

UNIVERSITY OF NAIROBI
POPULATION STUDIES AND RESEARCH INSTITUTE

**EFFECTS OF FORCED MIGRATION ON THE ENVIRONMENT: THE CASE OF
ARUA DISTRICT, IN UGANDA.**

BY:

Apollo Wanyakha Masete


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DECLARATION

I APOLLO WANYAKHA MASETE do hereby declare that this research project report is my original work and has not been presented for an award of a degree or any other certification in any other university.

Signature  _____

Date 03 / 06 / 2020

Student: Apollo Wanyakha Masete

Q68/28921/2019

APPROVAL

This is to certify that this research project report titled "*Effects of Forced Migration on the Environment; A Case of Arua District, in Uganda*" has been submitted for examination with my approval as University appointed supervisor.

Signature  _____ DATE June 6, 2020

Supervisor: **Dr. Fransen Sonja**

Research fellow, Maastricht Graduate School of Governance

University of Maastricht.

ABSTRACT

It is an accepted fact that large influx of displaced persons (refugees/IDPs) significantly contributes to environmental problems in host countries and communities (McNeill, 1984). In Uganda, land deterioration has been severe in areas where refugees have settled. This has resulted from the gradual removal of some part of the ecosystem by the refugees for settlement (UNDP, 2017). The situation is worsened by the rate of depletion of settled areas. As such, the refugees who depend on it have had to relocate to newer, virgin areas in search for better environment. The negative impacts of refugees on environment include deforestation, water pollution, health hazards, declining productivity of agricultural land among others (Ahimbisibwe, 2018). Refugee settlements often occur in environmentally sensitive areas. They depend entirely on environment for survival and livelihoods. Dependence on environmental factors such as land, water, and forests exerts undue pressure on these scarce resources thus creating degradation problems. It is on this backdrop that this study on the effects of forced migration on environment was undertaken. The study examines the effects that forced migration settlements pose on the environment, here, forced migration studied in terms of settling Refugees and Internally Displaced persons. This study is cognisant of the delicate nexus between migration and environment. There is need to manage this relationship in a smart balance so as to avoid adverse effects of the other. Using functionalist theory, this study recognises the drivers for migration as the forces behind migration situations and the effect on environment. The study uses qualitative descriptions in analysis of the objectives herein: to establish the effect of forced migration settlements on water resources, forest cover and land use. This study established that forced migration has significant effect on all the environmental factors above.

LIST OF ACRONYMS

CEAP	Community Environmental Action Plan
COVID-19	Corona Virus Disease 2019
CREEC	Center for Research in Energy and Energy Conservation
CRRF	Comprehensive Refugee Response Framework
DCIC	Directorate of Citizenship and Immigration Control
DRC	Democratic Republic of Congo
EHoA	East and Horn of Africa
FAO	Food and Agriculture Organization
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IDMC	Internal Displacement Monitoring Centre
IDP	Internally Displaced Persons
IOM	International Organization for Migration
IRRI	International Refugee Rights Initiative
MEA	Millennium Ecosystem assessment
NEMA	National Environmental Management Authority
NGO	Non-Governmental Organization
NRRF	National Refugee Response Plan
OPM	Office of the Prime Minister
UNDP	United Nations Development Program
UNHCR	United Nations High Commissioner for Refugees.

DEDICATION

To my dear family whom I greatly love and cherish

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My gratitude goes to my family for standing with me during this educational journey. My employer for giving me the opportunity to go study. My financial sponsors GIZ,GoK for support and facilitation.

To Ret Gen. Dr Gordon Kihalangwa, I wish to say you faught a valiant war and we are glad to be the first fruits of your effort, asante sana papa.

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TABLE OF CONTENTS

ABSTRACT.....	ii
LIST OF ACRONYMS	iii
DEDICATION.....	iv
ACKNOWLEDGEMENT	v
LIST OF TABLES.....	ix
LIST OF FIGURES	ix
CHAPTER ONE.....	1
BACKGROUND, PROBLEM STATEMENT AND OBJECTIVES.....	1
1.0. Introduction	1
1.1. Background.....	1
1.2. Statement of the Problem	4
1.3. Research Questions.....	5
1.4. Objectives	5
1.5 Conceptual Framework.....	6
1.6 Scope of the Study.....	6
1.7 Justification.....	7
CHAPTER TWO	8
LITERATURE REVIEW	8
2.0 Introduction	8
2.1 Theoretical Literature review	8
2.3 Empirical Literature Review	10
2.4. Refugees/ IDPs Settlements and Water Resources.....	13
2.5. Refugee/ IDPs Settlements and Forest Cover.....	14
2.6. Refugees, IDPs Settlements and Land Use	19
CHAPTER THREE	21

DATA AND METHODS.....	21
3.0 Introduction	21
3.1 Research Design	21
3.3 Sources of Data.....	22
3.6 Validity	23
3.7 Data Analysis Procedures.....	23
3.8 Ethical Considerations	24
CHAPTER FOUR.....	25
RESEARCH FINDINGS AND DISCUSSIONS.....	25
4.1 Introduction	25
4.2 Background Information.....	25
4.2.1 Response Rate.....	25
4.2.2 Representation by Social Strata	25
4.2.3 Demographics	26
Figure 5: Respondents distribution by education level	28
4.3 Forced Migration and Water Resources Use.....	29
4.3.1 Drivers of migration	29
4.3.2 Water Source and Management.....	29
Figure 6. Graphical Presentation of Water Situation in Arua, Before and After Settlement	30
4.4 Forced Migrants’ settlements and Forest Cover.....	31
4.4.1 Situation of Forest Cover.....	31
Figure 7. Graphical Presentation of Source of Energy against Consumption (frequency) ...	32
4.4.2 Effect of forced Migration Settlement on Forest Cover	33
4.5 Forced Migration Settlement and land Use	34
4.5.1 Land Allocation in Arua Settlements	34

4.5.2 Effects of Settlement on Land Use	35
Figure 8. Effects of Settlement on Land Use.....	36
4.6 Other information	36
CHAPTER FIVE	38
SUMMARY AND CONCLUSIONS	38
5.0 Introduction	38
5.1 Summary.....	38
5.1.1 Refugees and IDPs Settlement and Water Resource Use.....	38
5.1.2 Refugees and IDPs Settlement and Forest Cover.....	39
5.1.3. Refugees, IDPs Settlement and Land Use	39
5.2 Conclusions	40
5.2.1 Refugees, IDPs settlement and water resource use.	40
5.2.2 Refugees, IDPs Settlements and Forest cover	41
5.2.3 Refugee, IDPs Settlements and Land use.	41
5.3 Recommendations	41
5.4 Limitations of the study and suggestions for further Research	42
REFERENCES	44
Appendix i Interview Guide.....	48
Appendix ii. Originality Report.....	54
Appendix iii. certificate of correction.....	58

LIST OF TABLES

Table 1: Representation per Social Section

Table 2: Presentation of Water Situation in Arua, Before and After Settlement

LIST OF FIGURES

Figure 1: Conceptual framework.

Figure 2: Refugee Settlements in Uganda with population size

Figure 3: Chart showing distribution of respondents by gender

Figure 4: Distribution of respondents by Age

Figure 5: Respondents distribution by education level

Figure 6: Graphical Presentation of Water Situation in Arua, Before and After Settlement

Figure 7: Graphical Presentation of Source of Energy against Consumption (frequency)

Figure 8: Effects of Settlement on Land Use

CHAPTER ONE

BACKGROUND, PROBLEM STATEMENT AND OBJECTIVES

1.0. Introduction

This study was about the impact of forced migration on the environment in Uganda. There is growing debate linking forced migrations to environmental degradation in receiving areas. Environmental degradation is one of the threats to human existence. This has attracted government, non-government and international attention. This chapter covers the background to the study, statement of the problem, justification of the study, research questions, study objectives, conceptual framework, scope and the study significance.

1.1. Background

Globally, efforts to link forced migration and environment stem from the enormous threats posed by environment degradation on human survival. The Millennium Ecosystem Assessment (MEA), (2005a) considers environmental degradation to occur because of careless human activities on earth. Some of the activities associated with environmental degradation are people cutting down trees for firewood, construction poles, clearance of vegetation for agriculture and roofing materials in mushrooming settlements, (World Bank and FAO, 2018). Such activities lead to environmental degradation that is a key threat to human survival. As the settlement of refugees in the country is anticipated to impact on the environment in different ways which include deforestation and general loss of vegetation cover; water pollution and depletion of ground water resources; land degradation and air pollution. Such destructions of the environment emerge from the urge for refugees to meet their immediate needs at their arrival.

Environmental degradation is said to lessen the capacity of the earth to meet social and environmental needs of the people living on it (World Bank, 2000a). The report further indicates that environmental degradation can happen in a number of ways. That is at the point when the environments is degraded or when common assets are exhausted, the environment is corrupted and injured. Environmental degradation caused by increased population due to influx of refugees and

protracted internal displacement from people's settlements increases refugees' and local community exposure to environmental hazards like droughts (Ahimbisibwe, 2018). Although there are, a number of causes of environmental degradation highlighted by many writers elsewhere, the study however, focus is on forced migration aspects of refugees and internally displaced persons in Uganda.

1.1.2 Displacement and Environmental Degradation

Anatomy of disaster displacement in the East and Horn of Africa (EHOA) is precarious. The recent disaster displacement affected the region ending the month of December owing to various rain cases due to cyclone Idai and its aftermath has resulted into displacements in various countries including; Djibouti (200,000), Somalia (270,000) and South Sudan (1 million). The recent floods in the EHOA is a result of cyclones Idai and Kenneth that affected parts of Mozambique and neighboring countries leading to displacement of 617,000 people in Mozambique alone.

Drought-related displacement of pastoralists paradoxically affects a large population of inherently mobile persons in search of water and pasture for their livestock. It is very difficult to distinguish between voluntary nomadic movements, less voluntary migration and displacement, particularly in the context of drought. The process of displacement results from pastoral livelihoods reaching a critical threshold below which pastoralism is not sustainable. This results in movement of pastoralist population within state borders and across state borders. This pastoralist coping strategy of having to move has challenges embedded on it. Some of these challenges can be security, diplomatic, and rights based. The protection of pastoralists and their livestock within and without national borders is a paramount function of the state. This policy recognizes this special feature of displacement and responds to it. Refugees in Uganda occupy unproductive drier areas like the Northern part of the country thus prone to drought displacement and conflicts over water and pasture with host community who are pastoralists.

1.1.3 Historical Underpinning of Ugandan Case

Uganda's experience with forced migration is as old as the history of the country itself. The refugee and internal displacement in Uganda assumes unique dichotomy. While Uganda a refugee receiving country since pre-independence, making it a preferred and accessible destination of refugees in the great lake region, the political history of the country has also churned out refugees

to many parts of the world and caused displacements of Ugandans in millions. Currently Uganda hosts refugees from Rwanda, Democratic Republic of Congo (DRC), south Sudan, Somalia and Sudan. As a result, many refugees' and internally displaced person's settlements camps continue to be established (Child Voice Organization Report, 2017). The causes of forced migration have been almost the same, ranging from political conflicts to natural disasters (Kyazike, 2018). It is widely accepted that large influx of refugees contributes to environmental problems in host countries and communities (McNeill, 1984).

In the context of Uganda, land deterioration has been severe in areas where refugees have settled and this has resulted from the gradual removal of some part of the ecosystem by the refugees (UNDP, 2017). This has worsened the rate of depletion and as such, the refugees who depend on it have had to relocate in search for better environment.

According to (Ahimbisibwe, 2018) the negative impacts of refugees on environment include deforestation, water pollution, health hazards, declining productivity of agricultural land among others. Refugee settlements often occur in environmentally sensitive areas. In Uganda, refugees have settled in agriculturally marginal areas or near national parks or forest reserves. This has the potential of causing more environmental problems resulting in a cycle of refugees and displacements. Breaking this cycle of refugee causing environmental degradation and vice versa needs the efforts of all stakeholders involved in refugee and displacements management at local and international levels.

Refugees, that is to say the displaced populations who have crossed the borders of their states, are still as numerous in Africa with persistent conflicts in South Sudan, Somalia, the DRC, northern Mali, Libya, etc. In addition to armed conflicts, there are political challenges from the authorities, which are increasingly causing confrontation and exile from populations considered opponents of the ruling parties. In 2018, of the 20 million refugees in the world, a third, or nearly 7 million refugees, was in Africa.

The refugee influx fuels increased competition over natural resources between refugees and the Ugandan host community. This creates scarcity of trees (wood); water and grass increasing competition between the hosts and refugees over same resources. As scarcity increases, so do tensions over access to and management of natural resources (Ahimbisibwe). Violent incidents

affecting both refugees and host communities occur, as documented in research done in Lamwo, Adjumani and Arua districts by International Refugee Rights Initiative (IRRI) for example. Therefore, it is against this background that this study into the impact of forced migration on the environment is undertaken.

One cannot approach the subjects relating to refugees and internally displaced persons in Africa without referring to Ugandan, the home of the largest refugee and internally displaced population in Africa and third largest in the world. The Internal Displacement Monitoring Centre (IDMC, 2019) report indicates that, by the end of December 2018, there were 16.8 million Africans displaced within their own countries due to armed conflict or community violence. This figures changed rapidly during the year 2019 that saw the escalation of conflicts in Libya, the Sahel, Central and East Africa. In of Burkina Faso, the number of internally displaced persons rose from 80,000 in January 2019 to 500,000 in mid-October 2019, due to the terrorist attacks that dot this country. Additionally, the example of DRC had the number of internally displaced persons increased from 3.1 million at the end of December 2018 to 4.5 million in mid-October.

The paucity of data of populations displaced by natural disasters (floods, droughts, storms, etc.) is challenge to full determination of the extent of displacement problem in Africa. This numbers has have increased following cyclones Idai and Kenneth which hit southern Africa this year making more than 617,000 displaced people just in Mozambique and its neighboring countries. The difficulty in determining the exact numbers of displacement is due to states resistant to acknowledge such persons as needing protection within their territories. States and all the actors involved on the subject need to reflect on the durable solutions for managing refugees, returnees and internally displaced persons in Uganda and the continent at large.

1.2.Statement of the Problem

The large and protracted influx of displaced persons in various hosting regions in Uganda is said to have brought about untold environmental degradation. This follows refugees and displaced persons overreliance on the environment for livelihood on arrival and subsistence leading to environmental destruction of untold magnitude. This affects the livelihood of the host communities and refugees leading to more displacement and consequent destruction of environment. The circus is bound to continue if smart strategies are not implemented at national and regional levels to tackle the interface between refugees/ (re)displacements and environmental (re)destruction to infinity.

The United Nations High Commissioner for Refugees, (UNHCR, 2019) report acknowledges, that Uganda has received international recognition as a host country to the highest number of refugees in Africa and third largest in the world, with approximately 1.4 million refugees. There is little attention put to how these enormous numbers of refugees and internally displaced people have affected Uganda's environment. The living conditions of refugees and internally displaced persons settlements is characterized by limited resources resulting in overreliance on the environment in order to meet the immediate needs of the new arrivals. The refugee presence has added to existing pressure on the environment, for example, trees are being cut down to create space for shelter and wood for fuel a situation that results into deforestation which may lead to an increase in the rate of degradation, with accelerated land cover changes in bush-land and woodland, (World Bank and FAO (2018). Besides that, the dwellers of the refugee settlement areas continue to report drastic climatic change. The changes reported include, prolonged dry spells, droughts, erratic rains, strong winds, increased air temperatures (CREEC, 2018). It was not clear whether such changes were related to forced migration aspects. Therefore, this formed the basis for initiating a study to establish whether forced migration has effect on environment in Uganda.

1.3. Research Questions

This study aimed at answering the following research questions

1. What is the effect of Forced Migrants settlements on sustainable water use?
2. What is the impact of Forced Migrants settlements on forests in Uganda?
3. What is the effect of Forced Migrants settlement on land use?

1.4. Objectives

The general objective of this study was to examine the effect of forced migration on environment in North Western district (Arua) Uganda. Arua is chosen due to its proximity with South Sudan and Democratic Republic of Congo that are key Origin countries of forced migrants to Uganda.

Specifically, this study seeks to achieve the following research objectives

- i. To examine the impact of Forced Migrants settlements on water resource.
- ii. To assess the effects of Forced Migrants settlements on Forests in Uganda
- iii. To establish the effect of Forced Migrants settlements on land use in Uganda.

1.5 Conceptual Framework

Independent Variable (IV)

Dependent Variable (DV)

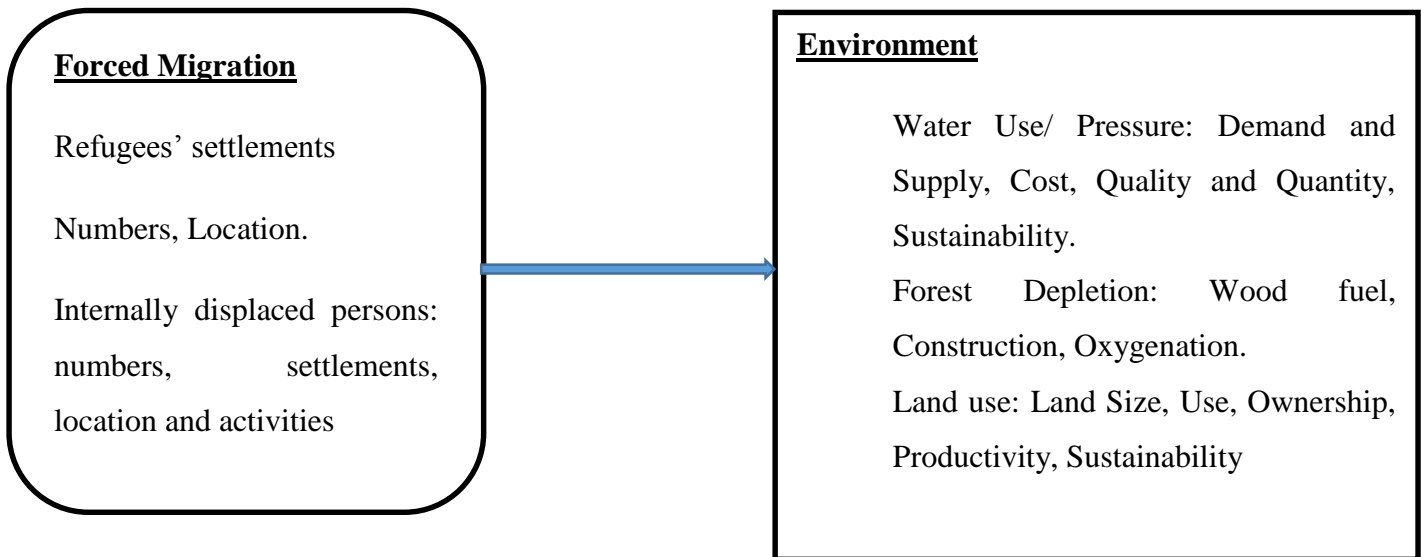


Figure 1: Conceptualization of interface between Forced Migration and Environment framework.

Description of the Variables

Figure 1 above presents two variables, Forced Migration and Environment. Forced Migration is the Independent variable studied in terms of two sub constructs; settlement of Refugees and the internally displaced persons within the country. Environment is the dependent variable studied in terms of Water, Forest cover and Land use. The study looked at these dimensions in relation to the effects of settlements on ecosystems, habitants of wildlife and pollution. Besides the socio-economic relationship between forced migrations settlements and host communities as they compete for the resources with the local communities.

1.6 Scope of the Study

The scope of this study was confined to the general research objective, which was to examine the effects of forced migration on environment in Uganda. Specifically: To examine the effects of refugees and internally displaced people settlements on water, land and forest resources. Geographically, the study focused on Arua District. This is because Arua district, situated in North

western part of the country hosts most of forced migrants in Uganda. Arua borders the countries of Congo DR and South Sudan that have witnessed protracted conflicts that have generated most of forced migrants in Uganda.

1.7 Justification

This sought to provide useful information that can harmonize both National refugees and internally displaced persons settlements policies with Environmental protection policies. Furthermore, this study will be significant to different parties in Uganda.

(a) Government

The study will be significant to government for policies on the relationship between forced migrations and environment. Through that, it helps in informing the policy related to refugees and environment protection.

Academic

The study also seeks to interest the academicians to use the topic as reference material for further study on similar subject matter and guide future researchers to generate new knowledge especially in review of literature.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter covers the review of the literature on forced migration and environment. Specifically it covers the impact of refugee, internally displaced persons' (IDPs) settlements on forest cover, land use and water resource in Uganda.

2.1 Theoretical Literature review

This study is informed by the Functionalist theory of migration advanced by (Everet S Lee, 1966). According to him, in order to project migration patterns, there is need to account for push/pull factors in the origin and destination countries, plus intervening obstacles like migration laws, border controls and other physical barriers that are encountered by migrants in the course of migration.

The theory advocated the idea that intervening obstacles: distance and physical barriers have a bearing on the migration cycle, as it can constrain migration to certain areas, while push and pull can promote the migration out of an old area to a new one

According to Lee, each place possesses a set of positive and negative factors. While positive factors are the circumstances that act to hold people within it, or attract people from other areas, negative factors tend to repel them (Lee, 1975:191). In this case, civil conflict, environmental hazards, political persecution constitute the minus factors that forced people to flee on emergency. In addition to these, there are factors, which remain neutral, and to which people are essentially indifferent. While some of these factors affect most of the people in the area, others tend to have differential effects. Migration in any area is the net result of the interplay between these factors.

Although the push-pull theory has been acknowledged as a path-breaking model that explains migration at various periods and has stood the test of time, it has also faced criticism. Scholars like (Skeldon (1990) claim that it is difficult to determine which plus factors and which minus factors at both origin and destination are quantitatively the most important to different groups and classes of people.

Despite these criticisms, the researcher considered the Lee's model to be fundamentally relevant in this study due to its ability to explain the aspect of Forced Migration in relation to the plus and minus variables. For example wars, civil conflicts, political persecutions: Environmental calamities like landslides, floods, cyclones and prolonged draughts that force people to flee their areas of origin to relatively peaceful or more habitable destination, but leave them in a state of refugee or internal displacement.

The challenge however was its inability to explain the Refugee settlement aspect of the study since this is largely policy oriented.

In order to inform the study on refugee settlements aspect, the study employed a four factor model compiled by Bloch, (2002), which suggests that the settlement of forced migrants in the country of asylum will depend on four key factors. According to her, first, are the policies of the country of asylum including the legal system, citizenship rights conferred on individuals through their immigration status in the country of asylum and strategies of migrant incorporation such as differential exclusion and multiculturalism. Second, the presence or absence of social networks influence settlement. Thirdly, Bloch observes that the characteristics of individual migrants including language skills, education and employment. Fourth are the circumstances of the migration itself and linked to this are attitudes and aspirations about the migration.

Bloch argues that immigration laws and policy are key factors affecting migration and settlement by defining status and rights of migrants. And that in such circumstances, migrants with temporary admission are subjected to conditions that impede settlement. The notion that refugees are temporary migrants in most host countries perhaps explains why they settle refugees in camps or camp like settlements with hope that they would return soon. Whereas Uganda adopts an open door policy for asylum seekers and refugees, this has not spared refugees from a confined settlement.

Bloch demonstrates that, the social and economic settlement of forced migrants is affected by the characteristics and experiences that these migrants bring with them on arrival. For example, historical ties, language proximity, skills, ethnic interconnections have a strong bearing on the policy decision to settle refugees.

In Uganda for instance, and particularly in Arua refugee settlements, the large proportion of refugees are from the Republic of South Sudan and the Democratic Republic of Congo. The two countries closely neighbor with Uganda from Arua and the refugees from there have got similar ethnic and cultural affiliations with some communities in Uganda particularly Arua region and this justifies the decision to settle them in that area for easy integration.

Comparatively, the location of Dadaab refugee camp and Kalobeyei refugee settlement in Kenya are in the areas whose host communities' ethnicity and language are closely compatible with that of migrants.

2.3 Empirical Literature Review

Uganda is the third largest refugee-hosting country in the world after Turkey and Pakistan, hosting an estimated over 1.4 million refugees from the surrounding region, (Ataria, D. O., & McKagueb, 2019), with about 170,000 internally displaced persons, (IDMC, 2018).

Uganda's policies toward refugees and internally displaced persons have been progressive. Since achieving independence in 1962, Uganda has been hosting refugees, asylum seekers and internally displaced persons affected by violent conflict, persecution, and socio-economic and environmental oppression. The country's progressive refugee laws and policies have become globally accepted and recognized as a model for offering refugee asylum and protection.

Uganda has adopted a liberal approach, accepting all refugees regardless of country of origin or ethnic affiliation and allows them the right to work, establish a business, hold private property and move freely around the country, as well as the right to access basic public services, including education and health care, (Friedrich, 2019). This is in line with the country's international obligations as embodied in the 2006 Refugees Act, the 2010 Refugees Regulations, the 2017 Comprehensive Refugee Response Framework and party to the 1951 Refugee Convention and 1967 Protocol, 2009 Kampala convention (related to the protection and assistance of IDPs),

Relatedly, the country pursues a non-encampment policy where by refugees are provided with a plot of land for housing and cultivation and can settle alongside and integrate into existing Ugandan host communities. Uganda currently hosts refugees in 11 settlements. These have paved way for mass influx of refugees, which coupled with increased number if IDPs adds pressure on the water, land and forest resources.

Comparatively, Uganda's refugee policy does not deviate so much from other states in the region apart from the aspect of integration. Whereas Uganda encourages self-integration, Rwanda has a policy of progressively integrating refugees into national systems for health and education. The progressive integration policy has realized the construction of permanent water treatment plants for refugees and 480 refugee housing units installed to provide shelter by the Rwanda refugee response plan, (UNHCR, 2019). This policy does not only give good response to the plight of a forced migrant but also tends towards a workable solution to the protection of environmental resources surrounding the settlement areas.

Arua District particularly has two main refugee settlements that is, Rhino camp settlement which was established in 1980 as a result of south Sudan civil war to host Sudan refugee influx and Invepi settlements established in 2017 to ease the pressure on camps and settlements in the region that had reached the capacity. The name Rhino camp is derived from the White Rhinos that were originally the occupants of the area where the refugees were settled. However, as a result of human activities, the white Rhinos were extinct though the name remains vivid in the minds of the people.

Refugees in Arua comprise about 30% of the total Population of the district with 825639 nationals and 250327 refugees, (UNHCR, 2018).

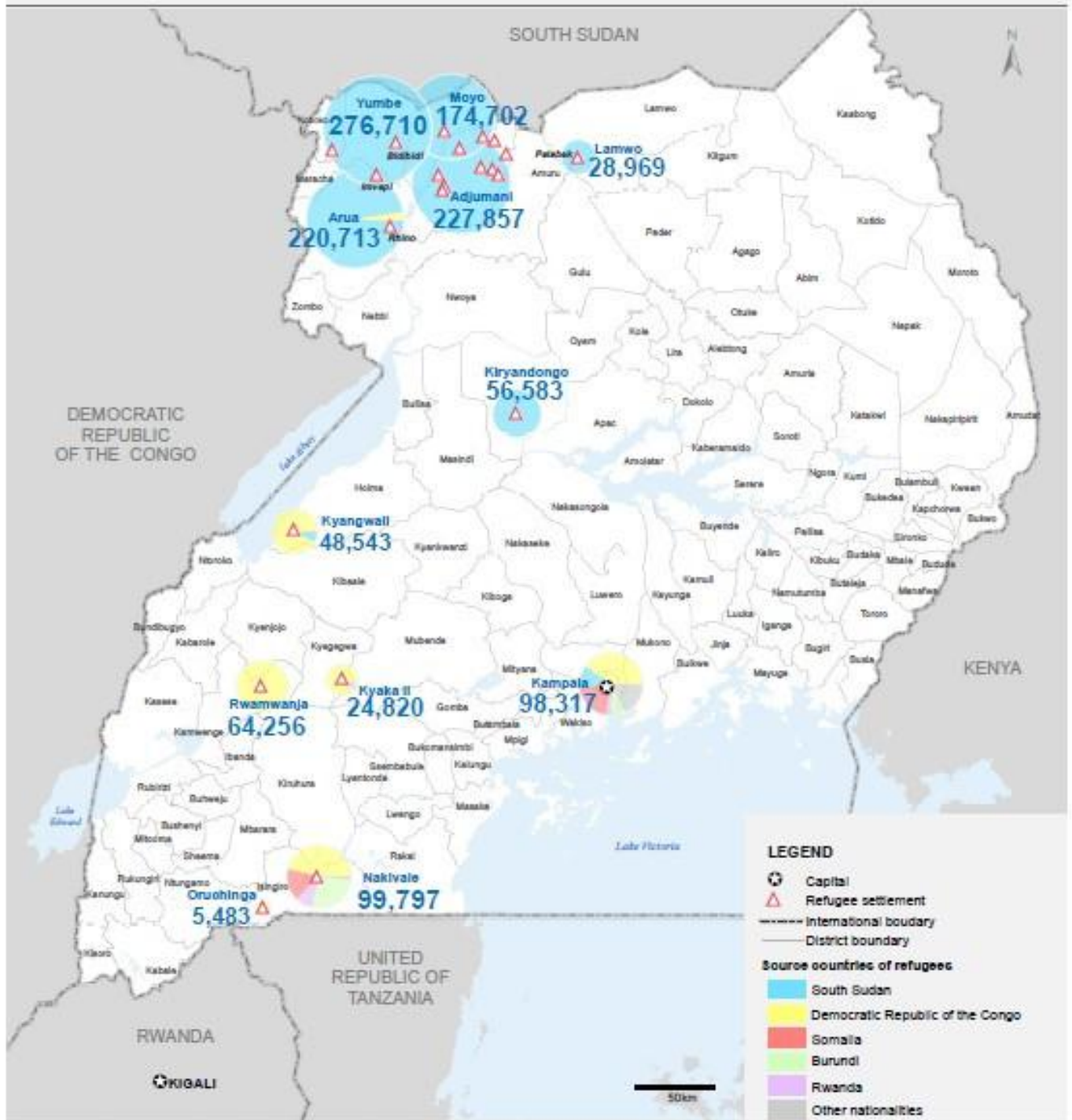


Figure2. Refugee Settlements in Uganda with population size

SOURCE: UNHCR/ OPM 2019

2.4. Refugees/ IDPs Settlements and Water Resources

Following the sudden increase in refugees fleeing into Uganda, there has been a growing strain on water and sanitation resources especially in Kyaka and Kyangwali refugee settlements. That has led to disease outbreaks, with IOM and its partners racing to meet the needs of the daily arrivals. (IOM Glossary on Migration, 2019)

The Refugee populations in Moyo and Adjumani settlements largely depend on natural resources for their livelihoods. The refugee policy in Uganda promotes the self-reliance strategy where refugees are provided with land for settlement and cultivation to become self-reliant and less dependent on donations.

Consequently, Refugees exploit the Natural resources around them to increase land productivity to meet their livelihood and food requirements. However, hosting a large number of people on a small area and expecting them to be self-reliant has had significant impact on the natural resources in the settlements and the surrounding environments. Poor production methods and the associated effects remain the potential threat on environment and their livelihoods.

According to the Community Environmental Action Plan (CEAP, 2008), for the restoration and management of Moyo and Adjumani refugee settlements, there has been degradation of Wetlands, Rivers and streams around Moyo and Adjumani settlements as a result of poor soil productivity, where by wetlands are encroached on by various communities for farming in pursuance of higher yields. There was also a general limited knowledge of laws governing riverbanks and wetlands use which is further being exacerbated by poor enforcement of the same. Encroachment has occurred extensively across the riparian ranges of the river Nile.

Pollution of water sources and catchment areas, the large-scale arrival and prolonged presence of refugees and internally displaced persons can have negative impacts on the water resource including pollution of water sources and catchment areas like wetlands, (Miller, S. D, 2018).

Protracted refugee situations, in particular, can exacerbate environmental concerns including, water contamination and water depletion, a condition that not only threatens human life, but also that could lead to loss of habitat and aquatic wildlife. For instance, according to the state of Uganda's Biodiversity report, (Pomeroy,D., Tushabe,H., & Loh, J., 2017), the Grey Crowned Crane is a symbolic Uganda's National Bird which depends upon seasonal wetlands for nesting,

and the decline in cranes is largely a result of declining wetlands. Wetlands, particularly seasonal wetlands, are rapidly being converted into rice fields, other forms of agriculture, or for seasonal grazing by livestock. Water catchment materials like papyrus are used as raw materials for making baskets and crafts for commercial purposes. These human activities threaten the existence of this cultural creature that identifies with the Uganda National flag.

The study has established that, Rwamwanja Settlement in Uganda in particular borders with Katonga Game Reserve of a large area of wetlands (Katonga Primary ecosystem). The reserve protects a network of forest-fringed wetlands along the Katonga River and is home to over forty (40) species of mammals and over one hundred and fifty (150) species of birds many of which are specific to wetland habitats. Birds commonly sighted in the wetland reserve are crested crane, Goliath heron, Spur-winged, Malachite kingfisher among others. Also animals common include; Bohor reedbuck, bushbuck, waterbuck, warthog, as well as elephant, buffaloes, river otters and colobus monkeys. Also found in this habitat is the shy Sitatunga, a semi-aquatic antelope that lives exclusively in swamp areas, (IUCN/ UNEP 2013).

However, most of this natural vegetation is being cleared for Settlement, agriculture, firewood, charcoal and building materials. So far, all the refugees who have arrived at the Settlement are cultivators and by allocation of land, they are encouraged to continue with their agricultural activities that have negatively affected the aquatic resources.

Large camps like Dadaab in Kenya or Zaatari in Jordan can have particularly negative effects on the environment, including air pollution, water contamination and water depletion, (Melissa, 2003). These conditions, coupled with excessive pressure on sanitation facilities, such as the public latrines and few garbage containers escalate the risk of lives of people if not studied critically.

2.5. Refugee/ IDPs Settlements and Forest Cover

According to the United Nations Development Program (UNDP, 2018), Uganda is faced with an unsustainable demand for natural resources due to high population density in refugee settlement surroundings. Consequently, (UNHCR, 2017) observes, that environmental degradation has become a matter of concern following the ecosystem loss due to refugee settlement that was estimated at USD 90.7 million for 2016/17, constituting about 28 percent of the total public cost on refugee protection and management in Uganda. The contributing factors to ecosystem loss

include land degradation, deforestation, loss of vegetation cover, and water contamination among others.

Deforestation is by far the most observable effect associated with refugees, where by Trees have been cut down due to increased fuel and construction needs, land for settlement and increased commoditization of forest resources by refugees as a quick-short term income generating activity.

In Adjumani settlement area of northwestern part of Uganda, farmers to provide poles and logs for construction during the refugee influx in 2017 have cut about 75 percent of trees for sale, yet no more than 40 hectares of trees have been planted to replace the cut trees. About 14,000 hectares of land have been degraded, yet only 900 hectares of the degraded land has been planted with trees. Almost all refugees rely on traditional biomass for cooking and have limited access to modern forms of energy, (UNDP, 2017).

It is estimated that refugees of Bidibidi refugee camp consume on average 3.5 kg of wood per person daily, Such high demands on the environment can easily lead to complete depletion of above ground biomass if left unchecked without mitigating interventions such as massive tree planting and use of energy efficient cooking technology as suggested by (Lahn, 2015).

Sustainability interventions and sensitization initiatives are underway in many settlements and host communities to mitigate the environment related challenges. Tree planting, tree marking and the use of improved cooking technologies for example are the common strategies that NEMA and UNHCR have been emphasizing in a bid to prevent the rate of destruction. Trees in and around the refugee settlement have been marked Red for “no cutting” or Yellow for “can be cut only with special permission.” Red-marked trees are mainly fruit trees and trees with significance to the community in terms of size, land demarcation and religious connotation. Yellow-marked and unpainted trees may be cut and used for firewood.

The above tree marking strategy by government is not satisfactory in serving the expected purpose. This is because the enforcement of the cut and ‘do not cut’ may be limited to the faithfulness of the consumer whose honesty may not be guaranteed.

GIZ also promoted agroforestry for the dual role of food and environmental conservation; however, in the short run, communities still need to understand and appreciate the importance of agroforestry.

Food and Agricultural Organization (FAO & UNHCR, 2018), provide a comprehensive guide on reforestation and forest management, including site management, stakeholder involvement and choosing the right species to suite the refugee needs.

Factors affecting site selection for forest plantations include the terrain, where land should be assessed for both its physical attributes (e.g. distance from the community, size, terrain and hydrology) as well as in political, legal and social terms.

Stakeholder involvement on the other hand requires that before planning a tree plantation strategy, local and national services should be mobilized to obtain a clear understanding of the main challenges and opportunities ahead. Whereby, stakeholder engagement must be comprehensive and gender-sensitive, for example in determining the species to be planted. In one participatory forestry intervention, for example, it was noted that men preferred slow-growing species because this would produce higher-value wood, but women preferred short-rotation species because of their roles as caregivers and the capacity of such species to help meet needs for food, shelter, water and safety (FAO, 2011). It is essential that women are involved in the decision-making process for plantation establishment and management, in order to ensure that tasks typically performed by women (for example, watering seedlings) are compatible with their other daily duties.

Despite all these initiatives and efforts that have been made over time, there seems not be any change relating to the environmental impact of refugee and IDPs settlement as they still bear drastic outcomes.

In this regard, the refugee presence continues to add to existing pressure on the environment that has led to an increase in the rate of degradation and tree loss as observed by the (World Bank, 2019).

The continued influx of the refugees from the neighboring conflict-ridden countries of South Sudan and Democratic Republic of Congo, coupled with rampant internal displacements caused

by environmental calamities continue to undermine the mitigation drives of reforestation being implemented.

This situation therefore called for this study aimed at supporting more sustainable use of those resources, plus the development of alternative means to meeting needs of settled forced migrants, which can help to address environmental degradation.

Whereas (Berry, 2008), in the study on the impact of environmental degradation on refugee-host relations, observes that, without doubt, there is environmental degradation in the refugee-affected areas, he does not contend that environmental degradation will necessarily ever be the most significant variable in shaping both the impact that the refugees have on the hosts and the overall refugee-host relationship, but rather believes it is one of a number of significant factors.

Further, it is worth noting that, environmental degradation is present in many, if not all, refugee affected areas. Hence, global conflicts will continue to force people to seek refuge in neighboring countries or in other parts of their own country, which will undoubtedly affect both the natural environment and the people living in these areas.

In addition, little attention has been drawn to IDPs in Africa because, as (Cohen, 2000) warns, IDPs in Africa bare two characteristic disadvantages, that is: because they are IDPs and because they are Africa IDPs. Cohen hints that African governments ought to monitor their environmental impact, which they need to consider in national migration and development policies and Refugee Response Frameworks.

Relatedly, there is need to carry out a study that is envisaged to yield recommendations that provide sustainable solutions in refugee emergencies, to ensure that environmental degradation and its anticipated effects like socio-economic pitfalls, conflict between refugees and local communities is prevented, or at least mitigated.

The Uganda country refugee response plan, (RRP 2019-2020), on the other hand, observes that failure to integrate environmental screening in settlement planning could account for recurrence of risks associated with environmental and social hazards. Where Environmental and Social Impact Assessments has not been done to determine the basis for site-specific environmental

management and site planning, the conflicts have ensued leading to a tearing of the integration fabric that refugees, IDPs and host community have enjoyed in settlement areas before.

Consequently, scarcity of resources has had an acute impact on women and girls who are responsible for the day-to-day collection of firewood and grass for thatched roofs. They can spend 12-24 hours collecting firewood, which they have to seek further from their homes, putting them at risk of sexual violence, (Shepherd 1995). Refugees and Ugandans living around the refugee settlements also rely on the same natural resources to make a living.

Furthermore study conducted by the International Refugee Rights Initiative (IRR, 2019), noted that, the humanitarian agencies in northern Uganda do not provide cooking fuel or roofing materials yet there are no designated locations where refugees can collect them. This condition puts refugees and IDPs in a vulnerable situation. They often engage in daily negotiations with host community to pay for grass and firewood in cash or kind using their food rations.

Sustainable management of natural resources is therefore key to enable Uganda's promoted policy of self-reliance and inclusion of refugees, especially as humanitarian assistance suffers from insufficient funding.

The relationship between refugee, IDPs settlements and forests has been primarily investigated in the dimensions of socio-economic and environmental effects in most of these communities hosting large numbers of refugees. Local communities often experience a high level of poverty and face increased chances of economic vulnerability. In this regard, their economic conditions are not necessarily better than those seeking refuge in their communities. This situation as a result may lead to economic competition over scarce resources between host and refugee communities and cause increased social tensions within the society, (Fajth, et al 2019).

Such a potential threat to social cohesion needs to be studied in order to reconcile settlements and the underlying effects on the trust built over time due to increased economic interaction.

Transfer of swampland development and cultivation skills from refugees (who grow rice) to host populations, Importation of improved plant materials and Exchange of plantation management skills between refugees and host populations are of great benefit. For instance, afforestation

projects around RHAs can be a continuous agro- forestry investment that host community can tap into for future markets.

2.6. Refugees, IDPs Settlements and Land Use

The Refugee Act (2006) and Refugee Regulations (2010), provide for the allocation of land to refugees in Uganda. Most refugees access land through OPM on behalf of the Government.

There is however the rising uncertainty of land access, anticipating the likely ineffectiveness of Uganda's current land allocation model due to growing refugee numbers. The quantity and quality of land available to new arrivals is inadequate. The Oxford refugee studies center report indicates that 80% of Congolese households who arrived in Nakivale before 2012 have access to land, compared with 17% of Congolese households who arrived after 2012, (Bets, A .et al, 2019).

Despite the pressure that the current refugee population has exerted on existing limited land resource, Uganda is likely to continue receiving refugees in the coming years as per the projections by the 2018 integrated refugee response plan, (UNDP, 2018).

Environmental degradation, occurring during forced and mass migrations and in Refugee Hosting Areas (RHAs), features negatively in all the above-mentioned challenges. Forced migrants are themselves threatened by diminishing land value, firewood resources or polluted water. The local population may also find that the erosion of the natural resource base threatens their livelihoods and economic opportunities in the RHA (UNHCR, 1996a).

The United Nations International Strategy for Disaster Reduction characterizes environmental degradation as the lessening of the limit of the earth to meet social and environmental destinations and needs.

In conclusion, some interventions and conservation initiatives have been put in place by UNHCR and NEMA to mitigate the negative effects of settling forced migrants, but the problem still persists.

Related studies have been undertaken by UNDP, World Bank, FAO, Berry L, Fajjth et al and Ahimbisibwe, linking migration and environment but have not yielded workable solutions to the problem since the problem still persists to date, hence constituting the epitome of the gap.

One however finds it rather difficult to blame forced migrants on the current exploitation of land, forests and water resources in settlement areas as the same migrants cannot survive without it. Therefore, durable interventions and environmental friendly settlement policies were envisaged by the study to ensure that resources are sustainably managed and enjoyed in a co-existent manner.

CHAPTER THREE

DATA AND METHODS

3.0 Introduction

This chapter presents the methodology of how data for the study was collected, analyzed and interpreted in order to answer the research questions, thereby meeting the purpose of this study. This section comprises research design, type of data collected, data collection methods, data collection instruments, data analysis.

3.1 Research Design

This study employed a Retrospective qualitative design in which both qualitative and quantitative data was used. This design was selected because of its ability to allow a researcher to work out hypothesis and possible association between forced migration and Environment and thereby making inferences about the same using information that was generated from the Qualitative interviews and literature on the study variables. Besides, Scott, & Alwin, (1998), assert that Retrospective qualitative research design is cost effective and less time consuming. Amin (2005) illustrates that qualitative designs help in giving detailed information while quantitative design involves the collection of numerical data in order to give facts on given phenomena and in this study data analysis being mainly descriptive.

3.2 Type of Data and Data Collection Methods

The researcher used both primary and secondary data. Primary data was collected through qualitative interviews with key policy makers like OPM officials, UNHCR, NEMA and the top leadership of Arua District. The researcher carried out four interviews sessions.

Secondary data is data which was already collected and published by other researchers. Key sources of secondary data included research journals, reports by NGOs, information collected by government departments, organizational records and data that was originally collected for other research purposes. In this study data on forced migration aspects of refugees and displaced people settlements was reviewed in accordance to the established research objectives. The researcher largely relied on the online libraries for information relating to the research objectives. Secondary research involves re-analyzing, interpreting, or reviewing past data. This study observed data on

refugees and internally displaced persons; and made inferences on possible relationship with data on environmental degradation.

3.3 Sources of Data

For the purposes of this study, primary data was acquired from interviews with relevant actors while secondary data was gleaned from past researches on the same subject, published books, and journals including online journals, project publications, policy reviews, the internet, blogs and newspaper/magazine publications.

3.4 Data Collection Instruments

For the collection of primary data, this study relied on administration of interviews guides with key informant persons on the effect of forced migration on environment in Arua district. A total of 70 interview guides were distributed by the researcher to a sample group of participants while 15 key informant interviews were arranged with key resource persons who are involved in the environmental management in the district. The key informant persons working as: agricultural officers, forest service providers, government agencies, refugee administration and willing members of the refugees.

3.5 Study Population

This study is about the effect of forced migration on environment in Arua Uganda. Arua District was selected because it has a large presence of refugee settlements such as Rhino and Imvepi that are hosting a large number of refugees. This area has born the brand of large resettlement that have directly affected the environment. The camp is home to approximately 183,438 people who call the camp home. With the population of adults between ages of 18 years to 60years to be 58.8%, since children in vulnerable situations cannot be interviewed, the actual legible population to participate in this research was 107862 people. While in this camp, the refugees rely on their present social network to re-emigrate. With a confidence level of 95% and a margin error of +-5, and expecting a response rate of 50% of all sampled individuals to respond. This study aimed at interviewing 382 refugees and stakeholders in refugee resettlement in Arua. The 382 individuals were arrived at using the Cochran's formula as:

$$n_0 = \frac{Z^2 pq}{e^2}$$

Where:

- e is the desired level of precision or the margin of error,
- p is the (estimated) proportion of the population which has the attribute in question,
- q is 1 – p.

From this sample, a smaller population was however purposively selected for interviews on effects of forced migration on environment. This selected interviewees are regarded as key informants for the research and thus the interview questions are designed to reflect a key informant interview kind of questions. Given the above considerations and the limitations of this research, purposely 70 interview guides were distributed to select interviewees.

3.6 Validity

To ensure validity, the research instruments was tested through expert opinion. The researcher presented the research questions to the supervisor for the supervisor to check for the objectivity of the questions that would be used in the study. The researcher also considered use of peer scrutiny of the research instrument and got their opinion. After incorporating the opinions of peers and expert opinion, the questions were pretested. Such a pretest enables the researcher gauge if the questions seek answers that the researcher seeks to get. The views gathered from the pre-test were included in the final questions for analysis.

3.7 Data Analysis Procedures

The researcher carried out mainly a qualitative descriptive analysis on the phenomenon of Forced Migration and the Environment to establish the effects of forced migration on the Environment. This procedure was considered because of its ability to yield a greater insight on the views of respondents on the subject matter in a more detailed way as observed by Bryman (2012)

3.8 Ethical Considerations

Utmost regard to intellectual property and confidentiality was observed. All material reviewed were cited and the author commits to acknowledge appropriately according to citation rules. Where the publication reviewed is confidential, prior permission and consent of publisher would be sought from the author before citing it.

The study team interviewed some respondents who indicated they were under 18 years. Whereas it was not in the interest of the researcher to interview them, some of them claimed to be about to make 18 and were responsible for their siblings as their parents had moved to urban areas to work, while others were young mothers. This put the researcher in the would-be ethical dilemma.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents and interprets the analyzed data along the themes identified in the study. In the end, the study sought to establish the effect of forced migration on environment in Arua district. The data is presented using tables and figures.

4.2 Background Information

This section presents findings from questions posed to respondents to capture the background information in the form of country of origin, sex, age and levels of education.

4.2.1 Response Rate

The study achieved a 70% response rate when 49 questionnaires were returned of the possible 70 that had been purposively sampled. This rate was achieved because of good networks with resource and liaison person in Arua and consistent follow ups and ready guidance made by the researcher as the respondents filled the questionnaires. Mugenda and Mugenda (2003), assert that a response rate of at least 65% is satisfactory for a study to be accurate. Thus the threshold was achieved which enabled the researcher to conduct the analysis of the data and present them in this chapter.

The table below presents data on the respondents and their social status in Arua.

4.2.2 Representation by Social Strata

Table 1: Representation per Social Section

Social Section/ strata	Frequency	Percent
Government officials	18	36.7
Refugees	20	40.8
Local community	11	22.4
Total	49	100

Source: Research Data (2020)

At least 3 strata of residents of Arua refugee settlements who were represented in the sample with the majority of them (40.8%) were drawn from the refugee population. The other respondents were drawn from different sections/ social structure as indicated in table 2 above.

4.2.3 Demographics

Distribution of respondents by gender

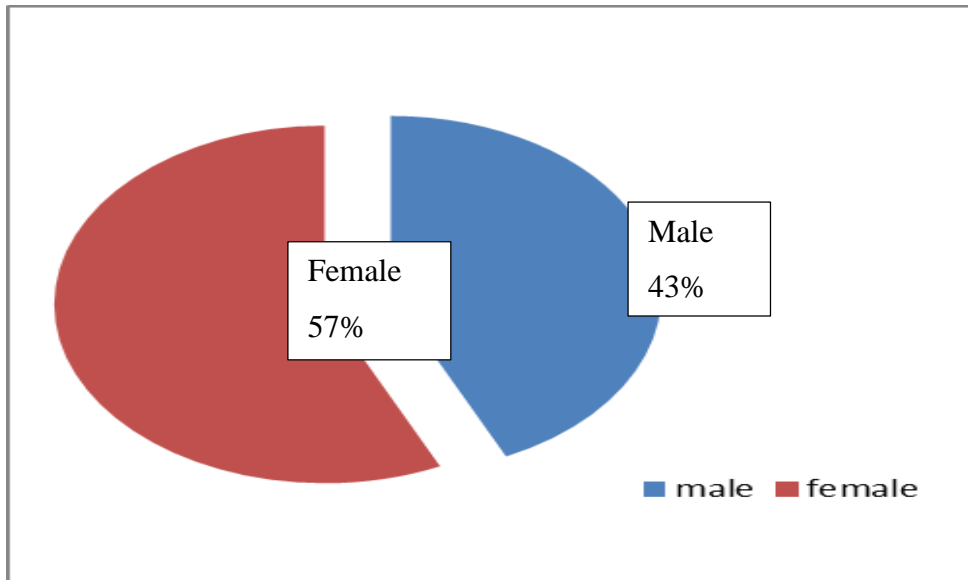


Figure 3. Chart of distribution of respondents by gender

Source: Research Data (2020)

Figure 3 above captures the segmentation of respondents according to their sex/gender. Male respondents were 43% while females were 57%. This finding indicates that more females participated in the study compared to males. This distribution gives a picture of refugee disaggregation by sex and confirms observations that majority of refugees are women children. This begs the question of where men are in refugee settlement. Either they were killed in conflict, trafficked elsewhere or they're urban refugees fending for their families hosted in camps and settlements.

Additionally, given the majority of the respondents were women and comparing this to actual population numbers disaggregated by sex, this shows a shift in land ownership and social roles in the Arua settlements. From the analysis, it can be deduced that women bear the highest social

responsibility in the settlement. They have to provide for the families, thus are the bastion of economic growth in the settlement.

Another important deduction is the kind of land ownership policies of settlement portions given to refugees. Majority of residents in the settlements are women as confirmed by both the total population figures of refugees in Arua settlement and thus the high sample of women interviewed in this study. Consequently, land ownership policies should be in favour of woman. A gendered study of the impact of forced migrants on environmental protection in the settlement would be exciting to appreciate whether population numbers disaggregated by gender have impact on environmental protection and conservation in Arua. This would help confirm the premise as to whether the large number of women led to serious environmental degradation than men.

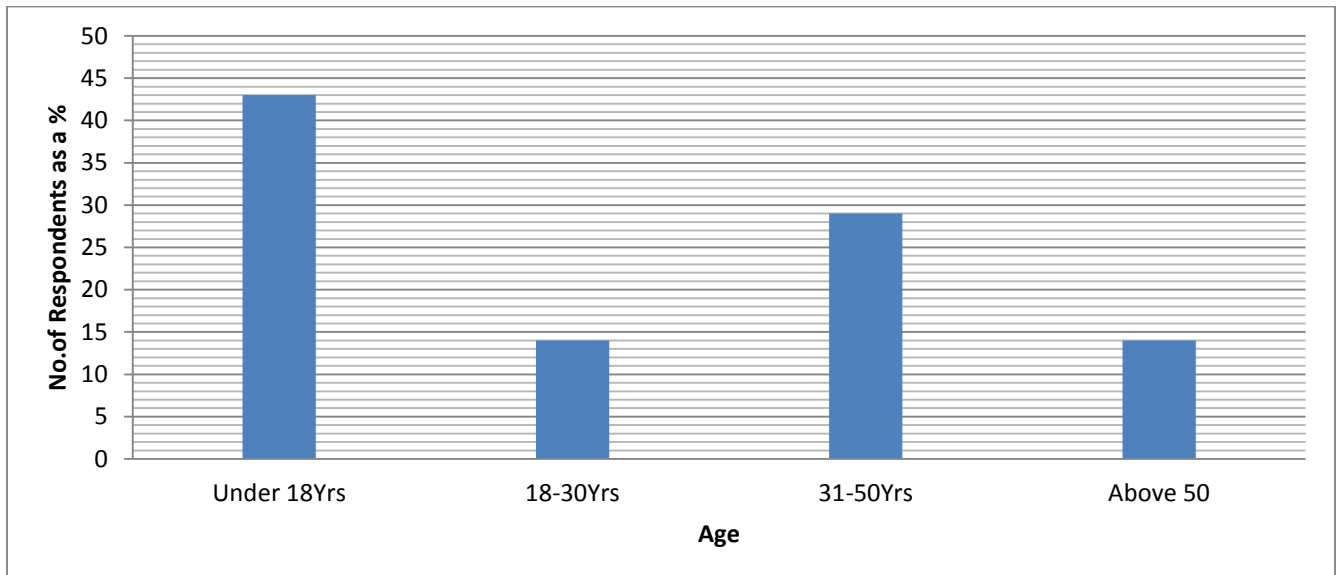


Figure 4: Distribution of respondents by Age

Source: Research Data (2020)

Respondents recorded different ages. From the graphical presentation above, more than half (43 %) of the respondents were bellow 18 years, followed by those between 31 and 50 years – at 29% of the respondents. Those who are between 18-30 year and above 50years represented 14% of the respondents respectively. This age-sex distribution could imply that wars and conflicts have a more adverse effects on women and children. The 43% category bellow 18 could represent households

headed by Refugee children, either due to broken families or loss of parents to war. The data is captured in figure 2 above.

Respondents were also required to answer to the question of their educational propensity and endowment. This called for the respondents to state their highest or current educational levels. This parameter is important in determining the quality and quantity of responses. Additionally, this is meant to ensure that the sample selected is representative of the society at large straddling all social classes.

The figure 5 below presents this findings

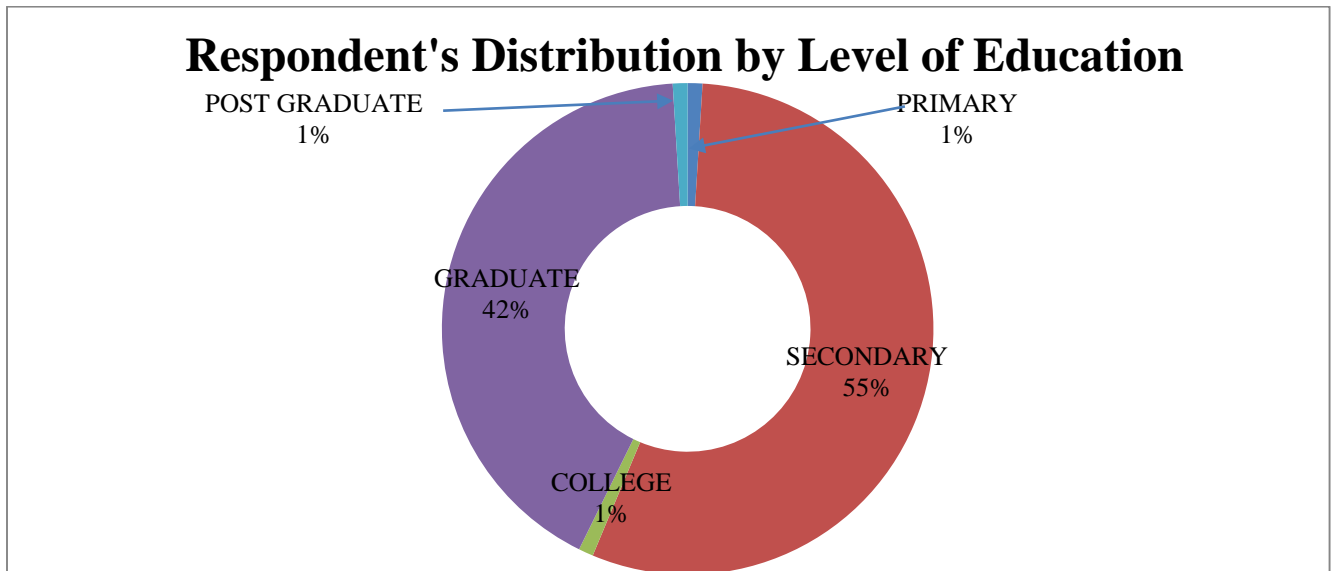


Figure 5: Respondents distribution by education level

Source: Research data 2020

From the findings, majority of interviewees drawn from the refugee population had a secondary schooling at 55%. This therefore means they have some understanding of the intermix between environment and forced migration or rather their ability to grasp this interconnection is significant. This would thus mean the government needs to boost the capacity of migrants in helping mitigate the effects of migration on environment. At least 42% of the respondents had graduate education. This respondents composed of government officials working with various agencies in this area. This category of respondents are those directly involved in management of the Arua settlement in all its sectors including environmental protection.

4.3 Forced Migration and Water Resources Use

In seeking an understanding of the objective that sought to explore the impact of refugees/IDP's settlement on water resource use, the following were explored:

4.3.1 Drivers of migration

When prompted to state reasons why they left/migrated from their homes to camps and settlements, all the respondents 100% gave similar answers. This response endorses the suitability of Lee's Functionalist Push and Pull theory as applied to guide the study. The most driver to this kind of migration is conflicts/wars in their various countries. This is accurate given that most of refugees in Arua crossed over from South Sudan, DR Congo, Chad and some from Central African Republic. This region has witnessed a conflagration of violent conflicts that led to uprooting of large populations of peoples who are currently seeking safety in Uganda.

However, it's not conflicts that cause displacements alone. Social, economic and natural factors have been known to cause displacement and lead to forced migration. In fact, economic factors account for largest population of displaced people globally with devastating results to the environment.

The process of migration can be said to be the differential element in forced migration i.e between refugees and IDPs and the other forms of migration. The process of migration of forced migrants is characterized by many risks and increased vulnerability from migrants, long journeys some of which are undertaken in precarious conditions, unimaginable human suffering and abrogation of human rights of those migrating. These facts were well elaborated by all the respondents who recounted their experiences in migration life.

4.3.2 Water Source and Management

On arrival into settlement areas, forced migrants meet new experiences. All the respondents could recollect their water use experience when they settled in Arua. Most could remember the existent sources of water then as being streams. Given this is a refugee settlement area, refugees relied mostly on water supplied by UNHCR trucks. The trucking method was used because of the refugees' fear that their "enemies" could follow them and poison streams and rivers that supply them with water. Additionally, Arua area is a dry area almost arid thus few rivers as source of water leaving refugees to depend on trucked water.

The respondents were also asked to compare the water situation on arrival in Arua settlement area and after. Their responses are captured in the figure 6 below:

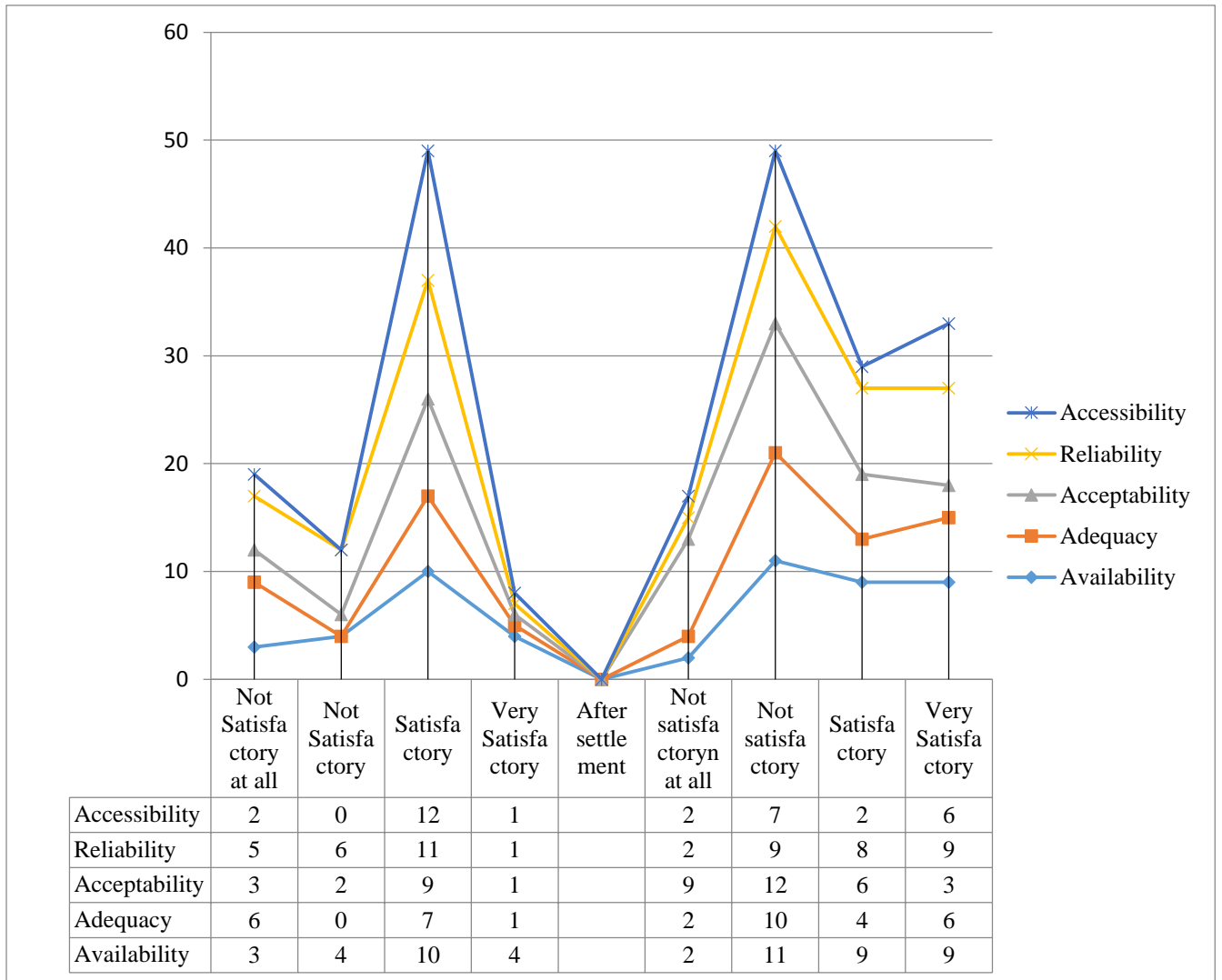


Figure 6. Graphical Presentation of Water Situation in Arua, Before and After Settlement
Source: Research Data 2020

From the figure, it can be discerned that there is significant change in the water resources management in the area. According to the graph, the water situation before settlement was satisfactory on all elements tested. The respondents were satisfied with water situation in Arua on arrival which is definitely better compared to when they were moving from their countries. The satisfactory levels was high on accessibility to water by refugees on arrival in Arua, availability of

water; at least the water was available even if by trucking, the water was reliable and the means used in providing water to settlement resident was reliable at a frequency of 11 compared to situation after settlement where this drops to 8. The water situation in Arua was however acceptable and adequate at lower frequencies of 9 and 7 respectively. This means there were issues with the water situation that is systemic that needs to be addressed.

The water issue changes in all its characteristics when tested on the parameter of after settlement. The respondents averred that the water accessibility and reliability dropped to 9 and 7 points respectively signifying stress on the supply channels of water in the settlement. However, the water became more acceptable, adequate and reliable at high frequency values than before. This can be interpreted to mean the desperation of residents in getting any water amidst increasing water scarcity thus trading off on the two later measures of accessibility and reliability. The water supplied or available in boreholes can thus be adequate and acceptable in the circumstances. This means there is a drop in the water quality in Arua as scramble for available water grows while refugees continue to find their own alternative means to getting water. Just like some of them whose response indicated that they get water directly from River Nile. The change in water situation can be attributed to the settlement which exerts more pressure on existing water resources unlike before.

4.4 Forced Migrants' settlements and Forest Cover

Additionally, respondents were required to express their understanding of the effects of refugees/IDPs settlement on forests in Arua, Uganda. Their responses were as detailed below

4.4.1 Situation of Forest Cover

Arua district hosts two major settlements that is Rhino Camp and Invepi refugee settlement. However, there is also Omugo refugee settlement which is an extension of Rhino. These settlements have similar characteristics in that they are designated for refugees from northern neighbours to Uganda, they are densely populated settlements thus allowing interactions of refugees and host community. This interaction means there is sharing of resources provided by nature except the size of land owned by refugees. Lastly, refugees have to ensure their livelihood to large extend.

This study sought to establish the main source of energy by Arua residents and how this reflects to forest management. The responses are as presented below.

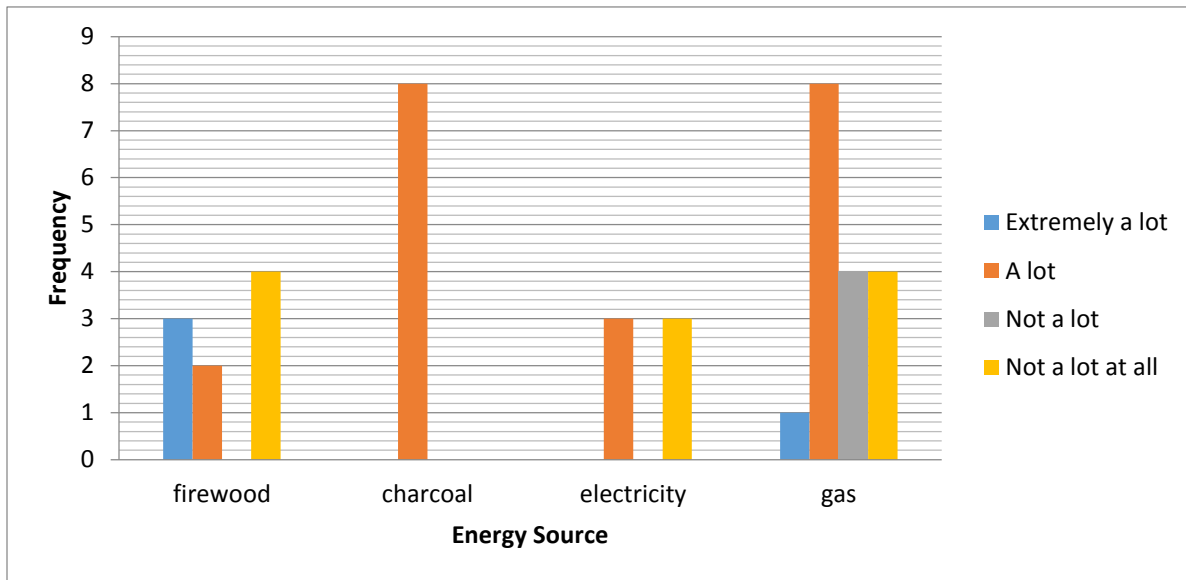


Figure 7. Graphical Presentation of Source of Energy against Consumption (frequency)

Source: Research Data 2020

From the graph above, it can be discerned that the main source of energy in the Arua refugees' settlements is charcoal and gas. This is evident from the response of a lot for charcoal and gas at a frequency of 8. This means that respondents rely on charcoal and liquefied petroleum gas to cook. The growth in use of gas as a source of energy could either be attributed to efforts made by NEMA and UNHCR in a bid to conserve the environment, a desperate indicator of having no choice but resort to an expensive gas or representing the 36.7% category of respondents who are of a high working class.

The extreme reliance on charcoal has the potential to affect forest cover in the area since it puts pressure on few forest resources available through condition created by refugees' population. This response correlates with the use of firewood in Arua. Firewood scored the next highest frequency score of 3 of respondents who indicated relying on firewood for energy provision. Charcoal is a product from trees. The fact that a larger population of refugees rely on charcoal for cooking and other energy needs spells doom for forests in Arua. Further, this deepens the pressure already

exerted by firewood users and definitely this will translate to environmental degradation and expansion of desertification.

Interestingly, the only best option for provision of energy needs in Arua is not available and if it is, it is very expensive to the residents who are barely surviving on the edge of economic and social circles of life. When asked about how many use electricity, 3 times respondents indicated to use of electricity. This means there is need to deepen the use of electricity as a sustainable way to save forests from depletion thus protecting water sources.

Respondents interviewed concurred that exploitation of available forests in Arua is extreme and has adversely affected the environment. Efforts to protect forests and restore those already affected has not been successful due to persistent presence of refugees and a lack of innovation in alternatives for energy provisions to the settlement residents. The competition between refugees and host community on use of forest resources has not helped much since apart from just exploiting the forests, the price tag on forest products such as timber and wood fuel has consistently been increasing thus making forests more endangered. Finding a sustainable solution would include attractive alternative means of livelihood that combines technology and business strategies for purposes of ensuring enabled and empowered refugee and host community.

It is the respondents' submission that the forest cover in Arua has been declining since the establishment of the settlement. When asked to comment on the forest cover situation before and after the settlement, all the respondents 100% (49) were in agreement that forests have been reducing significantly ever since the settlement compared to situation before the settlement. They attribute this change in forest cover to the settlements that have introduced added population that are dependent on the forest. The added population put pressure on forest by creating more dependants on forest products including timber for construction, medicine products and wood for fuel and craft chairs for sell.

4.4.2 Effect of forced Migration Settlement on Forest Cover

When asked about the effect of their settlement on the forest cover in the region, and comparing this to period before settlement, all the respondents were in agreement that the settlement has had a huge effect on the forest cover. They noted the shrinking forest cover; the price factor of forest products has been responsible for creating unmatched demand for forest products that the available

forest cover is struggling to satisfy with supply and exploitation. Continued presence of settlement is likely to result into more harm due to depletion of forests. There is need for innovation into alternatives to forest products and adoption of reforestation measures.

4.5 Forced Migration Settlement and land Use

Finally, the study sought to examine the correlation between refugees/IDPs settlement and land use in Arua. They expressed the following views.

4.5.1 Land Allocation in Arua Settlements

Rhino camp and Imvepi settlements in Arua district were established to settle refugees arriving into Uganda from the neighbouring countries of South Sudan, Chad and Democratic republic of Congo. Protection of refugees begins at the point where a refugee crosses his/her national borders and enter the territory of adjacent country. Such refugee is supposed to immediately claim asylum in appropriate manner. Various countries have varying laws on refugee management. While some provide camps as place of residence of refugees, others have adopted a settlement strategy in managing refugee affairs. Settlement policy is preferred because it is cost effective to government in several ways such as management costs since it is geared towards enhancing refugee self-reliance.

Refugees arriving into Arua settlements are first registered and allocated a piece of land to setup up shelter. The land given is just for residence purposes only, though some are allowed more land to farm. This land is distributed to all refugees without discrimination as to nationality, gender or other considerations.

This study sought to find out from refugees whether they found the settlement operational and whether they were allocated land equally without discrimination. Majority of the respondents 98% confirmed the policy and could pin point a land they were given.

The respondents when asked about the reception of new refugees and the land they are given, they strongly argued that those who arrived earlier in refugee settlement have relatively large portions than those refugees arriving later. The differences in size of portion allocated can be explained in context of diminishing resources amid increasing demand for the same. This means the sizes have to be reduced to accommodate all arriving refugees and spare some for future. This can be

confirmed by respondents' aversion that the sizes have been reducing 57% from early arriving refugees compared to recent arrivals at 43% who argue that the sizes are the same.

This reducing effect of land sizes in settlement area has the effect of creating more urban refugees since the young and male population will be predisposed to look for survival in towns or elsewhere so as to create space in the settlement for the women and children. This land has been reducing with arrival or new refugees who need settlement thus exerting pressure on available land. This in turn leads to cutting down of forest to create more settlement space thus reducing the forest cover. Reduced forest cover has the potential of impacting on the rivers in the region thus affecting the water situation through reduced flows, and extreme environmental effects such as desertification. Therefore the land scarcity is likely to result to reduction in forest cover thus affecting water supply in the area under study, notwithstanding the social effects of scarcity like moving long distances in search for scarce resources like water and firewood that come with associated social costs. This will in itself cause migration of persons from the settlement to look for livelihood elsewhere thus creating another migration cycle.

4.5.2 Effects of Settlement on Land Use

The sustainability of land use before and after settlement is an important consideration in anticipating the effects of these settlements on land use policy and practice in the affected area. This proactive approach at land management in settlement areas is encouraged to check on potential remigration from the settlements in search of appropriate space. It's clear from this study that spatial distribution is inversely related to the population. This inverse relationship applies to all other factors of livelihoods available within a certain geographic location. Thus, the space (land) reduces with increases in population density. This in turn reduces the availability of water and forest cover.

This natural resource interplay with population has an economic imperative that it drives the interrelationship between demand and supply to new levels called shifts. Demand for land will translate into encroaching on wetlands and deforestation in order to create space for settlement and farming. This will in turn lead to water scarcity due to drying up of wells, rivers and turning wetlands into farmland thus creating demand for water that cannot be met, as well as destroying habitat for wild life. This will lead, to innovation in water supply such as trucking among others

that are in turn affected by demand and supply factors. This process becomes cyclic and perpetual in Sisyphean manner.

In appreciating this interplay of factors around land use and the impact on other elements of survival, this study sought comparatively to invite comments from respondents on various land factors in Arua settlement in order to establish the effect of the settlement on land use. The responses are presented in the figure 8 below:

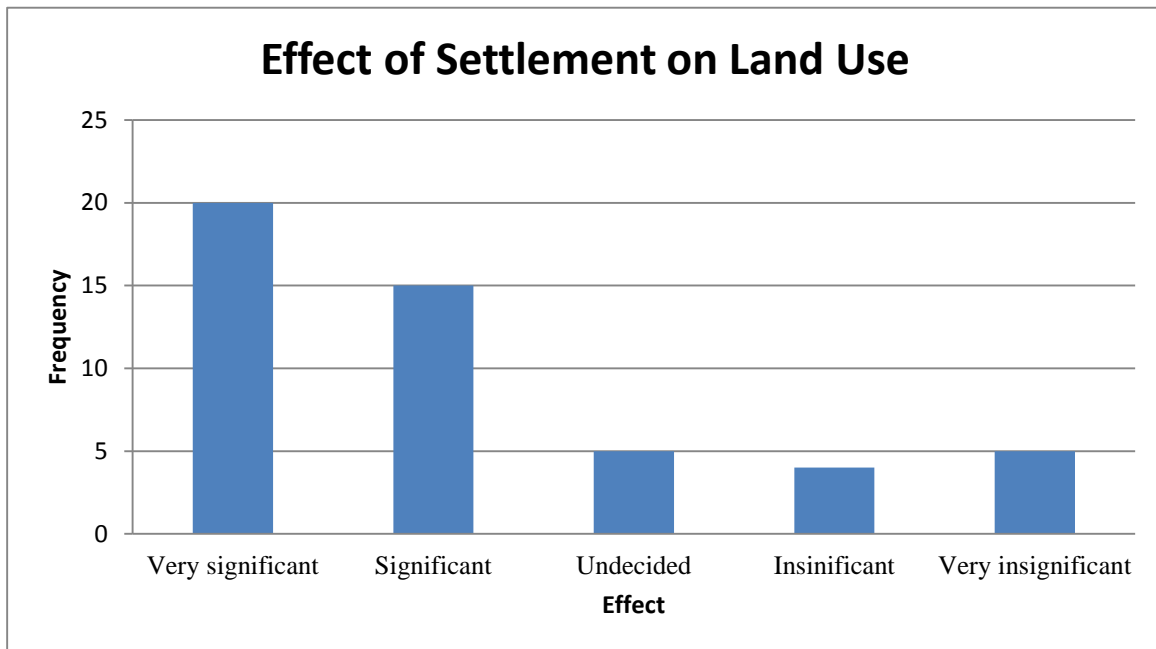


Figure 8. Effects of Settlement on Land Use

Source: Research data 2020

From the graph above, 41% of respondents expressed by a frequency of 20 were of the view that Arua settlement have very significant effect on land use. Land for distribution to endless cycle of refugees is continuing to diminish in Arua, compounded by the “ownership” of land by refugees who hold that the land belongs to them and thus a tendency to “pass it on” to their relatives or fellow refugees need to be investigated.

4.6 Other information

Respondents were asked if they have benefited from being settled in Arua and, if they have witnessed any socio-economic challenges as a result. They generally appreciate that despite traces of conflicts over land and other resources, they have realised tremendous benefits from being

settled in Arua. These benefits range from food, medical care, education for their children and ability to access legal and other social services indiscriminately.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

5.0 Introduction

This chapter gives summary of the research study and conclusions. At the end some recommendations are preferred.

5.1 Summary

This study attempted to examine the effect of forced migration on the environment in Arua district, Uganda. The study was informed by three objectives. This summary is based on the objectives of the study as outlined in chapter one.

5.1.1 Refugees and IDPs Settlement and Water Resource Use

In examining how refugees/IDPs settlement affects water resource use, this study established that there's a strong inverse correlation between forced migrants' settlements and water resources utilisations. This study found out that the settlement in Arua district has had negative effect on the protection and sustainable utilization of water resources in the area. This is because of the increased population in the area that had hitherto not been planned for results into competition in use of resources for survival thus depleting them. Additionally, the alternative water sources in Arua are in short supply thus forced all the residents to depend on the clearly inadequate or less acceptable sources available.

Refugees and IDPs are people who have been displaced from their habitual residences and countries owing to incidences such as war/conflict, natural calamity such as landslides, epidemics and environmental degeneration. This can be referred to as the drivers to migration. Arua refugee settlements are not entirely established to cater for refugees alone. It also hosts internally displaced persons (IDPs) who flee their homes due to same reasons as refugees. For this reason, this study sought to examine to effect of these two strains of migrants/displaced persons to the environment. This study established that there is a shift in the water situation before and after the arrival of forced migrants. Where there was self-sufficiency in water resources before, this is no longer the case after the arrival of refugees since the added population exerts more pressure on available resources that did not expand or increased with increased population.

The water scarcity witnessed in Arua can partly be blamed on the presence of refugees and IDPs who compete with locals/host community in exploitation of this scarce resource for livelihood.

5.1.2 Refugees and IDPs Settlement and Forest Cover

There is a direct interrelationship between water resources and forest covers. These two naturally exist in a symbiotic relationship strongly intertwined to the extent that depletion on one leads to destruction of the other. The forest cover in Arua which is characterized as a semi dry area is vulnerable and very hard to grow to level that can be comfortably exploited. This study noted the change in forest cover in the area after the arrival of refugees and IDPs. There was observed a shrinking in forest cover, increasing drier months and reducing rainfall that happened sparsely between months. This shrinking in forest was attributed to increase in cutting down of forests to provide land for settlement of refugees.

Additionally, the presence of refugees who receive aid and the need to make their life comfortable in the settlement has played into the demand for forest products such as timber for construction, wood for firewood and barks and leaves for medicine and crafts. The increased demand for forest products has led to spike in exploitation of these forests for the said products. This has the effect of destroying the forests, reducing the forest cover and eventually leading to a deforestation and desertification.

5.1.3. Refugees, IDPs Settlement and Land Use

Land is an important factor of production in any society. Land is a source of livelihood for all humanity in whatever status they be. There is a direct relationship between water, forests and land. These three elements are scarce, essential Land use is a factor of water which is a factor of forest cover. Thus for land use management in Arua district to make sense, protection of water sources and reforestation of unused lands that were under forest must be given top priority. This study noted a similar change in the effect of Arua settlements on land use. This is consistent with the other factors of environment that presented similar characterization in terms of same direction of shifts/change.

This study noted the decrease in land use quality in terms of reducing land size, fertility, availability and accessibility motivated by increasing population albeit temporary in nature that

has no alternative livelihood other than the land. Controlling this population is becoming necessary to sustain the close relationship between environment and forced migration.

Land ownership issues are beginning to crop with the continued arrival and settlement of refugees in this district. This study could not establish under what policy and legal provisions the resettled persons could lay claim to the portions they are allocated and be able to use it as their land in commercial transactions.

This study appreciates all these changes in elements of environment and how they affect environment in this district.

5.2 Conclusions

There are all pointers to the close relationship between water, forests and land in Arua district. The selection of Arua district for refugee settlement, a fragile ecosystem that is already vulnerable to vagaries of environment due to its dry climate was anathema to the environmental principles of conservation.

5.2.1 Refugees, IDPs settlement and water resource use.

This study found out that forced migrants' settlements have a negative effect on the environment. All the parameters used in determining a healthy environment were found to be compromised by the establishment of settlements. On refugees and IDPs settlement on water use, this study realized that settlement was responsible for the deteriorating water situation in some parts of Arua district. The quantity, quality, accessibility and availability of water after growth of settlement especially around wetlands and other water catchment areas is not reliable. This called for alternative strategies for supplying water in Arua such as use of trucks and pumping water directly from River Nile which is near Rhino and Imvepi camps and is more sustainable.

Consequently, residents' experience and expectations on water for use underwent a change since they could not be guaranteed of quality and quantity compared to the former situation before arrival of refugees. This experience is not only limited to host communities but also migrants who have had to trek long distances in hunt for same scarce resources.

5.2.2 Refugees, IDPs Settlements and Forest cover

On forest cover, this study found out that mass Refugee and IDPs settlement is responsible for reducing forest cover due to overstretched demand of forests products for livelihoods. This in turn has a correlated effect on the environment. The more the refugees, the more space required to settle them. This space is normally hived off from forests thus reducing the forest size and cover. This has the net impact of contributing to environmental degradation, hence being in tandem with the observation made by World Bank and FAO. The negative effects on the forests in turns hurts the social economic lifestyle of the community of host and refugees as young girl and boys spend more time searching for firewood and other environment resources at the expense of attending to school.

5.2.3 Refugee, IDPs Settlements and Land use.

Lastly, this study found out that refugee settlement has adverse effect on the land use in Arua. In all the parameters used to measure land use such as size, fertility, accessibility, availability and ownership issues over determine the land use system and practice. These factors were negatively correlated to the environment adding up to a significant effect land use has on environment. These land size findings concur with study by Bets, A .et al, which observed that the quantity and quality of land available to new arrivals is inadequate due to uncontrolled numbers of forced migrants.

5.3 Recommendations

Basing on the above conclusions the researcher made the following recommendations;

There is need to develop a comprehensive and systematic approach to settlement of Forced migrants that is in line with Environment conservation through policy frameworks that categorize causes of degradation, levels of escalation and possible response.

1. In the short and long run, there is need for the government and other development partners in refugees' management to develop sustainable and durable shelter building materials like Aluminium. This can be re- usable and transferable or kept for future use in case of return of mass refugees who flee conflicts. This will enhance environment friendly disaster preparedness hence save forests.
2. Provision of clean Gas subsidy and solar power in all the refugee settlements will help to make firewood less attractive. One would argue that people prefer charcoal to gas due to

need to cook beans that are normally hard, but they can be mobilised under the culture of soaking beans overnight so that it cooks for short time.

3. Arua district refugee settlements like Rhino and Imvepi are blessed with River Nile, this has vast water whose consumption by people will not leave a significant impact on its volumes. This therefore calls for UNHCR, Government and other actors to develop clean water supply system from the Nile to the settlement area. This will mitigate the impact of conflict and scramble for small scale water sources like wells and streams of rivers.
4. The decline in the amount of land available for allocation to forced migrants has not only led to social conflicts but also undermined the self- reliance strategy of settlements as opposed to encampment policy. Here, the government with the help of OPM needs to connect refugees and IDPs with land lords in other parts of the country who have land that is not put to use. Some refugees can hire land cheaply with help of UNHCR cash stipend so that they engage in commercial farming. This will decongest settlements, camps and thereby reduce pressure on environmental resources like cultivating in wetlands at the expense of habitat for wild life.

This can also be a very smart strategy to foster self-integration and self-reliance for forced migrants.

5. Most importantly, a big number respondents suggested that a global call for a strategy to create optimism for lasting peace in origin countries would fasten return migration and consequently reduce environmental degradation in concentrated settlement area. This should not only look at stopping war which has already started but also preventing the start of war, conflict and persecution to limit further displacements.

5.4 Limitations of the study and suggestions for further Research

During the course of this project development, various limitations were faced. Some of these were associated with research requirements relating to procurement of research permits and authorizations from relevant governmental institutions to access documents that at times prove an obstacle due to bureaucratic nature of their operation.

However, the researcher mitigated some of these bureaucracy obstacle by securing authorization from the institute (PSRI) for the research to introduce him to authorities with reliable information thus complying with all legal requirements for the conduct of this study.

The data collection method of relying on qualitative interviews restricted the interaction to a few target respondents and this limited the acquisition of more information.

Finally, the Covid- 19 pandemic literally contributed to the failure to interview all the people since most strategic key targets respondents were involved at various crisis meetings. The researcher was not able to have a session with top management of UNHCR and OPM. The findings would have been much more informative if these two agencies were directly met.

Choice of Arua refugee settlements would not be sufficient to generalize to the settlement situation in other parts of Uganda that are not semi-arid. Hence a more extensive study would be required countrywide.

REFERENCES

- Act, R. (2006). Uganda: The Refugee Act 2006.
- Ahimbisibwe, F. (2018). Uganda and the refugee problem: challenges and opportunities (No. 2018.05). Universities Antwerpen, Institute of Development Policy (IOB).
- Amin Ghaziani and Thomas D. Cook. (2005).” Reducing HIV infections at circuit parties: From Description to Explanation and principles of Intervention Design”. Journal of the international Association of physicians in AIDS care 4(2): 32-46.
- Ataria, D. O., & McKagueb, K. (2019). Using livelihoods to support primary health care for South Sudanese refugees in Kiryandongo, Uganda. SSMJ, 38. Available at: <http://www.brookings.edu/views/speeches/cohenr/20000620.htm>
- Berry, L. (2008). The impact of environmental degradation on refugee-host relations: a case study from Tanzania. UNHCR, Policy Development and Evaluation Service.
- Betts, A., Chaara, I., Omata, N., & Sterck, O. (2019). Refugee economies in Uganda: What difference does the self-reliance model make?
- Bloch, A. (2002). Theories of Refugee Migration and Migration to Britain. In the Migration and settlement of Refugees in Britain (pp64-79) Palgrave Macmillan, London.
- Bryman, A. (2012). Social research methods. Oxford university press.
- CEAP, (2008). Community environmental action plan (CEAP) for the restoration and management of Moyo and Adjumani refugee settlements
- Cohen, R. (2000) “Statement Addressing Internal Displacement in Africa”, Annual Meeting of Ethiopian Community Development Council, June 20; in *Global Politics*.
- Fajth, V., Bilgili Ö., Loschmann, C., & Siegel, M. (2019). How do refugees affect social life in host communities? The case of Congolese refugees in Rwanda. *Comparative Migration Studies*, 7(1), 33

FAO & UNHCR. (2018). Managing forests in displacement settings: guidance on the use of planted and natural forests to supply forest products and build resilience in displaced and host communities, by A. Gianvenuti, A. Guéret and C. Sabogal. Rome, 84 pp (2011). Gender analysis for forestry development planning.

Friedrich, H. (2019). Breaking Ground: Automating the Detection of Refugee Settlement Establishment and Growth through Landsat Time Series Analysis with a Case Study in Northern Uganda.

IDMC (2019). African report on internal displacement: new displacements by conflict, violence and disasters, December 2019. Retrieved from; <https://reliefweb.int/sites/reliefweb.int/files/resources/201912-Africa-report.pdf>

IDMC (2018). Uganda Global Report on Internal Displacement (GRID 2018). Conflict displacement Retrieved from: <https://www.internal-displacement.org/countries/uganda>

IRR (2019). Understanding conflict dynamics around the refugee settlement areas in northern Uganda. *Issues in Refugee Research*, UNHCR Evaluation and Policy Analysis Unit, Working Paper No. 84

IUCN/UNEP (2013). Environmental and social impact statement for the Rwamwanja refugee settlement, Kamwenge district. Retrieved from <http://www.adansonia-consulting.ch/document/FINAL%20Report%20ESIA%20FOR%20RS%2026-2-2013.pdf>

Kyazike, J. (2018). Refugees and Environmental Security in Uganda: research dissertation Makerere University

Lahn, G. (2015). Heat Light and Power for Refugees: Saving Lives, Reducing Costs. Chatham House.

McNeill, W. H. (1984). Human migration in historical perspective. *Population and Development Review*, 1-18.

Melissa .P. (2003), “The Role and Impact of Humanitarian Assets in Refugee-Hosting Countries”,
New

Millennium Ecosystem Assessment (MA) (2005a): Ecosystems and Human Well-being: Current State and Trends. Volume 1, Island Press, Washington, DC.

Miller, S. D. (2018). Assessing the Impacts of Hosting Refugees

RRP (2019). : UGANDA COUNTRY REFUGEE RESPONSE PLAN The integrated response plan for refugees from South Sudan, Burundi and the Democratic Republic of the Congo January 2019 — December. Retrieved from: <https://data2.unhcr.org/en/documents/download/69674>

Mugenda, O.M and Mugenda, A.G. (2003).Research methods: Quantitative and qualitative approaches, African Centre of Technology studies, Nairobi. Revised edition. Acts press.

Regulation. R, (2010). Uganda: The Refugee Regulations, 2010. Statutory instrument under article 48 of Refugee Act, 2006.

Scott, J., & Alwin, D. (1998). Retrospective versus prospective measurement of life histories in longitudinal research. *Methods of life course research: Qualitative and quantitative approaches*, 98-127.

The World Bank (2019). Uganda Forests and Resilient Landscapes Project (P170466). Project Information Document. Report No: PIDC27172

UNDP (2017). Uganda’s contribution to Refugee protection and management Center for Research in Energy and Energy Conservation (CREEC), Makerere University September 20th, 2018 Kampala, Uganda

UNDP (2018). Understanding land dynamics and livelihoods in refugee hosting districts of Northern Uganda

UNHCR (2017) Uganda Operational Update on the South Sudan Refugee Situation, Inter-Agency Update 1st-7th June 2017

UNHCR (2019). Uganda country data: UNHCR, Government of Uganda, Office of the Prime Minister. Retrieved from <https://data2.unhcr.org/en/country/uga>

UNHCR (2019). Rwanda refugee response plan 2019-2020

World Bank (2000a): Managing Economic Crises and Natural Disasters. In: World Development Report 2000/2001: Attacking Poverty, Oxford University Press, World Bank, Washington, D.C., pp. 161-176

World Bank and FAO (2018). Rapid Diagnostic Assessment of Land and other Natural Resource Degradation in Areas Impacted by the South Sudan Refugee Influx in Northern Uganda. FAO Technical Report, October 2018. (www.youtube.com/watch?v=rZ2EJsvDBnY).

Appendix I

INTERVIEW GUIDE

Dear respondent,

This study is aimed at examining the effects of forced migration on Environment in Arua district in fulfilment of the requirement for the award of Post Graduate Diploma in Migration studies of the University of Nairobi. In your capacity as a member of top District leadership/ UNHCR/ OPM/ and NEMA, you have useful information to contribute to the completion of this study. Therefore, you are requested to make this contribution by answering the questions in this interview and any other information relevant to the study will be highly appreciated.

Note: -the information you provide will be treated with the utmost confidentiality, and you will not be penalized for not responding or withdrawal from interview will be of no offense.

SECTION A: INTRODUCTION

COUNTY OF ORIGIN	
OCCUPATION	
ORGANIZATION	

SECTION B: DEMOGRAPHICS

1. Gender Male () Female()

2. Kindly specify your appropriate age

Below 18 Yrs. () 18 – 30 Yrs. () 31 – 40Yrs () 41 – 50 Yrs. ()
Over 50 Yrs. ()

3. Education level

Education Level	Select Highest level
Primary	
Secondary	
College	
Graduate	
Post Graduate	
Others (specify)	

SECTION C: FORCED MIGRATION AND WATER RESOURCES USE.

4. In your opinion, what drives people from their original settlements?
5. Have you ever been driven from your area before? Yes () No ()
6. If Yes, please state the reason

7. How would you describe the process of relocating and settling in Arua

8. Do you remember where you used to get water when you came to Arua? Yes () No ()
9. What is the source of water you use now?

10. Compare the water situation before (when you arrived in Arua) and now (in your present settlement). How do they compare according to parameter below?

a) Water situation before

Water	Availability	Adequacy	Reliability	Acceptability	Accessibility
Not satisfactory at al					
Not Satisfactory					
Satisfactory					
Very satisfactory					

(b) Water situation now.

Water	Availability	Adequacy	Reliability	Acceptability	Accessibility
Not satisfactory at al					
Not Satisfactory					
Satisfactory					
Very satisfactory					

11. How would you explain the change is status above?

12. Was the change caused by settlement into this area?

SECTION B: Refugee/IDP settlement and Forest Cover.

13. Which settlements are found around your residence?

1. _____

2. _____

3. _____

4. _____

14. How would you describe the source of energy in these settlements? Use the parameters below

Ranking not a lot 1 >< 3 extremely a lot

Source	Not a lot	A lot	Extremely a lot
Firewood			
Gas/ Biogas			
Charcoal			
Electricity			
Mixture of the above			

15. For what other purposes are forests/ forest products used in these settlements?

16. How would you explain the change in forest cover and forest use in this area before the settlement and after the settlement?

a) Before the settlement

b) After the settlement

SECTION C: Refugee/IDP settlements and land use.

17. Since you arrived in this settlement, have you been allocated land? Yes () No ()

18. How much land are you allocated?

19. Are all arriving and older refugees/IDPs being allocated the same size? Yes () No ()

20. What is the difference in land allocated to different nationalities of refugees

21. Would you say what you are allocated in this settlement is satisfactory to meet your livelihood? Yes () No () Others please specify _____


22. For what purpose do you use your allocated land?

23. Comment on land factors between the time you arrived and present (now)? Select from the parameters bellow

Land use then		Land use now	
Size		Size	
Fertility		Fertility	
Ownership		Ownership	
Population		Population	
Accessibility		Accessibility	
Availability		Availability	

24. In your opinion, has settlement in this area affected land use in any way? Yes () No ()

25. How would you rate the effect in question 24 above?

Very significant  Undecided  Very insignificant 

Significant



Insignificant



SECTION D: Other information

26. Are there any benefits associated with settlement of refugee and IDP in Arua district?

.....

27. Have you witnessed any socio-economic challenges arising from these settlements related

to the water, forest and land use?

.....

.....

28. Suggest any possible way that you think should be put in place to mitigate or stop

environment related problems associated with refugees settlements

.....

Thank you.

Appendix ii

EFFECTS OF FORCED MIGRATION ON THE ENVIRONMENT: THE CASE OF ARUA DISTRICT, IN UGANDA.

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Website: www.immigration.go.ke
Email: kims@immigration.go.ke
Tel. + 254-20-2222022 /2212760
Fax: + 254-20-2220731
When replying please quote:

Hyslop Building 2nd Floor Room H201
Population Studies & Research Institute
University of Nairobi
P.O Box 30197 – 00100
NAIROBI, KENYA

Director, Graduate School
University of Nairobi
P.O. BOX 30197-00100
Nairobi

Date: 10/11/2020

RE: CERTIFICATE OF CORRECTION: Apollo Wanyakha Masete - O68/28921/2019

This is to certify that Mr. Apollo Wanyakha Masete has effected corrections form the board of examiners.

Dr. Sonja Fransen.

Supervisor.