

**EFFECTS OF REFUGEES ON THE NATURAL ENVIRONMENT A CASE STUDY
OF DADAAB REFUGEES CAMP, GARISSA DISTRICT**

By

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2011

DECLARATION

This research project is my original work and has not been presented for a degree or any award in any other University.

Signature  Date 23/11/2011

This research project has been submitted for examination with my approval as the university supervisor.

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DEDICATION

This work is dedicated to my father Mohamed Abdullahi Ali, My mother Batula sheikh Aden , my wife Saedo Mohamed ,daughter Aisha and my brother and sisters who ensured that I successfully completed my studies.

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LIST OF ABBREVIATION AND ACRONYMS

IDPs	:	Internally Displaced Peoples
MDGs	:	Millennium Development Goals
OHCHR	:	Office of the High Commissioner for Human Rights
SPSS	:	Statistical Package for Social Sciences
UNCHE	:	United Nations Conference on the Human Environment
UNCHE	:	United Nations Conference on the Human Environment
UNCIS	:	United Nations Centre for Human Settlements
UNDP	:	United Nations Development Program
UNEP	:	United Nations Environment Programme
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
UNHCR	:	United Nations High Commissioner for Refugees

CHAPTER ONE:

1.0 INTRODUCTION

1.1 Background of the Study

For rural populations in developing countries, the natural environment is intimately linked to economic welfare. Populations are dependent on their surroundings for water, food, shelter and medicine. Refugee influxes intensify normal 'green' environmental problems - those associated with over-exploitation of rural natural resources due to poverty, rising populations, weak property rights and inappropriate management. Refugee settlements often occur in environmentally sensitive areas (UNHCR, 2002). In Africa, refugees have therefore usually been settled in semi-arid, agriculturally marginal areas or (as in the case of the Rwandese in Zaire) near national parks or forest reserves. Refugee camps tend to be large for both logistical and political reasons. These large camps have a more negative effect on the natural environment than would be the case if several considerably smaller camps, catering for the same total numbers, were set up. Furthermore, refugees often have to stay in their countries of asylum for extended periods, and the effect on the natural environment around camps may be prolonged. In the case of unique sites, such as the Virunga National Park, Zaire, the natural environmental effect of refugees may be irreversible (PRTADG, 1999).

Interpretation of the environmental impact of displaced persons often results in both positive and negative nuances. Indeed, state-of the-art analysis of the environmental impact of population displacement recognizes this ambivalence, but acknowledges

unanimity on the fact that "little research has been undertaken on long-term negative impact", and that "no truly comprehensive or scientific study has ever been carried out"; even studies, project documents or related institutions provide information that is either superficial, erratic, exaggerated, or limited with regard to time, sector or geographical area (Bishop and Garnett, 2000: 13). Analysts of forced migrants' environmental impact represent three schools of thought: negative in some circumstances, positive in others and indeterminate in situations in which other intervening factors are at play.

1.1.1 Environmental Impact

Two distinctive but easily misconstrued concepts – environmental assessment and environment impact assessment – we define *environmental impact* which denotes simply the process of change that occurs with respect to natural resources such as forests, soil and water, often viewed through negative lens, though "environmental degradation is partly in the eye of the beholder (Jacobsen 1997: 20). Usually, the beholder is the one responsible for or interested in what happens to the environment, even without delving into its conditions before an event construed to have interfered with it. To evaluate the environment, environmentalists often talk of *environmental assessment*, which denotes assessing conditions of the environment at any given time, and could move further to *environmental impact assessment*, that is, assessing environmental conditions in the wake of an occurrence, for example, the presence of refugees and IDPs in an environment. The UNHCR's (1996) *Environmental Guidelines* are comprehensive enough to provide for environmental impact indicators, their assessment and the parties to be involved in implementing the document. The foregoing definitions and taxonomies provided a meaningful starting point of this keynote address.

1.1.3 Refugees and the Environment

Refugees searching for safe haven can burden the ecosystems in their country of asylum and complicate environmental decision-making. In 2001, there were about 20 million uprooted people worldwide. Some 12 million were refugees and 5 million were "internally displaced persons"—people forced to flee their homes, but still living in their original country (UNHCR, 2002:12, 19, 22). Often, refugees are forced to settle in resource-scarce areas, putting further pressure on trees, land, water, and wildlife. The unstable in- and outflow of displaced people affects established patterns of rural cropping and food production, and upsets long-term agricultural investments (Messer et al. 2000). When rural communities are forced to flee, they may take with them knowledge of the harvest cycles of locally adapted seeds and the informal networks of seed swapping that help preserve the genetic diversity of agriculture (PRIAIXI, 1999).

Streams of refugees can overburden infrastructure for living quarters, clean water supplies, and waste systems. When it is time to make decisions about natural resource use and conservation, refugees are unable to have a voice in those decisions because they are not citizens. Even if they return to their original homes, they may lose their say in land use and management decisions due to land ownership disputes or postwar changes in national land policy. For example, in postwar Mozambique, the government awarded commercial land concessions in many areas when local communities were still absent or were struggling to re-establish their livelihoods, and were thus unable to effectively join in the decision (Hatton et al. 2001). In addition, documentation regarding legal land rights and property ownership is often misplaced or confiscated during conflicts, as occurred in

the southern Balkans when Kosovo Albanians fled to Albania and the former Yugoslav Republic of Macedonia in 1999 (UNEP and UNCHS, 1999).

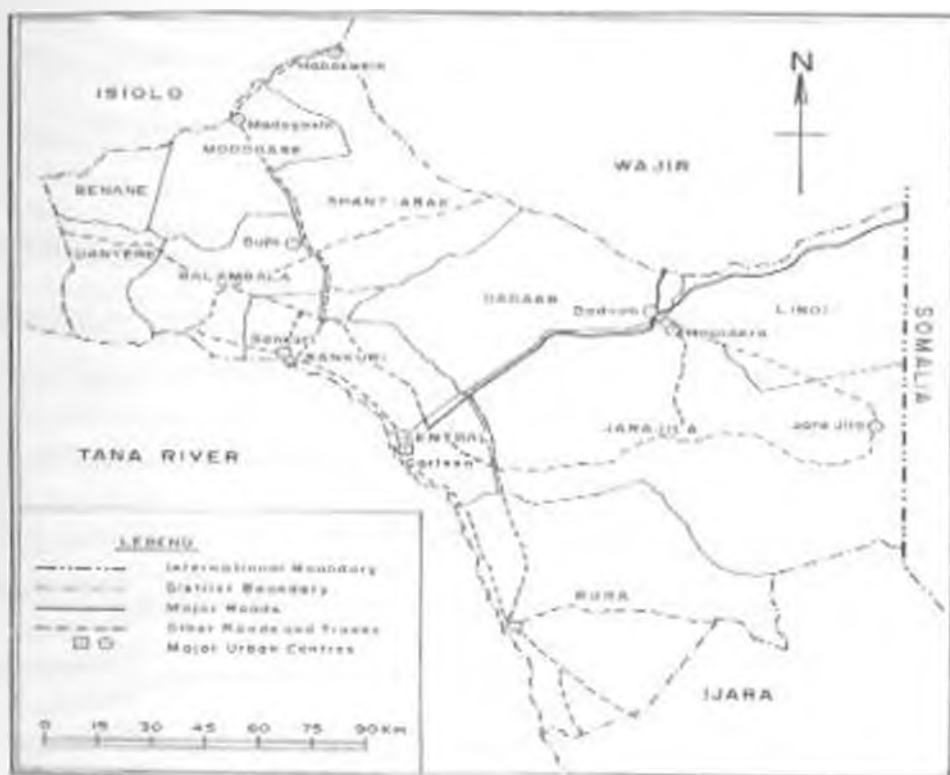
1.1.4 Daadab Refugee Camps

Daadab Division is situated in Garissa District and it is one of the four districts of North Eastern province. The District is located between latitude 058⁰ North and 02⁰ South and longitudes 38⁰34 East and 41⁰34 East. It is boarded by Wajir District to the South, Ijara and Tana River districts by West and Somalia Republic to the East. The refugees in Daadab camps are mainly from Somalia, Ethiopia, Eritrea, Uganda and Sudan. The average population is estimated at 136,338 refugees, majority of who are Somalis. The United Nation Agencies in Daadab camps include UNHCR, (umbrella) World Food Programme, CARE, SAVE THE CHILDREN, GTZ, IWF and UNICEF among others (UNEP and UNCHS, 1999).

Daadab is the second largest Division in Garissa District and has a total area of 5,899 km². It is boarded by Wajir to the North, Central and Shanta Abak Divisions to the West, Bura and Jarajila to the South and Liboi Division to the East. Daadab camp is complex; it consists of three refugee camps namely; IFO, Dagahley and Hagdera, which covers a total area of 50 km. The three camps are within a radius of 8km from Daadab camp. It is located about 100 km to the North East of Garissa town and 70 km from Somalia boarder. It is 500km from Nairobi, 600 km from the port of Mombasa and it is accessible from Nairobi through Garissa town. The region is basically dry and arid (UNEP and UNCHS, 1999). Based on this information, the researcher is prompted to investigate the socio-economic effect of refugee's presence in Daadab camp in North Eastern. There is limited literature on other studies carried out in this area by other researchers. Most

researchers have looked at issues related to dependency, health provision of refugees as well as political participation of refugees host countries and the attitude of local communities' towards the refugees (Black and Sessy, 2007).

Figure 1.1: Maps of Dadaab



1.2 Statement of the problem

Environmental deterioration on the refugees themselves is intense. Low-quality water affects the health of large numbers of people, in a situation where there is a high risk of infectious diseases multiplying rapidly. Deforestation gradually forces women and children to walk further for wood, putting women in particular in danger of physical assault. Children may have to miss school to help: cooking time is shortened, and drinking water not boiled. Refugees may have to sell part of their food rations in order to obtain the fuel needed to cook the remainder, contributing to increased levels of malnutrition (UNEP and UNCHS, 1999).

Before the settlement of the refugees in Dadaab area the natural vegetation was relatively dense comprising of trees, shrubs and grasses that sustainably the pastoral economy. Most important trees' shrubs, grass include acacia, spcordia, slimness, dalbergia, chloris etc. specific environment effect on vegetation by refugees in the trust land include: consite bush clearing to pave way for refugee settlement camps, Indiscriminate harvesting of natural vegetation for different uses, Fuel wood extraction for domestic and commercial purposes, most notorious being harvesting of live trees for fuel wood within vicinities of camps in the absence of lead fuel wood.

The effects of the refugees on environmental resources have vehemently reduced the land space previously available to the local community to support livelihood. Each refugee camp occupies 4km² of land devoid of vegetation as a result of using earth moving machines to pave way for refugee settlement. Despite the documentation of the effect of refugees on natural environment, no known study that has been done on the effect of

refugees on environment in Kenya, a knowledge gap. This study will therefore be motivated to investigating the effect of refugees on natural environment by focusing on Dadaab Refugees Camp. The study sought to answer the following research questions: what are the effects of refugees in Dadaab refugee camp on land and forest cover? How do the refugees in Dadaab refugee camp affect water catchments areas around Dadaab refugee camp? Which are ways that can be used to protect water catchments areas and forests around Dadaab refugee camp?

1.3 Research Questions

This study sought to answer the following questions:

- i. What are the effects of refugees in Dadaab refugee camp on land and forest cover?
- ii. How do the refugees in Dadaab refugee camp affect water catchments areas?
- iii. Which are ways that can be used to protect water catchments areas and forests?

1.4 Objectives of the Study

1.4.1 General Objective

The main objective is to determine the effect of refugee's on the environment at Dadaab refugee's camp.

1.4.2 Specific Objectives

The objectives of this study were to:

- i. To determine the effects of refugees in Dadaab refugee camp on land and forest cover around Dadaab refugee camp.
- ii. To establish the effects of refugees in Dadaab refugee camp on water catchments areas around Dadaab refugee camp.
- iii. To investigate on ways that can be used to protect water catchments areas and forests around Dadaab refugee camp.

1.5 Hypothesis

H_0 Refugees do not lead to destruction of forest cover in Dadaab refugee camp

H_1 Refugees lead to destruction of forest cover in Dadaab refugee camp.

H_0 Refugees do not cause land degradation and destruction of water catchments areas

H_1 Refugees do not cause land degradation and destruction of water catchments areas

1.6 Justification of the study

This study will be of great importance to local people and local leaders as it will provide information that can be used to prevent land degradation and deforestation and to protect water catchments areas.

Kenya being the host of many refugees, this study will be of great importance to the government of Kenya as it will help it in policy development which will be geared

towards environment conservation and ways to manage refugee's camps in order to conserve the environment

To researchers and academicians this study will be of great importance as it will form a basis for further research studies on the effect of refugees on the environment in Kenya. The study will also provide information that can further be used as literature review of related studies.

1.7 Scope of the Study

The study covered Dadaab refugee camp. The three camps in Dadaab, Kenya, have housed refugees for over 15 years, starting with the flight of refugees from Somalia in 1991. Most of the people living in the camps 97 percent are Somali, though there are also refugees from Sudan, Uganda, the Congo and other countries in conflict. The three refugee camps at Dadaab in the semi-desert of northeastern Kenya now make up one of the largest, the oldest and the most-overcrowded refugee sites in the world. With a total of 62,000 new arrivals from Somalia in 2008 and 7,000 in January 2008 alone, they now house just short of a quarter of a million people -- the equivalent of an entire city in the wilderness

This study determined the effects of refugees on natural environment in Dadaab refugee camp find out the effects of refugees on land and water catchments areas in Dadaab refugee camp and investigate on ways that can be used to protect water catchments areas and forests.

The study targeted employees of humanitarian agencies working in Dadaab camp, local leaders who included chief, sub chiefs and area MP. The study sample was 40 employees of humanitarian agencies working in Dadaab camp.

1.8 Operational Definition

Environmental refugees: Environmental refugees refers to the people who are purportedly forced to migrate from or flee their home region due to sudden or long-term changes to their local environment, which is held to include increased droughts, desertification, sea level rise, and disruption of seasonal weather patterns such as monsoons.

Environmental refugees: Initial applicant of the term which he popularized in the 1970s and gained prominence at a 1984 IED workshop. People fleeing traditional habitat because of a marked environmental disruption jeopardizing their existence and/or seriously affecting the quality of their life (El-Hinnawi, 1985).

Internally displaced persons (IDPs): Persons forced to flee or leave their homes or habitual residence but who have not crossed an internationally recognized State border (OHCHR, 1998).

Migrant: One that moves from one region to another by chance, instinct, or plan. An itinerant worker who travels from one area to another in search of work.

Natural Environment, consisting of biotic and abiotic features: regional scientists and those focusing on urbanization underpin settlement, in which agriculture dominates the rural part as non-agricultural activity typifies the urban component; economists emphasize the economic milieu; political scientists emphasize governance issues; sociologists underscore human ecology; and human security analysts consider environmental hazards and human induced occurrences such as wars and ethnic strife

Refugees: Fleeing fear and persecution from home country (emphasis on crossing an international boundary and consequently protection not provided by country of origin (UNHCR,2006).

CHAPTER TWO:

2.0 LITERATURE REVIEW

2.1 Introduction

Almost all countries in Africa have faced conflicts for several years and the scale of IDPs is alarming. The effect of refugees and IDPs on the environment and the links to natural resources is significant. Refugees and IDPs have contributed to deforestation and over grazing in catchment areas, leading to environmental degradation and soil erosion, leading to natural disasters such as drought and floods experienced by several countries in the region and probably linked to climate change (UNHCR, 1995). Lack of environmental considerations due to other pressing social and economic needs leads the destruction of the natural capital and affects long-term recovery. Chaotic settlements in many places have grown up to 200 percent in just two-three years such as in Darfur. Lack of planning and environmental consideration in many countries development is affecting their future development (Sondorp and Elema, 1995).

2.2 Environment: Natural and Human-made components

The *Cambridge Advanced Learner's Dictionary* defines the term *environment* as "the conditions you live or work in and the way they influence how you feel or how effectively you can work", *the environment* consisting of "the air, water and land in or on which people, animals and plants live" (Cambridge University Press, 2003: 400). The term has gained increasing prominence in scholarship and policy circles since the United Nations Conference on the Human Environment (UNCHE) convened in Stockholm, Sweden in June 1972, subsequently leading to establishment of the United Nations

Environment Program (UNEP), based in Nairobi, Kenya. Simply defined, *environment* is "the sum of all external factors, both biotic and non-biotic, to which an organism is exposed. While biotic factors include influences by members of the same and other species on the development and survival of the individual, primary abiotic factors are light, temperature, water, atmospheric gases." Discussions on environmental impact of refugees and IDPs, in some respects, invoke ideas in Thomas' (1956) book, *Man's Role in Changing the Face of the Earth*, published at a time when both population and environment had not occupied centre stage in the development discourse.

Among other things, the UNCIEE at Stockholm proclaimed that: Man is both creature and molder of his environment, which gives him physical sustenance and affords him the opportunity for intellectual, moral, social and spiritual growth. In the long and tortuous evolution of the human race on this planet a stage has been reached when, through the rapid acceleration of science and technology, man has acquired the power to transform his environment in countless ways and on an unprecedented scale. Both aspects of man's environment, the natural and the man-made, are essential to his well-being and to the enjoyment of basic human rights the right to life itself.

The last sentence of the quote above implies that humankind cannot and does not simply mess with the environment; if anything, circumstances may inadvertently force humankind to damage the environment, but the rule of thumb is for humankind to conserve it for sustained survival. There is a striking contrast between Thomas' (1956) book and the UNCIEE proclamation referred to above. While Thomas' (1956) underlined (gender-free) man's environmental impact, the UNCIEE underscored their reciprocal

relationship. Apparently, both positions did not envisage forced migrants' environmental impact, presumably because the wave of involuntary migration had not appeared on the scene and when it did in the post-independence SSA, for instance, much attention centered on hosting the victims without taking cognizance of their environmental impact.

Yet the study of the environment stems from a variety of disciplines. Students of the environment and consumers of their work construe the term within their disciplinary province: biological scientists underline the natural environment, consisting of biotic and abiotic features; regional scientists and those focusing on urbanization underpin settlement, in which agriculture dominates the rural part as non-agricultural activity typifies the urban component; economists emphasize the economic milieu; political scientists emphasize governance issues; sociologists underscore human ecology; and human security analysts consider environmental hazards and human induced occurrences such as wars and ethnic strife. For a term attracting students from a variety of disciplines, it is utopian to expect unanimity in methods, data and analytical approaches of studying it. In the same vein, it is difficult for planners and policy makers and, indeed an array of their development partners, to prescribe straightforward solutions to environmental issues, problems and opportunities that keep changing from time to time.

2.2.1 Environmental Impact Assessment Of Refugees

The popular media image of the refugee as a "problem", rather than a "persons with problems" (Harrell-Bond, 1998) underlines the congregation of refugees as a strain on local resources, including the environment, more than does a dispersed population (Black, 1994, quoted in Harrell-Bond, 1998) and as posing a health risk by increasing exposure to disease (Toole and Bhatia, 1994, quoted in Harrel-Bond, 1998). Against this

Rarely are there surveys of refugees, either nationally or locally at the camps holding them. In South Africa, for example, a national survey of refugees revealed useful insights into their origins, background characteristics, routine and piecemeal jobs, problems, future aspirations for leaving their current residence and so on. A popular approach is assessment of damage or amelioration of the environment that is already occupied by refugees, a situation which pits them with the local host society.

2.2.2 Instances Of Environmental Impact

This section analyses instances of environmental impact of displaced persons in selected African countries, based on experience gained in different settings. As the UNHCR, inter-governmental, non-governmental agencies and host governments endeavour to support and protect refugees, they have amassed useful information not only on the causes but also on the consequences of refugees in host communities. Virtually every analysis of environmental impact of displaced persons cites negative and positive impacts on flora and fauna, energy and heating sources, water bodies, soil quality, environmental sanitation and a variety of infrastructure among the most affected environmental issues. With the intervention of humanitarian agencies concerned with the plight of displaced persons, some observed negative impacts are eventually converted into positives, consequently benefiting the host communities as well.

Students of displaced persons' environmental impact define the concept to embrace "the process of change that occurs with respect to forests, soil and water" (Jacobsen, 1997: 20), often underscoring negative impact (Black, 1994b; Hoerz, 1995a; Tamondong-Helin and Helin, 1991, quoted in Jacobsen, 1997: 20). To this end and to capture the various components of environment, it is prudent to categorise forms of impact into four generic

categories: biosphere, lithosphere, hydrosphere and atmosphere; other categories that do not fall within any of the four are considered separately. The distinction Jacobsen (1997: 21) makes between refugees who "selfsettle" and refugees "who are settled" is important because it determines their contrasting perceptions of, attitudes toward and utilization of the environment.

Western Africa is a classical arena where refugees have impacted negatively on different types of natural resources, as over one million Sierra Leonean and Liberian refugees fled across their borders within the Upper Guinea forest regions of Guinea and Cote d'Ivoire with fabulous tropical rainforest, clearing forests for farmland, felling trees for the construction of refugee camps, logging and mining (Bishop and Garnett, 2000: 8). This is the stereotypical example of refugees' environmental impact everywhere even without empirical research to support it.

2.2.3 Evidence of Environmental Impact in a Rain Forest Area

Four West African Guinea Forest countries Liberia, Sierra Leone, Cote d'Ivoire and Guinea provide cursory evidence of environmental impact of refugees and internally displaced persons in a forested area with all the natural resources, agricultural produce and other attributes that the area has. Negative impacts range from deforestation to water pollution, health hazards, declining agricultural land and production, timber and fuel wood shortages and loss of biodiversity; on appositive note, skills transfer between refugees and host populations and the inhabitants' increased consciousness of their responses to environmental conditions are likely to rehabilitate the once devastated environment.

2.3 Refugees in Garissa district and their effect on the environment

Garissa district is the second largest district in North Eastern province and the 4th largest district in the republic. It covers an area of 43,931km² and has an estimated population of 500,000 people and the district is among the least developed in the republic due to its climatic and general environmental condition. It is classified as Arid and Semi Arid I and categorized to be ecological zone surrounding Dadaab refugee camp. With a fragile environment 90% of its inhabitants are Somalis who are predominately pastoralists (Helin, 1990).

The presence of these large population of refugees in Dadaab area of Garissa has invariably had adverse environmental impacts on these fragile ecological zone (v) ecosystem competition for scarce resources found in these environment by over 200,000 people both locals and refugees coupled with presence of large herds of livestock and wildlife impacted serious environment degradation of negative magnitudes to Dadaab region trust land environment (Lonergan and Steve, 1995).

The environmental impacts of these refugees has had multiple cause effect on this environment that can lead to irreversible land degradation and loss of biodiversity and economic value of the environment in Dadaab, Liboi and Jarajilla division and is rapidly spreading to the adjacent regions (Helin, 1990)..

2.3.1 Refugees effect on Land

Land is a primary environmental resource that provides space and supports all biodiversity upon it. Land degradation renders these important resources economically

valueless and unproductive limiting landscape for economic production proportionally lowers its ability to support that economic activity. Dadaab, Jarajilla and Liboi division covers an area of 7074kms and 1783km respectively combined form approximate 1/3 of the district trust land available to support the local pastoral economy. The best dry land season grazing land referred to as RAMAGUDA falls in the heart of these three (3) divisions and because of its significance to the pastoral community the range land development project drilled boreholes and divided the area into grazing blocks (Guma Epidemiology Group, 1994).

The effect of the refugees on these resources has vehemently reduced the land space previously available to the local community to support livelihood. Each refugee camp occupies 4km² of land devoid of vegetation as a result of using earth moving machines to pave way for refugee settlement. Former Liboi camp was occupying 2km² which is bare land with gaping pit latrines and silted communal water pans. Currently harvesting of live trees for fuel wood is 10km away from the camps. While harvesting of live building material is 40km away from the camps (Delmas and Courvallet, 1994).

2.3.2 Refugees effect on water catchments areas

The only two permanent water sources in Garissa district are Tana River and Merti Aquifer to cater for both human and livestock demands. Others are surface pans that dry up immediately. To meet water demands for the 130,000 refugees in Dadaab area, UNICEF/ UNHCR dug a total of 24 boreholes in 1992/ 1994. A lone equipment with high discharge pumps operating for 14 hours a day and abstracting large quantity of volumes of water. Specific impacts of refugees on this trust land resources include:

Destruction of water catchments area through deforestation, over exploitation of the Merti Aquifer as the rate of the abstraction of underground water from the aquifer is not equivalent to the rate of recharge of the aquifer, lack of aquifer monitoring gadgets and lowering of water table of merti aquifer at an alarming rate (Sondorp and Elenia, 1995).

2.4 Refugees and Deforestation

Within three days of the arrival of the refugees, Mount Gioma was completely deforested, over 300 hectares. The sudden influx of over one million refugees caused irreversible damage to the vegetation in Zaire's Virunga National Park, a UNESCO World Heritage site. An estimated 7,000 -10,000 m³ of wood and grass were being collected from the park by refugees every day from August to December 1994. Deforestation accelerated problems of environmental degradation and there was a significant increase in soil erosion and loss of biodiversity. An environmental impact study commissioned by The United Nations Development Program (UNDP) documented various categories of extensive damage and identified other problems such as poaching in national parks, and landslides in refugee camps located on hill slopes caused by uprooting of trees and bushes (Saunders, 1995).

How these factors, combined with the "rule by fear" in the camps impacted on the health of the refugees needs to be considered. In an attempt to solve the problem of supply of cooking fuel, UNHCR distributed a new fuel efficient stove to all refugees. They also supplied timber to burn in these new stoves, but due to the distribution scheme (by the militia), the most vulnerable did not receive supplies. Refugees soon abandoned the new

stoves because their traditional stone fires could burn large pieces of wood (regularly edged into the fire), while the "free" and less bulky firewood for their new stoves had to be chopped into small pieces to fit. Many did not have either the tools or the enthusiasm to follow through with the new concept. They went back to ransacking the forest (UNHCR, 1995).

2.5 Response to the effect of refugees on environment

There are a variety of short- and longer-term solutions to the need for fuel wood provision on this scale, which were proposed by the agencies involved in the camps, including UNHCR, and by consultants. The most urgent need is to keep per capita consumption of fuel low, and to make fuel available from a wide area and variety of sources so that refugees do not irreversibly damage the area immediately surrounding camps (Gibbs, 1994).

On the demand side, the biggest single reducer of per capita consumption of fuel is the provision of food in a quick-cooking form. Maize in the form of maize-meal rather than whole dry 'popcorn' maize, for example, takes six to eight times longer to cook. It is theoretically possible to save fuel through the use of fuel-efficient stoves as well, though stove programs have a depressingly unsuccessful history. A far simpler technology, which greatly reduces fuel-use and cooking time, is the provision of large flat saucepan lids to refugees for covering boiling food and water (high altitude has been a factor in high fuel consumption rates in the Rwanda refugee situation. Cooking times are much slower in highland areas because the boiling point of water is lower) (Biswas and Tortajada-Quiroz, 1994).

On the supply side, the simplest way of reducing the effect of refugees (though it is often not politically possible), is to set up a larger number of smaller camps, rather than a tiny number of large ones, so that fuel wood collection is automatically spread over a larger area. If this is impossible, then it is essential for agencies to identify natural stands of forest or plantations, and to organize the delivery of fuel wood to the camps. As time goes by, other sources of fuel may be identified as well. In Tanzania, for instance, both peat and papyrus reeds constitute such sources. A range of other options are inappropriate in this context for the reasons set out in the chart (kerosene, charcoal, briquettes, solar cookers, stoves). At the same time, important trees around the camps (along water courses, large shade trees, etc) can be marked with white paint as not available for felling.

A further area which needs early consideration, from the environmental point of view, is the need for poles and timber. Current refugee shelters provide polythene sheeting, but no wood supports. These have to be cut from the surrounding area. Nor have the agencies themselves been blameless. UNHCR (1994) notes that the implementing agencies cut tens of thousands of poles within easy trucking distance for pit latrines, medical clinics etc. Tents for official purposes, and tent-pole provision, ought to be part of the agencies' commitment to a refugee situation.

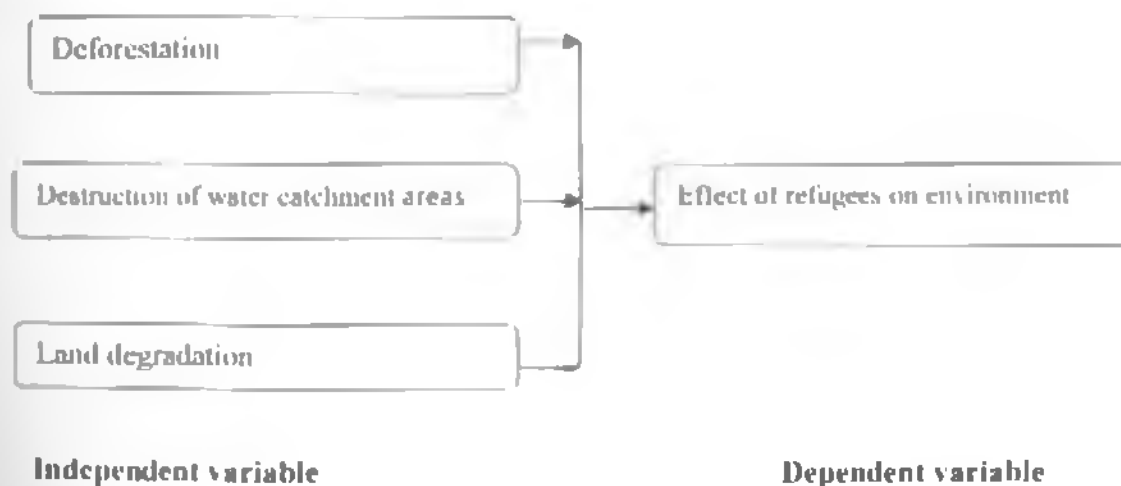
In the longer run, there are three further actions to be taken. Firstly, in the refugee-affected areas, tree-planting programs with local villagers and with remaining refugees should be a priority. Secondly, and this is more for future refugee situations than for restoring the environment in current ones, databases for countries in Africa and elsewhere likely to be involved in a refugee crisis in due course, need to be set up to document areas

of ample fuel wood resources (if any) available for future need, border areas of each country most unsuitable for the establishment of a refugee camps, and those which ought to be avoided at all costs (UNHCR, 1995).

2.6 Conceptual framework

One of the major impacts of refugees is deforestation as they look for firewood and building materials. Deforestation accelerates problems of environmental degradation and there is a significant increase in soil erosion and loss of biodiversity. Destruction of water catchments area comes about as a result of deforestation. This conceptual framework shows that, effects of refugees on the environments ranges from deforestation, destruction of water catchments areas and land degradation

Figure 2.1: Conceptual framework



Source, Researcher (2011).

2.7 Research Gap

Before the settlement of the refugees in Dadaab area the natural vegetation was relatively dense comprising of trees, shrubs and grasses that sustain the pastoral economy. Most important trees/ shrubs, grass include acacia, spcordia, slimness, dalbergia, chloris etc. specific environment effect on vegetation by refugees in the trust land include: consite hush clearing to pave way for refugee settlement camps, Indiscriminate harvesting of natural vegetation for different uses, Fuel wood extraction for domestic and commercial purposes, most notorious being harvesting of live trees for fuel wood within vicinities of camps in the absence of lead fuel wood.

Harvesting of building materials include poles fitus and grass thatch, rafters etc harvested indiscriminately from natural vegetation by the refugees. It is well known fact the UNHCR, does (NOT ADEQUATELY PROVIDE TENTS) or shelter to the refugees. These refugees entirely depend on the surrounding natural vegetation for live building materials to construct their temporary shelters. These temporary shelter materials are perishable within six months due to the harsh weather conditions and vulnerably to highly destructive ants common in subject area.

CHAPTER THREE:

3.0 RESEARCH METHODOLOGY

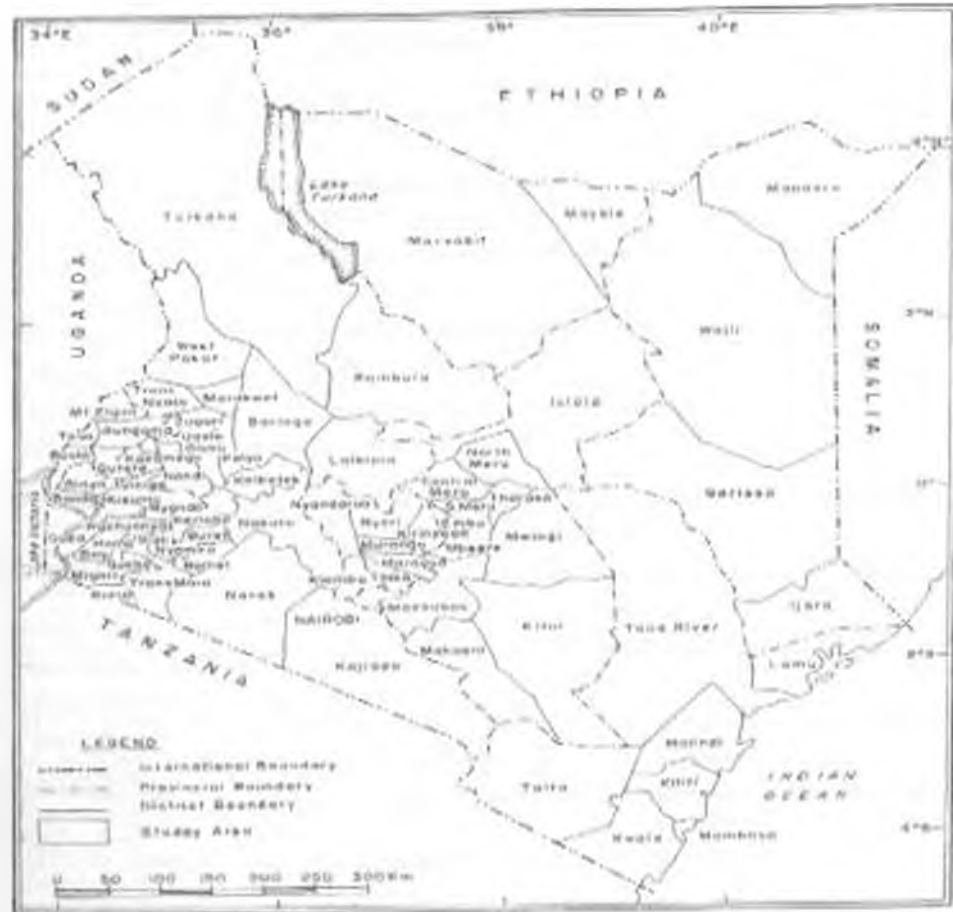
3.1 Introduction

This chapter provides the methodology of the study. It gives the specific procedures that were followed in undertaking the study. The research design, target population, data collection methods and data analysis are described in this chapter.

3.2 Study Location

Dadaab Division is situated in Garissa District and it is one of the four districts of North Eastern province. The District is located between latitude 058° North and 02° South and longitudes $38^{\circ}34'$ East and $41^{\circ}34'$ East. It is bordered by Wajir District to the South, Ijara and Iana River districts by West and Somalia Republic to the East. The refugees in Dadaab camps are mainly from Somalia, Ethiopia, Eritrea, Uganda and Sudan. The average population is estimated at 136,338 refugees, majority of who are Somalis. The United Nation Agencies in Dadaab camps include UNHCR, (umbrella) World Food Program, CARE, SAVE THE CHILDREN, GTZ, LWF and UNICEF among others (UNEP and UNCHS, 1999).

Figure 2.2: Study Area Map



3.3 Research Design

Cooper and Schindler (2006) stated that research design is the manner in which data is collected, measured and analyzed in order to achieve certain research objectives.

Chandran (2004) stated that the research design is a way to accomplish the research objectives through empirical evidence that is obtained economically. The considerations

that determine the research design to be used include: research purpose, categories of data required, data sources and the cost implications.

The research that was employed in this study was descriptive type of research design. The major purpose of descriptive research design was to describe the state of affairs as it is at present. According to Mugenda and Mugenda (1999) a descriptive research is a process of collecting data in order to test hypotheses or answer questions concerning the current status of the subjects in the study. It points out that the purpose of a descriptive research is to determine and report the way things are done.

Descriptive research was used to obtain information concerning the current status of the phenomena to describe what exists with respect to variables or conditions in a situation. The method involved a range from the survey which describes the status quo and the regression study which investigates the relationship between variables. The primary use of descriptive statistics was to describe information or data through the use of numbers (create number of pictures of the information). The characteristics of groups of numbers representing information or data are called descriptive statistics (Kay, 1997). According to Mugenda and Mugenda (1999) this type of research attempted to describe such things as possible behavior, attitudes, values and characteristics.

3.4 Target Population

The target population of this study was the local leaders in the region, who will include, Chief, assistant chief and area MP, Refugees in the three camps that constitute Dadaab, the study also targeted employee working with humanitarian agency' based in Dadaab UNHCR was chosen in this study since it has been in the frontline to protect the

environment in refugee camps. Simple random sampling was used in this study to select 50 UNHCR officers and 10 local leaders and 40 refugees. In simple sampling method each member of the population has an equal and an independent chance of being included in the sample. The sample size of this study was therefore 100 respondents

Table 2: Sample frame

Designation	Proportion	Percent
MP	1	1
Chief	2	2
Assistant chief	4	4
Local leaders	3	3
UNCHR official	50	50
Refuges	40	40
Total	100	100

Source, Author (2011)

3.5 Data Collection Instruments

The researcher used primary data for this research study. Primary data was obtained through self-administered questionnaires with closed and open-ended questions. The questionnaires included structured and unstructured questions and was administered through drop and pick method to respondents. The closed ended question was enabling the researcher to collect quantitative data while open-ended questions enabled the researcher to collect qualitative data.

3.6 Data Analysis

The primary data collected was thoroughly examined and checked for completeness and comprehensibility. The data was then summarized, coded and tabulated. Descriptive statistics such as means, standard deviation and frequency distribution were used to describe the data. Data was analyzed with the help of Statistical Package for Social Sciences (SPSS). SPSS was used to perform the analysis as it aids in organizing and

summarizing the data by the use of descriptive statistics. ANOVA was used to test the research hypothesis. Data presentation was done by the use of pie charts, bar charts and graphs, percentages and frequency tables. This ensured that the gathered information was clearly understood.

3.7 Limitation of the Study

The study assumed that the information given by various respondents is true and accurate and therefore forms the basis for the research data analysis. It also assumed that the sampled respondent gave the true picture of similar scenarios in Kenya. The research assumes that the target population provided sufficient evidence to support the case study. The study also was also limited to Dadaab refugee camp.

CHAPTER FOUR

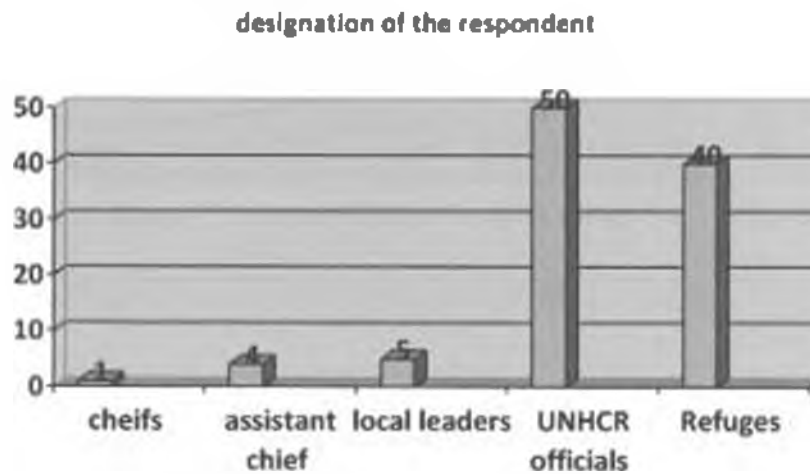
4.0 DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the research findings to determine the effect of refugee's effect on the natural environment a case study of Daadab refugee's camp. The study was conducted on 100 respondents who were served with a questionnaire, out of 100 targeted respondents 100 respondents filled-in and returned the questionnaires which make a response rate of 100%. Descriptive statistics and ANOVA were used to analyze the data. In the descriptive statistics, relative frequencies were used in some questions and other were analyzed using mean scores with the help of Likert scale ratings in the analysis. ANOVA was used to test the research hypothesis.

4.2 General information

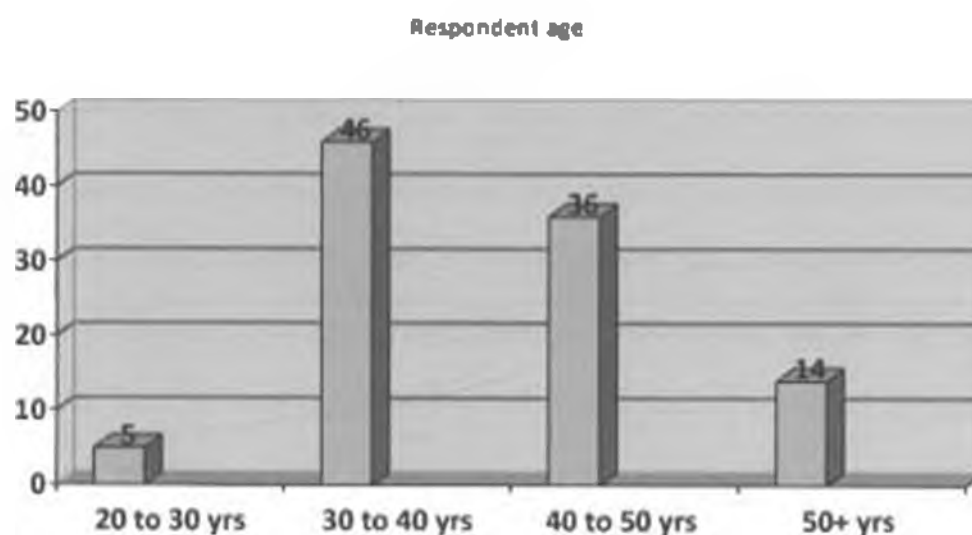
Figure 4.3: Designation of the respondent



Source, Author (2011)

On the respondent designation, the study found that majority of the respondent as shown by 50% of the respondent were UNHCR officials, 40% of the respondent were refugees, 5% of the respondent were local leaders, 4% of the respondent were assistant chiefs and 1% of the respondent were chiefs, the respondent were deemed to be reliable to give credible information to this study as they include all representative and thus information was not biased

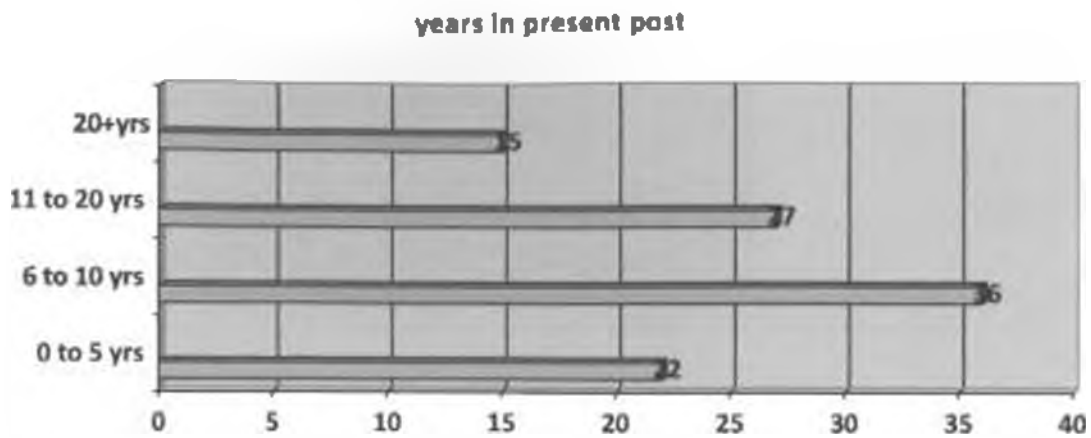
Figure 4.4: Age of the respondent



Source, Author (2011)

From the findings on the respondent age, the study found that most of the respondent as shown by 46% were aged between 30 to 40 years, 36% of the respondents were aged between 40 to 50 years, 14% of the respondent indicated that they were aged 50 years and above whereas 5% of the respondent were aged between 20 to 30 years, this information shows that respondent were from all age categories.

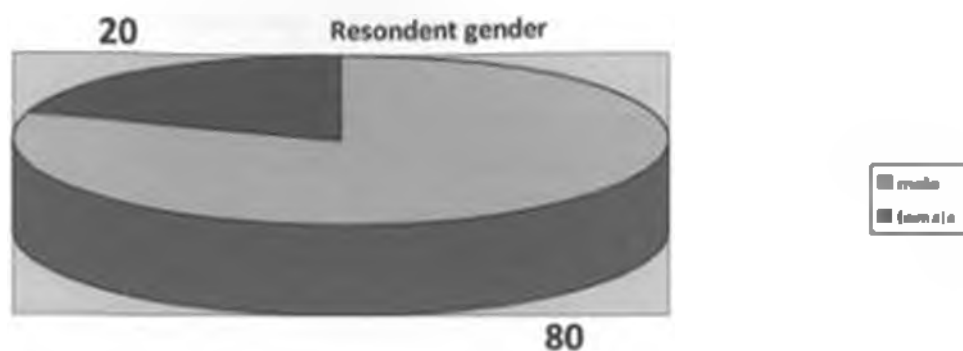
Figure 4.5: Years of service in present post



Source, Author (2011)

On the years of service in the present post, the researcher requested the respondent to indicate the number of years they had served in their current post, from the findings the study found that most of the respondent as shown by 36% had served in their current position for 6 to 10 years, 27% of the respondent indicated that they had served in their current post for 11 to 20 year's, 22% had served in their current post for 0 to 5 year's whereas those who had served in their current post for more than 20 years were shown by 15%.

Figure 4.6: Gender of the respondent



Source, Author (2011)

On the gender of the respondent the study found that majority of respondent as shown by 80% were male, while 20% of the respondent were females, this shows that both gender were represented in this study and therefore avoiding gender biasness

4.3 Effects of Refugees

Table 4.3: Refugees having effects on the land and forest cover

Respondent opinion	Distribution	
	Frequency	Percent
Yes	90	90.0
No	10	10.0
Total	100	100

Source, Author (2011)

On whether respondent believed the presence of refugees in the region had effects on the land and forest cover in the region surrounding Dadaab refugee camp, from the findings in the above table the study found that majority of the respondent as shown by 90% indicated that they had effects on the land and forest cover, while 10% believed that presence of refugees didn't have effects on the land and forest cover. This shows that

presence of refugees in the region had effects on the land and forest cover in the region surrounding Dadaab refugee camp. The study revealed that the effect of refugees on land and forest cover in the region surrounding Dadaab refugee camp were : cutting of tree for firewood, cutting of trees for construction , clearing of land for setting up camps and clearing of bushes for creating ways to access camps.

Table 4.4: Respondent level of agreement on effects of refugees on the land and forest cover

Statement	strongly agree	agree	neutral	disagree	strongly disagree	Mean
presence of these large population of refugees in Dadaab area of Garissa has invariably had adverse environmental impacts on these fragile ecological zone	41	46	14	0	0	1.729
ecosystem competition for scarce resources found in these environment by over 200,000 people both locals and refugees coupled with presence of large herds of livestock and wildlife impacted serious environment degradation of negative magnitudes to Dadaab region trust land environment	52	39	8	0	0	1.559
Presence of refugees have multiple cause effect the environment that lead to irreversible land degradation and loss of biodiversity and economic value of the environment in Dadaab	32	68	0	0	0	1.678
Land degradation due to presence of refugees renders important resources economically	41	54	5	0	0	1.644

valueless and unproductive limiting landscape for economic production proportionally lowers its ability to support that economic activity						
Presence of refugees have resulted into harvesting of live trees for fuel wood in the region around Dadaab camp	52	42	5	0	0	1.525

Source, Author (2011)

On the respondent level of agreement on various statements relating to effects of refugees on the land and forest cover, the study found that most of the respondent agreed that presence of refugees have resulted into harvesting of live trees for fuel wood in the region around Dadaab camp as shown by mean of 1.525. ecosystem competition for scarce resources found in these environment by over 200,000 people both locals and refugees coupled with presence of large herds of livestock and wildlife impacted serious environment degradation of negative magnitudes to Dadaab region trust land environment as shown by mean of 1.559, 1 and degradation due to presence of refugees renders important resources economically valueless and unproductive limiting landscape for economic production proportionally lowers its ability to support that economic activity as shown by mean of 1.644. Presence of refugees have multiple cause effect the environment that lead to irreversible land degradation and loss of biodiversity and economic value of the environment in Dadaab as shown by mean of 1.678 and presence of these large population of refugees in Dadaab area of Garissa has invariably had adverse environmental impacts on these fragile ecological zone as shown by mean of 1.729.

Table 4.5: Extent to which presence of refugee in Dadaab affect land and forest cover

Respondent rating	Distribution	
	Frequency	Percent
Very great extent	39	39.0
Great extent	53	53.0
Moderate	8	8.0
Total	100	100

Source, Author (2011)

On the extent to which presence of refugee in Dadaab affect land and forest cover in the region, the study found that majority of respondent as shown by 53% indicated to great extent, 39% of the respondent indicated to very great extent while 8% of the respondent indicated to moderate extent. This information shows that presence of refugee in Dadaab affect land and forest cover in the region to great extent.

Table 4.6: Presence of refugees having effects on water catchments areas

Respondent opinion	Distribution	
	Frequency	Percent
Yes	86	86.0
No	14	14.0
Total	100	100

Source, Author (2011)

On the respondent opinion on whether refugees in the region has effects on water catchments areas in the region surrounding Dadaab refugee camp, the study found that majority of the respondent as shown by 86% indicated that refugees in the region has effects on water catchments areas in the region surrounding Dadaab refugee camp while

14% of the opinion that presence of refugees in the region has no effects on water catchments areas in the region surrounding Dadaab refugee camp. This shows that presences of refugees in the region have effects on water catchments areas in the region surrounding Dadaab refugee camp. The study established that the effects of refugees on water catchments areas in the region surrounding Dadaab refugee camp were; destruction of water catchments area through deforestation, clearing of vegetation cover around the rivers to creating places for setting up camps and over exploitation of Merti Aquifer

Table 4.7: Rating statement relating to effects of refugees on water catchments areas

Statement	strongly agree	agree	neutral	disagree	strongly disagree	Mean
Presence of Refugees in Dadaab have negative effects on Tana River and Merti Aquifer which are the only source of water for both human and livestock demands in Garissa	19	76	3	2	0	1.881
There have been destruction of water catchments area through deforestation by the presence of refugees in the region	63	34	3	0	0	1.407
Refugee in Dadaab refugee camp have over exploited the Merti Aquifer	29	61	10	0	0	1.814

Source, Author (2011)

From the findings on the respondent level of agreement on various statement relating to effects of refugees on water catchments areas, the study found that respondent strongly agreed that there have been destruction of water catchments area through deforestation by the presence of refugees in the region as shown by mean of 1.407 . respondent further agreed that Refugee in Dadaab refugee camp have over exploited the Merti Aquifer as shown by mean 1.814 and Presence of Refugees in Dadaab have negative effects on Tana River and Merti Aquifer which are the only source of water for both human and livestock demands in Garissa as shown by 1.881.

Table 4.8: Extent to which various methods can be employed in order to protect water catchments areas and forest cover

Statement	Very great extent	Great extent	Moderate extent	Less extent	Not at all	Mean
To keep per capita consumption of fuel low, and to make fuel available from a wide area and variety of sources so that refugees do not irreversibly damage the area immediately surrounding camps	35	51	12	2	0	1.797
to set up a larger number of smaller camps, rather than a tiny number of large ones, so that fuel wood collection is automatically spread over a larger area	39	54	7	0	0	1.678
Humanitarian agencies should have organized delivery of fuel wood to the camps	83	15	2	0	0	1.186
in the refugee-affected areas. tree-planting programs with local villagers and with refugees should be a priority	56	39	5	0	0	1.492

Source, Author (2011)

On the extent to which various method can be used in order to protect water catchments areas and forest cover in the region around Dadaab, the study found that Humanitarian agencies should have organized delivery of fuel wood to the camps and in the refugee-affected areas, tree-planting programs with local villagers and with refugees should be a priority could be used to very great extent as shown by mean of 1.186 and 1.492 respectively. Those that can be employed to great extent were to set up a larger number of smaller camps, rather than a tiny number of large ones, so that fuel wood collection is automatically spread over a larger area as shown by mean of 1.678 and to keep per capita consumption of fuel low, and to make fuel available from a wide area and variety of sources so that refugees do not irreversibly damage the area immediately surrounding camps as shown by mean of 1.797.

The study revealed that ways which can be adopted in order to protect the Water Catchments Areas and Forests cover in the region around Dadaab refugee's camp were ; having campaign on tree planting in the region around the camps , sensitizing people on need to conserve their environments , maintain low number of people in the camps , set up a larger number of smaller camps, rather than a tiny number of large ones, so that fuel wood collection is automatically spread over a larger area, to keep per capita consumption of fuel low, and to make fuel available from a wide area and variety of sources so that refugees do not irreversibly damage the area immediately surrounding camps and tree-planting programs with local villagers and with refugees.

4.4 Hypothesis Testing

Hypothesis 1:

H_{01} : Refugees do not lead to destruction of forest cover in Dadaab refugee camp.

The data on various aspect of destruction of forest cover was subjected to Anova test using statistical package for social science to help to test the hypothesis that Refugees do not lead to destruction of forest cover in Dadaab refugee camp. The calculated values were compared with critical value to establish whether to reject or accept hypothesis. The Anova results are summarized in Table 4.9.

Table 4.9: Summary of ANOVAs on destruction of forest covers in Dadaab refugee camp

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	33.327	4	8.332	5.077	.001
Within Groups	205.142	96	1.641		
Total	238.469	100			

Critical value = 1.660

The information in Table 4.9 shows $F_0 = 5.077 > F_c = 1.660$; and $\alpha_s = .050 < \alpha_r = .001$.

This means that there is a significant difference in the destruction of forest cover in Dadaab refugee camp with refugees. The hypothesis that Refugees do not lead to destruction of forest cover in Dadaab refugee camp was therefore rejected.

Hypothesis 2:

H₀₂: Refugees do not cause land degradation and destruction of water catchments areas. The data on various aspects of land degradation and destruction of water catchments areas were subjected to Anova using statistical package for social science to help to test to test the hypothesis that Refugees do not cause land degradation and destruction of water catchments areas. The calculated values were compared with critical value to establish whether to reject or accept hypothesis the results are summarized in Table 4.8.

Table 4.10: Summary of Anova on land degradation and destruction of water catchments areas

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	22.047	4	5.512	5.940	.000
Within Groups	115.984	96	.928		
Total	138.031	100			

The information in Table 4.9 shows $F_o = 5.940 > F_c = 1.660$; and $\alpha_o = .000 < \alpha_c = .050$. This means that there was significant difference between presence of refugees with various aspect land degradation and destruction of water catchments areas. The hypothesis that Refugees do not cause land degradation and destruction of water catchments areas was rejected.

CHAPTER FIVE

5.0 SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

From the analysis and data collected, the following discussions, conclusion and recommendations were made. The responses were based on the objectives of the study.

The researcher had intended to determine the effects of refugees in Dadaab refugee camp on land and forest cover around Dadaab refugee camp, to find out the effects of refugees in Dadaab refugee camp on water catchments areas around Dadaab refugee camp and to investigate on ways that can be used to protect water catchments areas and forests around Dadaab refugee camp.

5.2 Summary of Finding

On whether respondent believed the presence of refugees in the region had effects on the land and forest cover in the region surrounding Dadaab refugee camp, the study found that majority of the respondent as shown by 89.8% indicated that they had effects on the land and forest cover. This shows that presence of refugees in the region had effects on the land and forest cover in the region surrounding Dadaab refugee camp. The study revealed that the effect of refugees on land and forest cover in the region surrounding Dadaab refugee camp were : cutting of tree for firewood, cutting of trees for construction , clearing of land for setting up camps and clearing of bushes for creating ways to access camps.

On the respondent level of agreement on various statements relating to effects of refugees on the land and forest cover, the study found that most of the respondent agreed that presence of refugees have resulted into harvesting of live trees for fuel wood in the region around Dadaab camp, ecosystem competition for scarce resources found in these environment by over 200,000 people both locals and refugees coupled with presence of large herds of livestock and wildlife impacted serious environment degradation of negative magnitudes to Dadaab region trust land environment, Land degradation due to presence of refugees renders important resources economically valueless and unproductive limiting landscape for economic production proportionally lowers its ability to support that economic activity, Presence of refugees have multiple cause effect the environment that lead to irreversible land degradation and loss of biodiversity and economic value of the environment in Dadaab and presence of these large population of refugees in Dadaab area of Garissa has invariably had adverse environmental impacts on these fragile ecological zone.

On the extent to which presence of refugee in Dadaab affect land and forest cover in the region, the study found that majority of respondent as shown by 52.5% indicated to great extent, 39% of the respondent indicated to very great extent. This information shows that presence of refugee in Dadaab affect land and forest cover in the region to great extent

On the respondent opinion on whether refugees in the region has effects on water catchments areas in the region surrounding Dadaab refugee camp, the study found that majority of the respondent as shown by 86.4% indicated that refugees in the region has effects on water catchments areas in the region surrounding Dadaab refugee camp This

shows that presences of refugees in the region have effects on water catchments areas in the region surrounding Dadaab refugee camp. The study established that the effects of refugees on water catchments areas in the region surrounding Dadaab refugee camp were; destruction of water catchments area through deforestation, clearing of vegetation cover around the rivers to creating places for setting up camps and over exploitation of Merti Aquifer

From the findings on the respondent level of agreement on various statement relating to effects of refugees on water catchments areas, the study found that respondent strongly agreed that there have been destruction of water catchments area through deforestation by the presence of refugees in the region, respondent further agreed that Refugee in Dadaab refugee camp have over exploited the Merti Aquifer and Presence of Refugees in Dadaab have negative effects on Tana River and Merti Aquifer which are the only source of water for both human and livestock demands in Garissa.

On the extent to which various method can be used in order to protect water catchments areas and forest cover in the region around Dadaab, the study found that Humanitarian agencies should have organized delivery of fuel wood to the camps and in the refugee-affected areas, tree planting programs with local villagers and with refugees should be a priority could be used to very great extent. Those that can be employed to great extent were to set up a larger number of smaller camps, rather than a tiny number of large ones, so that fuel wood collection is automatically spread over a larger area and to keep per capita consumption of fuel low, and to make fuel available from a wide area and variety

of sources so that refugees do not irreversibly damage the area immediately surrounding camps.

The study revealed that ways which can be adopted in order to protect the Water Catchments Areas and Forests cover in the region around Dadaab refugee's camp were , having campaign on tree planting in the region around the camps , sensitizing people on need to conserve their environments , maintain low number of people in the camps , set up a larger number of smaller camps, rather than a tiny number of large ones, so that fuel wood collection is automatically spread over a larger area, to keep per capita consumption of fuel low, and to make fuel available from a wide area and variety of sources so that refugees do not irreversibly damage the area immediately surrounding camps and tree-planting programs with local villagers and with refugees.

5.3 Conclusion

On the effects of refugees in Dadaab refugee camp on land and forest cover around Dadaab refugee camp. The study revealed that the effect of refugees on land and forest cover in the region surrounding Dadaab refugee camp were ; cutting of tree for firewood, cutting of trees for construction , clearing of land for setting up camps and clearing of bushes for creating ways to access camps. The study thus concludes that presence of refugees in the region had effects on the land and forest cover in the region surrounding Dadaab refugee camp to great extent.

From the findings on the effects of refugees in Dadaab refugee camp on water catchments areas around Dadaab refugee camp, the study found that the study found that refugees in the region had effects on water catchments areas in the region surrounding Dadaab

refugee camp. The effects of refugee were; destruction of water catchments area through deforestation, clearing of vegetation cover around the rivers to creating places for setting up camps and over exploitation of Merti Aquifer. The study thus concludes that that refugee in the region had effects on water catchments areas in the region surrounding Dadaab refugee camp.

The study also concludes that the ways that can be used to protect water catchments areas and forests around Dadaab refugee camp were ; Humanitarian agencies should have organized delivery of fuel wood to the camps and in the refugee-affected areas, tree-planting programs with local villagers and with refugees, set up a larger number of smaller camps, rather than a tiny number of large ones, so that fuel wood collection is automatically spread over a larger area and to keep per capita consumption of fuel low, and to make fuel available from a wide area and variety of sources so that refugees do not irreversibly damage the area immediately surrounding camps.

5.4 Recommendation

The study recommends that the in order to protect the Water Catchments Areas and Forests cover in the region around Dadaab refugee's camp the following method should be adopted : having campaign on tree planting in the region around the camps , sensitizing people on need to conserve their environments , maintain low number of people in the camps , set up a larger number of smaller camps, rather than a tiny number of large ones, so that fuel wood collection is automatically spread over a larger area, to keep per capita consumption of fuel low, and to make fuel available from a wide area and variety of sources so that refugees do not irreversibly damage the area immediately surrounding camps and tree-planting programs with local villagers and with refugees.

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APPENDICES

Appendix 1: Research Questionnaire

Kindly answer the following questions by ticking in the appropriate box or filling the spaces provided.

Part A: General Information

1. Name of the respondent (optional): _____

2. Designation of the respondent?

Chief assistant chief MP

UNHCR Official local leader

3. Age of the respondent:

20-30 yrs

30-40 yrs

40-50 yrs

50 + yrs

4. Years of service in present post:

0-5 yrs

6-10 yrs

11-20 yrs

20 +yrs

5. Sex: 1. Male _____

2. Female _____

PART B: EFFECTS OF REFUGEES

6. Do you believe the presence of refugees in the region have effects on the land and forest cover in the region surrounding Dadaab refugee camp?

Yes () No ()

7. If yes what are the effect of refugees on land and forest cover in the region surrounding Dadaab refugee camp?

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8. To what extent do you agree with following statement relating to effects of refugees on the land and forest cover? 1 strongly agree, 2 agree, 3 neutral, 4 disagree, 5 strongly disagree.

Statement	1	2	3	4	5
presence of these large population of refugees in Dadaab area of Garissa has invariably had adverse environmental impacts on these fragile ecological zone					
ecosystem competition for scarce resources found in these environment by over 200,000 people both locals and refugees coupled with presence of large herds of livestock and wildlife impacted serious environment degradation of negative magnitudes to Dadaab region trust land environment					
Presence of refugees have multiple cause effect the environment that lead to irreversible land degradation and loss of biodiversity and economic value of the environment in Dadaab					

Land degradation due to presence of refugees renders important resources economically valueless and unproductive limiting landscape for economic production proportionally lowers its ability to support that economic activity					
Presence of refugees have resulted into harvesting of live trees for fuel wood in the region around Dadaab camp					

10. To what extent do the presence of refugee in Dadaab affect land and forest cover in the region?

Very great extent ()

Great extent ()

Moderate ()

Less extent ()

Not at all ()

11. Do you believe the presence of refugees in the region has effects on water catchments areas in the region surrounding Dadaab refugee camp?

Yes ()

No ()

12. If yes what are the effect of refugees on water catchments areas in the region surrounding Dadaab refugee camp?

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13. To what extent do you agree with following statement relating to effects of refugees on water catchments areas? 1= strongly agree, 2= agree, 3= neutral, 4 = disagree, 5= strongly disagree.

Statement	1	2	3	4	5
Presence of Refugees in Dadaab have negative effects on Tana River and Merti Aquifer which are the only source of water for both human and livestock demands in Garissa					
There have been destruction of water catchments area through deforestation by the presence of refugees in the region					
Refugee in Dadaab refugee camp have over exploited the Merti Aquifer					

14. To what extent can the following method be employee in order to protect water catchments areas and forest cover in the region around Dadaab? 1= very great extent, 2= great extent, 3= moderate, 4 = less extent, 5= not at all.

Statement	1	2	3	4	5
To keep per capita consumption of fuel low, and to make fuel available from a wide area and variety of sources so that refugees do not irreversibly damage the area immediately surrounding camps					
to set up a larger number of smaller camps, rather than a tiny number of large ones, so that fuel wood collection is automatically spread over a larger area					
Humanitarian agencies should have organized delivery of fuel wood to the camps					
in the refugee-affected areas, tree-planting programs with local villagers and with refugees should be a priority					

16. Which are the Ways which can be adopted in order to protect the Water Catchments Areas and Forests cover in the region around dada refugee's camp?

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Thank you

Appendix II: Dadaab Map



(Relief Web, 2009)

Appendix III: Picture On Human Activities On The Environment In the Dadaab Region







Appendix IV: Women Group for Environmental Conservation

