors that affected migration in the communities (the authors).

Figure 3.3 shows that in Gwoza, occupation, land ownership, and previous resources scarcity showed medium to large effects on the dependent variable. In other words, these factors affected the time people spent in their communities with the insecurity created by the insurgency of Boko Haram. Meanwhile, in Marte and Monguno, all independent variables showed a low effect on the dependent variable. For most people from both communities, this means that they spent little (less than a week) or no time at all in the conflict. In Guzamala and Nganzai, land ownership and

previous water scarcity, respectively, showed a high effect on the dependent variable. However, these were not enough to considerably delay the time of migration in both communities. As a result, many people from Guzamala and Nganzai migrated before the communities became insecure due to the activities of Boko Haram and many more migrated within a week in conflict as shown in Table 3.1.

3.3.2. Results of Interviews

Data presented on the statistical results above were also corroborated by additional information provided by the IDPs and by answers given by experts. Some respondents indicated that they were willing to continue practicing their activities and stay in their community despite the presence of Boko Haram. To ensure their safety, they paid "taxes" or bribes to Boko Haram insurgents. A 54-year-old male from Marte who stayed six months in conflict stated: "***I gave one cow to Boko Haram for tax so that I could stay in my community, all my cattle were later stolen by Boko Haram soldiers and I had to leave to protect my life***". A 48-year-old male from the same community who also left after six months had a similar story: "***I was forced to pay taxes to Boko Haram. I later fled when nothing was left for me to pay with***". This was confirmed by a conflict expert from the Institute of Peace and Conflict Resolution in Abuja who said "***At the height of the crisis in the region, some people moved, others did not move. Those who stayed agreed to stay under the rule of Boko Haram. They were paying their taxes and did whatever was required by Boko Haram. They farmed for Boko Haram and supplied them with food. Those on the other hand who could not bear this rule of Boko Haram left. Some people were also forced to stay, as if they were enslaved and were used as a human shield. Some became partners of Boko Haram soldier***." Some respondents from Monguno also reported paying "taxes" to Boko Haram to stay in their community. Other respondents from Guzamala and Gwoza reported that they came to the camp as there was no food left for them.

The causal relationship between environmental change, insecurity, and migration in this study is summarized in Figure 3.4 below. On the one hand, environmental change that manifests through

water scarcity and land desertification, leading to low agricultural productivity, loss of animals, and income contributed to insecurity related to food and water, which in return leads to migration. On the other hand, insecurity caused by the insurgency of Boko Haram and the counter-insurgency by the government also lead to migration. Affected people migrate to IDP camps in Maiduguri, to other parts of the country, or across the borders into neighbouring countries.

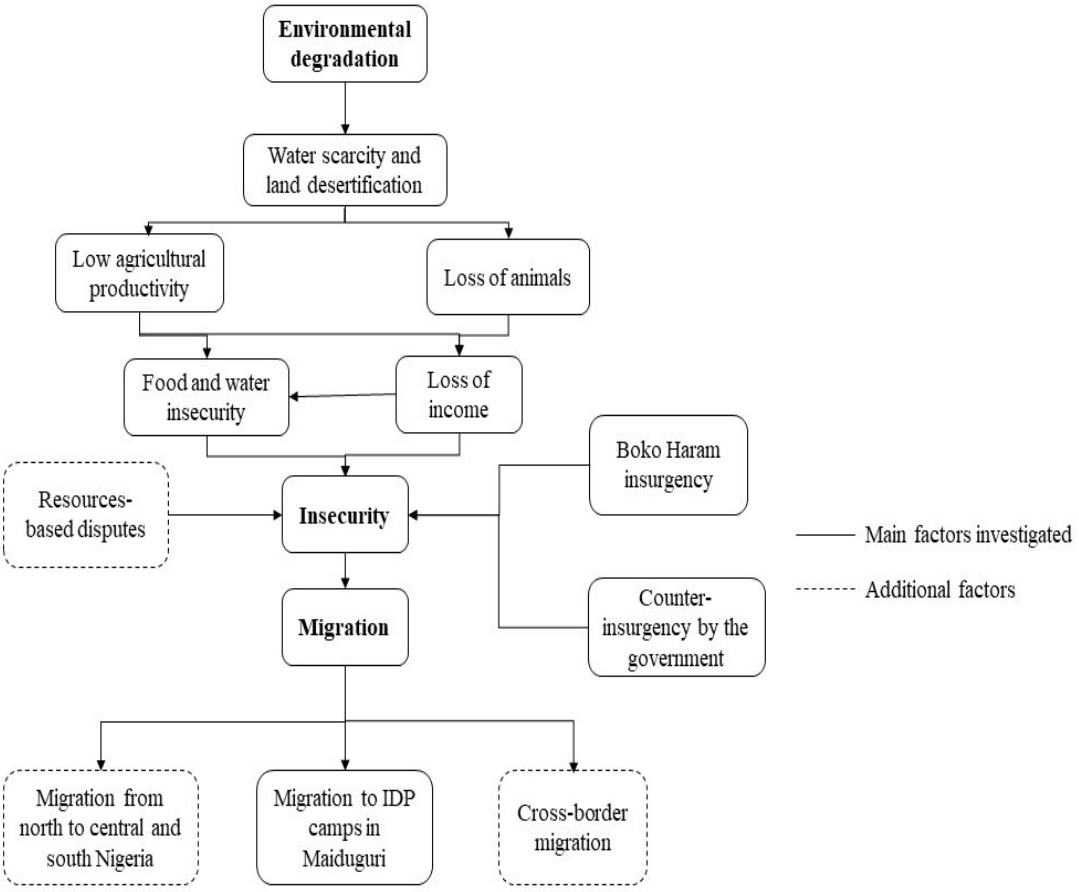

Figure 3. 4. Links between resources scarcity, insecurity, and migration in the Lake Chad Basin. Source: the authors.

3.4. Discussion

As shown in Figure 3.1, communities in the study area were located at different proximities to Lake Chad. While Guzamala, Marte, Monguno, and Nganzai were close to each other and all close to Lake Chad, Gwoza was far in the south at approximately 200 km from Lake Chad. Results showed that in the communities closer to Lake Chad, most tests were not statistically significant as opposed to Gwoza, where most tests were statistically significant and large effect sizes of most independent variables on the dependent variable were observed. One may assume that because of the proximity to the Lake Chad and its resources, nearby communities would be more resilient to external disturbances such as conflict or insecurity. In this case, the opposite was observed. It was found by Zieba et al. (2017) that seasonal migration into the Lake Chad area and the pressure caused on its resources have contributed to increasing reliance on resources of the Lake Chad basin for the livelihoods of people affected by the pressure. Furthermore, Zieba et al. (2017) argued that the waters, wetlands, and fish of the basin offered potentials for populations to exploit through activities such as fishing, cattle rearing, crafts, and a range of supporting services. Changes in natural, socioeconomic, demographic, or political systems often result in tipping points in stocks of ecosystem services. This in turn limits access to such resources and income in most developing countries (Koch et al., 2009). Poor populations that are highly dependent on those ecosystem services often prioritize their short-term needs over long-term sustainability (Kafumbata et al., 2014). The previous is consistent with findings in this study where members of communities that depended on the Lake Chad resources, namely Guzamala, Marte, Monguno, and Nganzai, migrated very early when their communities were exposed to the insecurity caused by the insurgency of Boko Haram.

Generally, drivers of migration such as climate, political factors, economic conditions, and conflict are considered simultaneously in empirical specifications, without considering the pathway through which migration is determined (Abel et al, 2019). In this study, we found that factors affecting migration mattered differently in various communities of our research area. In Gwoza, income showed a large effect on the time people spent in their community after it was affected by the insurgency. While a large number of people in this community were involved in agriculture (87%), a good percentage of them (42%) were involved in small business activities as well. This suggests that their incomes were not only dependent on agriculture that in turn depends on water

and fertile land. It was found by Maxwell et al. (2017) that conflict has different and deeper effects on livelihoods in areas that are affected by chronic economic marginalization, precisely because of their existing vulnerability. This suggests that people from Gowza being economically stronger resisted the insecurity caused by the insurgency of Boko Haram longer than communities in Guzamala, Nganzai, Marte, and Monguno. The previous is consistent with the assertion that economic strength created by local business activities can foster resilience to conflict (Joseph et al, 2020; Austin and Wennmann, 2017). This was also corroborated by a statement from a conflict expert (No 1) from the Institute of Peace and Conflict Resolution in Abuja who suggested that "***Migration from the conflict area might not necessarily occur as a result of the conflict, but also because of famine and environmental problems. Further to that argument, there is the fact that because you are socioeconomically not strong, you don't have the capacity of knowing whether running is a good thing or not. For you to decide, it is a function of your socioeconomic wellbeing. So your socioeconomic wellbeing influences your decision, your actions and inactions. Whether to run or not to run is a function of your economic wellbeing. To a great extent, this determines migration***".

The impact of climate change and the resulting resources scarcity on society is frequently framed in terms of adaptation, vulnerability, and resilience (Friske et al., 2014). The discussion at this point as raised by Klepp (2017) and Scheffran et al. (2012) is whether migration is a failure of adaptation altogether, a positive adaptive strategy, or a matter of survival. Results of the current study showed that communities that were more dependent on the environmental resources were more vulnerable to conflict. They migrated earlier than those that had developed more resilience to resources scarcity by practicing alternative income-generating activities. Land ownership showed a medium effect on the time spent in conflict in Gwoza and a large effect in Guzamala. It is explained that in certain instances during conflict in northeast Nigeria, some family members stayed behind protecting their land and property and became unable to leave once the insurgent group took control of the community (Beltramo and Rossiasco, 2016).

It has been controversially debated whether growing water scarcity and frequent droughts, coupled with poor water management, leads to multiyear crop failures, economic deterioration, and consequently mass migration of rural families to urban areas (Gleick, 2014; Kelly et al., 2015; Selby et al., 2017). Such conditions are similar to those observed in northeast Nigeria with the

migration trend from rural areas of the Borno State to the urban center of Maiduguri. A water expert from the Nigerian federal ministry of water resources suggested that "***Migration is triggered as a result of the stress that was existing before. The stress on local populations was already there before the conflict. People could manage for a long time to stay around if there was no insurgency. The insurgency just precipitated their migration that was bound to happen as a result of climate change***". The evidence suggests that climate change reduces availability and alters the distribution of resources such as water, food, and arable land, which in turn trigger violent conflict and, as a consequence, migration (Abel et al., 2019). The challenge of assessing the link between resources scarcity, conflict, and migration is to integrate the comprehensive scientific literature (e.g., Abel et al., 2019; Scheffran et al., 2012b; Mach et al., 2019).

The role of conflict or the insecurity as a push factor for migration cannot be dismissed. A migration expert from the Nigerian Federal ministry of labor in Abuja suggested that "***Conflict is one of the push factors for migration. If your life is in danger and your livelihood is taken away from you, would you continue staying in that environment? I don't think so because you have to save your life. For those who stayed many died and others could not get water, food or other basic commodities. Access became impossible because of the conflict. Most people migrated down South and those who could not move further at least moved to IDP camps within the same state***". Experts in Nigeria also believed that migration may be a result of conflict and insecurity mainly. Interestingly, they also showed a common agreement on the role that environmental changes and the resulting effect on resources play in migration. Such is the case of a conflict expert (No 2) from the Institute of Peace and Conflict Resolution when he stated that "***Northeast Nigeria is an area that suffers from desertification. It is a fact that the desert is moving into Nigeria hence a trend of downward movements of people and animals towards the South. Once humans cannot survive the desert, they have to look for means to survive. That also explains the kind of pressure within the middle belt area and the North-Central. The impact of desertification in this region is real***". A similar view is shared by a UNHCR expert "***With the shrinking of the Lake Chad, there is no more irrigation possible for farming activities, fishing activities are also reduced. That would push a lot of people to migrate either across borders or within the country. It is reported by various sources that this degradation of the Lake Chad Basin may have triggered the issue of Boko Haram as many people did not have any activities and resolved in taking weapons. In summary, environmental change triggered conflict and conflict triggered***

migration". Data collected at the Bakassi IDP camp indicate indeed that migration is a function of the wellbeing, with people that were more stable economically (in Gwoza) staying longer in their communities and doing all things possible not to migrate, and people that were not economically strong migrating very early after conflict started. Similar results were found by Sobczak-Szelc and Fekih (2020), who identified migration as an adaptation strategy for households to cope with environmental changes and resources scarcity. The study area selected by Sobczak-Szelc and Fekih (2020) has environmental conditions similar to the research area of the current study, where water and land quality and quantity pose significant challenges for the communities. Similarly to what we observed in Gwoza, Sobczak-Szelc and Fekih (2020) found that some local farmers developed resilience to resource scarcity by practicing parallel activities. As the current study suggests, environmental change cannot be viewed as the sole driver of migration. It is suggested that environmental impacts susceptible of triggering migration are mediated through factors on the macro, meso, and micro levels which include economic, social, and political drivers (Borderon et al., 2019).

3.5. Conclusions

The aim of this study was to determine what role insecurity created by the insurgency of Boko Haram and resources scarcity including water scarcity and land desertification played in the decision of northeast Nigeria residents to move to an IDP camp in Maiduguri. Factors capable of influencing the decision to migrate included the geographical location of the community, land ownership, the socioeconomic status of the migrants, access to water and land, and wealth. Conflict was found to be the main push factor for migration. It was also found that factors mentioned above acted differently in different communities on people's decision to migrate. Gwoza is furthest away from Lake Chad and hence, people benefited the least from ecosystem services offered by the Lake Chad. However, the lack of those privileges pushed the communities in Gwoza to develop other resilience measures such as engaging in alternative income generating activities including small businesses and tailoring.

Boko Haram has been trying to establish an Islamic State in the Lake Chad Basin since the early 2000 by introducing new laws, collecting taxes, and practicing what they call a 'pure' form of

Islam (Kamta et al., 2020). Communities in the study area were exposed to the brutality of this terrorist group. Those who were more resilient to their environmental conditions tried to adhere to the rule of Boko Haram and paid taxes to stay in their communities. The decision to migrate was only taken when such conditions were no longer present and they had nothing to hold on to. Those that were less resilient migrated very soon after conflict had started or even before their communities were affected by the conflict.

A resolution of the conflict as the main push factor for migration in the region is inevitable when searching for solutions. A peaceful solution is however challenging when dealing with terrorist groups. This may explain the use of force by the government, which has not been successful in resolving the conflict for over ten years now. Many studies suggest that young people join the insurgency as they lack economic opportunities (e.g., Kamta et al., 2020; Usman, 2015; Adelaja et al., 2018). We therefore recommend that the poor socioeconomic and environmental conditions of the study area should properly be addressed by the government. This may not directly end the conflict, but at least reduce the chronic poverty that pushes many young people to join the insurgency. Such can be achieved by strengthening industrialization in the northern parts of the country.

Chapter 4: The nexus of water, migration and violence in the Nigerian part of the Lake Chad Basin[4]

Abstract

In this paper, we examine the nexus between water availability, migration and violence in the Nigerian part of the Lake Chad basin. We analyze the sources of water available to rural communities of northeast Nigeria, as well as the response of community members to water scarcity. Data for this study were collected by interviewing 304 local residents in northeast Nigeria, as well as experts in migration, environmental, humanitarian and conflict-related issues in research centers and governmental institutions in Abuja. Interviews were conducted between March and May 2019. The results show that while between 47% to 95% of the rural community members interviewed in northeast Nigeria are willing to migrate in case of water scarcity, only 2.5% to 7% of them actually migrated before as a result of water scarcity, despite the pronounced water scarcity in the region. While the high percentages of rural community members willing to migrate do not actually translate into migration, the potential of conflict between host communities and internally displaced persons still exist. Results further reveal that 15% of host community members were in favor of the presence of displaced persons in their community, while 85% of them were opposed to the presence of displaced persons. We recommend a better and efficient management of water resources to reinforce resilience of northern Nigerian communities to climate change, and protection of groundwater through the construction of boreholes and the identification and protection of recharge zones.

Keywords: Water, Migration, Agriculture, Conflict, Lake Chad Basin, Nigeria

[4] This chapter is ready and will soon be submitted for peer review**.** As the lead author, Frederic N. Kamta contributed about 80% of the chapter's content. His contribution consisted in collecting data analyzing the data and preparing the original draft. Janpeter Schilling and Jürgen Scheffran each contributed about 10% by reviewing and editing the original draft.

4.1. Introduction

Nigeria is a country with abundant water resources which are largely unused (Muta'aHellandendu, 2012). Water scarcity in certain areas of Nigeria is seen as the failure of the state to harness these resources and to ensure a sustainable and equitable access to safe, adequate, improved and affordable water supply to its population (Muta'aHellandendu, 2012). In northern Nigeria, while water supply infrastructures are highly underdeveloped, rainfall as the main source of water is very limited (Omole, 2013; Amanchukwu et al., 2015, Amobi and Onyishi, 2015). Northern Nigeria enjoys only three to four months of rainfall a year, resulting in a strong reliance on groundwater sources (Ogungbenro and Morakinyo, 2014; Tukur et al., 2018). Furthermore, unavailability of data such as geographical information on water quantity, hydrology, state of aquifer and withdrawal limits, have contributed to the unsustainable use of groundwater in the region (Omole, 2013). Agriculture as the main income generating activity in the region is responsible for the use of up to 70% of available water, making it difficult for communities to find suitable water for household use (Frenken, 2005; Atwood, 2012). In the lack of modern infrastructures and technology, water resources are abusively used in Nigeria, especially in the dryer northeast part of the country, further increasing the risk of water scarcity. The response to water scarcity may vary from community to community, or even from person to person. More generally, migration as a response to water scarcity is common in water scarce regions such as northern Nigeria (Miletto et al., 2017). This makes water resources a push and a pull factor for migration (Black et al., 2011a).

Rural residents in response to water shortages may seek refuge in other areas (Biermann and Boas, 2010). Although the exact numbers of people that have been displaced in the Lake Chad Basin as a result of water scarcity are unknown and vary from assessment to assessment depending on underlying methods, scenarios, time frames, and assumptions, a number of references indicate that climate related refugees crises will surpass known refugee crises in terms of the number of people affected (e.g. IOM, 2008, Biermann and Boas, 2010; Ayazi and Elsheikh, 2019; Black, et al., 2011a; Scheffran, et al. 2012a; Burrows and Kinney, 2016; Ionesco, et al. 2017; Boas et al., 2019). Climate change-induced displacements are usually seasonal, but it is often, however the case that due to the perception of likely future risks, people's displacements become permanent (Warner, 2010).

Migration related to water scarcity may present a security risk at the receiving locations in the Lake Chad Basin. Population displacements in large numbers will redefine ethnic distribution in the region, hence bringing different ethnic groups to close proximity. This will result in a competition for the same resources and may in the context of poor governance, poverty and easy access to small arms, lead to violence (IOM, 2008). While the literature on climate related migration if abundant (e.g. Black et al., 2011a,b; Mohamoud et al., 2014; Wright et al., 2020; Mpandeli et al., 2020), data on water access in the Lake Chad basin in general and northeast Nigeria in particular are still missing. It is unknown how individual residents of the region are responding or are expected to respond to further water scarcity. Furthermore, northeast Nigeria alone being home to at least five ethnic groups (Kanuri, Fulani, Karekare, Bade and Hausa), little is still known on how the ethnic redistribution caused by possible migration as a response to water scarcity will result in terms of social cohesion.

Migration in general and particularly in northeast Nigeria is driven by several push and pull factors (Kamta et al., 2020b; Kabir et al. 2018; Gavonel, 2017; Idehen and Ikuru, 2019). Disentangling the different factors and their importance is highly challenging and not the purpose of this study. Instead, we particularly focus on the relation between water and migration. Specifically, we aim to answering the following questions: (1) How does water scarcity impact out-migration in northeast Nigeria? (2) What is the potential of tensions between IDPs and host communities? While there is limited research suggesting that migration leads to conflict in Nigeria, scholars agree on the role that migration has played in bringing integration in some quarters as in the case of the establishment of the Kanem-Bornu Empire and the spread of Islam into most parts of northern Nigeria from about the 9th century (Clark, 2007). However, scholars also agree that migration has led to cases of violent conflict which is still evident in some parts of the country today (Akubor, 2017). Issues related to water scarcity, migration and conflict in the region are further complicated by the presence of the Islamist terrorist group Boko Haram (Kamta et al., 2020a).

The remainder of this paper is structured as follows: section two introduces the methods used including a conceptual framework, and data collection. Section three presents and discusses the results. Section four concludes and recommendations for policy makers are given.

4.2. Methods

4.2.1. Conceptual Framework

The scarcity of water and human migration are the key concepts of this paper. We understand water scarcity to be the inadequate, constrained or lack of access to sufficient quantities of water for human and environmental uses (Petruzzello, 2020; White, 2012). Water scarcity may also refer to inadequate or constrained access to sufficient quantities of water for the same purposes (see also Moe and Rheingans, 2006). Migration is mostly internal and can be defined as the movement of people, displaced by conflict, natural or environmental disasters, or the consequences of the previous factors such as famine (Gwadabe et al., 2018). The IOM (2011) adds that internal migration has the purpose or effect of establishing a new residence and may be temporary or permanent.

The model used in this paper is consistent with that of Freeman (2017). Five different scenarios were used by Freeman (2017) to illustrate pathways with migration as an intermediate factor between environmental change and conflict (Table 4.1). Two of the five scenarios are relevant to the current study, namely scenario two where the scarcity of resources caused by environmental change may lead to migration which in turn may lead to conflict; and scenario five where independently occurring climate change and migration may lead to conflict. The choice of this model is based on the fact that it describes the scenario observed in the study areas better than any other model and includes all possible scenario involving resource scarcity, migration and conflict. Other possible models applicable in this study are the push-pull model by Ravenstein (1989) and the human security framework (e.g. El Ghamari and Bartoszewicz, 2020; Vivekananda et al., 2014). These models are however limited in the context of the current study as they do not allow the assessment of the possibility of conflict or tensions at the receiving location.

Table 4. 1. Pathways with migration as a causal variable between environmental change and conflict.

Pathways connecting environmental change, migration, and conflict
Scenario 1: Abundance
Environmental change ⟹ migration ⟹ conflict
Scenario 2: Scarcity
Environmental change ⟹ constrained migration ⟹ conflict
Scenario 3: Conflict-induced migration
Conflict ⟹ migration ⟹ environmental degradation ⟹ conflict
Scenario 4: Environmental degradation as a method of conflict
Conflict ⟹ environmental degradation ⟹ (constrained) migration
Scenario 5: Independently occurring climate change and migration lead to conflict
Climate change + migration ⟹ conflict

Source: Freeman, 2017.

Freeman (2017) considers that the links from environmental change to migration and to conflict may not necessarily happen in a linear trajectory. She shows how the effects of environmental changes can cause migration and, along with other proximate variables, lead to conflict. In this scenario, she argues that refugees, Internally Displaced Persons (IDPs) and individuals who flee from war do not, in general, relocate to 'free' spaces but instead come to act as a competing contingent with pre-established groups. Migrants increase competition for access to environmental resources such as fertile land and freshwater, which may lead to tensions between host and migrating communities, as well as potentially fueling preexisting local tensions. Freeman (2017) concludes that refugees and IDPs can affect environmental, economic, and social dynamics, with the potential of generating conflict at the host site.

In the scenario where independently occurring climate change and migration lead to conflict, Freeman (2017) recognizes the possibility that environmental change and migration can occur independently of one another on separate causal trajectories and yet, combined, can cause conflict. In Nigeria, besides the fact that pressure put on resources by displaced persons may lead to conflict with host communities, there is a great difficulty in coexistence between different ethnic groups and different religions that also constitute a reason for many conflicts in the country (Gwaza, 2015). Recent ethnic and religious relationships in Nigeria have been characterized with violent conflicts leading to high death tolls and huge losses in property of inestimable value, displacements, disruption and crippling of economic, social and cultural lives, fear, anxiety, uncertainty and mutual suspicion (Gwaza, 2015). Migration in its capacity, brings together people from different ethnic groups and religion but can one freely consider that as a direct reason behind conflict?

The literature suggests that efforts can sometimes be conjugated by different communities to adapt and overcome their challenges, rather than engaging in conflict (Schffran et al., 2012, Kaniaru, 2015). It is shown that instances of water cooperation on the interstate as well as intrastate levels far outnumber instances of water conflict (CRS, 2009; Wofl, 2012). Cooperation, resilience, environmental security and peace-building are also highly important in managing risk, instability and conflict, as far as these are unavoidable (Schilling et al., 2017). Water scarcity in the study area may not only be seen as a result of climate change but also poor management. The understanding of the society's response to climate change can provide clues on the possibility of cooperation in instances of water scarcity. The role of climate change in conflict or eventually cooperation, remains uncertain and triggers different opinions. Scheffran et al. (2012b) suggest as an example that if climate change triggered violent conflict in some cases and cooperation in other cases, then on average, climate change might have no clear net effect on conflict.

4.2.2. Research area

Data in this study were collected in six communities of northeast Nigeria (Figure 4.1). Respondents from Guzamala, Gwoza, Marte, Monguno and Nganzai were interviewed in the Bakassi IDP camp in Maiduguri, and respondents from Maiduguri were interviewed in their local community. The

Bakassi IDP camp was created to host IDPs from the above mentioned communities, displaced as a result of the insecurity created by the insurgency of Boko Haram. At the time of the research, statistics made available by the camp's management indicated that the Bakassi IDP camp hosted 39176 IDPs among which 8578 were men, 11327 were women, 9057 were boys and 10124 were girls. IDPs from Guzamala, Gwoza, Marte, Monguno and Nganzai were selected as interviewees because they came from the area of interest near Lake Chad. The community interviewed in Maiduguri was the closest to the Bakassi IDP camp.

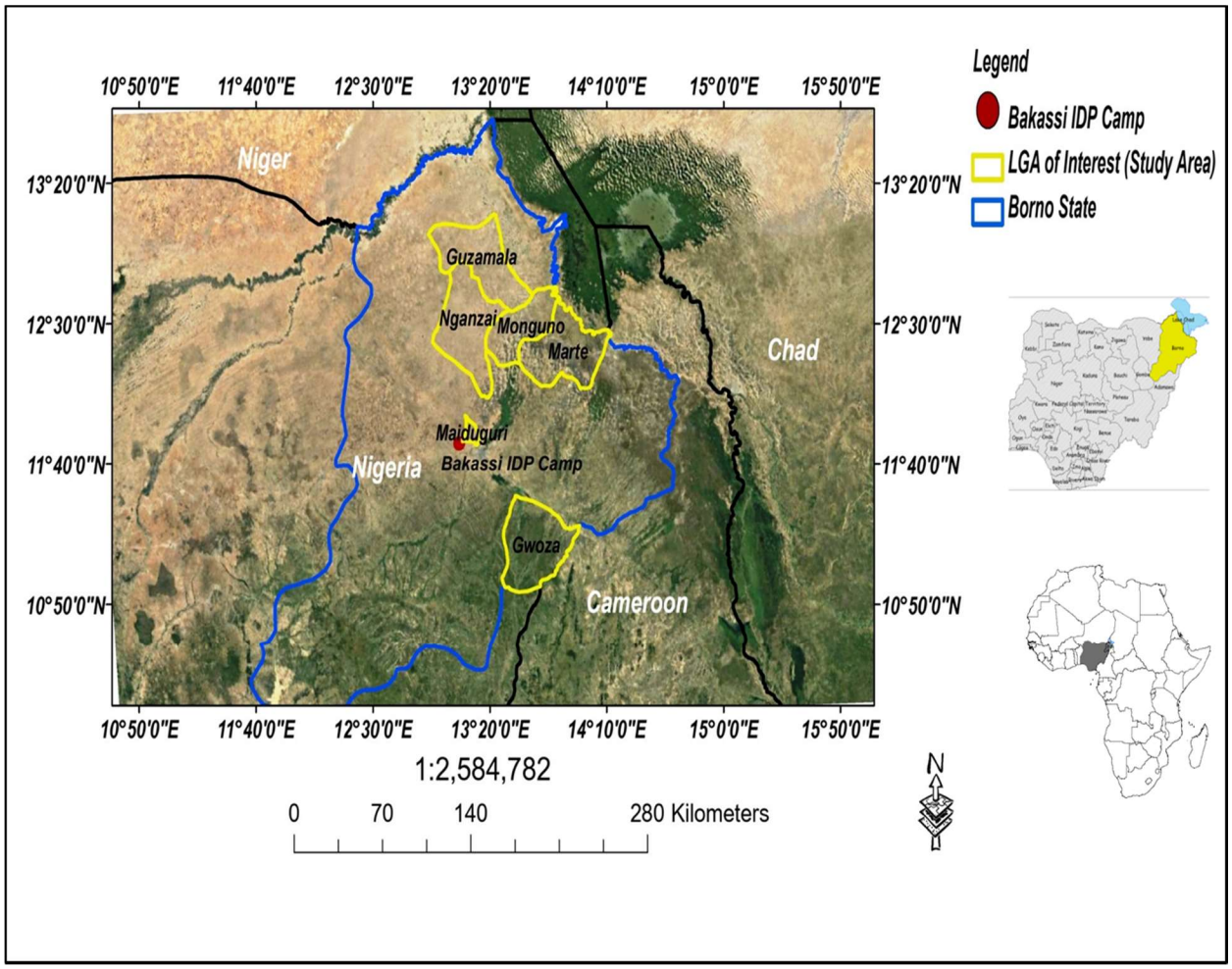

Figure 4. 1. Map of the study area. Source: Blessing Fabeku for the authors.

It was unsafe for the research team to travel to the communities shown in Figure. 1 (besides Maiduguri). Instead, interviews with members from these communities were conducted in the Bakassi IDP camp.

4.2.3. Data collection

304 respondents (204 in the Bakassi IPD camp and 100 in the host community) were interviewed between March 2019 and May 2019. The research phase was limited to this period due to the high level of insecurity in the region.

Questions aimed at understanding the sources of water used in the various communities, and whether or not community members had intentions to migrate in cases of water scarcity. For the host community in Maiduguri, questions were related to water availability in the community, their previous migration history in relation to water scarcity and past conflicts as well as their opinions on the presence of IDPs in their community. Questions related to water availability did not aim at quantifying water scarcity in terms of duration or severity because respondents tend to have problems remembering these specifics and the data become less reliable and comparable (see Kapoulas, 2012). Instead respondents were asked to compare the amount of water available to them with their water needs for agriculture purposes and household use. Some of the respondents did not speak English therefore a member of the research team translated from Kanuri or Hausa to English. Respondents were randomly chosen among members of each local community. Table 4.2 shows the gender and main livelihood activity of the respondents.

Table 4. 2. Gender and main livelihood activity of the respondents.

	Number of respondents	Males	Females	Farmers	Business and other activities
Guzamala	38	52.60%	47.4	94.74%	18.42%
Gwoza	60	15%	85%	76.67%	45%
Maiduguri	100	70%	30%	50%	50%
Marte	43	53.50%	46.50%	90.70%	44.19%
Monguno	41	48.80%	51.20%	82.92%	34.15%
Nganzai	22	27.30%	72.70%	86.36%	31.81%

Researchers and experts from various institutions in Abuja were also interviewed. They were from the federal ministry of water resources, the Federal Ministry of Environment, the National Commission for Refugees Migrants and Internally Displaced Persons, and the Institute of Peace and Conflict Resolution. Questions were asked about their views, knowledge and expertise on water access, water related migration and violence in northeast Nigeria. Interviews were recorded, transcribed and analyzed using MaxQDA.

4.2.4. Data analysis

Results of interviews conducted in the Bakassi IDP camp were analyzed by means of inferential statistics. More precisely, the association between the intention to migrate in case of water scarcity and other variable including source of water (groundwater or surface water), previous water scarcity, previous migration and type of activity (farming or not) was tested by performing a Chi-Square test of association using the IBM SPSS Statistics software package. The Chi-Square Test of association tests whether there is a significant association between the intention to migrate expressed by members of each community and the variables named above. For the p value set at .05, a statistically significant test ($p \leq .05$) means that there is a significant association between the intention to migrate and the tested variable. Otherwise, the association is not significant.

To assess the potential of conflict between IDPs and the host community, members of the host community were asked if they were in favor of the presence of IDPs in their community. The association between the opinion of the host community members on the presence of IDPs in the community (whether they agreed or not) with variables related to resources and conflict was tested also using a Chi-square Test of association. Such variables included previous conflict history, previous migration history, the perceived fear of land being taken by IDPs, and the history of previous water scarcity in the host community.

4.3. Results

4.3.1. Statistical results

A large majority of respondents from Guzamala, Gwoza, Marte, Monguno and Nganzai indicated that they would migrate if they experienced water scarcity. In Guzamala, 97 % of respondents indicated that they would migrate if they experienced water scarcity, followed by 90% in Gwoza, 46.5% in Marte, 93% in Monguno and 82% in Nganzai.

When the association between the intention to migrate and water related variables (Groundwater access, surface water access, previous water scarcity, previous migration and practice of farming) was tested using a Chi-Square Test of association, the following results were found.

In Guzamala, Gwoza and Nganzai, none of the test of association were statistically significant. This suggests that the intention to migrate expressed by members of these communities was not dependent on any of the variables related to water access or water use. In Guzamala and Nganzai, no association was found between the intention to migrate and access to surface water, and access to groundwater. This is likely due to the fact that all respondents in Guzamala and Nganzai indicated having access to groundwater only.

In Marte, a statistically significant result was found in the association between the intention to migrate and the practice of farming (p = .01). A statistically significant result was also found in the association between the intention to migrate and the history of previous migration (p = .05). Statistical results in this case indicate that a higher proportion of those who practiced farming were willing to migrate in case of water scarcity, while those who did not practice farming mostly indicated that they would stay regardless of water availability. Furthermore, mostly those who migrated before in response to water scarcity expressed intentions to migrate in the future, while those who never migrated before in response to water scarcity were not willing to migrate for the same reason in the future. In Monguno, a statistically significant result was found between the intention to migrate and access to surface water (p = .05). In this case, respondents who did not have access to surface water were more willing to migrate in case of water scarcity in the future. All other tests in Marte and Monguno returned no significant results. Table 4.3 is an excerpt of the output of the Chi-Square Test of association calculated to determine the association between the intention to migrate and the practice of farming in Marte.

Table 4. 3. Output test from SPSS for the association between the intention to migrate and the practice of farming in Marte.

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.508[a]	1	0.011		
Continuity Correction[b]	4.974	1	0.026		
Likelihood Ratio	6.869	1	0.009		
Fisher's Exact Test				0.023	0.012
Linear-by-Linear Association	6.357	1	0.012		
N of Valid Cases	43				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.98.

b. Computed only for a 2x2 table

Asymptotic Significance (2-sided) for Pearson Chi-Squared represents the *p* value.

In the host community, only 15% of respondents were in favor of the presence of IDPs in their community, while 85% of respondents did not approve the presence of IDPs in their community. A large majority of those who were opposed to the presence of IDPs in the community indicated in summary that living conditions provided to IDPs were not enough to meet their needs, which would result in IDPs putting extra pressure on the host community's resources. Statistical tests showed a statistically significant result between the respondents' opinion on the presence of IDPs in the community and the history of conflict (p = .03). Statistical results reveal that among respondents in the host community, mostly those who never experienced conflict before were in

disagreement with the presence of IDPs in the community. The test of association between the respondents' opinion on the presence of IDPs in the community and history of migration was also statistically significant (p = .05). Here also, the statistical results revealed that respondents in the host community who never migrated before were mostly opposed to the presence of IDPs in the community. The tests of association between the respondents' opinion on the presence of IPDs and the history of water scarcity in the host community as well as the test of association between the respondents' opinion and the perceived fear of land being taken by IDPs were not statistically significant.

4.3.2. Water availability in the study area

Figure 4.2 highlights the sources of water usage in the study area and the type of activity practiced by the respondents. The results show that members of the communities are mostly farmers and their main source of water for both agriculture and household use is groundwater. Surface water availability, mostly from seasonal rivers is very low across the study area, and even absent in two of the six communities (figure 4.2). The results also show that in addition to agriculture, many of the respondents in the study area practiced multiple activities such as small businesses or manual activities (e.g. tailoring).

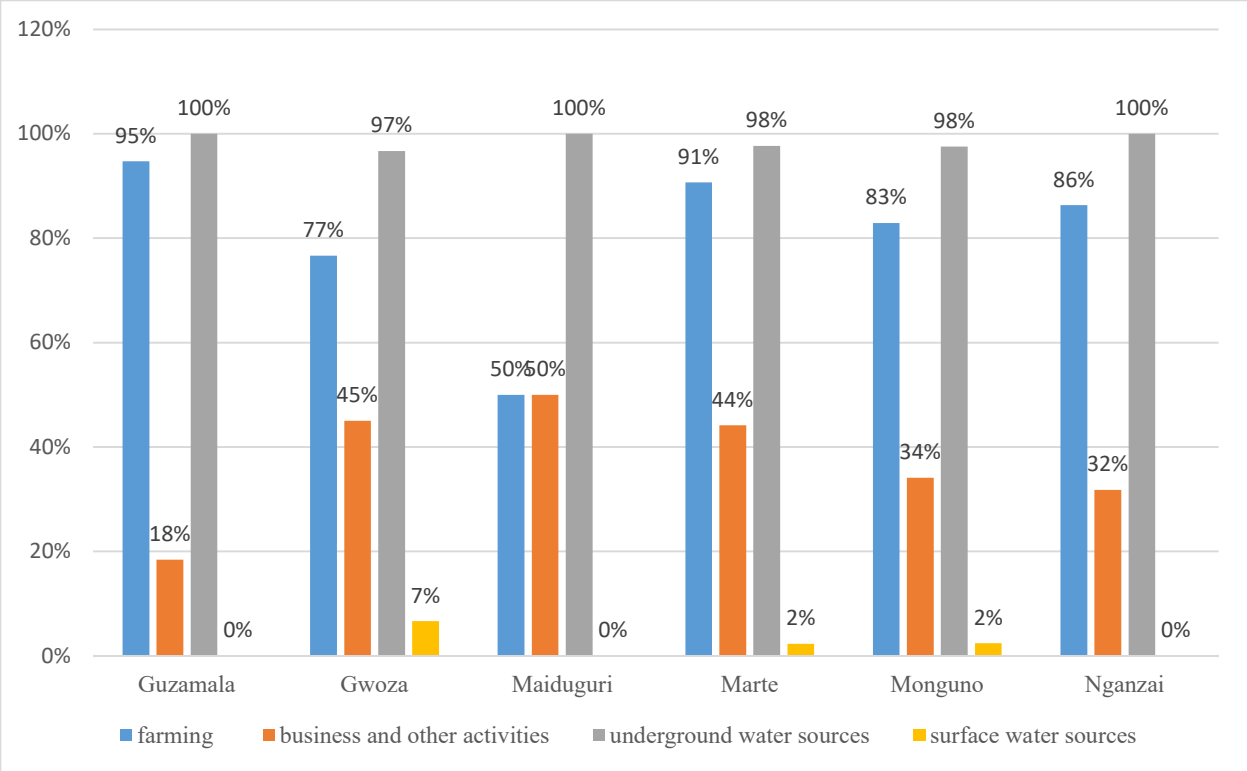

Figure 4. 2. Main livelihood activities and sources of water used in the study area.

Maiduguri was the community where most respondent (47%) reported having experienced water scarcity at least once in the past. Besides residents from Maiduguri who all reported having access to deep boreholes with pumping devices installed in their communities, 27% of the respondents from all other communities combined reported making use of shallow (hand-dug) wells to access groundwater.

To get a different picture of the state of water resources in the region, experts were also interviewed. A water expert interviewed at the Federal Ministry of Water Resources in Abuja points out the population's pressure as a potential cause of water scarcity in the region and in Nigeria as a whole. He said:

> '*one of the main issues that Nigeria as a whole faces in terms of water and environmental resources management is population pressure. Due to the high population of the country, too much is being taken from the environment without giving it enough time to rejuvenate*'.

The above statement indicates that the continuous exploitation of groundwater in northern Nigeria coupled with the rapid population growth and the low rainfall may affect the availability of surface and groundwater in the region. A study by Tukur et al. (2018) revealed a decrease in groundwater level in northern Nigeria between 2010 and 2013. The same study also found that groundwater beneath the floodplain in the Chad formation of northern Nigeria dropped from 9,000 Million Cubic Meter in 1964 to 5,000 Million Cubic Meter in 1987. The Nigerian population is currently estimated at 201 million and is estimated to reach 295 million in 2035 (PRB, 2020), suggesting even more pressure to come on groundwater resources.

4.3.3. Water and history of migration in the study area

Results presented on figure 4.3 provide information on the history of water related migration in the sending location of IDPs as well as in the host community. While between 2.6% to 14% of the respondents in the rural communities and 60% in Maiduguri indicated to have experienced water scarcity in the past years, these percentages do not correspond to the history of migration in the same communities. Results indicate in fact that only 1% to 7% of respondents in the rural communities migrated in the past in response to water scarcity. Most of those who migrated before indicated that they moved closer to the Lake Chad, to neighboring communities or to the urban center and returned when the situation was back to normal. A 60 year old woman from Nganzai said:

> '*we experienced water scarcity before, we moved to Maiduguri and returned two years later*'.

Furthermore, a 41 year old man from Monguno stated that:

> '*fires destroyed all our land 25 years ago, also rendering water sources unusable. We then migrated to another village and returned some years later*'.

The larger number of respondents who never migrated before despite water scarcity or land desertification, mostly indicated that they walked long distances every day to get water from other villages, or used more sophisticated tools to extract groundwater. This is the case of a 37 year old man from Monguno who stated that:

'*whenever we experience water shortage, we use motorized generators to pump water from deeper inside the ground*'.

When asked if they were intending to migrate in the future in case they face water scarcity, a large majority responded favorably, between 47% to 95% in the rural communities and 17% in Maiduguri. The rest of the respondents indicated that they would never migrate from their communities regardless of how harsh water scarcity or land desertification could get. Figure 4.3 compares vulnerability to water scarcity, represented by the intention to migrate in the six local communities.

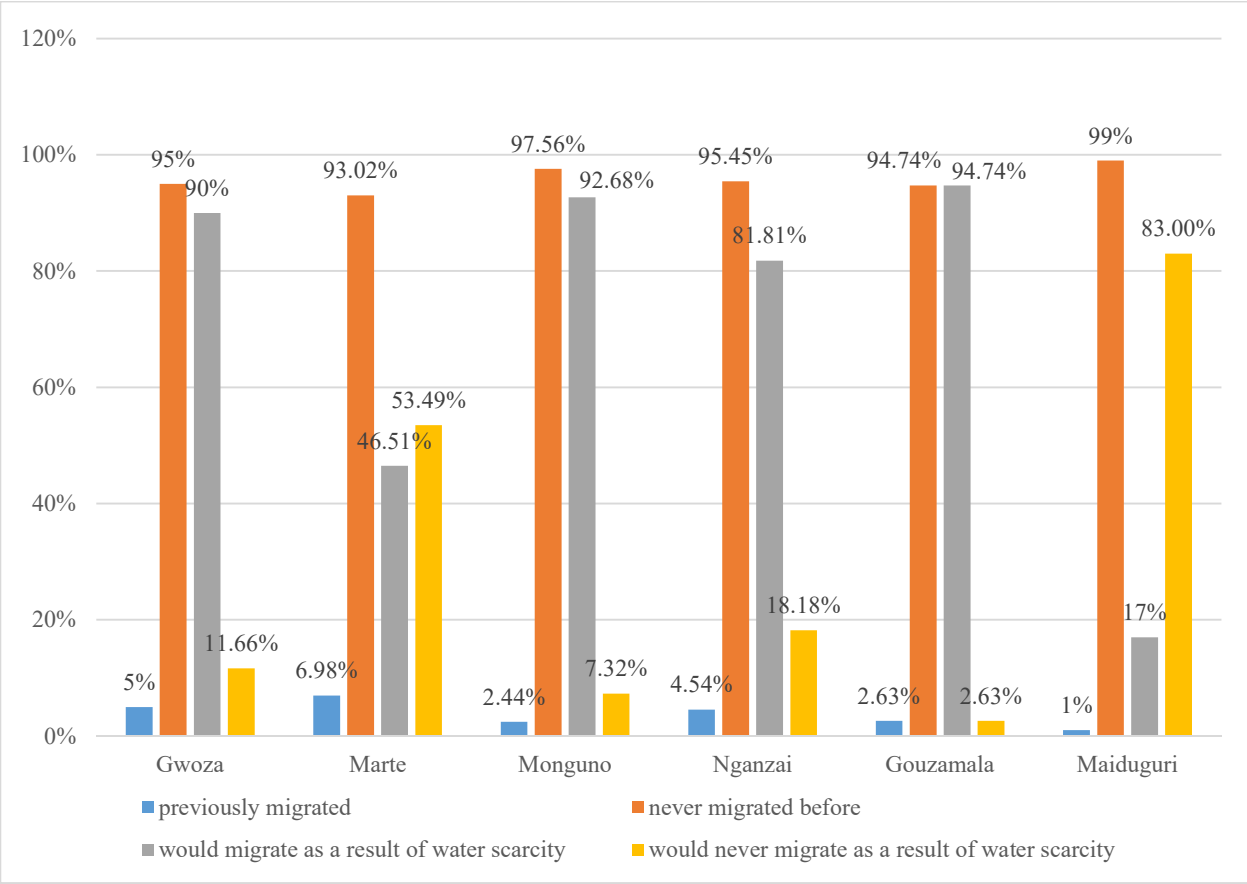

Figure 4. 3. Comparing vulnerability to water scarcity in the communities of the study area

4.4. Discussion

Results indicate that while large proportions (47% to 95%) of respondents from the rural communities (Guzamala, Gwoza, Marte, Monguno and Nganzai) expressed intentions to migrate in case of water scarcity, these intensions were not translated into actual migration in these communities. A difference is noted in the intension to migrate between communities. In Marte for example, only 47% of respondents indicated that they would migrate in case of water scarcity, while 90%, 93%, 82% and 95% of respondents from Gwoza, Monguno, Guzamala and Nganzai respectively reported that they would migrate in case of water scarcity. The previous may suggest that water scarcity does not have the same meaning in all communities. Water related migration is often motivated by the attractiveness of water resource development or environmental conditions at the receiving location (see for instance Kandasamy et al. 2014, Roobavannan et al. 2017). Rural communities in the present study are located in proximity of Lake Chad, therefore benefitting from the Lake Chad ecosystems which support more livelihood options than most ecosystems in the Sahel region (see Lemoalle, 2005). It is however noted that up to 70% of rural households in Nigeria do not have access to improved water supply (Ishaku et al., 2011) and that Lake Chad has lost more than 90% of its water size between 1963 and 2017 with the Nigerian side of the Lake taking the bigger toll (Ikusemoran et al., 2018; Buma et al, 2018). Furthermore, the Lake Chad region is characterized by low rainfall (less than 500 mm per year) and high evaporation (more than 2000 mm per year), resulting in excessive use of groundwater resources (Yusuf, 2015; Mamman et al, 2018). As a result, pasture, forage, and water for agro-pastoralists is strongly reduced (Fasona et al, 2016). One would expect that with such water precariousness, local populations would be prone to migrating in search of better environmental conditions. Migrants interviewed in the Bakassi IDP camp, reported that they would migrate because of water scarcity in their place of origin. However, when asked why they actually migrated, insecurity related to conflicts and Boko Haram was reported as the main push factor, rather than water scarcity (See also conclusion section). A study by Kamta et al. (2020) also found that migration from rural areas of northeast Nigeria to IDP camps in Maiduguri happened mainly as a result of the insecurity and that environmental factors such as water scarcity alone, were not sufficient to trigger migration in this region.

Water access when low or absent, increases environmental vulnerability and human insecurity (Selby and Hoffmann, 2012). This is even more so as most crops cultivated in northern Nigeria are irrigated with groundwater (Dabi and Anderson, 1999, Tukur et al., 2018; Van der Wijngaart, 2019). Internal migration in Nigeria is mostly seen as a rural-urban movement (see Oyeniyi, 2013; Nweke, 2019). While factors motivating migration are likely to be different from person to person or from community to community, common push factors of rural urban-migration in Nigeria include the degradation of rural economies and insecurity, especially in the case of northeast Nigeria. Results in Marte show that the association between the intention to migrate and the practice of agriculture was statistically significant, with a higher proportion of those practicing agriculture willing to migrate. This finding may relate to food security issues as water resources necessary for agriculture in the Lake Chad region continue to dry out. It is however still challenging with data in the present study to determine why the association between the intention to migrate and the practice of farming was statistically significant in Marte and not in other rural communities that face the same water challenges. This result indicates that water scarcity may act as a push factor of migration, but it may also depend on other factors such as the coping capacity of the affected community. Certain communities may have stronger coping capacities and hence a higher resilience to water scarcity than other communities.

Although the high intention to migrate in case of water scarcity expressed by respondents from the rural communities in the current study did not match their previous migration history, this study reveals that small proportions of respondents actually migrated in the past as a result of water scarcity. They were 7% in Marte, 5% in Gwoza, 4.5% in Nganzai, 2.5% in Monguno and in Guzamala. Most of those who migrated before said they moved to a nearby community or to the city (Maiduguri) and returned after a few years. The potential of cohabitation or contacts between people from different communities and/or ethnic groups as a result of water scarcity therefore exist in the region. A study by Kamta et al. (2020b) revealed that even though migration to IDP camps in northeast Nigeria is a result of the insecurity created by the insurgency of Boko Haram and the counter insurgency by the government, environmental and socioeconomic factors also play a role in the decision of local community members to migrate. Furthermore, Onifade and Osinowo (2019) mention the absence of rainfall and desertification as some of the environmental factors that drive migration from rural areas to cities in northeast Nigeria. As such, the present study

assessed the attitude of the host community towards IDPs and the potential of tensions between both groups in Maiduguri.

The analysis of the data collected in the host community in Maiduguri reveal that 15% of respondents were in favor of the presence of IDPs in their community, while 85% of them were opposed to the presence of the IDPs. Furthermore, the results reveal that the association between the respondents' opinion on the presence of IDPs in the community and the history of migration within members of the host community was statistically significant. Members of the host community who never migrated before were more opposed to the presence of IDPs in their community. A similar result was found in the association between the respondents' opinion and the history of conflict within the host community, with more of those who never experienced conflict being opposed to the presence of IDPs in the community. The pressure which the IDPs have exerted on the limited existing social infrastructures in their host communities has been identified as one of the major challenges related to IDP migration in northeast Nigerian cities (Itumo, 2016). The previous may explain why IDPs are not welcomed by their host communities as we found in the present study. This sort of rejection of the IDPs expressed by host community members also manifest through the treatment subdued by IDPs in their host communities. According to Itumno (2016 p 25), IDPs are regarded as strangers by their host communities. They are exposed to severe socioeconomic challenges such as starvation, lack of accommodation, unemployment, social discriminations, sexual harassment and child abuse, resulting in health challenges such as vascular diseases, malaria, malnutrition, water borne diseases and ultimately death. Itumno (2016) emphasizes that conditions in which IDPs find themselves in host communities of northeast Nigeria may make it more likely for them to become radicalized. Furthermore, Lischer (2003) notes that in some cases, a group of persecuted refugees tends to become violent. This is especially likely for long-term refugees who see no hope of return until radical change occurs in their homeland. Even though IDPs are not classified as refugees as they did not cross an international border, the case of IDPs in northeast Nigeria may be assimilated to that of refugees illustrate by Lischer (2003) given the similarities they share. The potential of conflict or at least tensions in the host community, created by the presence of IDPs and local responses to them is therefore a possibility.

Most experts interviewed in Abuja also agree that the presence of IDPs in host communities present a security issue in those communities. They agree that if the relationship between IDPs and host communities seem peaceful for now, if nothing is done to reduce the growing numbers of IDPs and to improve living conditions in IDP camps and host communities, tensions may rise between IDPs and host communities in the long run. Field experts interviewed at the National Emergency Management Agency in Abuja note a discontent of host communities in northeast Nigeria who feel that more attention is given to IDPs while members of host communities are neglected and poor, and require assistance.

4.5. Conclusion

The aim of this study was to examine the availability of water resources and how they are used in northeast Nigeria, and to determine how water scarcity in the region may lead to migration and the potential for tensions between IDPs and the host community. Six local communities were selected as case studies including five rural communities and one urban community. Results indicate that surface water is usually unavailable in northeast Nigeria, resulting in the extreme reliance on groundwater, accessed by means of constructed boreholes and hand-dug wells. Furthermore, results indicate that 76% to 95% of local residents from the rural communities practice agriculture as the main source of income. In the absence of surface water necessary to improve agricultural productivity, residents of the study area are likely to face food shortages. These shortages are susceptible to trigger migration. However, Migrants interviewed in the IDP camp, reported that they would migrate because of water scarcity in their place of origin. However, when asked why they actually migrated, insecurity related to conflicts and Boko Haram was reported as a main push factor, rather than water scarcity. In summary, a take home message is that people are willing to migrate if they experience water scarcity but water scarcity alone is not a sufficient factor to trigger migration. In the presence of aggravating factors such as insecurity and conflict, waster scarcity can then act as a push factor for migration.

On issues related to migration and conflict between IDPs and host communities, findings in this study revealed that only 15% of host community members were in favor of the presence of IDPs

in their community, while 85% of them were opposed to the presence of IDPs in the community. The inappropriate living conditions provided to IDPs which may result in more pressure on host community's resources was mentioned as the main reason for opposing the presence of IDPs in the host community. In addition to the overstretch on resources in the host community by IDPs, the precarious condition of IDPs in the host community are seen in this study as potential causes of tensions between IDPs and host community.

Although the numbers of people who migrated before in the rural communities in response to water scarcity is quite low, the high proportion of those willing to migrate in case of water scarcity should be taken as a matter of concern and addressed appropriately. Should those intentions turn into actual migration, it might prove challenging to manage the increased migration. We suggest that water resources in the region should properly by managed. This may include the regulation of irrigation activities and the construction of boreholes to limit groundwater depletion and pollution. The construction of dams to harvest and store water during the rainy season and the redistribution during periods of water scarcity could improve farming conditions while at the same time reducing water flow that causes flooding in the South. Furthermore, it is vital to know the recharge zones of each aquifer in order to protect them and ensure a better recharge of the groundwater reserves. To minimize the potential of violence between IDPs and their host communities, living conditions in the IDP camps should be improved by providing more shelter, improved sanitation and improved supply of humanitarian assistance. At the same time, poor households in the host communities need to be given better access to basic services which may improve their lives.

Chapter 5: A Social Network Analysis of Internally Displaced Communities in Northeast Nigeria: Potential Conflicts with Host Communities in the Lake Chad Region[5]

Abstract

In Northeast Nigeria, hundreds of people continue to make their way to Central Borno state from the insecure Local Government Areas (LGA) near Lake Chad and the border with Cameroon and Chad. Such insecurity is caused by the exactions of the Islamist insurgents, mainly of the Islamic State in the West African Province (ISWAP), a faction of Boko Haram. While the Internally Displaced Persons (IDPs) usually resettle in camps operated by the government, contacts with host communities are common. In this study, we analyze the social networks in which IDPs in Maiduguri are involved as well as the potential of conflict between IDPs and host communities. Data for this study were collected by interviewing IDPs in the Bakassi IDP camp in Maiduguri and by interviewing members of the host community in Maiduguri in close proximity to the Bakassi IDP camp. The results of the study show on the one hand a mixture of friendly and conflicting relationships between IDPs and the host community from the IDPs' perspective, and on the other hand, the absence of relationships between members of the host community and IDPs in the Bakassi IDP camp. As most IDPs in Maiduguri are related to a member of the host community and many on arrival are hosted by a relative before joining the camp, such affinities between IDPs and host community members may be seen as a guarantee for a stable relationship. However, experts interviewed in this study believe that it is only a matter of time until such relationships become conflicting as a result of the pressure put on resources by IDPs. This study recommends a better service delivery to IDPs but also to members of the host communities who feel neglected as more attention is given to IDPs.

[5] This chapter has been submitted for peer review to the peer reviewed journal *Geojournal.* As the lead author, Frederic N. Kamta contributed about 80% of the chapter's content. His contribution consisted in collecting data analyzing the data and preparing the original draft. Jürgen Scheffran contributed about 20% by reviewing and editing the original draft.

Keywords: IDP; Host Community; Conflict; Social Networks; Nigeria; Maiduguri, Lake Chad

5.1. Introduction

Over the past decade, the Lake Chad Basin region has been subject to exactions from the Boko Haram terrorist group which started with sporadic attacks, and with time extend their offensives on churches, mosques, schools and other public places (Omomia, 2015; Okoroafor and Ukpabi, 2015; Akubo and Akolo, 2019). Villages in northeast Nigeria in the states of Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe are severely hit by the Islamist insurgency of Boko Haram (Jacob et al., 2016). They are responsible for a very high death toll with tens of thousands of civilians killed and millions displaced across the region since 2009 (Brechenmacher, 2019). Such atrocities have caused hundreds of thousands of people to seek refuge in host communities and IDP camps, mostly in urban centers in northeast Nigeria. As of 2016, the Boko Haram insurgency was considered to be the greatest single cause of displacements in the Lake Chad Basin with over 2.5 million people leaving their homes, becoming refugees and IDPs (Beltramo and Rossiasco, 2016). Insurgency in this region is however not the only cause of migration. Environmental factors have also been studied for their potential role in migration in the Lake Chad Basin region (Akubor, 2017; Zieba et al., 2017; Freeman, 2017; Rudincova, 2017; Kamta et al., 2020b).

Climate change and the resulting environmental change are studied as important factors that can lead to migration (Klepp, 2017), or act as a fueling factor to other causes of migration such as conflict (Scheffran et al., 2019; Homer-Dixon and Deligiannis, 2009). It is estimated that more than 32,000 farmers in Nigeria are affected annually by climate change through losses of farmland (Idowu et al., 2011). Northeast Nigeria is particularly affected by climate change due to the fact that it lies at the fringes of the Sahel, with desert encroachment between one and ten kilometers each year (Odjugo, 2010). As a result, large expanses of arable land are engulfed, driving community displacements. Climate change in northern Nigeria also manifests through a high variability in rainfall (Bose et al., 2015). As a result, fresh water supplies and food production are

compromised, urging local communities to migrate in search of better living conditions. In a country like Nigeria, with diverse cultural and religious groups, such migration raises questions of safety between migrants and host communities.

In an attempt to evaluate the potential of conflict between IDPs in Maiduguri and host communities, we analyze the social networks in which IDPs are involved as well as their connections with host communities. Social networks graphs of the IDPs in the Bakassi IDP camp in Maiduguri are constructed. Such networks present social relations (ties) between IDPs from five different LGAs and their relations with host communities. A network of the ties between members of the host community and IDPs is also constructed. To supplement observations from the social networks, we present a qualitative analysis of interviews conducted with expert from various governmental and non-governmental institutions in Abuja.

Social network analysis (SNA) is commonly used to understand social connections and behaviors in studies related to conflict analysis, resource management and many more (Martens et al., 2015; Ngaruiya and Scheffran, 2016; Mincer and Niewiadomska-Szynkiewicz, 2016). A social network illustrates a set of nodes (actors) and their connections to study social interactions and patterns that would otherwise go unnoticed (Sridevi and Arun, 2015). SNA may not be a completely new tool, but it has seen little theoretical establishment. However, more recently, researchers from social and natural sciences have proposed an interdisciplinary effort to establish social network theory, following the trend of information visualization (Havig et al, 2012). In this study, we apply SNA principles to IDP communities in the Bakassi IDP camp in Maiduguri in northeast Nigeria, to understand how they connect with the host community in Maiduguri. SNA allows us in this study to evaluate the potential of conflict between IDPs and host communities. The same concept is also applied to members of the host community to understand the nature of their relationships with IDPs. This study assesses the presence or absence of a relationship between IDPs and the host community, and determines the centrality of the actors, hence informing how relevant they are in the network of relationships. The current study will address the following questions: What are the networks in which IDPs in Maiduguri are involved? What is the potential of friendly or conflicting relationships between IDPs and host communities in Maiduguri?

To answer the above questions, this paper is organized as follows: Section 2 provides the methods used, including a conceptual framework, a description of the study area and the method used to

analyze the data. Section 3 presents the data, Section 4 presents a discussion of the data and finally, section 5 concludes and provides some recommendations.

5.2. Methods

5.2.1. Theoretical Framework

A key issue today for developing countries is internal migration which is complicated by other issues such as conflict and instability, stress on resources and accommodation. One of those issues, which is of major concern is post-displacement conflict between IDPs and host communities, or even between different displaced groups. Scholars have largely failed to converge on the security dimension of migration in developing countries (Mitchell, 2018), which is exacerbated by the homogeneous nature of the communities in Africa. According to Weiner (1992/1993), a homogeneous society, for example, places a higher value on preserving its ethnic character than does a heterogeneous society, therefore, regarding a population influx as a threat to its security. Nigeria is a country with three major ethnic groups (Hausa, Yoruba and Igbo) among which there are over 200 minority groups (Oyedeji, 2017). In such a context, people migrating from one community to a different community are most likely bound to encounter another minority group. In line with the statement by Weiner (1992/1993) above, such an encounter presents potentials for conflict.

According to Ladan (2006), IDPs are persons or groups who have been forcefully moved from their habitual residence to new places within national borders considered relatively safe, as a result of conflict, violations of human rights, generalized violence, natural or manmade disasters. IDPs in the Bakassi camp migrated there from Gwoza, Guzamala, Marte, Monguno and Nganzai. Among these five communities alone, a few tribes were recorded. The Kanuri are largely represented across the region, with several sub-tribes. In Marte, there is a small group of Shoa Arabs, in Gwoza there is the Gwoza tribe, and in Guzamala, Monguno and Nganzai, there are groups belonging to the Kwayam and the Kanembu sub-tribes. Communities in northeast Nigeria

are highly heterogeneous and any migratory movement within the region is likely to involve different tribes or sub-tribes. The armed conflict between Nigerian military forces and Boko Haram insurgents has been identified as the main push factor for internal migration in the region (see Kamta et al., 2020b).

A definition of conflict may help to understand its relevance for displacement. Being an integral part of human life and an outcome of behaviors (Thakore, 2013), conflicts exist when two or more groups engage in a struggle over values and claims for status, power, and resources in which the aims of the opponents are to neutralize, injure, or eliminate the rivals (Jeong, 2000). Conflict has been thought to arise from opposing interests involving scarce resources and goal divergence and frustration, occurring in mixed-motive relationships where persons have both competitive and cooperative linkages. Competitive linkages produce the conflict, cooperative linkages create the incentives to bargain to reach an agreement (Tjosvold, 2006).

A tool to study social interactions is social network analysis (SNA) which has previously been used in several domains, including natural resources governance or conflict management (Ngaruiya and Scheffran, 2016; Gatewood and Price, 2017). The use of SNA brings together a quantitative and qualitative approach for the integrated analysis of political, economic or social processes in connection to structural and environmental processes (Bodin and Prell, 2011). Conflict has the potential of breaking social structures in a region (Gatewood and Price, 2017). As a result of the conflict between Boko Haram insurgents and governmental forces in northeast Nigeria, communities are displaced and forced into new social structures. Such structures in IDP camps or in host communities are often different from those in their home communities where there has been a strong emphasis on the relationships and bonds between people (Smith, 2013). In this study as described in the method section, IDPs from five different communities are hosted in the camp where data were collected. The camp is itself located near a community of Maiduguri. We consider that due to the harsh living conditions in the camp and in the host community as a result of the high poverty level, the competition for survival may result in tensions between different communities in the camp, or between IDPs and the host community. The SNA approach can assist in understanding how relationships are formed in the camp and between IDPs and the host community. The potential of SNA to study the relationship between conflict and internal displacement in Northeast Nigeria will be determined in the following.

5.2.2. Study area

Data were collected in the Bakassi IDP camp in Maiduguri and in the adjacent local community that hosts the Bakassi IDP camp (Figure 5.1). Respondents in the Bakassi IDP camp were from Guzamala, Gwoza, Marte, Monguno and Nganzai, five LGAs from northeast Nigeria. Members of these communities came to the camp after their communities were subjected to attacks by the Boko Haram terrorist group. 204 IDPs were interviewed in the Bakassi IDP camp. Members of the host community adjacent to the IDP camp were also interviewed. A total of 100 members of the host community responded to the interview. Figure 1 shows the IDP camp and the local community where interviews were conducted.

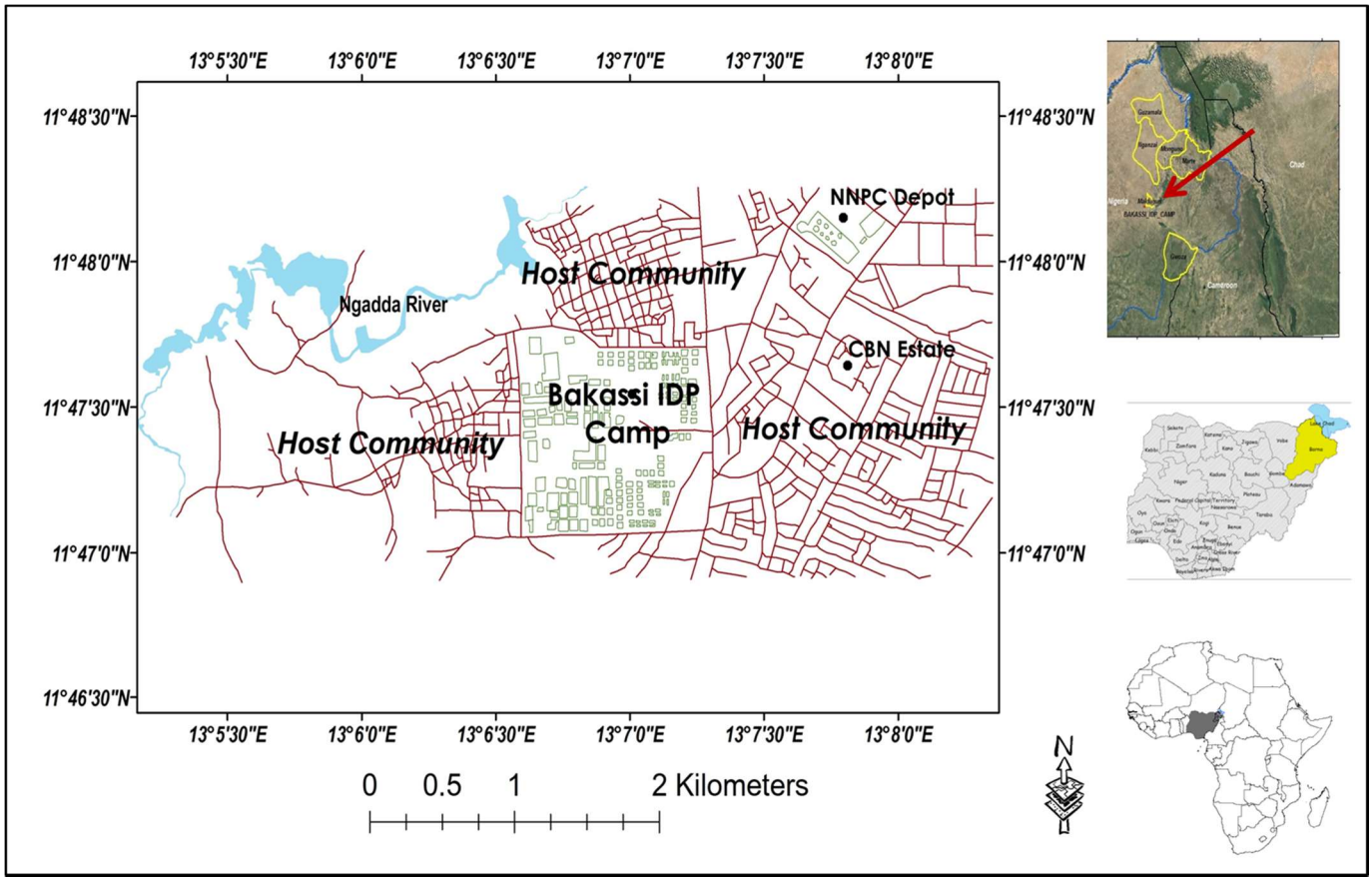

Figure 5. 1. Study area showing the Bakassi IDP camp and the host community.

5.2.3. Data collection

Data were collected by means of interviews. Questionnaires were used to collect answers from the respondents. Respondents were asked on a scale from 1 to 5 to evaluate the level of their relationships with a group of actors or with some institutions. On this scale, 1 and 2 represent a negative or conflicting relationship, 3 is a neutral relationship while 4 and 5 represent a positive or friendly relationship. Each respondent in the camp was asked to rate their relationship with IDPs from the same LGA, with IDPs from other LGAs within the Bakassi IDP camp, with members of the host community, and with IDPs from other IDP camps in and around Maiduguri. In the host community, respondents were asked to indicate if they have any contacts with IDPs located in the Bakassi IDP camp, or with IDPs from any other IDP camps in and around Maiduguri.

In addition to SNA data, questions related to the potential of future conflicts between IDPs and the host community were asked both in the camp and in the host community. Qualitative interviews with experts were also conducted in Abuja and questions were asked in relation to the potential of conflict between different groups of IDPs, but mostly between IDPs and host communities.

5.2.4. Data Analysis

Betweenness Centrality

Social network data were analyzed using the software packages Ucinet (Borgatti et al., 2002), and Netdraw (Borgatti, 2002) which were used to represent the network including actors and ties. Ucinet was also used to calculate network attributes such as betweenness centrality. The betweenness centrality index counts the number of network pathways passing through an actor and is used to measure how much potential control an actor has over disseminating accurate and relevant information across the community network (Ngaruiya and Scheffran, 2016). For a one mode network, it can be obtained using equation (1) below.

$$C_B\,(k) = \sum\nolimits_{\mathrm{i} \neq \mathrm{j} \neq \mathrm{k}} \frac{\partial_{\mathrm{ikj}}}{\partial_{\mathrm{ij}}}, \qquad (1)$$

In this equation, $C_B(k)$ is the betweenness centrality of actor k, ∂ikj is the number of paths linking actors i and j that pass through actor k, and ∂ij is the number of paths linking actor i and j. More basically, Brandes (2001) suggests that betweenness centrality is traditionally determined by computing the length and number of shortest paths between all pairs and by summing all pair-dependencies. The definition of betweenness centrality is based on the assumption that interactions between two nonadjacent actors might depend on other actors, especially the actors who lie on the path between the two (Wasserman and Faust, 1994). Mode refers to a class of actors. In this study the first mode is made of single actors and the second mode is made of groups of actors such as Host community, IDPs from the same LGA etc.

The use of SNA allows us to understand the position of actors within the network. This will highlight the centrality of certain actors, those that play key roles in the network. In many social network applications, the main objective of data analysis is to identify the most important actors in a network (Mincer and Niewiadomska-Szynkiewicz, 2016). A network node according to Mincer and Niewiadomska-Szynkiewicz (2016) is considered to be a prominent one, if it is extensively involved in relationships with other nodes that form a social network. Moreover, the importance of a node relies on the number of prominent nodes that are connected to this node.

Centrality of a node k is defined as the share of times that a node i needs this node (whose centrality is being measured) in order to reach a node j via the shortest path. Specifically, if g_{ij} is the number of geodesic paths from i to j, and g_{ikj} is the number of these geodesics that pass through node k, then the betweenness centrality of node k is given by equation 1 above (Borgatti, 2005). Stated in plain language, betweenness basically counts the number of geodesic paths that pass through a node k (Wassermann and Faust, 1994; Borgatti, 2005). Freeman (1979) also defines betweenness centrality as a measurement based upon the frequency with which a point falls between pairs of other points on the shortest or geodesic paths connecting them.

SNA data in the present study form a 2-mode matrix. For a 2-mode matrix, there can be two different approaches. The first approach is a unimodal approach to the 2-mode matrix. This approach converts the data into a 1-mode matrix. Such an approach is appropriate when the analytical interest focuses primarily on just one of the modes (Borgatti, 2009). The second approach is a bimodal analysis of the 2-mode matrix. In this approach, both modes are analyzed

simultaneously. The data in this approach represent relations between two sets of nodes, forming a bipartite graph GB(V1+V2,E) in which, for all u and v, (u,v) ∈ E if and only if u and v belong to different vertex sets (Borgatti, 2009). In this study, we use a bimodal approach of the 2-mode data. This is particularly relevant to the current study because our data includes a mode that consists of individuals (respondents) and their relationship with the second mode which is made of institutions or groups of people.

Betweenness centrality in a bimodal approach of 2-mode data.

Betweenness centrality is defined above and its value in an ordinary graph is given by the equation above (1). Betweenness is ordinarily normalized by dividing by (n-1)(n-2) = $n^2 - 3n + 2$, which is the maximum betweenness that any node can achieve in a graph with n nodes, which occurs for the node at the center of a star-shaped graph. This maximum is appropriate for bipartite graphs only when one mode has just one node; otherwise we must take account of the sizes of each vertex set. Equation 2 gives the maximums for nodes in each vertex set as a function of the vertex set sizes (Borgatti, 2009).

$$b_{v1\,\max} = \frac{1}{2}[n_2^2(s+1)^2 + n_2(s+1)(2t - s - 1) - t(2s - t + 3)]$$

$$s = (n_1 - 1)\ div\ n_2,\ t = (n_1 - 1) \bmod n_2 \qquad (2)$$

$$b_{v2\,\max} = \frac{1}{2}[n_1^2(p+1)^2 + n_1(p+1)(2r - p - 1) - r(2p - r + 3)]$$

$$p = (n_2 - 1)\ div\ n_1,\ r = (n_1 - 1) \bmod n_2$$

x div y refers to integer division of *x* by *y* and *x mod y* refers to the remainder of an integer division of *x* by *y*.

Betweenness centrality for the bipartite graph can then be normalized by dividing the standard betweenness centrality (1) by the maxima defined above (Borgatti, 2009).

$$b_i^* = \frac{b_i}{b_{v1\mathrm{ma}}}, \text{ for } i \in V_1$$

$$b_j^* = \frac{b_j}{b_{v2\mathrm{ma}}}, \text{ for } j \in V_2 \quad (3)$$

5.3. Results

Friendly, neutral and conflicting relationships in the IDP community

The nature of the relationships between different groups of IDPs and between IDPs and host community was investigated. Relationships were either friendly, neutral or conflicting. Friendly relationships are indicated by '1', neutral relationships by '0' and conflicting relationships by '-1'. Table 5.1 shows in percentage the proportions of IDPs for each LGA according to the nature of their relationships with other groups of IDPs and the host community.

Table 5. 1. Nature of the relationships between IDPs of the same community or LGA (A), between IDPs of different LGAs within the Bakassi IDP camp (B), between IDPs in the Bakassi IDP camp and members of the host community (C) and between IDPs in the Bakassi IDP camp and IDPs in other IDP camps in Maiduguri (D).

	Gwoza	Marte	Monguno	Nganzai	Guzamala
Relationships	(A) IDPs from the same LGA				
1	91.70%	93%	92.70%	100%	100%
0	5%	0%	7.30%	0%	0%
-1	3.30%	7%	0%	0%	0%
	(B) IDPs from different LGAs				
1	38.30%	46%	65.80%	91%	94.70%
0	53.30%	40%	24.40%	4.50%	5.30%
-1	8.30%	14%	9.80%	4.50%	0%
	(C) Host Community				
1	15%	26%	22%	45.40%	34.20%
0	68.3%	44%	39%	27.30%	36.80%
-1	16.60%	30%	39%	27.30%	29%
	(D) IDPs in other Camps				
1	3.30%	33%	36.60%	22.30%	23.70%
0	86.70%	60%	61%	77.70%	71%
-1	10%	7%	2.40%	0%	5.30%

Here, we are more interested in friendly and conflicting relationships; neutral relationships are of least interest. We can observe that relationships between IDPs from the same community or LGA were usually friendly. Relationships between IDPs of a given community and IDPs of a different community were also mostly friendly, but the percentages of conflicting relationships were higher than for relationships between IDPs of the same community.

Relationships between IDPs and host community as indicated by IDPs

Relationships between IDPs and the host community as indicated by IDPs themselves were mostly neutral. However, a small percentage of the IDPs had friendly relationships with the host community, while a lower percentage (between 0% and 10%) of the relationships were conflicting. Due to security reasons, many IDPs did not have the possibility to be in contact with the host

community, hence they expressed a neutral relationship with the host community. The nature of the relationships between IDPs and host community is shown in Figure 5.2.

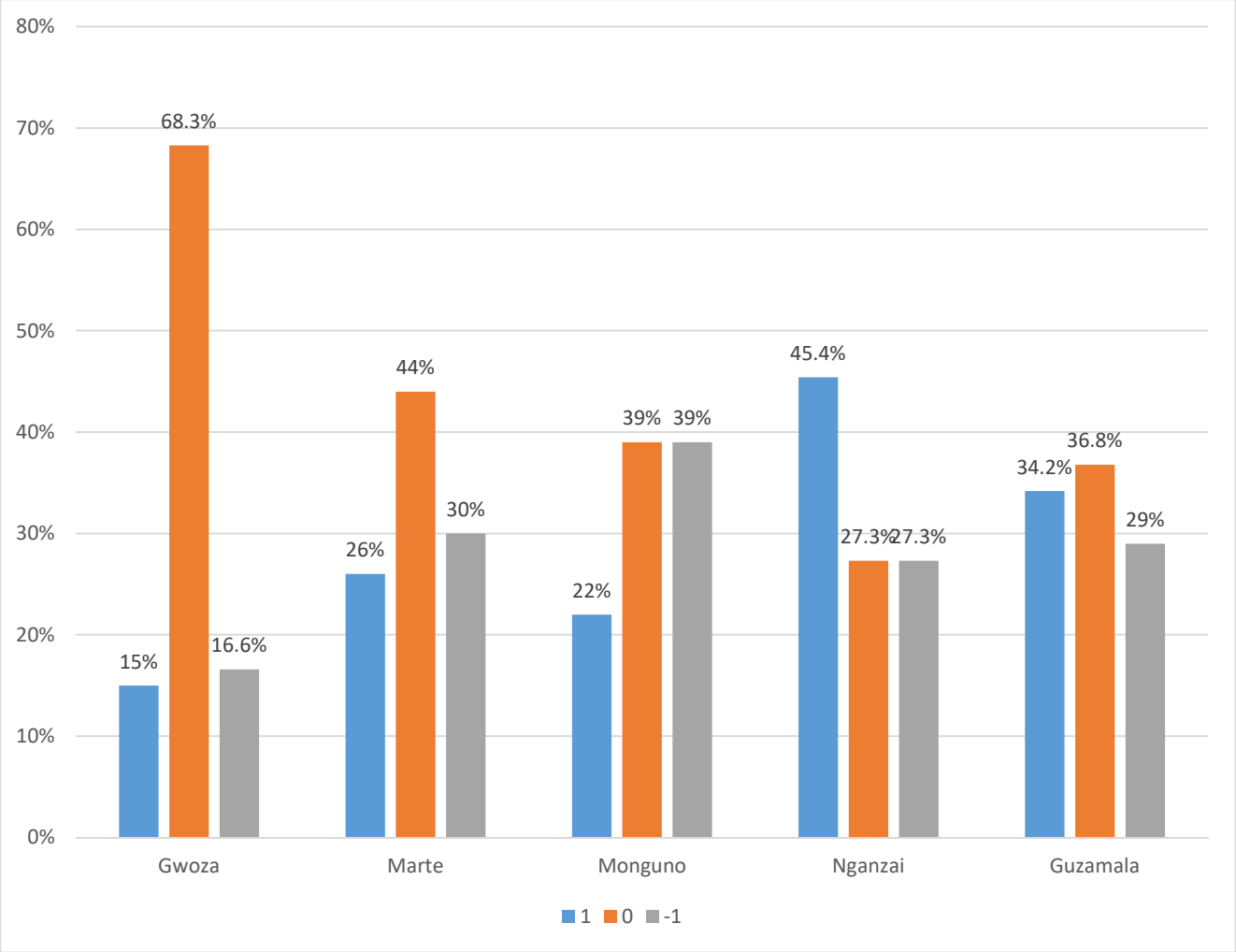

Figure 5. 2. Nature of the relationships between IDPs and members of the host community from the IDPs perspective, representing case (C) of Table 5.1.

Relationships between host community and IDPs as indicated by host community members

In the host community, relationships with IDPs were either present (friendly) or absent (neutral). Members of the host community were asked if they had a relationship with IDPs present in the Bakassi IDP camp or with IDPs from another IDP camps within or around Maiduguri. While very few members of the host community reported having a relationship with IDPs in the Bakassi IDP

camp that was closer to their community, they all had a relationship with at least one IDP from any other IDP camp in or around Maiduguri. Figure 5.3 represents a social network graph of the relationships between host community members and IDPs in the Bakassi IDP camp and at any other IDP camps in or around Maiduguri.

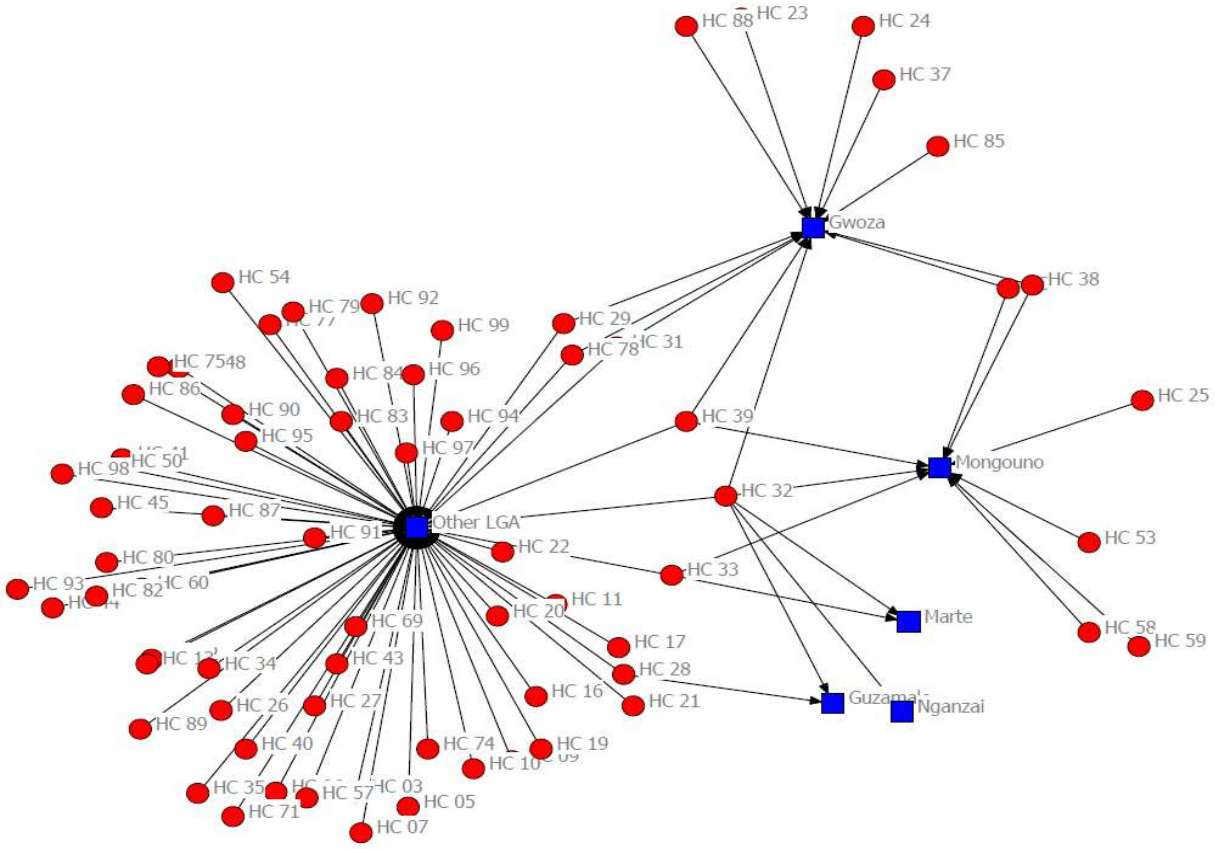

Figure 5. 3. Social Network Graph of the relationships between members of the host community and IDPs. HC01-HC100 represents host community members that were interviewed. 'Other LGA' indicates IDPs from other LGAs present in IDP camps other than the Bakassi IDP camp.

Friendly relationships and betweenness centrality of actors in the Bakassi IDP camp

The Ucinet and Netdraw software packages were used to construct the network representation of friendly relationships between IDPs from the same and from other LGAs within the Bakassi IDP camp, between IDPs from the Bakassi IDP camp and members of the host community and between

IDPs in the Bakassi IDP camp and IDPs from other camps in and around Maiduguri. The betweenness centrality for each actor was also calculated using Ucinet. Figure 5.4 and Table 5.2 represent the social network graph and the betweenness centrality values respectively for actors in the Bakassi IDP camp.

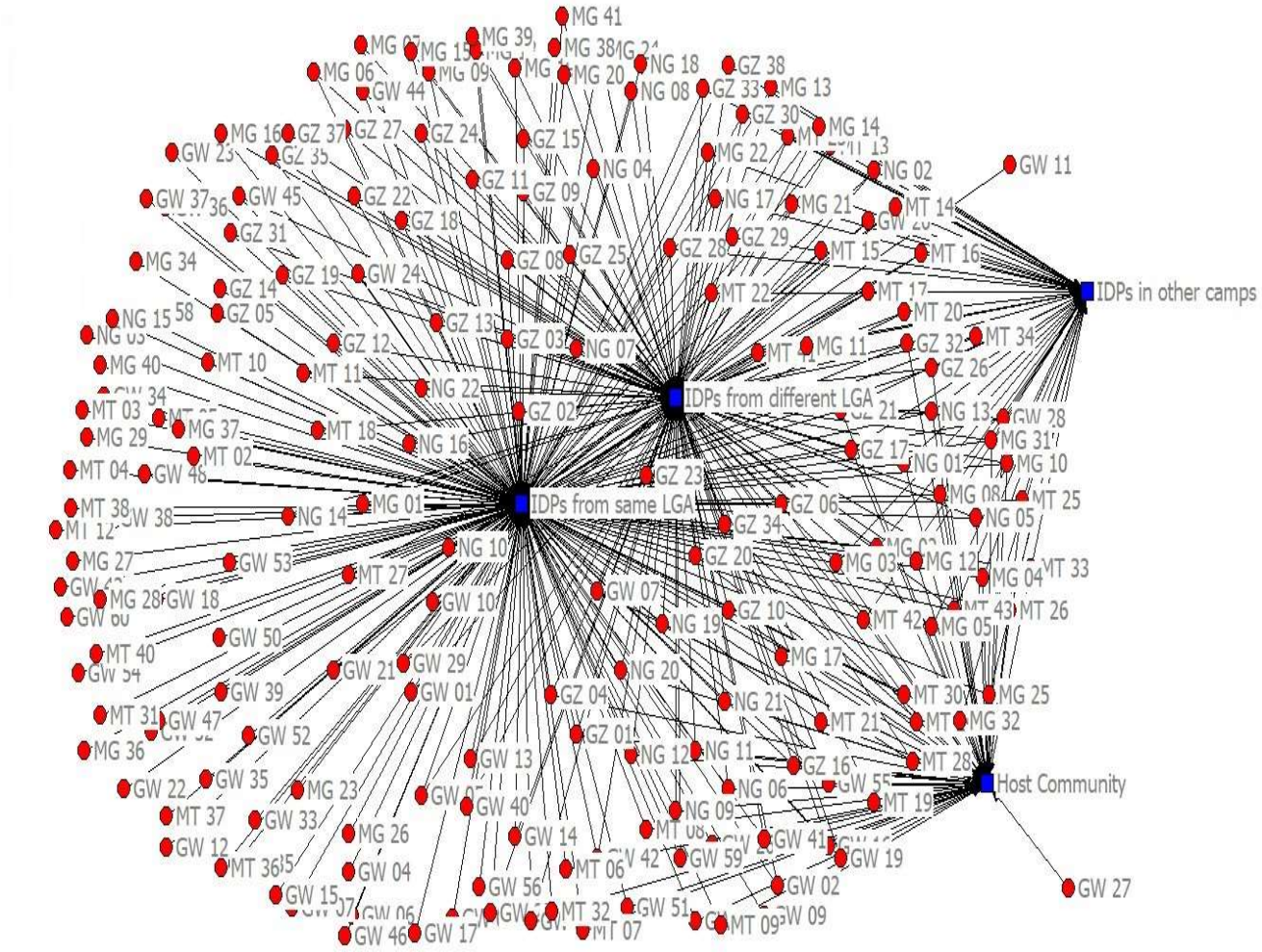

Figure 5. 4. Social network graph for friendly relationships among IDPs in the Bakassi IDP camp. GW01-GW60 represents IDPs from Gwoza, GZ01-GZ38 represents IDPs from Guzamala, MT01-MT43 represents IDPs from Marte, MG01-MG41 represents IDPs from Monguno, NG01-NG22 represents IDPs from Nganzai.

Table 5. 2. Values of the betweenness centrality for friendly relationships within the Bakassi IDP camp

Actors or groups of actors	Betweenness Centrality
GW28, MT42, MT43, MG02, MG03, MG04, MG05, MG08, MG10, MG12, MG31, NG01, NG05, NG13, GZ17, GZ21, GZ26, GZ32	0.001
Host community	0.033
IDPs in other camps	0.017
IDPs from same LGA	0.68
IDPs from different LGA	0.185

Besides actors enumerated in Table 5.2 with a betweenness centrality value of 0.001 which indicates that they were connected in terms of friendly relationships to two other groups of actors, any other actors not present in Table 5.2 had a betweenness centrality value of 0.000, which indicates that they were connected in terms of friendly relationships to only one group of actors.

Conflicting relationships and betweenness centrality of actors in the Bakassi IDP camp

Similarly to the case of friendly relationships, a social network graph of conflicting relationships between actors in the Bakassi IDP camp was constructed using Ucinet and Netdraw. The betweenness centrality of actors in the conflicting relationships network was also calculated. Figure 5.5 and Table 5.3 represent the social network illustration and the betweenness centrality of actors.

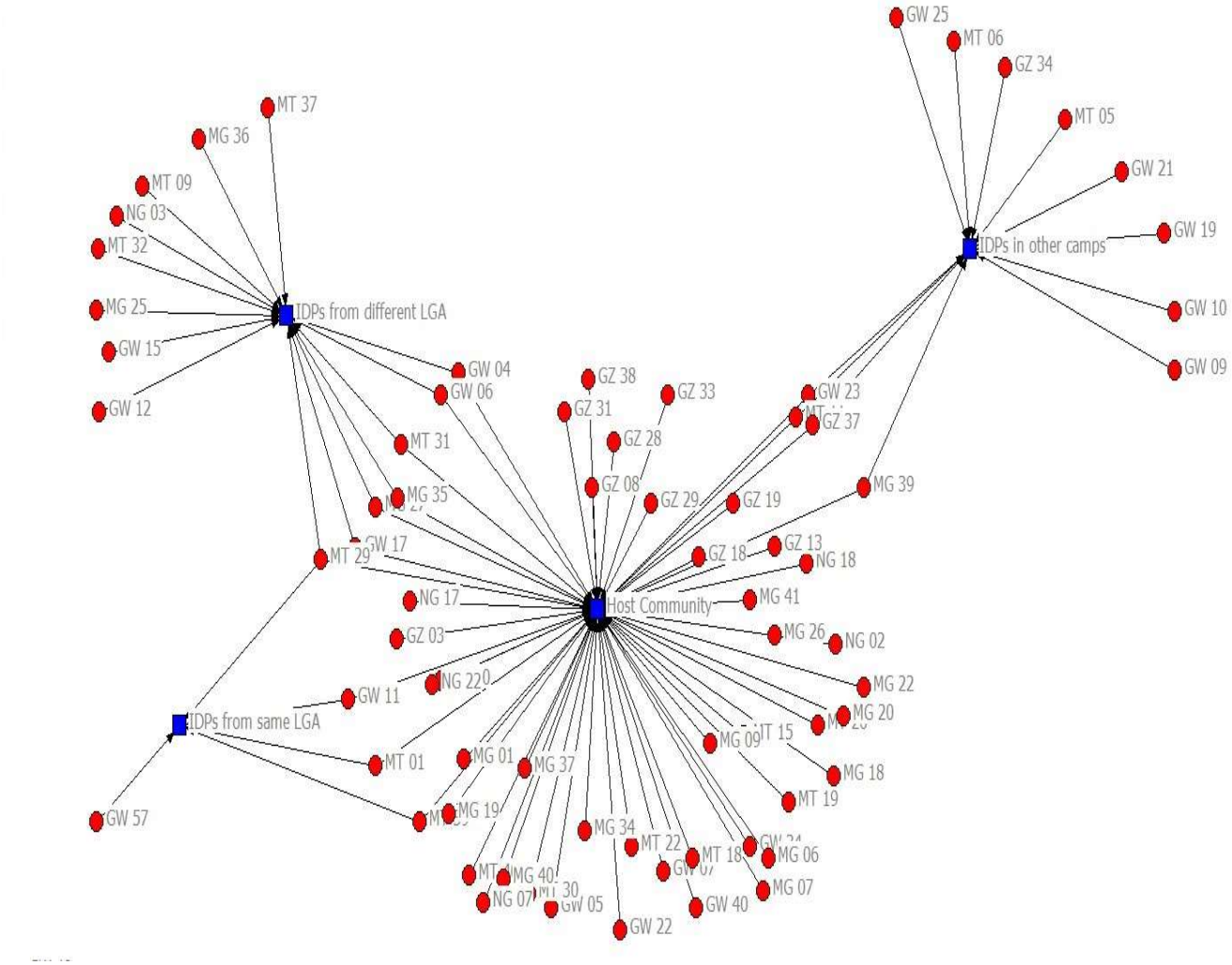

Figure 5. 5. Social network graph of conflicting relationships among IDPs in the Bakassi IDP camp. GW01-GW60 represents IDPs from Gwoza, GZ01-GZ38 represents IDPs from Guzamala, MT01-MT43 represents IDPs from Marte, MG01-MG41 represents IDPs from Monguno, NG01-NG22 represents IDPs from Nganzai.

Table 5. 3. Values of the betweenness centrality for conflicting relationships within the Bakassi IDP camp

Actors or groups of actors	Betweenness Centrality
GW11, MT01, MT39	0.002
GW04, GW06, GW17, MT10, MT31, MG27, MG35,	0.004
MT29	0.007
GW23, MT11, MG39, GZ37	0.009
Local Community	0.123
IDPs in other camps	0.027
IDPs from same LGA	0.004
IDPs from different LGA	0.028

Besides IDP actors present in Table 5.3, any other agents showed a betweenness centrality value of 0.000 meaning that in terms of conflicting relationships, they were not connected to more than one group of actors.

5.4. Discussion

Results of this study usually illustrate a friendly relationship between IDPs inside the Bakassi IDP camp. On the other hand, relationships with the host community were not so great (see Table 5.1). Most IDPs reported having a neutral or a conflicting relationship with members of the host community. The previous results are confirmed by the values of betweenness centrality recorded in the case of friendly relationships. Values of betweenness centrality were higher for friendly relationships among IDPs of the same community (0.68), decreasing to 0.185 among IDPs from different communities, to 0.033 between IDPs and the host community and finally to 0.017 between IDPs in the Bakassi camp and IDPs in other camps. From the host community's perspective, the relationship appears friendlier, but still only about 20% of host community members were connected to IDPs in the Bakassi IDP camp (see Figure 5.3). Experts interviewed also expressed views that confirm the results above. It is the case of a peace and conflict expert at the Institute of Peace and Conflict Resolution in Abuja who stated:

''*Initially the relationship between IDPs and host communities is always very smooth in the sense that local communities are very keen to assist those who are victims of conflict. However, due to existing resource constraint, extra pressure exerted by IDPs is not always welcomed by host communities. This may result in creating animosity between IDPs and host communities with a potential of conflict in the long run*''.

With the supply of humanitarian assistance to IDPs in camps in northeast Nigeria, host communities who are often poor with limited basic services and infrastructures have been largely forgotten besides being significantly strained by the presence of IDPs (IOM, 2015; Adeola, 2018). Most IDPs upon arriving in the city are hosted by a relative or friend in the host community (see Davies, 2012). They are later referred to a camp when the host can no longer meet their needs in terms of food and other basic services. This was the experience of most IDPs interviewed in the Bakassi IDP camp. The relationship thereafter tends to become progressively conflicting due to the fact that on the one hand, IDPs feel abandoned by the host community, and on the other hand, the host community feels that IDPs get more attention than them. Such was seen by an expert from the Federal Ministry of Environment in Abuja as a potential cause of conflict. He stated:

''*The Nigerian society is usually very accommodative towards persons in need. Many factors are however susceptible to destabilize the relationship between the person in need and the host. Such factors include the exhausting of the hosts' resources, the person in need requiring more resources in order to become independent, especially when such resources are limited in the host community*''.

Results in the current study show a poor network connectivity in terms of friendly relationships between IDPs and members of the host community. Also, looking at the values of the betweenness centrality, only few IDPs showed a value of 0.001 and most IDPs did not show any value. This translates to the low connectivity between IDPs and members of the host community. Most problems usually encountered by IDPs in poor urban areas (such as Maiduguri) include difficulties securing a regular source of income. This is due to their lack of involvement in social networks, their dependence on state assistance and their difficulty in accessing formal and informal labor markets (Arredondo et al, 2011). Host communities securing the few available income opportunities (jobs and small businesses) by keeping close networks that exclude potential competitors such as IDPs may be seen as a plausible explanation to the low involvement of IDPs

in social networks. According to experts at the National Emergency Management Agency (NEMA) interviewed in Abuja, the low involvement of IDPs in social networks may also be explained by the fact that they usually feel marginalized, and the perceived fear by host communities of being overshadowed by IDPs, given their growing numbers.

Increased climate vulnerability that manifests through unpredictable inter- and intra-annual rainfall patterns resulting in the deterioration of livelihood has contributed to damaging social cohesion, and fueled conflict between different social groups in northeast Nigeria (Vivekananda, 2018). Added to climate vulnerability that comes as a threat to IDPs is the fact that migrants in Nigeria are still seen as a threat multiplier rather than a constituent part of broader social and economic transformation processes (De Haas, 2007; Iwuoha, 2020). When interviewed on their feelings over the presence of IDPs in their community, most members of the host community usually expressed a negative opinion. The social network analysis in the host community also confirm that members of the host community were not so keen to accept IDPs in their community. It appears that members of the host community were more connected to IDPs in camps far away from their community and only few connections were observed with IDPs in the Bakassi IDP camp that is closer to them. This may testify to the fact that the presence of IDPs in Maiduguri is seen by members of the host community as a threat multiplier. This may be due to the fact that IDPs are susceptible of excreting extra pressure on the very limited resources available to the host community.

Schilling et al. (2013) found that the potential of conflict can increase in the receiving area of migrants, especially if the migration is internal, forced and large-scale. Such conditions are similar to those present in northeast Nigeria, where large numbers of IDPs migrated within Nigeria as a result of the insurgency of Boko Haram and the counter-insurgency by the state forces (see also IOM, 2016; Mukhtar et al., 2018; Mbiyozo, 2017; Kamta et al., 2020a). It is expected that Africa will most likely experience high impacts of climate change including water scarcity and food security (Niang et al., 2014), with the potential of aggravating conflict, instability and insecurity (Borderon et al., 2019; Scheffran et al., 2019). Such climate conditions and the resulting impact on the resources is expected to fuel conflicts in the Lake Chad Basin, hence increasing the number of displaced persons in the region (see Werz and Conley, 2012; Akubor, 2017).

Efforts are made by the Nigerian authorities to limit contacts between IDPs and host communities in northeast Nigeria, and there is a perceived willingness of each group (IDPs on one side and host community members on the other side) to limit contacts. This may explain why a relatively peaceful atmosphere still reign as far as the IDP-host community relationship is concerned. Most experts interviewed believe however that it is only a matter of time until this relationship becomes conflicting. In other parts of Nigeria such as Jos and Kaduna, the incoming of internal migrants has resulted in ethno-religious conflict with the host community (Werz and Conley, 2012). The numbers of IDPs in northeast Nigeria has continued to rise but the amount of services provided, such as food, shelter and healthcare, has remained unimproved (Letswa and Isyaku, 2018). It can therefore be predicted that if nothing is done to improve services provided to IDPs and to stop or reduce new arrivals, camps will no longer be able to contain them, and contacts with the host community tend to increase with the potential of creating new tensions.

Conclusion

The aim of this study was to determine the social networks in which IDPs are involved in Maiduguri, as well as the potential of conflict between IDPs and host communities in close proximity of the Bakassi IDP camp in Maiduguri. Results show that IDPs within this camp mostly have friendly relationships with other IDPs. While many IDPs had a neutral or no relationship with the host community, 17% to 39% of IDPs had a conflicting relationship with the host community. Relationships between IDPs in the Bakassi camp and IDPs in other IDP camps in Maiduguri were mostly neutral or absent. This was explained by the fact that IDPs had restricted access to other camps. On the host community's perspective, only few relationships were recorded with IDPs in the Bakassi IDP camp. Most members of the host community were rather connected to IDPs in other camps in or around Maiduguri that were further away from their community. This behavior was seen in this study as a way of protecting the few economic opportunities and resources available to the local community. In this logic, IDPs were seen by the host community as competitors for the resources that were already insufficient.

Most IDPs interviewed in this study migrated to Maiduguri in search of safety, after being subjected to the insecurity created by the insurgency of Boko Haram, and the counter insurgency by the government. Many also indicated that the choice of Maiduguri as a destination was partially motivated by the presence of a relative who could host them. Members of the host community also indicated having relatives in the Bakassi IDP camp or in other camps in Maiduguri. It can be assumed that because of these affinities between IDPs and the host community, the relationship will remain peaceful. Social network data presented in this study show something different. IDPs tend to have no relationship or rather conflicting relationships with members of the host community. On the other hand, members of the host community tend to lose contact with relatives in the IDP camp. Experts interviewed in this study also believe that even though the relationship between IDPs and the host community may seem peaceful for now, it is only a matter of time until such a relationship becomes conflicting.

Field experts at the National Emergency Management Agency (NEMA) interviewed in this study identify service delivery to IDPs in northeast Nigeria as a potential cause of conflict between IDPs and host communities. Members of the host community that also have basic needs feel that they should be treated the same way IDPs are treated. This study recommends that while service delivery to IDPs should be improved, host communities should also be taken into account with basic commodities. The social network presented in this study may allow to identify key actors that can be useful for peacekeeping between IDPs and host community. Those are the actors with high betweenness centrality in terms of friendly relationships. On the other hand, actors with high betweeness centrality in terms of conflicting relationships can be identified and restricted from contacts with the host community for peace keeping.

Chapter 6: Summary and conclusion

The work presented in this thesis was subdivided into individual chapters that were either published or submitted for publication in peer review journals. Each chapter presented a specific aspect of the study with conclusions and recommendations. As such, this last chapter summarizes the findings from the previous chapters to answer the research questions associated with the overall study. General conclusions are drawn and directions for further studies are given in this chapter.

6.1. Summary

Projections of future climate change still present major uncertainties, therefore, it cannot accurately be predicted how the climate system will change in the next half century. Meanwhile, social impacts of climate change continue to grow especially in developing countries given their low adaptive capacities. Rural populations in developing countries mostly rely on ecosystem services as their main source of livelihood. Therefore, changes in the natural environment can have major impacts on their lives. The impacts of climate change in such regions may also trigger conflict as people try to secure the little available resources for themselves. Furthermore, terrorist groups may easily prosper in these areas as impoverished young farmers can easily be enrolled within their troops in exchange of small stipends.

Several studies have addressed the impacts of climate change on conflicts but a direct link between climate change and conflict has hardly been made (e.g. Jiricka-Pürrera and Wachter, 2019; Mendenhall et al., 2020). More generally, the evidence suggests that the impacts of climate change in vulnerable regions may lead to conflict in the presence of other factors such as easy access to small arms, the weakness of institutions, unequal distribution of resources, marginalization, etc. Religious and political motivations may also contribute as a threat multiplier.

The overall aim of this thesis was to determine the impact of climate change and conflict in migration in the Lake Chad Basin region and the potential of further conflicts, by answering the following research questions: 1- What role does insecurity/violent conflict play in the decision of

people to migrate to Maiduguri? 2- What role does environmental change and resource scarcity (in the sending area of the migrants) play in the decision of people to migrate to Maiduguri? 3- What are the key networks of migrants and their links with members of the host community in Maiduguri? 4- What is the potential of the migration to lead or contribute to conflict between migrants and the host community? This thesis addressed the research questions in four different chapters.

To better understand the origins of the ongoing humanitarian crisis in the Lake Chad Basin, chapter two looked at some of the main causes of the crisis, including historical, environmental and socioeconomic root causes. The Islamic insurgency of the Boko Haram group is the main cause of conflict in the region, and has its origins into the history of the region, namely the existence of the ancient Kanem-Bornu Empire. The pursuit of an Islamic state in the Lake Chad region by Boko-Haram ideologists draws on the model of the Kanem-Bornu Empire, which made this empire one of the most influential in sub-Saharan Africa between the 11^{th} and the 19^{th} century. The successive locations of the empire around Lake Chad were motivated by climate factors and today, climate is still at play in the region with the increased poverty level and the emergence of the Boko-haram Islamist group. As a result of poor environmental factors that manifest through water scarcity and land desertification in the region, many young people whose main activity was agriculture have become jobless. The peaceful and non-violent youth movement in Maiduguri that later became violent as a result of political misunderstandings, took advantage of this environmental and socioeconomic misfortune to easily enrol young people within its troops.

Conflict between Islamist insurgents and state security forces in the Lake Chad Basin, mainly on the Nigerian side, triggered internal displacements from the most affected rural areas towards urban centres in search of safety and better living conditions. It was noticed that the time people spent in the conflict before migrating varied from person to person, but mostly from community to community. Chapter three then sought to understand what other factors influenced the time people spent in the community before migrating. This chapter showed that in the state of environmental degradation, communities that did not have the privilege of benefiting from the ecosystem services offered by Lake Chad, developed other income generating activities such as small businesses and manual labour. This allowed them to become more resilient to external disturbances such as conflict, hence they spent more time in their communities before migrating.

Other factors such as land ownership and resource scarcity also influenced the time of migration in certain communities. Therefore, in response to question 1 and question 2 of this thesis, chapter three found that conflict and insecurity related to the activities of Boko Haram were the main push factors of migration in the study area, but the response or the decision to migrate was taken at different moments. This chapter further found that the decision to migrate despite the insecurity was a function of the socioeconomic strength of the individuals, and environmental factors such as access to fertile land or to water resources.

Since some environmental factors including water availability influenced the time of migration as shown in chapter three, chapter four investigated the role that water scarcity played in the decision of rural communities in northeast Nigeria to migrate to the urban centre of Maiduguri, and the potential that migration may lead to conflict in the receiving location. This chapter found that in relation with water, a large majority of people in northeast Nigeria were willing to migrate if they experienced water scarcity. The willingness to migrate was however, hardly associated with actual migration. The history of migration in the study area showed that only a small percentage of the people migrated in the past in response to water scarcity. Therefore, environmental related migration should not be regarded as a process that systematically occurs when certain conditions are present, but rather as a case-specific process that may differ from person to person or from community to community. This chapter showed that people in two different communities under similar environmental conditions may respond differently.

Chapter four also investigated the potential of conflict between IDPs and host communities in Maiduguri. While the relationship between IDPs and their host communities was perceived to be peaceful, chapter four, partially answering the research question 4, found that the majority of members of the host community were not in agreement with the presence of IDPs in their community. The shortage of resources in the host community was seen as a possible explanation for this disapproval of the presence of IDPs by members of the host community. Most experts agreed that competition for the few available resources may come as a potential source of conflict between IDPs and host communities. The potential of conflict between IDPs and host communities in Maiduguri was further investigated in Chapter five by means of Social Network Analysis.

Chapter five addressed question 3 of this thesis by analysing Social Networks of IDPs in Maiduguri. Findings revealed that some IDPs in Maiduguri showed friendly relationships with the

host community. On the host community's perspective, very few relationships with IDPs located in the Bakassi IDP camp were recorded. Members of the host community were rather connected with IDPs in other camps in Maiduguri that were located further away from their community. The interpretation of this behaviour joins the analysis made in chapter four, therefore consolidating the hypothesis that the scarcity of resources may affect the nature of relationships between members of the host community and IDPs. In completion of the answer to research question 4 given in chapter four, chapter five found that the pre-existing relationships (family or friendship) between most IDPs and members of the host community were not enough to keep them in contact. The scarcity of resources was seen by experts as a factor sufficient to trigger tensions between IDPs and their host community.

The potential of conflict in the Lake Chad region is exacerbated by the ethnic heterogeneity in this region. Northeast Nigeria including the states of Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe is the most diversified region in the country with at least 205 minority ethnic groups and the dominant ones being the Kanuri, the Fulani and the Hausa ethnic groups (Mustapha, 2006). People migrating even on a relatively short distance are most likely to encounter people from a different ethnic group. The resulting social heterogeneity may be seen as a possible source of tensions. This does not imply that cohabitation between ethnic groups in Nigeria is inexistent or impossible, but in the context of resource scarcity, identity may play a significant role in fuelling tensions. The case of the conflict between herdsmen and farmers in Nigeria has widely been mentioned and Lindfors (2019, p48) notes that identity construction and the perception of the 'others' are believed to be intimately connected to the increased polarization between the groups and the intensification of violence.

6.2. Conclusions and Outlook

The objectives of this study were to comparatively analyse environmental and political factors of migration in the Lake Chad Basin, to understand through the analysis of social networks how displaced persons in Maiduguri connect between themselves and with host communities and finally, to evaluate the potential that internal displacements may lead or contribute to conflict between IDPs and their host communities. The subject matter introduced by these objectives is

certainly complex, but this thesis through the overreaching conclusions that are drawn, has proven that it is possible to grasp the complexity with the use of good empirical data and a multitude of methods. Findings in this thesis, summarised in this chapter, present a unique aspect of issues related to conflict, climate change and migration in the Lake Chad Basin. The study area is still very unstable due to the activities of the Boko Haram insurgent group. Therefore, there is very limited field research done in this insecure area, hence data presented in this study and the findings are of unique importance.

The social impacts of climate change, mainly migration due to environmental degradation have been shown by several studies. The connection between climate change and migration on the one hand and climate change and conflict on the other hand have been made, even though scholars still fail to agree that climate change leads to conflict. One of the major achievements in his thesis is the dissociation of political factors (the conflict) from the environmental factors (resource scarcity) as push factors of migration in northeast Nigeria. The conflict between Boko Haram insurgents and the Nigerian forces has often been seen as the sole cause of migration in the region. This study showed that members of local communities that did not benefit from Lake Chad ecosystem services were more resilient to environmental changes and developed parallel income generating activities such as small businesses and manual labour. Members of those communities were ready to stay in their communities besides the insecurity, even paid 'taxes' to the insurgent group to continue staying and only migrated when they had nothing left to hold on to.

It has also been shown in this thesis that in a state of humanitarian crisis and resource scarcity, communities may tend to organise into smaller and closed networks, reducing relationships with potential competitors for the insufficient resources. This was the case with members of the host community in Maiduguri that were hardly connected with IDPs in their community.

This thesis made several policy recommendations that may contribute to improve the living conditions in the Lake Cad Basin and reduce the potential of new conflicts in the future. Short term and long term solutions can be considered:

- Short terms solutions may include improving humanitarian supply to IDP camps as well as to host communities in northeast Nigeria to minimize the possibility of tensions that may occur between IDPs and host communities. In October 2020, several news outlets including

France 24 and Vanguard reported on the initiative of the Nigeria Security and Civil Defence Corps (NSCDC) to deploy a strong Agro-Rangers squad in farm settlements of northeast Nigeria with an aim to provide security cover to farmers in order to allow them to access their farms with an aim to enhance food security. This initiative is highly encouraged as farmers are still being killed in northeast Nigeria. On 28th November 2020, the killing by insurgents of at least 110 farmers near Maiduguri was reported (France 24, 2020).

- Long term solutions may include a better industrialization of northern Nigeria which will provide an income alternative to young farmers when farming is no longer profitable due to climate change that induces changes in the natural environment. Furthermore, a more sustainable use of water resources through practices such as the construction of boreholes and the regulation of upstream irrigation will protect groundwater and surface water sources and improve access to water which in turn may improve agricultural productivity. Finally, even though the Islamic insurgency in the region emerged in Nigeria as a result of political misunderstandings, the crisis should not be viewed as a Nigerian problem alone, but rather as a continental or even a worldwide problem that requires efforts from the international community for solutions.

Due to time constraints and limited funding, only five rural communities affected by the conflict were considered in this study. Findings showed that the response to conflict and to resource scarcity can vary significantly from one community to another community. As such to have a broader perception of the impacts of conflict and climate change on a regional scale, research should include more communities in the region.

Furthermore, data collected in the present study addressed climate change in terms of droughts and desertification alone. Flooding and the resulting impacts on communities are also common in the Lake Chad region (see for instance USGS, 2020). The cumulative impact of insecurity and flooding events on human migration in the region has hardly been studied. Further research should also address this critical issue.

In northeast Nigeria, IDPs are located in formal camps operated by the Nigerian government, but also in informal camps that receive less attention from the government due to limited resources. The Bakassi IDP camp where data were collected is a formal camp operated by the government.

Research should also include IDPs in informal camps as they may have different views from those of IDPs in formal camps. Host communities of informal camps may also have a different perception of the presence of IDPs in their community.

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Appendices

Appendix 1: List of Experts interviewed or consulted during the field study

Name	Organization	Position	Focus of interview
Dr, Joseph Ochogwu	Institute for Peace and Conflict Resolution	Researcher	The root causes of the insurgency in northeast Nigeria, conflict actors and possible solutions
Paul Gwaza	Institute for Peace and Conflict Resolution	Researcher	The root causes of the crisis, local and regional political approach to the crisis
Charles Nwanelo	National Commission for Refugees, Migrants and IDPs (NCFRMI)	Head of migration unit	Migration trends in northern Nigeria, actors of violence in northern and central Nigeria
Dr. Emeka Xris Obiezu	National Commission for Refugees, Migrants and IDPs (NCFRMI)	Consultant	Migration trends in northern Nigeria, actors of violence in northern and central Nigeria
Jonah Barde	Federal Ministry of Environment	Chief Scientific Officer	Environmental change and migration in northern Nigeria, resource access and conflicts
Garba Abdulrahman Mohammad	Federal Ministry of Environment	Scientific officer	Regional initiatives to rehabilitate Lake Chad, local adaptation to climate change
Babarinde S.M.	Federal Ministry of Water Resources	Head of climate change unit	Water resources availability and use in northern Nigeria, population pressure, migration and groundwater recharge
Dr. Sunday Onazi	Federal Ministry of Labour	Assistant chief labour officer	Socioeconomic impacts of conflict in northern Nigeria, migration to central and southern Nigeria

Sumaila Ibrahim	National Emergency Management Agency	Humanitarian assistance unit	Humanitarian assistance to IDPs, and the potential of tensions with the host community
Ishaq Ado Adamu	National Emergency Management Agency	Humanitarian assistance unit	Humanitarian assistance to IDPs, and the potential of tensions with the host community
Mariam Belgore	M.O.B foundation	Founder	Humanitarian assistance to IDPs and reintegration
Solomon Momoh	UNHCR	Senior protection assistant	Humanitarian impact of the conflict, assistance and relationships with host communities
Vincent Pouget	International Committee of the Red Cross (ICRC)	Communication Coordinator	Actions of the ICRC in the region, implication on conflict resolution and humanitarian assistance

Appendix 2: Guideline questionnaire used to collect data in the Bakassi IDP camp

Questionnaire No_____ Date_____ Camp _____Identification _____Gender M/F___

Section 1: Role of insecurity/Conflict in the decision to move

1- Where did you come from? _____When did you arrive here?_____
Why did you leave your original place?_____
_____
_____

2- Were you involved in conflict before leaving? Yes ☐ No ☐ if yes in what period(s)?
_____
_____

- Who was involved in the conflict? _____

_____

- Who were the main conflict actors? _____

_____

3- Have you lost any assets in conflict (House, land, cattle etc.)? Yes ☐ No ☐
If yes, please explain_____

4- Were you forced to leave? Yes ☐ No ☐ If yes by whom? _____
And why?_____

_____

Section 2: Role of environmental change and resource scarcity in the decision to move

5- What was your principal activity? Farmer ☐ Herder ☐ Other _____

_____

6- Did you have access to land? Yes ☐ No ☐ if yes under what title?
Own land ☐ Community land ☐ unoccupied land ☐ other _____

_____

7- Did you have access to water? Yes ☐ No ☐ Please explain _____

_____

8- Did you have any income? Yes ☐ No ☐ Please explain _____

_____

9- Have you ever experienced resource scarcity (land or water) in the past? Yes ☐ No ☐
- If yes what was your response? _____

_____

10- Have you ever migrated because of land or water scarcity? Yes ☐ No ☐
- If yes, please explain? _____

_____

- If no, would you ever have left because of land of water scarcity? Yes ☐ No ☐

_____

Section 3: Potential of new conflicts with host community

11- Do you feel safe inside the camp? Yes ☐ No ☐ Why/why not? _____

_____

12- Do you feel safe outside the camp? Yes ☐ No ☐ Why/why not? _____

_____ _____

13- What do you do on a daily basis since joining the camp? _____

14- Do you intend resuming your previous activities (exp. Farming, herding)? Yes ☐ No☐

- If yes what resources (land, water) do you intend using? _____

15- Are you in contact with host communities? Yes ☐ No ☐ Please explain

_____

16- Do you feel welcomed by the host communities? Yes ☐ No ☐ Please explain -

_____

17- Do you have access to land or water resources at this moment? Yes ☐ No ☐ specify

_____

- If yes how was access acquired? By force ☐ Granted by local authorities ☐ Granted by local owners ☐ Unoccupied land ☐ Renting ☐ Other _____

  _____

- If No, are you interested in having access to such resources? Yes ☐ No ☐ and if yes would you engage in violent actions for this reason? Yes ☐ No ☐

  _____

Section 4: Key networks in Maiduguri

18- Who do you collaborate with in terms of:

- Information_____
- Basic needs _____
- Security_____
- Conflict resolution_____
- Resources access _____
- Health issues_____
- Other services or needs (specify)_____

19- Please rate your collaboration with the following people, group of people or institutions:

Rate from 1 to 5 with 5 being very good/strong/helpful, 1 being very poor/unhelpful and 0 in the case where there is no relationship or contact.

- Police unit 5☐ 4☐ 3☐ 2☐ 1☐ 0☐
- SEMA 5☐ 4☐ 3☐ 2☐ 1☐ 0☐
- NEMA 5☐ 4☐ 3☐ 2☐ 1☐ 0☐
- Civil defense unit 5☐ 4☐ 3☐ 2☐ 1☐ 0☐
- Immigration Unit 5☐ 4☐ 3☐ 2☐ 1☐ 0☐
- Local community 5☐ 4☐ 3☐ 2☐ 1☐ 0☐
- Residents of other camps 5☐ 4☐ 3☐ 2☐ 1☐ 0☐
- IDPs from same village 5☐ 4☐ 3☐ 2☐ 1☐ 0☐
- IDPs from other village 5☐ 4☐ 3☐ 2☐ 1☐ 0☐
- IDPs former herders 5☐ 4☐ 3☐ 2☐ 1☐ 0☐
- IDPs former farmers 5☐ 4☐ 3☐ 2☐ 1☐ 0☐
- All NGOs 5☐ 4☐ 3☐ 2☐ 1☐ 0☐

20- Are you comfortable in sharing the following?

Age (Approx.):_____ Religion_____

21- Is there anything else you would like to share with me that we have not covered but you find important/relevant?

_____

_____

_____

Appendix 3: Guideline questionnaire used to collect data in the host community in Maiduguri

Questionnaire No_____ Date_____ Identification _____Gender M/F_____

Section 1: Conflict history in host community

22- Have you always lived here? _____

23- Were you subject to conflict before? Yes ☐ No ☐ if yes in what period(s)?

_____

- Who was involved in the conflict? _____

_____

- Who were the main conflict actors? _____

_____

24- Have you ever lost any assets in conflict (House, land, cattle etc.)? Yes ☐ No ☐
If yes, please explain _____

_____

25- Have you ever been forced to leave your regular living area? Yes ☐ No ☐ If yes by whom? _____
and why? _____

_____

26- Have you ever migrated because of conflict? Yes ☐ No ☐ If yes please explain

_____

_____

-**Section 2:** Role of environmental change in conflict as perceived by the community

27- What is your principal activity? Farmer ☐ Herder ☐ Employed ☐ Business ☐
Other_____

28- Do you have access to land? Yes ☐ No ☐ if yes under what title? Own land ☐ Community land ☐ Unoccupied land ☐ Renting ☐ other _____

_____

29- Do you have access to water? Yes ☐ No ☐ Please explain_____

_____

30- Is there a risk for your land being stolen or forcefully taken? Yes ☐ No ☐

- If yes by whom? _____
- How do you (intend) flight(ing) to keep your land? Self-armed defence ☐ Community task force ☐ Legal means ☐ Traditional (community leaders) resolution ☐ other _____

_____

31- Have you ever experienced resource scarcity (land or water) in the past? Yes ☐ No ☐

- If yes what was your response? _____

_____

32- Have you ever migrated because of land or water scarcity? Yes ☐ No ☐

- If yes, please explain? _____

_____

- If no, would you ever leave because of land of water scarcity? Yes ☐ No ☐

_____

Section 3: Potential of conflicts with displaced communities

33- Do you feel safe inside your local community? Yes ☐ No ☐ Why/why not?

_____

_____

34- Do you feel safe outside your local community? Yes ☐ No ☐ Why/why not?

_____

_____

35- Are you in contact with any IDP? Yes ☐ No ☐ Please explain

_____

36- Do you approve the idea of displaced persons in your community? Yes ☐ No ☐ please explain_____

_____

37- Are you in favour of IDPs using land within your community for agricultural activities? Yes ☐ No ☐ if yes, Please explain

_____

_____

If no what would your response be if they were to do so? _____

_____

Section 4: Key networks and collaboration in Maiduguri local communities

38- Please rate your collaboration with the following IDPs groups:
Rate from 1 to 5 with 5 being very good/strong/helpful, 1 being very poor/unhelpful and 0 in the case where there is no relationship or contact.

- IDPs from Gwoza: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ 0 ☐
- IDPs from Marte: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ 0 ☐
- IDPs from Mongouno: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ 0 ☐
- IDPs from Guzamala: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ 0 ☐
- IDPs from Nganzai: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ 0 ☐
- Other IDPs_____ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ 0 ☐
- Other IDPs_____ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ 0 ☐
- Other IDPs_____ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ 0 ☐

39- Are you comfortable in sharing the following?

Age (Approx.):_____ Religion_____

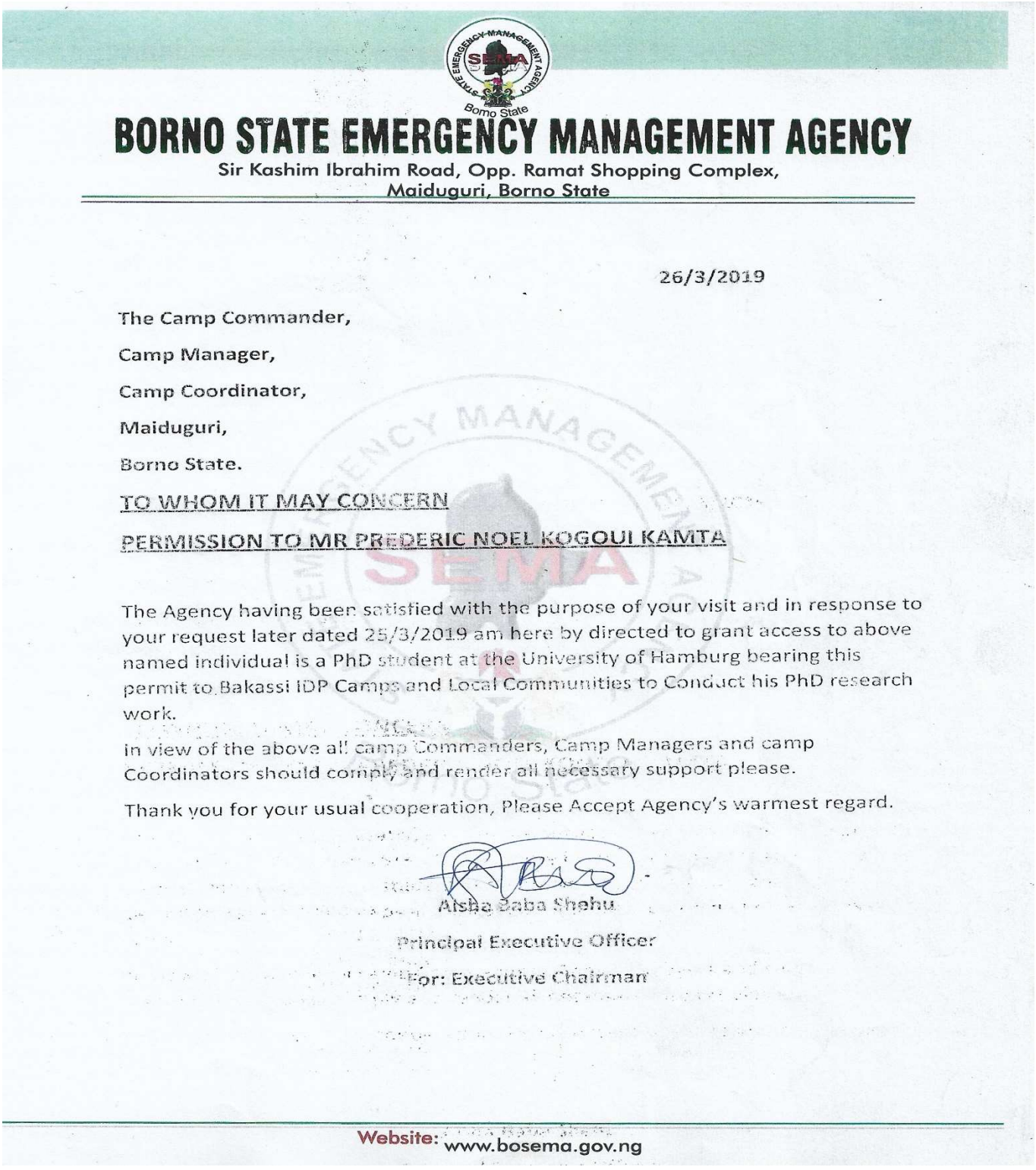
Is there anything else you would like to share with me that we have not covered but you find important/relevant?

_____

_____

_____

Appendix 4: Permission form the Borno State Emergency Management Agency to conduct research in the Bakassi IDP camp.



BORNO STATE EMERGENCY MANAGEMENT AGENCY

Sir Kashim Ibrahim Road, Opp. Ramat Shopping Complex,
Maiduguri, Borno State

26/3/2019

The Camp Commander,

Camp Manager,

Camp Coordinator,

Maiduguri,

Borno State.

TO WHOM IT MAY CONCERN

PERMISSION TO MR PREDERIC NOEL KOGOUI KAMTA

The Agency having been satisfied with the purpose of your visit and in response to your request later dated 25/3/2019 am here by directed to grant access to above named individual is a PhD student at the University of Hamburg bearing this permit to Bakassi IDP Camps and Local Communities to Conduct his PhD research work.

in view of the above all camp Commanders, Camp Managers and camp Coordinators should comply and render all necessary support please.

Thank you for your usual cooperation, Please Accept Agency's warmest regard.

Aisha Baba Shehu

Principal Executive Officer

For: Executive Chairman

Website: www.bosema.gov.ng

Appendix 5: Interviews in the Bakassi IDP camp

Acknowledgements

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