ASSESSEMENT OF PASTORAL RESOURCE MANAGEMENT, RISKS AND CONFLICT AMONG THE WASO BORANA OF NORTHERN KENYA

ABDULLAHI DIMA JILLO

Dissertation Submitted to the Gradute School, Egerton University in Partial Fullfillment o the Requiremnets for the Award of the Degree of the Doctor of Philosophy in Natural Resources Management (Human Ecology) of Egerton University.

EGERTON UNIVERSITY

NOVEMBER, 2011

DECLARATION AND RECCOMMENDATION

Declaration

This Dissertation is my original work and has not been submitted for examination for an award of Degree in any University.

Abdullahi Dima Jillo Reg. No. ND 11/0054/2001

Signed ..... Date 13th, October, 2011

Reccommendation

This Dissertation has been submitted for examination with our approval as University Supervisors.

1. Prof. Francis N Wegulo,
   Department of Geography,
   Egerton University P. O. Box 536, Njoro, Kenya

Signature ..... Date 14/10/2011

2. Prof Abdillahi A. Aboud
   Department of Natural Resources,
   Egerton University,
   P. O. Box 536, Njoro, Kenya

Signature ..... Date 14-10-2011

DEDICATION

To the memory of my late father Dima Jillo and his contemporaries among Waso Borana, whose visions were to inter-marry education and pastoralism for posterity of those whose umbilical cords (*handur*) must be tied to a cow (*handura*) to build an *embryonic herd* that symbolize continuity

AND

To my mother Hajia *Tarri* Dima for her unfailing blessings when I was away from home in pursuit of education,

AND

To my wife Fatuma Shedho, for her unswerving support during this trying time for me as I am in school with all my children and half dozen others who are under my care

AND

To my children; Jillo-Jarsa, Dido-*Abbo,* Liban-*Ibsa*, Jamal-*Jirmo*, Dirre and Sakina who will live to cherish the future of Waso Borana Pastoralism,

AND

To all the pastoral Nomads of the world who continue to glorify the past and detest the present, like Waso Borana amid uncertainty for the future.

ACKNOWLEDGEMENTS

Undertaking a research of this magnitude particularly in an isolated pastoral environment, such as the study area, could not have been possible without the support and understanding of several people and institutions. I am greatly indebted to my supervisors, Prof. Abdillahi A. Aboud and Prof. Francis N. Wegulo, for their patience, encouragement and invaluable scholarly advice.

Secondly, I would like to acknowledge the support, advice and inspirations from friends in various Departments and Faculties of Egerton University. In particular, I would like to express my appreciation to Prof. Dankit Nassiuma, Prof. William. A. Shivoga, Dr. F. Wako, Dr. Hussein Golicha, Mohamed Umar, colleagues and friends in Faculty of Environment and Resources Development. My special thanks goes to Abdi Gonjobe Raka a family friend for his constant support, Prof.Gufu Oba, Dr. Abdullahi Wako and Dr. A.A Nunow of Moi Universty for their inspiration and encouragement.

Thirdly, I would like to express my gratitude to Dr. Layne Coppock of Utah State Univesity, USA for his keen interest in my research work and the financial support that was provided for field research through PARIMA project. My gratitude also goes to Prof Gunther Schlee of Max Plank Institute of Social Anthropology in Germany for having supported my two months research visit to the Department of Conflict and Integration.

My gratitude also goes to my three field assistants; Hassan Tari, Rukia Golicha and Abdullahi Molu for the many hours they endured in the tough terrain across several *dheda*, while administering questionnaires. My further gratitude goes to the members of sampled households in the nine *dheda,* the Key Informants and participants in the Focus Group Discussion, members of the *dheda* council, formal and informal leaders including Members of Parliament who were interviewed as Key Informants.

Finally, I wish to thank J. M. Kimani for helping me to code and analyse data and Mr Ojode for assistance in cartographic work. To all who have contributed to the completion of this dissertation in one way or another I say to them, may the Almighty God bless you for your patience and efforts and let us keep Pastoralists network alive.

ABSTRACT

Waso Borana pastoralism has thrived in the arid lands of northern Kenya for well over a century. Before the colonial period,Waso Borana pastoralism was based on a mode of production that was established through harmonious combination of intensive and extensive use of natural resources, using indigenous resource management systems. Under this old a rrangement the Waso Borana pastoralists secured their livelihoods, asserted their identities, defined their resource boundaries and institutions. Over the last one century or so, particularly with the advent of colonial era, the ability of Waso Borana pastoralists to continue their pastoral way of life has come under increasing pressure. This pressure is a ttributed to escalating risks in their livelihoods due to insecurity related to conflicts that arose from the Shifta War, changes in resource use and management and other influences alien to Waso Borana pastoral systems. This study therefore sought to investigate and quantify the views and opinions of the Waso Borana pastoralists concerning problems related to major risks in their livelihoods, resource use and management, conflicts araising and possible solutions. The study used a multi-technique research methodology involving library search, Focus Group Discussion, key informants interviews, and socialogical survey. Data analysis was carried out using Statistical Package for Social Sciences (SPSS). Descriptive statistics including frequency distribution, cross-tabulations were used to summarise and describe the observation of out comes. Findings from the study indicate that in the past, the Waso Borana pastoralists had elaborate traditional resource management systems, which had evolved useful mechanisms to cope with various risks in their livelihoods including, containment of external and internal conflicts. The study has also underscored various factors, both external and internal to pastoral systems, as major causes of risks and current resource-based conflicts. These include recurrent drought, influx of modern weapons, shortage of water and grazing, land alienation for non-pastoral use, wildlife predation on livestock and ambiguity of development policies among others. From these findings, it is observed that a reduction in perceived risks particularly conflicts, could allow Waso Borana pastoralists to routinely access water points and forage reserves in areas which are now dissented, and allow implementation of development programmes that can enhance livestock marketing, food security, reduce drought shocks, and strengthen the overall economy in the region. The study thus recommends broad based, but well articulated policies that will empower and strengthen Waso Borana pastoralism with the view to containing current resource use problems and risk reductions.

TABLE OF CONTENTS

CHAPTER FOUR:

RESULTS AND DISCUSSION

LIST OF TABLES

Page

LIST OF FIGURES

LIST OF ACRONYMS

ALRMP	Arid Land Resource Management Project
ASAL	Arid and Semi Arid Lands
CBO	Community Based Organization
CBPP	Contagious Bovine Pleuro- Pneumonia
CIDA	Canadian International Development Agency
DAO	District Agricultural Officer
DC	District Commissioner
DDC	District Development Committee
DEC	District Executive Committee
DFRD	District Focus for Rural Development
DLPO	District Livestock Production Officer
DO	District Officer
DVO	District Vetinary Officer
EMI\ASAL	Embu-Meru-Isiolo Arid and Semi Arid Lands
ENNDA	Ewaso Nyiro North Development Authority
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
GHA	Great Horn of Africa
GL-CRSP	Global Livestock Collaborative Research Support
GoK	Government of Kenya
HIV/AIDs	Acquired Immuno Deficiency Syndrome
IGAD	Intergovernmental Authority on Development
ILCA	International Livestock Centre for Africa
ILDP	Isiolo Livestock Development Project
IPAL	Integrated Project in Arid Lands
KANU	Kenya Africa National Union
KHRC	Kenya Human Right Commission
KII	Key Informants Interviews
KLDP	Kenya Livestock Development Project
KWS	Kenya Wildlife Services

NFD	Northern Frontier District
NGO	Non Governmental Organisation
NOPA	Nomadic Peoples
PARIMA	Pastoral Risk Management
PRSP	Poverty Reduction Strategy Paper
PTG	Pastoralist Thematic Group
RATCO	Research and Training Consultant
SPSS	Statistical Package for the Social Sciences
TLU	Tropical Livestock Unit
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations, Education and Social-Cultural Organization
UNICEF	United Nations Children Education Fund
WB	World Bank

CHAPTER ONE:
INTRODUCTION

1.1 Background to the Study Problem

This chapter provides an overview on pastoralism, as well as relevant information and statistics which together form the background and a basis for the study. These include; definition of pastoralism as will be used in this study, pastoralism as a geo-social economic systems in the arid and semi-arid lands (ASALs), the origin of pastoralism, its importance as a type of production system, the type of animals raised by the pastoralists, the ASALs themselves and relevant statistics in terms of their global, regional and local distributions. Others are the Waso Borana pastoralists as the primary study group, their historical and socio-cultural link to other pastoral groups in the region, Waso Borana perception of environments, resource management and type of pastoral production systems.

The chapter then presents the statement of the problem, research objectives and questions, justification, rationale for the choice of the study area, scope and limitation of the study and the organization of the thesis.

1.2 Pastoralism

Pastoralism is a major geo-social economic system over much of the arid and semi-arid regions of the earth, constituting over 50 million Km^2 or about 35% of the land surface (World Resources Institute, 1998, Pratt *et al.* 1995). Pastoral systems all over the world are regulated by ecology and complex modes of social, political and economic organization with livestock and risk spreading strategies well a dopted to arid rangelands conditions (IIED, 1998). These rangelands provide a direct livelihood for about 180 million people living in close association with about 360 million cattle and over 600 million sheep and goats.

Before the domestication of animals, all forms of human subsistence were based on hunting land animals, fishing and collecting aquatic animals and gathering plant foods. Animal domestication and pastoralism gave human groups greater control over their food resources in comparison to hunting and gathering (Dyson-Hudson, 1980). According to Khazanov (1984), the accepted classifications of different forms of pastoralism are pastoral nomadism, semi-nomadic pastoralism and semi-sedentary pastoralism with varying

regional and global characteristics. The common types of pastoralism based on regional classifications are the Near east-type with North East African sub- type, the Middle eastern type with Eurassian sub-type and the eastern African type with Horn of African sub-type.

Pastoralism is practiced in arid lands of Central Asia, eastern Europe, the Middle East and Africa, with more than 50% in Africa, 25 - 30% in Asia, 15% in Americas and less than 1% in Australia. Most of these arid regions have a pasture growing period of between 30 to 90 days per year with a rainfall regime of between 150 to 450 millimeters over the same period (Pratt *et al*, 1995).

Current forms of pastoralism in Africa are varied, and they can be analyzed according to number of interrelated variables such as socio-economic, the features of pastoral production systems and sub-systems, and their links with other economic activities (mainly farming, but also trade, wage labor, crafts, caravanning, etc). Other variables include the type of power wielded by pastoral societies, problems of access to and control over land based resources, the quality and quantity of natural resources at the disposal of pastoralists (range, water, salt); the dominant types of animals raised (cattle, camels, small stock); and the degree and type of mobility practiced.

According to Swift (1988), pastoral production systems are those in which 50% or more of household gross revenue including both market and subsistence production comes from livestock or livestock related activities. Agro-pastoral systems, in his definition are those in which 50% or more of household gross revenue comes from farming, with 10 - 50% from pastoralism. According to Sandford (1983), in terms of number of pastoralists, the most important countries in the world are Ethiopia, Kenya, Somalia, Sudan, Chad, Mali, Mauritania, India, and China each with about 1 million or more pastoralists.

The Horn of Africa encompasses the countries of North East Africa, which include Ethiopia, Somalia, Djibouti, Sudan and Kenya with large populations of the eastern Cushitic groups, i.e. the Oromo and Somali (Markakis, 1993). The region is home to the largest remaining aggregation of traditional livestock producers in the World with Sudan, Somalia and Ethiopia ranking first, third and fifth, respectively, in terms of pastoral population size, while more than two third of Djibuotis inhabitants are pastoralists.

The Waso Borana pastoralists of northern Kenya are culturally and geographically linked to the main pastoral groups of the Greater Horn of Africa region, and are still one of

the traditional livestock producers in Kenya. The natural resource endowment of the northern Kenya region, which Waso Borana inhabit has meager and unevenly distributed resources. Large parts of Northern Kenya region are unsuitable for settled habitation and agriculture, thus communities survival is mainly based on pastoralism. Pastoralism in the region is historically charactrerised by adaptive mobility and extensive migrations of peoples in search of land, pastures and water, thus causing frictions that often ignite violent resource conflicts among the pastoral groups.

1.3 Waso Borana Social and Resource Management Organisation

In this study, the term Waso Borana refers to both the Borana *Gutu* and Sakuye who form the Waso Borana pastoral population. The Borana *Gutu* are traditionally organized on two main axes, where kinship organization is expressed through a clan system which are grouped into two exogamous moieties, *Sabbo* and *Gonna*. These two moieties are further sub-divided into a number of clans and sub-clans that differ widely in numbers. The *Sakuye* are divided into two group of clans, Jiblo and Lossa that are based on kinship and descent systems and are known to subscribe to *Gada* cultural institutions through the *Qallu* of *Karayu* just like any other Oromo group.

Clans have important economic and social control functions among the Waso Borana, with each clan having either a *Jallab*, or *hayu* clan leader involved in enforcement of customary law. They are responsible for organizing redistribution of livestock as well as the care of injured or sick members of the clan. The clan leaders who form the Council of elders also organize meetings that from time to time bring all pastoralists of an area together to discuss matters of common interest at *dheda* or at inter-*dheda* level. The meetings are chaired by clan elders and open to attendance by all Borana male livestock owners.

Waso Borana pastoralism has thrived in the northen Kneya region, for over a century, with adaptive mobility and efficient indigenous resource management systems geared towards resolving conflicts with neighbouring communities (Dahl, 1979; Hogg, 1980; Swift and Umar, 1991, Jillo,1993). In the recent years, the rapid growth of human population both from natural increase and immigration from other areas including the high

potential areas and encroachement of non-pastoral land use systems has precipitated several land use conflicts in Waso Borana arid rangelands (Maritim *et al.*, 1998; ALRMP, 2002). The most apparent of these conflicts are those caused by expansion of sedentary agriculture, wild life sanctuaries, urban settlements into the vital traditional dry season grazing areas, and territorial intrusions by pastoralist groups leading to severe competition for pasture and water.

Waso Borana pastoralists perceive environments and natural resources as basis for productive and non-productive activities on which society depends, and over which there should be harmony. The main elements of the environment and natural resources perceived by Waso Borana pastoralists that provide a basis for these activities include; rainfall, soils, and vegetation resources. Waso Borana perception of environment has greater implication for conflict management and resolution since most conflicts worldwide arise from environmental resources and people's cultural clashes.

From the viewpoint of the environmental resource conflicts and risks associated with climate change experienced in the ASAL of Kenya, rainfall is the most variable element of climate affecting distribution of soils, vegetation, and human populations. The failure of rainfall often described as drought, has devastating effects on the economy of Waso Borana pastoralists. Given that drought usually disrupts general livelihoods system of pastoral population who inhabit over 70% of kenya's land mass, Borana pastoral region faces shortage of grazing and water resources, hence competition for these scarce resources, often lead to escalation of resource-based conflicts.

According to Chambers (1969); Oba, (1989), classification of the natural resources such as soil, vegetation and of seasonal cycles has been the means by which information on pastoral communities about environment is passed on to their neighbours and descendants. Waso Borana pastoralists classify soils on the basis of colour and texture (Appendix-1). Similarly, the significance of the seasonal cycle among the Borana pastoralists is based on the pattern of rainfall, which dictates the grazing cycle of their livestock. Waso Borana pastoralists recognize four seasons (Appendix1) based on their patterns of rainfall, during which their animals move in search of pasture and water (Jillo,1993).

Borana pastoralists do not have a distinct classification of the vegetation resources, but perceive individual value of trees and shrubs in relation to grazing and browsing value

and provision of shelter. Trees provide the pastoralists with food, shelter, shade, fibres, fuel, building materials, live fences for plots and materials for livestock enclosures especially at nights. Occasionally, some trees also provide edible gum products and wild fruits during dry season. Issues of the pastoralists perceptions of the seasonal cycles and their knowledge of range resources are of particular importance to this study, since they will be the basis of future resource-based conflict resolution.

Grazing patterns of Waso Borana changed during the previous four decades owing to internal alienation of resources and intrusion of traditional pastureland through external aggression by neighbouring pastoral groups. Internal alienation of resources such as enchroachment by farming and irrigation schemes and conversion of some drought fall back areas into wildlife-protected zones, made Waso Borana livelihoods particularly vulnerable to drought and conflict.

The primary unit of Borana territorial and resource management organization is the household. Thus, pastoral household interact with each other through a whole complex of livestock and resource management activities. In the case of Waso Borana, the inter-household interaction begins with the encampments (*olla*) and grows into localities (*arda*) containing several camps. Localities are subsequently built into wider territorial units called *dheda*, which is an area of common grazing, regularly used by group's camps or *arda*. Both the terms *arda* and *dheda* derive their names from the outstanding natural features of the area. Hence, both terms relate to the concept of Borana grazing and resource management systems.

The Waso Borana grazing resources are divided into *Dheda* resource management and within each *dheda* there are different resources exploited in different seasons of the year under traditional management systems (Oba,1997). Each *dheda* is composed of a stable population, with residents owning and managing grazing resources where, residents of other *dheda* can gain access through negotiations conducted by council of elders. The main purpose of the *dheda* council is to regulate and control access during different seasons.

Dheda sub-divisions (*arda*) are well recognized and subject to regular assemblies where all matters of common interests and especially matters relating to pasture, water and conflict are discussed. The *dheda* concept has evolved as a broad resource management

unit synonymous with administrative location, while *madda* is perceived as administrative divisional head-quarter and district (*Seera*) as the major resource management unit which Borana shares with other communities in the District.

1.4 Pastoral Livestock Production Systems

Range livestock production systems are production systems based on the use of natural and semi-natural vegetation. In Kenya, range livestock production systems include ranching and pastoral systems. Pastoral systems are associated with arid zones; that are not suitable for cropping and where livestock rearing constitutes major land use in terms of area (ILCA, 1983). Waso Borana pastoralists recognize four types of pastoral systems namely; Chari pastoral system, Waso pastoral system, Agro-pastoral system and urban based pastoralism. Each of these is briefly described.

1.4.1 Chari Pastoral System

Chari is a Borana term referring to dry scrubland characterized by poor shallow soils, and high quality browse species more suited to camels and goats, commonly found North and South of Ewaso-Nyiro River. Parts of this area, especially to the south and east of the Ewaso-Nyiro river used to be occupied by sheep and goats and camel herders, prior to the 1960s.

1.4.2 Waso Pastoral System

Waso production system is based on the flood plain of the Ewaso Nyiro River, and extends to Habaswein in Wajir district, which marks the end of the Lorian swamp. The area is characterized by the availability of river water and by the extensive grass land on either side of the river. The area is characterized by river access and by use of the extensive, sometimes swampy, grassland on either side of the river, downstream from Merti and Gafarsa. Cattle and sheep are the main livestock species, with few goats and practically no camels.

1.4.3 Agro-Pastoral System

Crop-livestock production systems denote land use systems in which livestock husbandry and cropping are practiced in association (Janke, 1982). In such a system, livestock husbandry and cropping may be parallel activities without interaction, and may

possibly not even belong to the same management unit. This case in which the association is reduced to geographical proximity is characteristic of this area. Agro-pastoral systems as a basis of irrigation agriculture became important in the study area from 1970, with the impoverishment of the Waso Borana from the Shifta War. These schemes attracted large idle populations whose livestock perished in the wars of the 1960's. Local residents in Kinna, Rapsu and Garfasa also started spontaneous irrigation schemes.

The tenants of the irrigation schemes endeavour to have a viable livestock industry as well, while an investment from any surplus accruing from cultivation enterprises, is usually invested in livestock. Agro-pastoral groups tend to live in large, permanent, or near permanent villages.

1.4.4 Urban-based Pastoralism

Urban-based pastoralism as basis of livelihood systems for Waso Borana pastoralists came about as a result of loss of livestock during Shifta War and consequent impoverishment. The period of Shifta War of 1960s, was followed by the drought of 1970s during which time the Borana pastoralists had to live on famine relief. Some of the famine relief camps have since grown into urban centres. While commitment to urban-based opportunities were irreversible, Borana pastoralists continue to express their relationships in terms of herd ownership, hence profits from agriculture and non-pastoral activities are invested in livestock leading to growth of urban-based pastoralism.

1.5 Statement of the Problems

Arid and semi-arid regions of the world where pastoralism is the major livelihood system are faced with risks of rapid deterioration of environmental resources, food insecurity and escalating resource conflicts, particularly over the last three or four decades (World Bank, 1989, Pratt *et al.*, 1998, Gebre, 2001). Waso Borana pastoral production systems have evolved for over a century in the arid lands of northern Kenya. Pastoralism has survived in the area through strategies that enhance effective utilization of the meagre natural resources, building up security against all types of biotic and abiotic hazards and other catastrophes (Oba, 1997).

Over the last four decades or so however, particularly with the advent of Shifta War of 1960's that coincided with independence period and consequent impoverishment, the

situation of Waso Borana pastoralists has changed. These changes are attributed to rising risks in livelihoods caused by frequent droughts, general insecurity and conflicts transformed by the use of modern weapons.

These reported risks coupled with inappropriate development policies by the modern state such as creation of game reserves in dry season fallback areas and promotion of perpetually unsuccessfull irrigation schemes have caused land use pressures. These developments have made Waso Borana pastoralists vulnerable to various risks in their livelihoods including those of fierce conflicts and confrontations over resources with their neighbours and other resource users in the region. Traditional resource management systems of Waso Borana have also been distorted resulting in rapid sedentarization, diversification in economic activities as survival strategies amidst increasing destitution. Similarly, increased pastoral population and socio-economic changes over the last three or four decades in the region, have brought about changes in the gender roles, herd compositions, grazing patterns, and economic status of Waso Borana pastoralists making them less self-reliant. Such changes exert more pressure on the Borana pastoral systems increase multiple risks, conflicts and insecurity that need to be contained.

Currently, Waso Borana pastoral land has become unbearable to activities unsuitable to its ecological zones that has accelerated the pace of current decline in land productivity, thus escalating resource destruction and associated conflicts. Previous studies and research done on Waso Borana pastoralism have focused mainly upon improvements of livestock production leaving out those factors affecting natural resource base as means of sustaining pastoral livelihoods. As a result, most development projects whose implementation was based on those research findings, such as grazing blocks development in the area, have been perceived by pastoralists as having contributed towards the decline of pastoral production, and an increase in resource-based conflicts.

Most research and development initiatives that were carried out by colonial and later by post-colonial regimes, were aimed at improvement of livestock productivity for national integration. This was done with the interest of expanding meat industry, promoting irrigated food cultivation and sedentarization without regard to changes affecting Waso

Borana pastoral livelihood systems.

Hence, the purpose of this study was to identify the gap between the problems related to resource management and risks affecting Waso Borana pastoral livelihoods with the view of finding out lasting solutions.

1.6 Research Objectives

The broad objective of this research was to investigate and analyse problems related to resource management and risks and conflict as perceived by Waso Borana pastoralists in their livelihoods.

The specific objectives were to:

1). Determine and describe the social economic and livelihood characteristics of the Waso Borana pastoral households, access to and decision over resources, changes in resource base structure and its effects on livelihood systems, including food security.

2). Determine and describe the perceptions of Waso Borana pastoralists with regard to major risks in their livelihoods and problems related to escalating resource conflicts.

3. Determine and describe the perceptions of the Waso Borana about the solution to their problems and suggest policies that can improve on resource related problems and their general livelihoods.

1.7 Research Questions

1) How do Waso Borana pastoralists perceive the effects of changes in resource base structure and management that have affected their livelihoods over the years?
2) Which are the major risks perceived by the Waso Borana to conflicts over resources in the region and subsequently affecting their livelihoods?
3) How do the Waso Borana pastoralists perceive solutions to these problems?

1.8 Justification

The justification for conducting this study was based on the premises that Waso Borana communities are encountering various risks related to resource use problems and conflict in their livelihoods as results of competation over grazing and water resources excerbated by strategic position of their rangelands in terms of livestock marketing stock

route to Kenya's high potential regions.

It is assumed that these problems require scientific investigation whose findings would facilitate risk minimization and promote conflict mitigation measures for effective resource management and development in the area. The development of the Waso Borana pastoralism is tied to the vastness and economic importance of their pastoral lands, the natural resources therein and the prospects and challenges confronting resource management.

Borana pastoral regions comprise varieties of natural resources in terms of land area, with the main economic activities being pastoralism, ranching, wildlife-based systems and some dry land farming. Forests, woodlands, and shrubs are another important economic and ecological resource. These activities depend on natural resources and ecological systems, including soils, water, forests, wildlife and fisheries as defined by prevailing land use systems. For instance, in ASAL of Kenya it is reported that the magnificient culture of the pastoralists with their enormous livestock population and its symbolic relations between wildlife and the resultant tourism, supports directly or indirectly over six million people (ALRMP,2002, Pastoralist Thematic Group, 2001). Hence, the general development of ASAL, particularly minimization and possible elimination of current escalating resource conflicts in pastoral areas will enhance this relationship and raise national income.

Sustainable management of natural resources depends in large part on the governance systems, which define the relation between people, resources and how access to resources are determined to minimize conflicts (Blaike, 1989; Johnston and Taylor, 1992). Sectoral policy papers on food security and livestock (GoK, 1981; and 1992) and the current economic strategy papers contained in the Government's most recent Economic Recovery Programme (ERP, 2003) both underline the need for the development of pastoral regions for increased production of food and agro-industrial raw materials. Hence, the purpose of this study is to enhance these goals by promoting research in livelihood diversification andfood security.

The Waso Borana pastoral systems have proved resilient for many years under indigenous management systems, despite decades of failed development policies and a

century of social exclusion in Kenya. These lands represent a potentially important resource, which if managed carefully, can help generate income, employment and food for the people of this country. Economic, social and political changes over the last four decades have put enormous pressure and greatly weakened the traditional Waso Borana pastoral systems. This calls for a revisit and re-examination of links between resources and management in the context of current prevailing landuse systems and rising risks of resource conflict.

Based on the foregoing reasons, this study sought to generate information to fill the existing gap on the major issues that perceived as main risks by Waso Borana pastoralists and changes in general livelihoods. Finally, in terms of research, this study serves as reference tool for researchers, scholars and other interested parties, particularly development practitionaires in the region.

1.9 Rationale for the Choice of the Study Area

Waso Borana pastoralists, the focus of this study, have lived in Northern Kenya region for over a century. They have survived in this region through use of effective traditional strategies to manage scarce resources as well as building up security against all types of biotic and abiotic hazards and catastrophes. Over the last three or four decades, particularly with the advent of colonial rule and post-independent government policies which encourage d sedentiralization, pastoralism among Waso Borana have been threatened by the instability caused by recurrent drought, encroaching non-pastoral land-use systems and inaccessibility to traditional dry season grazing areas due to insecurity.

Swift (1988), contends that the shortfalls that have led to little or no success in several pastoral projects in Sub-Saharan Africa, could be attributed to poor understanding of the management goals of pastoralists, the functioning of their production systems and the productivity of these systems relative to the environment and the economics of the extensive livestock production system. It is these types of shortfalls and the lack of community participation that must be avoided in order to institute and implement asuccessful and efficient natural resource management practices for Waso Borana pastoralism. Similarly it should be observed that, major pastoralists communities in

Northern Kenya region and other ASAL areas operates under similar conditions and can benefit from the findings of this research.

Besides analyzing the diverse risks and resource conflicts among Waso Borana, the the study sought to highlight the main natural resources that support pastoral livelihoods and changes in resource base structure. The basic factors that are of major concern to the study and those that support natural resources in Waso Borana livelihood are land-based resources such as water and pastures. Waso Borana pastoralists just like many other communities who inhabit arid lands, have deeply rooted traditional concerns and indigenous ways of managing the land resource-base for sustainable production. It is in view of this background that, Waso Borana pastoralists were selected as the focus of this study. Similarly, it is expected that the findings from this research on Waso Borana pastoralism will benefit other pastoral groups from the application of this research and improved resource management practices.

1.10 Scope and Limitation of the Study

The scope of the study covers the Waso Borana pastoral ecosystems in Isiolo District of Kenya. However, since major pastoral groups of northern Kenya including the Waso Borana pastoralists have common resource management and production characteristics as manifested in their social-cultural organizations, this study reflects on most pastoral groups in the region.

The practice of the *dhed*a concept of resource management among the Borana are also shared by their traditional allies such as the Ajuran of Wajir, the Garre of Mandera and their Orma causins, of Tana-River, who practice a distinct environmentally sound resource management and protection systems for water points. This concept involves the selection on a rotational basis, of an *aba harega* whose responsibilities include administration of livestock watering and ensuring that household herders adhere to customary regulations for maintaining the cleanliness and general up keep of the water sources. The *abaherega* in consultation with local elders decide whether outsiders should be allowed to water their livestock. A number of scholars and observers of pastoralisn in the Horn of Africa, among them (Baxter 1978; Chambers,1969; Swift and Umar; 1991), report that this social-cultural control system for regulating and maintaining water sources is currently in existence

among the Borana but has virtually broken down among all Somali Clans in Kenya.

It is assumed that due to similarity of the socio-economic, organizational and ecological features of the pastoralism in the Great Horn of Africa region, the recommendations that emanate from this study will benefit policy makers and administrators in northern Kenya and the entire region. Limited financial resources and other logistic chalenges restricted coverage of a larger area, but this limitation is compensated for by an extensive coverage of literature reviewed on Waso Borana pastoralism and related areas of northern Kenya and Greater Horn of Africa region.

1.11 Definition of Terms and Concepts

The word "conflict" can be defined variously. Webster's dictionary defines conflicts as "competitive or opposing actions of incompatible antagonistic state or action (as of divergent ideas, interests or persons) mental struggle resulting from incompatible or opposing needs, drives, wishes or external or internal demands". Arising from the above discourse "resource conflicts" may be defined as "conscious antagonistic state of relationships between individuals, members of society or neighbourhood and government in connection or contention to one or several aspects of the resources at the local, national, regional or global levels over span of time". Besides the above definition of conflict, other terms used in this thesis are defined as follows:

Aada: Customs or law in Borana

Aba Herega: Traditional water supervisor among the Borana

Aba-Olla: Head of *Ola* or Manyatta

Aba-Warra: Borana name for head of House –Hold

Agro-pastoral System: Systems of livestock production based on agriculture and natural pasture.

Arda: Borana reference to locality with marked features

Busa Gonofa: Clan based Borana institution for livestock re-distribution

Chari-pastoral systems: Systems of livestock production based on scrubland vegetation

Communal land tenure: Tenure involving substantial community control of land access and use.

Custom: Long established practice considered as un-written law

Dabare: Livestock loaning system among Borana and Gabbra

Dheda: Borana resource management unit based on neighborhood systems

Handur: Boran name for umbilical cord

Handura: An embryonic herd or a cow given to a male child at birth among Borana to mark transfer of nourishment from the mothers womb to the cows milk, to symbolize continuity of household herd

Local Community: Groupings of people who physically live together in an area and who share a common geographical habitat. The local community reffered to in the list is synonomous with Waso Borana.

Local people: The inhabitants of a given geographical region, area or locality. Habitation may be by occupation through conquest, migration or otherwise.

Ola: Grouping of pastoral huts or (*Manyatta*).

Pastoralis: A system of livestock production based on nomadism and natural pasture.

Pastoralists: Group of people who rear livestock on the basis of pastoralism.

Pastoral production system: System of natural resources in which free ranging or grass fed animals are the principal means of exploiting the range.

Pre-colonial communities: A group of inter-related people who occupied a geographical region, area or locality before the coming of colonialists.

Resource tenure: Right(s) in land and other resources including water and forests.

Risk: In the context of this study, risk can be defined as a vulnearability of households or local community groups to various shocks that threatened their livelihoods such as; Natural risks of floods and drought, Economic risks of market exlusion, marginalization, and Social risks of domestic violence, violent conflict over resources, inter-clan conflicts, war and social strife.

Seer: Borana Jural System, it is also used to mean physical land based boundary and social boundary between individuals

Waso Borana: This is a common reference to the Kenyan Borana of Isiolo District

Waso-pastoral systems: Systems of livestock production based on flood plains of Euaso-Nyiro river

1.12 Organization of the Thesis

Besides chapter 1 just presented, this thesis contains another four chapters. Chapter two elaborates further on the history of conflicts in the context of pastoralism in northern Kenya, an overview of the effects of colonial and post-colonial policies, general conclusions on literature review and the theoretical and conceptual frame-work. Chapter three provides the background to the research methodology and research procedures that were employed in the study. The chapter also provides an overview of the social-economic and ecological back- ground of the study area, the research design, the analytical framework based on the study unit, the focused group discussions, key informant interviews and participatory observations.

Chaper four presents the results and discussions based on the Waso Borana social economic characteristics of the respondents, Waso Borana resource base structure that contribute to their livelihood, perceived risk, conflict and solutions. Chapter Five of the study deals with the findings, conclusions and recommendations of the study.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter presents an overview of inter-ethnic relationships, resource use and conflict among pastoral groups in northern Kenya through a in historical perspective. It also provides an understanding of the effects of the pastoral resource development policies during colonial and post-colonial period on the management of the resources.

The main purpose of the chapter is to explore the broad and rich historical data of pastoralism in northern Kenya, the traditional resource use patterns, the current trend of perceived risks and conflicts, with the view of constructing a theoretical and conceptual framework on which the study is based.

2.2 Pastoralism and Conflict in Historical Perspective

Waso Borana pastoralists, one of the pastoral group in Northern Kenya, who are also culturally and ethnically linked to main pastoral groups in the Geater Horn of Africa regions have thrived in the area for well over a century. Prior to the colonial period, the indigenous pastoral communities in the Greater Horn of Africa regions (GHA) had devised ways of adapting to the natural environments using intricate modes of cultural social organization. Commenting on this complex situation of mobility and conflicts over resources Markakis (1993) observes that, the pastoralists land in eastern and Horn of Africa has never been a peaceful place since pastureland, water sources and control of caravan routes were the main causes of perennial conflicts. Markakis further contends that, although conflict took place within and between communities, conflict patterns followed certain rules designed to limit damage to life and property, and was resolved in a manner that provided for mediation and compensation, rather than retribution.

A number of observers on pastoral developments among them (Sandford, 1983; Bongfigholi, 1992; Coppock, 1994; Desta, 1999) believe that the sustainability of pastoral systems in many parts of sub-Saharan Africa is threatened by many inter-related problems including; socio-political instability, poverty, environmental degradation and resource based conflicts. The main causes of these problems have been identified as population growth, high rate of sedentarization, expansion of crop agriculture, loss of grazing land to

non-pastoral purposes, recurrent drought, general insecurity, declining resource base, poor policies and programme failure. In the eastern Africa region, where pastoralism was once robust and vigorous, evidence suggests that it is no longer able to contend with the challenges posed by the socio-economic and political environments in which they must exist. Some researchers assert that pastoral societies in the region have "outlived" their own well established successes as they are now locked in a "downward" spiral of economic crisis, famine, dependency, and permanent destitution.

Ethnicity and identity in the context of colonialism and post-colonialism continues to play major roles in shaping the political and historical development of Africa (Markakis, 1994). The historical composition and ethnic distribution in Kenya has been characterized by three broad varieties of ethnic language groups classified as Cushitic, Nilotic, and Bantu, based on widest linguistic expression. In Kenya, historians among them (Okoth et al, 2000; Baxter, 1954; Goto, 1972; Lewis, 1961), believe that the history of the migration of the tribes is the history of conflict between the peoples of the early Hamatic movements who forms the bulk of today's nomadic populations and Bantu sedentary tribes of the Nyika confederacy referred to as the Zengs.

The Zeng are the inhabitants of the southern part of the Horn of Africa, identified with pre-Cushitic Negroid, a pre-cursor of the Hamatic Galla and the Somali (Lewis, 1994). The term "Galla" has since been replaced with Oromo in current history and the main groups in Kenya are the Borana, Orma and the allied groups.

According to Leggesse (1971), and Goto (1972), the Oromo were part of an early Hamitic invasion of the Horn of Africa and by the end of 14th Century, had expanded from south-west Ethiopia into part of the centre of what today is called the Somali Republic. The Darod and Hawiya branches of the Somali, who have been known to have established settlements along the coast of the Gulf of Aden between 11th and 13th Centuries; but who very little was known about before, are said to have appeared by 15th Century.

Lewis (1994) on the other hand has observed that over this period, the fertile land between the Shebelle and Juba rivers in Somalia which lie South of Oromo and Somali was occupied by the sedentary Bantu tribes of the Nyika Confederacy refered to as the Zengi. It is against this background that the scene was set for the great movements; of the Somali

towards the West, Oromo towards the south and west, and thus pushing Bantu still further south to the River Tana.

In the year 1891, the Imperial British Administration restricted further movement of tribes as part of a deliberate policy to stem Somali domination. According to Schlee (1989), the Wajir Boran were moved to Moyale District to avoid further conflict with the Somali, and in 1909 the British Government, in order to save the Orma in Garissa District from complete assimilation, offered to move them across the River Tana to the south-west corner of Garissa District. Many of them accepted the offer, but some agreed the assimilation by the Somali clans of the Ogaden sub-tribe and are currently refered to as Wardey Gabra. The current conflict between Orma and Wardey Gabra in Tana River is viewed as a proxy war over land by Somalis using this group whom they treat as their subject. The Wardey Gabra were just recently re-accepted by their Orma causins following their displacements after Shifta War of 1960s and severe droughts of 1970s and 80s.

Various scholars believe that the introduction in 1934 of the Special District Administration Ordinance Acts which gave the Provincial Commissioner power to define grazing boundaries and to control the movements of tribes, greatly helped to stabilize the various tribes of the Northern Frontier Districts. The Borana continue to be a dominant expanding force southwards and to the eastern flank, using *gada* principles as a cohesive force probably through which to contend with sustained Somali aggression and expansion. Richard Hogg (1990) describes *gada* as "a generation system in which every eight years, a new set of men becomes responsible for maintaining the 'Peace of the Boran' through prayer and sacrifice. *Gada* stresses the unity of all Boran and the role of age and generational loyalties in maintaining the peace of Borana "*Naaga* Borana" to which every individual must subscribe. According to observations by a number of authors among them Baxter (1978) and Aguillar (1997), the Borana Oromo used *gada* system for expansion in the preceding century and that social political characteristics of *gada* in resource tenure and management is still a distinct feature of the Waso Borana pastoralists.

2.3 Cultural Resource use Pattern and Ethnic Group Distribution in Northern Kenya

The Northern Frontier Districts of Kenya popularly known as (NFD), are pre-dominantly occupied by pastoralist and agro-pastoral groups. The main pastoral groups in

Kenya can broadly be classified as the Nilotic and Cushitic speaking (Sobania, 1980). The Nilotic speaking communities include the Maasai, Samburu, Pokot, Turkana, and Dassanech/Merille, while the Cushitic groups are the various clans of Somalis, Oromo, Borana/Waso Borana, Gabra, Orma and Rendille (Fig.1).

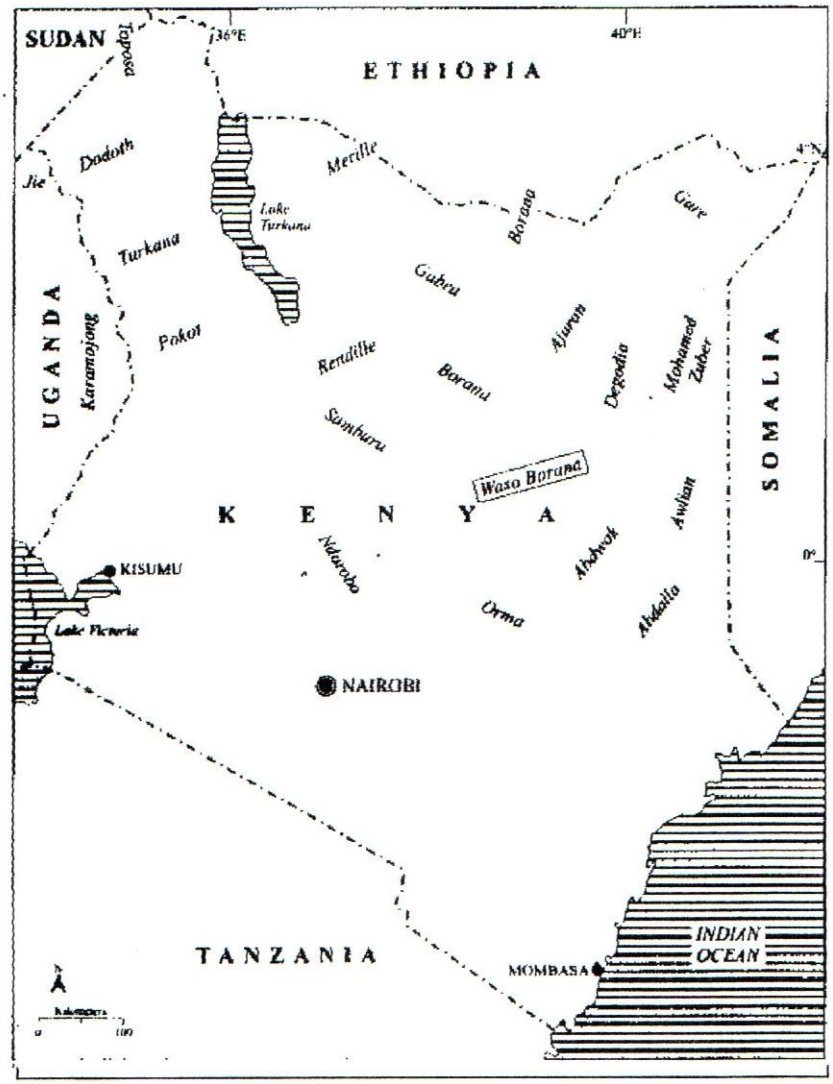

Figure 1: Cultural resource use pattern and ethnic distribution in Northern Kenya

Somalis of northern Kenya share common social and genealogical systems with the Somali people who inhabit Djibouti, Ethiopia, and Somalia (Dahl and Sanford, 1978), and the distinguished feature of the Somali clan is territorial exclusiveness. They observed that

in northern Kenya, if a clan does not occupy a specific area rigidly defined by natural boundaries, its regular seasonal movements established some degree of localization within a general tract of territory.

Social-political and territorial organization of the Somalis of northern Kenya, which was to provide a basis for administrative range management and establishment of grazing blocks was described by Chambers (1969). Chambers observed that political friendship and hostility between groups is partly opportunistic, but also strongly associated with the closeness or distance of descent groups. Members of an association or clan appear communally to identify themselves more closely with territories, though self- consciously competing for water, grazing and other resources.

Indeed, the Waso Borana community are in constant conflict with their eastern neighbours, the Somalis, who are ever on westward expansion, probably due to deteriorating ecological conditions and insecurity in neighbouring Somalia, particularly over the last two decades (Dahl,1979; Swift and Umar 1989; Jillo 1993). The main Somali clans and sub tribes who border Waso Borana to the east include Abdwak, Abdalla, Awlian and Mohamed Zuber. These are of the Ogaden sub tribe of Somali (Figure.1). The other groups with whom they often interact for grazing include, Ajuran and Degodia to the North East, and Garre. Currently, the Waso Borana are in constant conflict with the Degodia and Ogaden sub tribes particularly Awlian and Abduwak, over water and grazing resources and territorial disputes.

The colonial policy of tribal separation and the imposition of exclusive boundaries between clans among Somalis and the neighbouring tribes particularly the Borana, was partly "*de jure*" to what had earlier been "*de facto*". In this way, it attempted to freeze a situation which had earlier been fluid, a situation in which water and grazing rights were based largely on vows and liable to change according to relative power of the different groups. The current dilemma of land use in northern Kenya, which is characterised by the acts of banditry, cattle rustling, tribal clashes using modern weapons though exacerbated by the situation in neighbouring Somalia, is a clear evidence of failure to provide any direction in effective resource management, other than those that can be based on traditional clan based systems particularly for Somalis.

The colonial administration believed that clear boundaries and the social

organizations of different tribes were rigid and clear, so that any infiltration by tribes or segments of tribes across tribal boundaries was both untidy and wrong and therefore, to be discouraged. Each of the pastoral tribes including Boranas was allocated exclusive grazing area, and encouraged to continue its pastoral way of life within it. The colonial regime was very much pre-occupied with maintaining security and control by establishing firm boundaries between ethnic groups as one control strategy, minimizing cattle rustling and other conflicts, limiting migrations of pastoralists, and probably encouraging trend towards settlement.

According to an extensive study by Simpson (1994), the main reasons for the British to occupy the NFD derived from negative considerations, since the British, were only concerned with denying their imperial rivals the "Ethiopian empire" the possession of the head waters of river Nile. While under British rule, the NFD was beset with a host of problems such as banditry, poaching, raiding and illicit arms trafficking causing much friction between pastoralists and Ethiopians imperial rule. Simpsons (1994) further contends that frontier administrators were pre-occupied with mediation of disputes among the herders over scarce water and grazing resources and had no time for the region's long term development. Further observations on this issue were also done by Schlee, (1994) who states that, the British were not keen on any development agenda in northern Kenya, and were not keen to leave any thing to anybody else. Hardly did they build any roads, schools or hospitals and even Christian missions were not allowed in the area.

The British felt the need to protect the less militant groups and their grazing grounds from the Islamic groups (the Somali). In this attempt, the British made a rough boundary cut called Galla-Somali line separating the Oromo ethnic community from Somalis. In the early Thirties, the line was shifted westwards to incorporate Ajuran into the Somali area. The Boran gave up their grazing land and wells in Wajir and were compensated with the now Isiolo district probably at the expense of Samburus since the British wanted to avoid conflicts with the Somalis.

A number of scholars on pastoralism in the Horn of Africa and in particular on immigration of Somalis, among them Baxter (1954), claim that large scale Somali movements (e.g of Darod and Hawiya) into Northern Frontier District coincided roughly with the first introduction of British administration to the area, which at that time included

the province of Jubaland. Prior to that date, the Oromo had been in occupation of most of the Northern Frontier District and the greater part of southern Ethiopia (Goto 1972; Baxter 1954).

According to Legesse (1973), an observer of the Borana pastoralsim over the years, the population of the Borana-Oromo has not been restricted to its present territories of northern Kenya and southern Ethiopia. He contends that, there are adequate indications that the Borana occupation extends to several regions in the Horn of Africa presently occupied by the Somali and other Oromo groups during the first decades of the Twentieth Century.

Legesse (1973: pg-46 states;

"it is a mistake to think that the Somali displaced the Borana because of the superiority over their military organization. From a military stand point, there seems to have been very little differences between them. In level, neither community today is bent on conquest, although there is extensive and persistence cattle raiding between them. The process of displacement seems to be largely ecological in nature. When ever there is a drought, the cattle herding Borana are forced to move in a generally westerly direction and the camel/goat herding Somali move into abandoned territory. Somali livestock can survive in the very pasture the Borana consider as inadequate for their cattle. After one or two seasons have elapsed, the Borana find it virtually impossible to return to there former grazing grounds, because the land by Borana standards are perpetually overgrazed. This is the basis of the slow population movements. It is a relentless process over which the two societies have little control".

The current evolving theory is that pastoral resource conflict was once part and parcel of the economic and social fabric of the pastoral societies, but that it is currently being transformed into a new and destructive phenomenon (Swift, 1999). For instance, during pre-colonial subsistence production systems, conflicts among the indigenous groups were common and it was an important means by which various groups would adjust to underlying economic and political changes. A number of anthropological analysts of modern war and conflicts point to the transformation of indigenous patterns of warfare brought about by the proximity or intrusion of expanding states (Turton, 1987; Doornobs *et al.*, 1992). They contend that Colonial powers attempted to police local conflicts with varying degrees of success, by way of their superiority and monopoly of arms but the decay

of governance in many parts of Africa since the 1970s, together with the spread of modern automatic weapons among the peripheral groups has led to transformation of conflicts and increasing instability.

According to Dorornbos *et al,* (1991), prolonged conflicts in the Horn of Africa region, is attributed to the super-power rivalry during cold war periods and control of political and material resources. They further observed that these situations, have taken advantage of scarcity of resources and failure of the unitary and authoritarian post-colonial states in the region to peace fully resolve the contradictions inherent in ethnic, regional and class divisions within their borders. Accordingly conflicts over the Horn of Africa's fresh water resources will certainly threaten future regional stability and co-operation.The observation in this study is that, if these issues are neglected, it can be over shadowed by more visible, ethnic, religious, cultural, political and trade conflicts.

Various researchers on pastoral resource conflicts in Sub-Saharan Africa among them Swift (1999) claim that resource based conflicts combind with other factors have made pastoral systems vulnearable. He contends that conflict combined with other factors such as famine and disease have destroyed extensively human lives and livelihoods with widespread damage on the environment with consequent economic and food insecurity.

It should be observed that currently, this situation is prevalent in almost all the arid regions of Kenya and in absence of other value creating activities that will diversify communities livelihoods, such as wide spread industrialization, there is likely-hood of continued conflict over resources at local, national and regional conflict, particularly in areas of peripheral agriculture and pastoralism.

The Rio Earth Summit of 1992, outlined the major environmental and resource conflicts that will characterize the trend of global resource use with major implications for Africa. The main areas of concern are those conflicts arising from climate change, water resources, and those that may arise from changes in flora and fauna through change of biodiversity. It is also observed that, some environmental resource conflicst may arise from the demographic trend, people's culture, civil strife and human development activities.

Conflicts arising from risk of climate change in Africa are attributed to variation in temperature and rainfall. From the view point of environmental conflicts, rainfall is the most variable element of climate affecting distribution of soils, vegetation, and human

populations. For instance, evidence adduced from various studies indicate that, the continental wide droughts of 1970s, mid-1980s and conflict arising therefrom, re-emphasize the long cherished thesis that pastoral regions have to face scarcity of water resources that will heighten conflicts. Therefore, the development of pastoral regions should focus on the control of flow of resources to harness water resources for agriculture and energy to minimise drought, famine and misery from the population as necessary conditions for mitigating conflicts related to water resources.

Other dimensions of resource conflicts that can arise are problems associated with exploitation of mineral and oil resources. The main areas of conflict that can arise out of mining activities include those of pollution of the air, chemical pollution of water resources (rivers and underground aquifers) and noise pollution. In the study area, there is high expectations of oil and gas exploiration in Merti division while there are also prospects for mining of various minerals in the area.

Conflict arising from demographic trends, which manifest in the form of rapid urbanization and senditirasations, deterioration of the quality and distribution of infrastructure is common feature of environmental conflict in Africa (Okoth and Okumu, 2000). The absence of resources for sustaining environmental infrastructure for the people and land degradation, manifests in terms of non-existence or poor distribution of roads, sewers, inaccessibility to safe drinking water systems, siltation of water sources through soil erosions and unplanned shanties posing insecurity. Resource conflicts arising from peoples' diverse culture is another important factor in the perceptions of the state of the prevalence of conflicts in Kenya.

Anthropological analysis of the historical processes in construction and reconstruction of ethnic identities in Africa shows that identity formation in the past was characterized by a high degree of dynamism and fluidity (Sobania, 1980). Ethnic identities and boundaries were largely the creation of colonial states, but tribal labels are social reality in Kenya, as various tribal groups find it convenient to be recognized as administrative entity particularly when dealing with issues of resource based conflict.

In Kenya, ethnic groups have followed traditional occupations in specific ecological zones each with its own language, territory, culture, and values. Where several distinct ethnic groups share one or two ecological zones, such as in the ASAL of northern Kenya

"It is not an over statement to say that small arms and light weapons in Africa, have played major role in every political conflict, from South, East and West Africa. He contends that in Africa, the issue of small arms is important; there are no people to till the arable lands, and generation waste their lives by engaging in pointless wars. Children are denied their childhood and forced to become adults before puberty".

According to report by the (ALRMP/GoK, 2000), another dimension of conflicts in the pastoral regions that has changed the cultural landscape of traditional conflicts is commercialized raids or cattle rustling for purpose of food supply, and purchase of arms. In the recent past, young men are planning secret community raid where the raided livestock is sold off to traders before the news reaches the community elders. The report cites that, in northern Kenya raided large scale sale of animals is said to be over-stretching the communities' food security and creating destitutes among the pastoral communities.

According to observations made in this study, conflicts in northern Kenya have contributed negatively to the economic and social development of the region, by causing displacement, food insecurity, congestion in urban areas, low school enrollment and access to primary health care for pastoral communities. Protracted conflict and insecurity in pastoral areas contributes to a widening of the gaps between pastoral groups and others in the states, as it prevent investments and hinders development programs. Politically, it contributes through media representation to public, images of pastoralists as backward, irrational and violent people and therefore, reflects pastoral regions as insecure areas for any worthy investment..

2.4 Waso Borana Social-Organisation, Resource Management and Conflicts

The Borana are a major branch of the Oromo people in the Horn of Africa who penetrated into northern Kenya in the early nineteen century and occupied what is now Isiolo district in the initial decades of twentieth century (Goto, 1972). The Borana Oromo live in Ethiopia and Kenya are believed to have originated from Dirre and Liban in southern Ethiopia. Borana pastoralists came to northern Kenya through contestation of resources and herding movement before their resource use patterns was disrupted by the

British Colonial Administration.

According to Baxter (1954); Dahl (1979); and Goto (1972), by early 20th Century the Borana-Oromo of the southern Ethiopia and northern Kenya were politically and socially separated due to imposition of colonial boundaries by British and Ethiopian imperialists. Further imposition of colonial boundaries in Northern Frontier District (NFD) by British separated Waso Borana from the Borana of Marsabit and Moyale and their Orma cousins in Tana river.

Waso Borana society is composed of two populations of different origins, the Boran Gutu who descended directly from Ethiopian Borana, and the Sakuye, an Oromo speaking group who claim origin in the mixture of some Somali-Borana and Rendille (Baxter, 1954; Legesse, 1973). Most of the Oromo groups in Kenya belong to the Cushitic sub-family common to North-East Africa and speak closely related dialects of Oromo language and share a common cultural heritage.

Over the last one century or so, the Waso Borana pastoralists have lived in northern Kenya region through the practice of indigenous resorce management systems that mitigates social and resource conflicts with neigbouring communities. The pastoralists tradionally own multi-species livestock as primary resources that support their livelihood, the major type being cattle, sheep and goats and camels often reffered to as "*the three with sweet milk*". During pre-colonial and colonial periods, just like other groups in the Greater Horn of Africa, the Waso Borana made extensive use of autonomous grazing territories with freedom of mobility over large tracks of lands.

Colonisation deprived Waso Borana pastoralists of autonomy and freedom of movement by enveloping them within the boundaries of states established in a new geo-political pattern. In Kenya, Waso Borana pastoralists mobilities has been constrained by establishment of provincial and district boundaries, game parks, natural reserves, tribal grazing zones, quarantine zones and now insecurity in their own home land.

Pastoral Borana communities have over the centuries negotiated resource borders with their neighbours. According to Oba (1996) the Borana historically shared fluctuating ethnic and border resources various Somali groups to the East, Masai (Kibia), and later, Rendille and Samburu (Kore). The Waso Borana still share border resources with Samburu to the west and Rendille to the NorthWest. The relationship between resource use with

Samburu and Rendille is currently with less friction, since both groups are no longer in constant movement and expansion as Somali groups in the East.

Waso Borana pastoralists of Northern Kenya region perceive various forms of conflicts in their historical folds. They have experienced the destruction of society through warfare and decimation of animals and people and cataclysmic scourges of rinderpest combined with famine particularly at the beginning of the last Century (Goto 1972; Baxter 1954). During the colonial period, they underwent military conquests by the British and Abyssinian (Ahmaric) imperial conquerors that sustained their domination through the violence of punitive expeditions, collective punishments and closed district ordinances. In the post- colonial era, the Waso Borana homelands were treated as security areas by the state particularly during, and after the Shifta War, which concided with the independence period.

The period after Shifta War, and the government policy of allowing Somali access to grazing in Isiolo district, and the government's encouragement of settlement and development of irrigation agriculture, changed the Waso Borana attitudes Borana toward land. During this period, large numbers of the population of Waso Borana pastoralists were pushed out of the pastoral sector and confined to as near or completely stockless destitute to the main towns in the district or concentrated along Kinna and Ewaso River on government or missionary supported irrigation schemes. Waso Borana pastoralists were hence reduced from prosperity to destitution by the cruel war which was perpetrated by Somali separatists. Waso Borana pastoralists also suffered the cruelty of the Kenya government military actions that failed to differentiate between the pastoral ethnic groups particularly Borana and Somalis in its brutal actions of the collective punishments.

The loss of livestock during Shifta War had profound impact on Boran social economic livelihood and their settlement patterns. From 1966-1968, the Kenya government instituted a policy of enforced sedentarization into fixed concentration camps, a period which Boran referred to as *Gaaf Daaba* (the time when everything stopped). Boran were forced to move to three main trading centres Garba Tulla, Merti and Mado Gashe and their livestock prohibited from grazing beyond a five (5) mile radius of each centre. Majority of herds and flocks estimated between 70-95% (Watson 1970) were lost leading to collapse of Waso Borana pastoralism.

According to Waso Borana elders on history of conflict with neighbors, conflict that cannot be healed by time is those of Somalis who are ever on west-ward expansion into Borana land and beyond. The current conflict were first heightened by the ambition of Somalis for greater Somalia to annex northern Kenya in 1960s, and now by the proliferation of arms after collapse of the Said Barre regime and consequent instability of Somalia. Following this period, Waso Borana pastoralists experienced once again, a series of renewed conflicts in the late 1980s and in 1990s upto to-date. This continued conflicts have caused a number of direct and indirect consequences on Waso Borana livelihood including reversal of development processes, death and displacement of large segments of populations and impoverishment.

According to reports by Kenya Human Right Commission (KHRC-Report Series 1 & 2, 2003), escalation of conflict is caused by influx of weapon from Somalia across the porous border with Waso Borana being left unprotected. The Waso Borana Community leaders, confirm that in most cases of the conflicts resolution, the government tends to support other groups particularly Somalis when investigating conflict reports. The Borana elders maintains that, the Somalis particularly the Aulian sub-section of Ogaden, were in constant conflict with Waso Borana taking advantage of modern weapons from Somalia with the objective of taking over Borana land.

Modern arms and ancient feuds have been reported, to be the main cause of massacre in northern Kenya. "Describing March 31st, 1988 massacre in Malka Daka *Dheda* in the study area, Blaine Herden in company of local human right activist Daud Tari in Herald Tribune, 12th April 1988 state:

> *The killing of fifteen Borana herdsmen was a grisly reminder of how modern automatic weapons, worsening land pressure, mixed with historical tribal hatred, in recent years generate a death toll in the desert that is without precedent. He contends that, this upcountry chaos escalate for the most part, outside the control of modern African governments. The un-policed and largely un-policiable violence cuts across much of the arid heart of Africa South of Sahara, touching on the lives of about 30 million pastoral people.*

The Waso Borana pastoralists have been highly affected by marginalization and desolation having been drawn into the seccession movement of the Shifta War, where they

were later abandoned by the Somalis to face the wrath of the Kenya government military forces on their own, and are mistrusted up to today. During the colonial period, they were subjected to discriminatory laws such as, the Special District security Act and the Outlying District act, which restricted the enjoyment of fundamental rights and freedoms that every human being is entitled to enjoy.

In northern Kenya, traditional control mechanisms have failed and access to resources has become a free for all affair as existing regulatory mechanisms are transgressed with impunity. For instance, the 1992 to 1997 entry of the Degodia and Murale (Somali clans) into Isiolo District is a classical example of the Somali clans' strategy of violating the border resources of their neighbours disrupting the traditional wet and dry season grazing patterns that Waso Borana have adopted for a long time.

The Borana pastoralists tradionally reserve some areas based on wet and dry seasons grazing systems, but the Somali clans particularly the Degodia, do graze these areas preserved by the Borana for the milk herds and in dry season grazing reserves. The Degodia camels were capable of grazing in areas set aside as drought reserves for the Borana while watering at sources sixty to eighty kilometres from their base camp. These drought fall-back rangelands, therefore, became overgrazed before the Borana cattle moved in, making the Borana pastoralists lose cattle even under climatic conditions that were considered normal.

2.5 Effect of Colonial and Post- Colonial Policies on Waso Borana Resource Management and Conflicts

Pastoral societies, using the broad definition of the term adopted by Sandford (1983), are defined as groups of people ranging from the true nomads to transhumance communities. Sandford contends that in Africa, these groups of people have been regarded as obstacles to national development processes and contemporary perceptions of the aim of "modernization". Waso Borana pastoral production systems have evolved for over a century in the arid lands of northern Kenya. They have survived in the area through strategies that enhance; effective utilization of the meagre natural resources, building up security against all types of biotic and abiotic hazards and other catastrophes (Oba,1997).

In the last three or four decades, however, especially with the advent of colonial

rule, the ability of the Waso Borana pastoralists to sustain their pastoral way of life has come under increasing pressure. These pressure are attributed to the effects of colonial and post-colonial rules that have distorted traditional resource use patterns leading to rampant conflicts over resources. Prior to colonization, the communal practices of Waso Borana pastoralism and other pastoral groups of indigenous animal husbandry, hunting and gathering and shifting agriculture were well suited to sustainable use of natural resources.

Observation in this study shows that in Kenya, most of the indigenous resource management practices were seriously challenged with the coming of colonialism to Africa, as most arable parts of pastoral land were alienated and turned into either extensive livestock ranches, wildlife sanctuaries or put under commercial agriculture. According to Maritim (1998) and Bennet (1984), these challenges were justified by the assertion that these lands were empty spaces with no individual resource owners, and that in any event the pastoral way of life represented irrational resource management systems. According to AbdulGhafar (1989), has asserted that in the post-colonial era, proponents of sedentary civilizations have come to regard the word nomad as a term of abuse. In Kenya for instance, most pastoral groups occupy territories which are unstable ecologically and peculiar in physical characteristics. In addition, the migratory life of the nomadic pastoralists is perceived as being incompatible with the introduction of essential social services especially education and health which can only be delivered to sendentarised group.

Highly mobile societies present problems of administrative control, public security and the administration of justice, while they have often been regarded as out of model reserves of tribal grouping incompatible with aspiration of the modern state (Migot-Adolla and Little, 1981). Pastoral systems are also often seen as wasteful of available land resources, regardless of the fact that such resources are usually marginal and incapable of variable exploitation by other means. These arguments are further justified by the claims that pastoralists over-stock and over–graze and therefore, do not live in harmony with their environment. It should be noted that the same argument of environmental misuse and deterioration through pastoralist activities continues to be used as basis for a variety of land use development policies.

The colonial administration in Kenya created three regions, the highly developed

White Highlands, a less developed "Native Lands" which acted as a pool of cheap cultivator labour, and the "frontier," "closed district" or pastoral zones where permits were required for those intending to travel out to the emerging cities. These 'closed' areas included the 'Maasai reserve' and vast "Northern Frontier District". After independence, pastoralists were engaged in a three-pronged struggle for survival: the bitter localized conflict over resources between poor pastoralist groups, the wider equally complex national level conflict with state authorities, a voracious local elite, and expanding populations of peasant cultivators, and the struggle for meaningful development cognizant and respectful of social and ecological realities of arid areas. All the three related conflicts make the life of pastoralists a bitter and often" no-win" battle, in which the main focus so far has been the debilitating and struggle between pastoral groups.

According to Niamir (1990), pastoral people have been marginalized and displaced globally, whether it is in the Americas, the Far East or Africa, particularly in the last four decades. Moreover, and that the needs of the pastoralists are rarely articulated when policy options are considered and determined. Following the Berlin Conference of 1884, the territory that now covers present-day Kenya was declared a British Protectorate, with concessions given to the British East Africa Association. In 1899, it was decided that the British Foreign Jurisdictions Act of 1890 should give the British Government power of control and disposition over what was termed waste and unoccupied land' in the Protectorate (Okoth-Ogendo, 1991). As a result of this decision, the East African Lands Order in Council 1901 was passed, the effect of which was to make the British Crown the owner of all land that was not actually occupied by Africans. This was done without considering or in ignorance of the African tenure system, under which all land belonged to the community hence, no need of declarations of ownership as communal ownership was known and understood by all.

In 1902, the Crown Lands Ordinance gave His Majesty the power to sell land in lots not exceeding 1000 acres and to grant leases not exceeding 99 years for town plots and 999 years for agricultural land. In 1915, the Crown Lands Ordinance was passed, declaring all waste and unoccupied land, crown land, and thus giving the Governor powers of alienation over it. This led to the alienation of over 167,000 square miles of prime agricultural land in what came to be known as the White Highlands. Africans, particularly the pastoral

communities, were thus deprived of their land and their means of livelihood. The Crown Lands Ordinance survived to the era of political independence and thus forming the basis of the current Government Lands Act, Cap. 280; and another category of public land known as Trust Land (Odhiambo, 1996).

Trust lands comprised the native reserves land units, or special areas under the colonial government. Trust lands are vested in county councils by Section 115 of the Constitution of Kenya and are administered under the Trust Land Act, Cap 288. The county councils hold the land in trust for the benefit of the people who are ordinarily resident on the land. These people occupy the land under their customary laws and rights but hold no registered interest thereon. About two thirds of Kenyan land which is predominantly occupied by the pastoralists communities, including the study area falls under this category.

Colonization was not an accident of history but a premeditated process to create a new system of compulsions for the people of Africa on their own soil. In this way, colonization was a planned imperialistic movement to acquire new lands to settle surplus populations, obtain raw materials for industries and provide markets for goods produced by Europe (Markakis, 1991). For instance, in Kenya areas where Europeans settled, mainly the high potential land were acquired through force or cunning, and Africans were forced out of these areas. These laws were later formalized through enforcement of nineteenth century laws that had become antiquated in Europe which were designed to protect the interest of the settlers (Okoth–Ogendo, 1991). Ogendo further argues that the colonial administration system set up to serve the colonial powers and control the "natives" using what the colonizers found on the ground, that is the institution of traditional chiefs.

The colonizers looked for culturally legitimate allies and institutions through which they imparted their own values particularly in the areas of resource tenure and administration. Okoth-Ogendo (1991), further argues that the imposition of colonial rule in Kenya entailed the process of westernization and capitalist penetration of African economies. Colonialism then affected the articulation of indigenous modes of production within the capitalist mode of production and integration of African economies into the Western capitalist system of market relations.

In pastoral regions of Kenya, indirect rule of administration was used to govern the population. According to Borana elders the most dehumanizing aspects for pastoralists was

the pass system in Kenya that required each person, to carry identification papers all the time, and restricted their movements especially entry into trading centres occupied by white settlers, where only Asians and alien Somalis were allowed

In 1954, a plan was developed nicknamed the Swynnerton Plan, which provided additional inputs into the land policy. This document is based on capitalist ideology and has put Kenya firmly on the path of privatization of land. It valued sedentary lifestyle and agriculture to the exclusion of all other land based livelihood systems (Okoth-Ogendo, 1991). This policy coupled with extremely high levels of corruption and rent-seeking behaviour has resulted in the transference of land into fewer hands, and dispossession of those who owned it traditionally, particularly the pastoral communities.

Development of pastoral areas was never the priority of the colonial government, it has not been the priority of the independent Kenya either (Aboud, 1982). The pastoral region of northern Kenya does not receive an equitable share of public resources and services. Even the few available services, such as schools, are designed to serve sedentary people and do not cater for the needs or lifestyle of the pastoral groups, and therefore, cannot be optimally utilized. In the study area for instance, services that may be beneficial to the pastoralist like veterinary services, livestock marketing programmes slaughter houses, and meat preservation were not embraced in the governments development plans.

The pastoral people of northern Kenya were neglected by the pre-independence regime and had thus been left behind, in all forms of developments as the colonial government concentrated most development efforts on European dominated areas of agricultural potential known as "scheduled" lands. In contrast, the "non-scheduled" lands were left to Africans agriculture with minimum supervision (Swynerton Plan, 1954). Smith (1956) cited in Aboud (1982) claims that even regular sales and marketing of livestock from pastoral regions were virtually banned because the areas are in almost permanent quarantine aimed at stopping the spread of diseases to stock in European areas. Aboud (1982) further contends that, had regular marketing outlets and realistic prices for livestock prevailed, there is every likelyhood that pastoralists could have entered the market economy by selling their surplus male stock for fattening in high potential areas. History of evaluation of pastoral developments paradigm in Kenya goes back to colonial era where the emphasis was on livestock productivity development than enhancements of livelihoods.

According to Aboud (ibid), the main objective of livestock development paradigm during this period was to increase exports of products to urban centres and international markets. These paradigms characterized the design of main interventions in Kenya pastoral developments hitherto based on application of classical ranching model, water point's development and vaccination against contagious disease and epidemics.

Commercial ranching in Kenya started after the colonial administration enacted laws that allowed for freehold and long-term leasehold grants of land for agricultural purposes. Most of the ranches were established in the higher-potential rangelands of Machakos, Nakuru and Laikipia districts. The immigrant settlers were largely ex-soldiers of the two world wars. At about the time of Kenya's independence in 1963, there were about 150 commercial ranches covering one million hectares and producing high-quality beef cattle and sheep. More ranches have since been started, especially in the previously unoccupied state lands of the Coastal hinterland. The ranches in the new areas came to be referred to as "company ranches" while those in the traditional ranching areas were referred to as commercial ranches, but in both cases the ranches were made of individual, cooperative or company ownerships. Many of the long-established ranches have been purchased by groups of Kenyans and sub divided into units that would be unviable as commercial ranches, while some ranches in the Coast Province are facing operational and financial problems. These problems are the result of the effects of recurrent drought, inexperienced management, unavailability of fattening steers, and lack of working capital.

At about the time of Kenya's independence, political activity in the northern areas of Kenya inhabited mainly by the Somali and Borana ethnic groups culminated in the "Shifta" War, which lasted until about 1968 when the Arusha Accord was signed by the governments of Somalia and Kenya. During this time, Waso Borana areas were ravaged of human and livestock populations; and, by the time the shifta activities ended, the areas needed reconstruction to be able to support the people and contribute to the economy of the nation.

The government of Kenya approached various donors for assistance to develop the country's livestock industry. The United Nations Food and Agriculture Organization and the United Nation Development Programme (FAO/UNDP) started range-research and range-survey activities in 1969, in some areas that included Isiolo and Marsabit. A similar

study was commissioned by the Kenya government as a social administrative study of the North-Eastern province and was completed in 1969. This study was the beginning of the grazing blocks development in northern Kenya. Grazing blocks were developed in areas where the land had not been adjudicated and officially registered. Particularly, they were developed in the North-Eastern province and Isiolo district in the Eastern province. Grazing blocks were also proposed for Marsabit in the Eastern province, Turkana district in Rift Valley, and Tana River district in Coast province. The lands proposed for grazing blocks development were tribal or clan lands, in which tribes roam the entire area of the block in transhumant migrations over a season, or through out the year.

Four grazing blocks were proposed for the pastoral sector of Isiolo District predominantly occupied by Waso Borana pastoralists, namely; Garba-Tulla (452, 720 ha), Sericho (478, 370 ha), Yamicha (588,980 ha), and Merti (649, 460 ha) to be developed with aid from the Canadian International Development Agency (CIDA). All the infrastructural development of the Isiolo blocks took place from 1977 to 1986, and except for the surveys and proposals done by FAO/UNDP, no actual construction or installations involving communities took place and the proposed modes of construction, management, and general range-management administration are similar to those of North Eastern Province.

By the late 1980s, a new generation of projects emerged in pastoral regions of Kenya, based on the concepts of multi-sectoral approach with integrated development projects shifting focus away from livestock to rangelands and all of its resources. The pastoral sector of Isiolo was a beneficiary of the integrated projects of Embu-Isiolo-Meru popularly known as EMI-ASAL project. This project which broke new ground for attempting to modify institutional structures for natural resource management in its plan was however, not implemented. The EMI-ASAL project was followed by Arid Land Resource Management project (ALRMP), funded by GoK and World Bank which is now in its second phase.

The ALRMP main objective is to bring about an integrated approach to pastoral development by sustaining natural resource bases, enhance food security, and mitigate drought. The success of the ALRMP would be subject to forthcoming technical evaluation, by the donor and communities though some of the outcomes particularly those gauged on

natural resource base improvement and drought mitigation are not difficult to pre-judge. However, the project has established a successful early warning systems on which the current drought circle management are based.

2.6 Summary of Literature Review

This chapter has provided an overview of Waso Borana pastoralism in historical perspective highlighting cultural resource-use patterns, inter-ethnic relations and conflicts in northern Kenya regions. Also reviewed are the Waso Borana social organization systems and effects of colonial and post-colonial development policies on communities livelihoods paving way for conceptualisation of the study framework.

Review of literature of the Waso Borana pastoral economy before Kenya's independence reveals that the pastoral economy was one of the most thriving economy in northern region. However, the events of Shifta War of 1960's where Borana suffered heavy losses of both human and livestock followed by droughts of 1970s and subsequent impoverishment, have made the community vulnerable to various risks including a complex situation of escalating violent resource based conflicts with their neighbours. Other dimensions of risks and vulnerabilitiesthat Waso Borana have faced include, food insecurity, shelter, limited access to health services, education opportunities, vulnerability to natural disasters such as drought, economic crisis and exclusion from political power that hindered decisions over matters that pertain to resource management.

The main gaps identified in the review of the literature focus on the observation that Waso Borana pastoralists have undergone various changes in their livelihoods, particularly on issues of resource management that has also influenced changes in pastoral land use systems resulting in increased risks of resource-based conflicts. However, these changes have not been recognized by researchers and development argents who have continued promoting livestock production in the interest of expanding meat industry, at the expense of declinig natural resource base.

In order to fill this gap, the study has used extensive multi-techniques research methods that include; focus group discussions, key informant methods, participatory observations in addition to traditional research social economic survey methods. The purpose of using these integrated technique is to supplement information from the

extensive literature review to enrich the study findings on the problems of resource management, risk and conflicts with the view of finding out solutions that can improve Waso Borana pastoral livelihoods.

2.7 Theoretical and Conceptual Frame-Work

Risks and conflicts in pastoral areas are mainly attributed to the scarcity of resources and various changes affecting pastoral livelihood systems as explained by various development theories. The theory of the "Tragedy of the Commons" Hardin (1968), and old ideas conveyed by theories of the "East African Cattle Complex" of Herskovits, point to the irrationality of pastoralism as economic systems. According to a number of scholars, among them, Oba (1994) and Pratt *et al* (1995), modernization theories of pastoral development give different explanation to irrationality of pastoralism as being caused by external disturbances, demographic growth, clashing production strategies and resource use regulations.

A sustainable livelihood approach to rural poverty stresses that institutions determining access of households to the core resources are needed to construct a livelihood model (Scones, 1997; Carnery, 1998) of which natural resources and livestock are the most important social capital. Livestock are central to Waso Borana pastoralism which is based on such animals as cattle, camels, sheep, goats and donkeys. In the case of Waso Borana pastoralists, this diversity of species optimizes the use of varied browsing and grazing fodder types, through mobility.

Livestock management among the Waso Borana cannot be considered purely in terms of animal science. There are other linkages to other disciplines such as water use and management, grazing systems, use of trees for fodder, medicines and other social systems based on cultural values. For example, accessing watering points based on traditional water *rota* among the Borana pastoralists reduces the choice of watering intervals and period between herders, thereby minimizing conflicts. According to Swift (1977), the ability of nomadic pastoralists to support relatively large numbers of people on the land in comparison to more capitalistic modes of production must be seen in the management of pastoral societies. According to his observation, extensive grazing in the Sahel regions has

been sustainable for long periods due to rigid social organization of pastoralists and coordinated livestock movement practices.

The post-independent government of Kenya, pursuing theories of modernization promoted administrative reforms that were geared towards developing the pastoralists, but which ended up promoting loss of autonomy of resource use and control inherited from the colonial goverments. Currently, the traditional pastoral resources control and utilization enjoyed by the Borana pastoralists is transformed from communal ownership with internal social-cultural control mechanisms that were sustained during the colonial era, to "a more or less" open access to resources which is almost free for all, and which precipitates resource-based conflict situations.

This study is premised on the understanding that during the period before 1890, the Waso Borana had an independent indigenous authority system that governed their pastoral resources. Through this system,Waso Borana pastoralists have defined their boundaries, asserted their identities and independent resource management institutions. With the advent of colonial era i.e. 1890–1960s, the Borana indigenous authority systems of resource management and conflict resolutions, was under mined through impositions of rules and regulations on their institutions that governed resource management.

Hence, the conceptual frame-work upon which this study is based, takes into account the notion of multi-dimensional risks and conflict in the context of historical and ecological processes; which are assumed to affect contemporary Waso Borana pastoralism. These include: the problems related to resource management, drought, insecurity, human-wildlife conflict, problems related to food security and changes in social institutions for coping with risks and transformations of current resource based conflicts through modern weapons (Fig 2).

During post-colonial and to some extent colonial period, Waso Borana community used to manage their resources based on principles of traditional neighbourhood systems that were enforced by various traditional regulations and ordinances. The main feature of this resource administration was the enforcement of inter-clan and tribal boundaries in northern Kenya region to regulate access to water and grazing resources and promotion of reciprocity mechanism in resource management. This approach was generally successful because it was consistent with Waso Borana and their neighbouring communities

reciprocatory principles of indigenous resource management and conflict solution.

In the post independence era (1960s to the present), the direct rule and development administration by the post-independent government has dismantled the indigenous authority system, leading to multi-dimensional escalation of various risks in Waso Borana pastoral livelihoods and increased conflicts over resources particularly after Shifta War that also coincided with the independence period in Kenya. The government and other development partners in the region is currently responding to various risks in Waso Borana pastoral livelihoods, particularly by increasing stakeholder participations in conflict resolution and management.

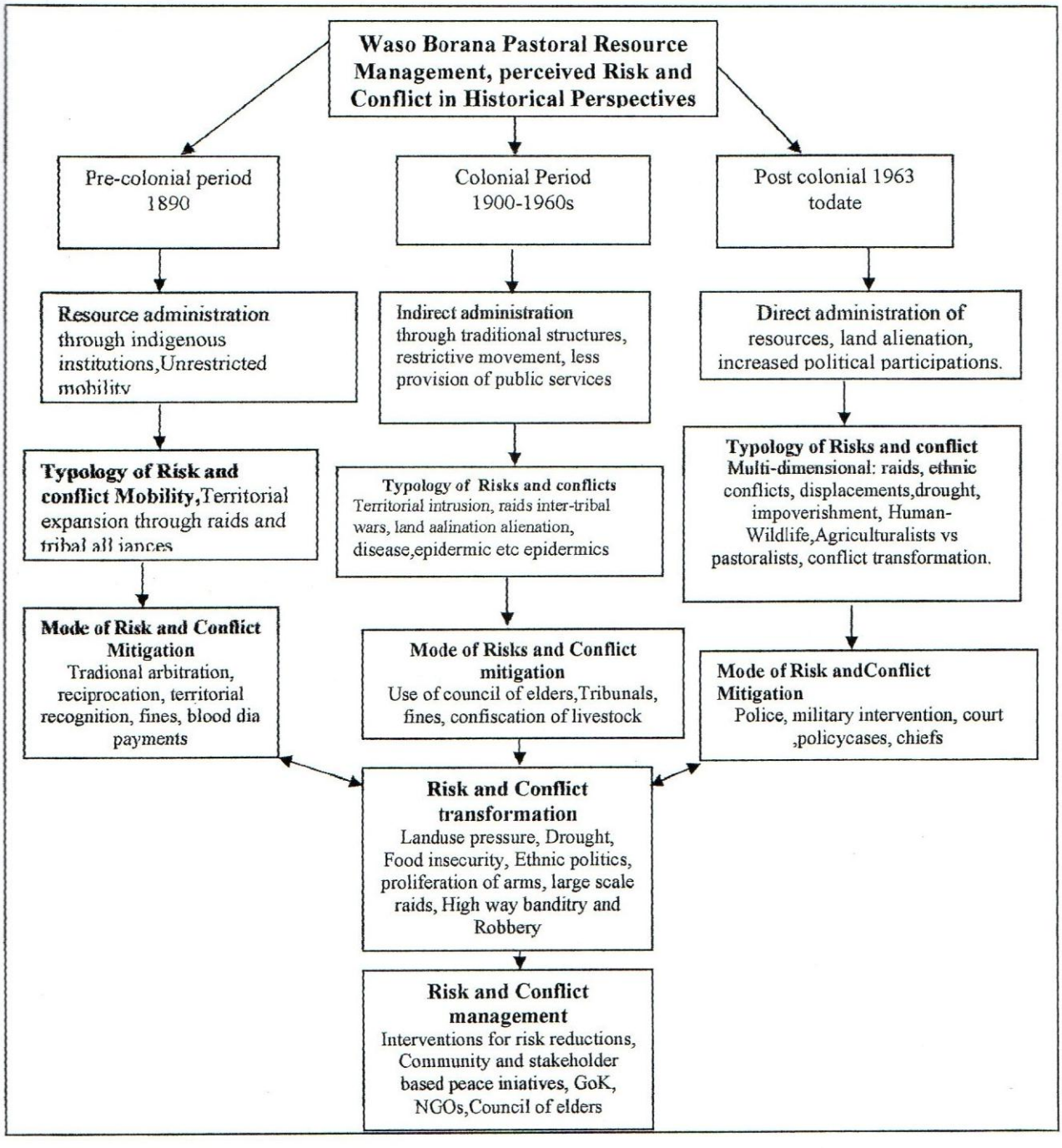

Figure 2. Conceptual Framework: Waso Borana Perception of Risk and Conflict Resolution

Source: Literature Review

CHAPTER THREE
METHODOLOGY

3.1 Introduction

This chapter presents the methodological procedures employed in the study and more specifically, it focuses on types of data collected, sampling frame, sample size, sampling procedures, as well as discussing the research design employed. The chapter also outlines the primary and secondary sources of data, limitations of field research, data analysis and presentation.

3.2 Data Requirements, Sources and Types

This study sought data on a diverse set of variables that were of qualitative and quantitative nature. The study aimed at assessing the influencing factors on the Waso Borana perceptions of risk and conflict on their livelihoods and how these problems can be mitigate ed.The main aim was to explore from the qualitative data, the historical trends and patterns of changes in resource base structure and livelihood systems.

The study was based on both primary and secondary data. Secondary data was obtained by reviewing related literature on similar studies conducted within the area and elsewhere. Government reports, historical documents, national archive, population census reports, journal articles, Thesis, and other relevant materials provided the secondary sources.

Primary data was obtained through administration of structured questionnaires to randomly selected pastoral households. Other tools used to collect data comprised interviewing key informants, conducting group discussions, and conducting observations. he questions and discussions were based on the perceptions of Waso Borana pastoralists on resource tenure, livelihood systems, perceived risks that threaten livelihood stability, causes, and solutions.

Main variables include, pastoral households social economic characteristics, access to resources, and decision making over resources that affects the livelihoods of the Waso Borana pastoralists.These factors were assessed against pastoral households perceptions on how the current risks and resource use problems related to escalating resource conflicts in the study area can be resolved.

3.3 Social-Economic and Ecological Background of the Study Area

The study was conducted in Isiolo district which occupies about 25,605 km^2 land mass and is one of the eleven districts forming Eastern Province of Kenya located in the upper Eastern Province of Kenya. The upper eastern region of the province encompasses the districts of Isiolo, Marsabit and Moyale which are pre-dorminantly inhabited by Borana pastoralists.

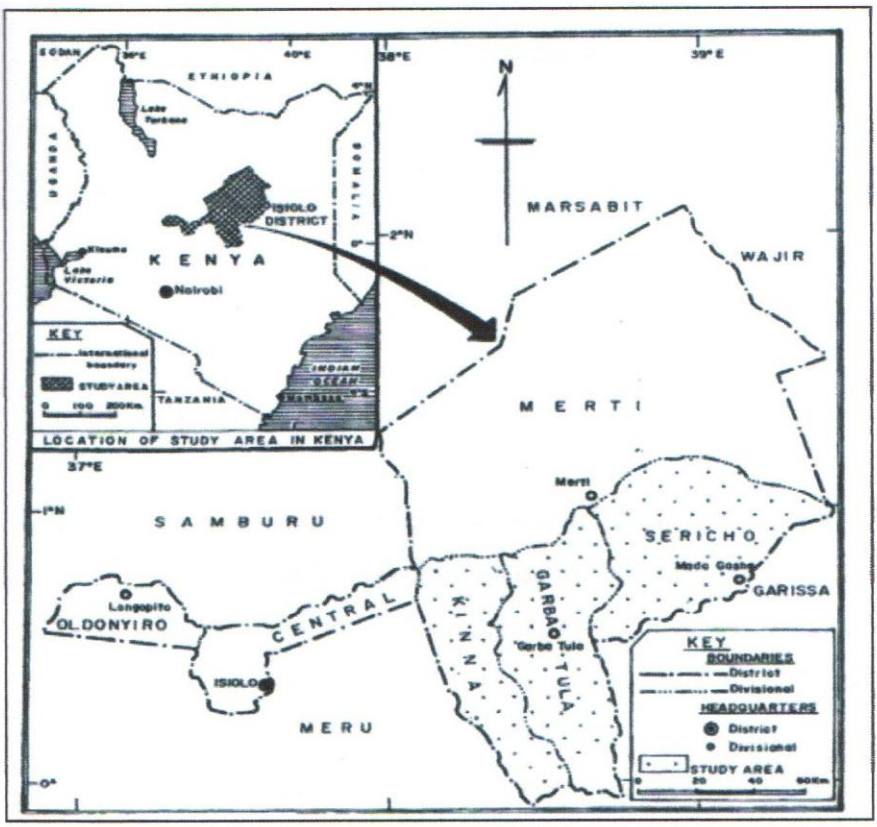

Figure 3: The Location of the Study Area in Kenya

The study area focuses on the southern rangelands of Isiolo district pre-dorminanatly occupied by Waso Borana pastoral and agro-pastoral communities. These southern parts of the district, which form the focus of this study (Fig.3), encompass the three divisions of Kinna, Garba-Tulla and Sericho that form the current Garba Tulla District. This have been the focus of livestock development projects for the last thirty years. According to Isiolo Distrct Development Plan (2004), the area has an estimated

population of about 35,000 people out of the the districts projected resident population of about 115,000 people.

Various pastoral groups with varying land use practices mainly occupy Isiolo Central division, whose mainland is occupied by holding ground and game reserves.

Table 1: Isiolo Distrct area and Administrative Units by Divisions

Division	Area (Km2)	Locations	Sub-locations
Kinna	2,516	3	6
Oldonyiro	1,161	2	4
Merti	12,377	6	13
Garbatulla	3,759	3	5
Central	1,411	4	8
Sericho	4,381	4	8
Total	25,605	22	44

Source: District Commissioner's Office Isiolo, 2004

3.3.1 Demographic and Socio-Economic Profile of the Study Area

The trend of human population distibution in the district is illustrated in the Table 2. Merti division with the biggest area coverage in the district has the lowest density of population while Isiolo Central division with the smallest area has highest number of population density per square kilometer.

The trend of population over the years is towards the urban centres, with about half of the district's population found in the Central division. This trend could be the result of displacement caused by conflicts and effects of drought, which force pastoral households that have lost their stock, to move near urban centres in search of relief food, employment, engagement in petty trade and charcoal sales as a means of gaining livelihood.

Table 2: Isiolo District Population Distribution and Density by Division

Isiolo District Administrative Units and Trend of Human Population		1999		2005 projection	
		Population	Density	Population	Density
Kinna	2516	7133	3.3	7947	3.7
Oldonyiro	1161	9669	8.2	10,772	9.1
Merti	12,377	15,771	1.3	17,570	1.4
Garbatulla	3,759	7,010	1.8	7,809	2.0
Central	1,411	52,280	25.0	58,242	27.9
Sericho	4,381	8,998	2.4	10,024	2.6
TOTAL	25,605	100,861	3.9	112,364	4.4

Source: District Statistics Office, Isiolo 2004

3.3.2 Trend of Livestock Population in the Study Area

The study area, just like other pastoral districts, has not had an effective livestock census to date. In the period before the Shifta War of 1960s, there was no attempt to undertake livestock census; since the colonial government used head tax and ethnic boundaries for its somewhat effective pastoral resource administration. The last aerial surveys were conducted in 1970s and 1980s (Watson, 1972; Watson *et al,* 1973 in ILCA, 1989) pointing to serious decline in livestock population. According to observations made by Dahl and Sandford (1978); Hogg (1981), the low number of livestock population in the study area over this period can be linked to combined effects of the Shifta War in the late 1960s followed by severe drought of the 1970s and 80s.

3.3.3 Isiolo District Human-livestock ratio

Table 3: Isiolo District Human-Livestock Population

Division	Population	Cattle	Sheep	Goats	Camels	Donkeys
Central	58,242	24,700	29,000	30,000	8,500	2,000
Garbatulla	7,809	8,200	50,500	40,700	5,300	3,100
Merti	17,570	49,300	70,200	53,000	3,200	4,100
Sericho	10,024	46,600	56,000	44,000	3,850	4,400
Kinna	7,947	34,200	33,000	28,300	10,400	3,400
Oldonyiro	10,772	21,800	21,300	34,000	1,800	3,000
TOTAL	112,364	185,000	260,000	230,000	30,000	20,000
TLU	-	129,500	26,000	23,000	30,000	10,000

Human: Livestock Ratio = 1. 9 ; TLU–Tropical Livestock Unit- Cattle-0.7, Camel-1.0, Equine (Donkeys)-0.5, Sheep–0.1, Goats-0.1

Source: DLPOS, Annual Report (2005).

Waso Borana pastoral economy still suffers various problems such as those of land use pressure, drought and rampant resource conflicts, resulting in tremendous reduction in livestock numbers leading to decline in livestock: people ratio currently estimated at 1: 1.9 as shown in the table above. According to Bekure (1991); Coppock (1994); the ratio of livestock to people in pastoral systems is a rough indicator of the ability of range land to support a pastoral population and trend toward increasing poverty.

In the case of the Waso Borana, there has been a decline in livestock house-hold ratio over the years as results of growing risks of drought, conflict, deterioration of rangelands conditions and consequent poverty.

3.3.4 Topography and Natural Conditions

The district is made of a low lying plain that rises gradually from an altitude of 200m above sea level at Lorian Swamp (Habaswein) in the East, to about 300m above sea level at Merti Plateau. Ewaso Nyiro River dissects the district into north and south blocks. To the north is Merti plateau, and to the south are the plains that rise to an altitude of 1000m above sea level, with some inselbergs towards Nyambene foot slopes.

The Ewaso-Nyiro River "the Nile" of Isiolo, runs approximately centrally through the district from west to east forming the main drainage patterns of the district (ILDP, 1991). Other smaller rivers, which form water sources for irrigation include Isiolo, Kinna and Bisan-adi, with the latter two being found in the eastern portion of the study area. Due to low rainfall and high evapotranspiration, surface water availability is limited.

According to (ILDP, 1991) Ewaso-Nyiro River basin covers about 78% of the district's land area. Further downstream the discharge becomes seasonal due to seepage and evaporation losses as it empties into retreating Lowrian swamp. The upper catchments of Ewaso-Nyiro River is characterized by high population growth, mainly due to immigration from the densely populated districts. The opening up of former large-scale farms in Laikipia and their subsequent sub-divisions into considerably small land parcel, to accommodate this growing population, has triggered fast changes in land use, resulting in degradation, pressure on water, land resources, and resource use conflicts (ENNDA, 2003). The pressure on human and wildlife ecosystems highly affects pastoralism in the study area, often triggering escalation of resource-based conflicts.

Ewaso-Nyiro River, with its vast flood plains and the Lorian Swamps dissect the district into two portions making the area often described as the "bread basket of northern Kenya" due to its potential grazing and the permanency of the river flow (Jillo, 1993). Such grazing potential adds another dimension of envious potential conflicts, as various pastoral groups seek access to grazing and water resources particularly during the period of drought.

3.3.5 Agro-Climatic Conditions

The study district is under the influence of extreme arid climatic conditions that are only suitable for pastoralism with limited agricultural activites. Relationship between climate, vegetation, and land use potential, has long been used to assess the suitability of land use for different uses. The major elements of climate that affect herbage growth are the intensity and the duration of the rainfall, and the year-to-year variation in rainfall amounts as well as potential evaporation. Based on the rangeland classification by Pratt and Gywanne (1977), the district is divided into two major ecological zones. Arid lands (or ecological zone five which curves about half of Kenya), constitute approximately half of the Isiolo District. The remainder of the District is comprised of semi-desert lands

(Ecological Zone V1).

The arid land zone which roughly covers the south-western third of the district is generally too dry for agriculture and forestry, but its livestock carrying capacity is considerably higher than the semi-desert zone (Rice *et* al 1978). The semi-desert zone, which covers approximately two thirds of the district, is a harsh barren land of intense heat and dust and little vegetation. The populations of wildlife and domestic livestock are very low due to the severity of the environment, and dependency on the Lorian Swamp in this part of the district. It is within this environment that the pattern of Waso Boran pastoral land use systems evolved.

The very arid Zone (V1I) covers mainly Merti and Sericho divisions, which comprise about 65 percent of the total area of the district. Rainfall received in this division ranges between 150 and 250mm annually. The area is barren, very hot, and dry most of the year. The extensive semi-desert plain North of Merti plateau is characterized by dwarf shrub land of acacia *Mellifera* (*var. misera*) and dousperma spp. This zone used to be traditionally a wet season grazing area for cattle and camel pastoralism before the collapse of Waso Borana pastoral economy. Currently, these zones which were once used by Waso Borana as drought contingency areas is under threat of constant conflict from influx of Somali livestock herders from the neighbouring Garissa and Wajir districts.

3.3.6 Rainfall

Rainfall in Isiolo District is derived from the moisture bearing North East and South East trade winds (Olson, 1978). The bi-annual movement of the inter-tropical convergence zone with the accompanying instability, caused by the monsoon winds gives rise to precipitation. The district is hot and dry almost throughout the year with two rainy seasons, the short and long rain season. The short rains occur in October and November while the long rains occur between March and May. The rainfall received in the district is usually low and unreliable with an annual average of 580.2mm. The wettest months are November with an average of 143mm and April with an average of 159mm. Since rainfall is erratic and unreliable, it cannot support crop farming, resulting in high food poverty levels in the district, particularly in central division where almost half of the district population lives (District Agricultural Officer, Isiolo, Annual Report, 1998).

3.3.7 Temperature

The average temperature in the study area does not vary much from season to season or month to month. However, observation has it that in the periods after the long rains of April-May, the area is subjected to constant drying winds (Olson, 1978). This in part accounts for the very high evaporation rates in the area. The district experiences high temperatures throughout the year, with variations in some places due to differences in altitude. The mean annual temperature for Isiolo station, at an altitude of 1,104m above sea level is 26.6^0c while in Merti, which is 300m above seal level, is 27^0C.

The continuous sunshine in the district provides for a high potential for harvesting and utilization of solar energy. Monsoon winds blow across the district throughout the year, attaining peaks in the months of July and August. The winds sweep away all the moisture due to high evaporation rate and reduced humidity.

3.4.0 Geology and Soil Resources

According to Herlocker (1999), pastoral and agricultural communities' percetions, the potential of soils for supporting grazing and crop use is influenced by the geological foundation. However, no comprehensive geological survey has been undertaken in the study area, except those that cover the whole of northern Kenya done by FAO (1971). According to this survey, there were five main rock groups in the study area namely; the basement crystalline rocks (Archaean), Merti sedimentary beds (tertiary), volcanic rocks (Tertiary to Pleistocene), limestones (Pleistocene), and some superficial deposits (quaternary). There are extensive basement system strata in the area both North and South of the Ewaso-Nyiro River.

Most of the study area is covered by general soil maps of Kenya, notably that of FAO/UNESCO (1974). According to Touber (1993), the soils of northern Kenya have also been mapped by Sombroek *et al.* (1982);, Mungai and Wamicha (1985);. IPAL resource assessment also provides a good information base, on investigations of geomorphology, pedology and hydrology. Therefore, most rangelands' suitability classifications are based on combinations of geology, landform, and vegetation, using analysis of aerial photographs and satellite imagery.

Touber (1993), dealt in detail with landforms and soils of Isiolo district; with surveys based on satellite image interpretation and restricted amount of field observations. According to the study of the landforms and soil maps, there are twenty-seven different types of land, each with its own set of environmental characteristics and rangeland qualities. The extensive flat surface covered by very deep calcareous reddish brown clays, called malbe soils in Borana, dominate the study area. Waso Borana pastoralists, however classify soils within their general perceptions of environment based on visual characteristics and suitability for grazing. The names of the Borana soil types and categories with correlated scientific names are shown in Appendix II.

3.4.1 Vegetation Resources

The premise that vegetation can be used perpetually for grazing, while simultaneously providing society with high quality air, water, and open space recreation is the basis for scientific range management practice.. In its widest sense, "range" is defined to include all vegetation present in the region, from the smallest herbs to the largest trees.

FAO (1971) undertook vegetation mapping in Isiolo district with the work being updated by ILCA (1989). In the ILCA survey, nine vegetation types were distinguished, of which four cover about 90 per cent of the district area. Open grass land, covering about 20 per cent of the district is found mainly on flood plains and in part of the alluvial plains. Bush grassland cover about 10 per cent and was found scattered on the various plains. Bush-land occupies about half of the district and occur on most ecological units. Wooded bush land covers about 20 per cent, located mainly to the South and East of the District.

In addition to recording vegetation structure, the ILCA survey estimated the percentage of woody and herbaceous cover, noted to have decreased slightly over time mainly because of the dry season condidtions. The implication of this for land use planning in a range ecosystem is that, grazing management plans have to take into account the seasonal variations.

The Ewaso-Nyiro River runs approximately centrally through the district from West to East, and is usually perennial as far as Merti plateau. East from Merti, there is a largely flooded plain, which is an important source of grazing for livestock, and the river normally ceases to flow around Sericho, where it enters a terminal swamp. Traditionally the area

along the river was used for dry season grazing.

Much of the area beyond grazing distance from the Ewaso Nyiro is only accessible to livestock during wet seasons when surplus water is temporarily available. The FAO/UNDP vegetation description map of 1971, updated by Isiolo Livestock Development Project (ILDP), identified four basic vegetation types namely, open grasslands, stretching within Ewaso Nyiro River alluvial plains, wooded bush land, commonly found on the Garba Tulla peneplain and basement ridges in the North of Ewaso Nyiro River.

The volcanic plains at the Nyambene foot slopes in the southern part of the study area is also characterised by bush grassland of Acacia *Mellifora* and Compiphora spp. In addition, bushed dwarf shrub land dominates Merti and Mado Gashe sedimentary plains. The main dominant shrubs and grass species are the *acacia* and *commiphora* spp, while the perennial grasses dominate areas of volcanic soil valleys, on the spring deposits and riverside areas. *Acacia tortilis* woodland with hypaene compressa-doum palm forms characteristics vegetation along perennial rivers of Ewaso-Nyiro and Bisan Adi River. It should be noted that the original vegetation, particularly the *hypaene compressa* (Doum palm) are on serious decline due to pressure from settlements and use of shelter materials.

Vegetation resources are the most extensively used by the Borana pastoralists. Pastoralists use wood species and plants to browse, for fuel wood, construction, fences, food/medicine and shades, while grasses are used for grazing animals and some times, for thatching houses by the settled groups.

3.5.0 Unit of Analysis

Individual pastoral households were the focus of this study. The principal researcher interviewed the head of each of the sampled households in their capacity as heads of the households or delegated heads of households. First, the individual pastoral household is the unit, where all decisions relating to resource allocation and management are made in the Waso Borana pastoralism. Second, the Waso Borana pastoral systems structure is based on *dheda* concept of resource tenure where the household is considered as the primary unit of production. The pastoral household therefore can be construed as the basis on which to evaluate the total perspectives of pastoral livelihoods and its relation to escalating risks and resource conflict.

A study focus on Waso Borana pastoral households is perceived by the researcher to provide what is often missed by most regional or even national studies. Hence, the dis-aggregated households level analysis can pin point resource abundance, scarcities and household based coping mechanisms. These phenomena may not be experienced across the regional or national spectrum of pastoral societies and therefore, can provide an explanation for adoption of specific measures of risks and conflict management over resources.

The Waso Borana pastoralism is undergoing socio-economic transformation including the persuit of subsistence economic activities by some pastoral households. For instance, the level of sedentarization over the last four decades, and diversification of livelihoods have had major implications for pastoral households, gender role in decision – making over resources at household level, in risk and conflict management. The study sought information about changes in pastoral resources management and livelihood systems of Waso Borana pastoralists in the context of current escalating conflicts.

Various studies on pastoral resource conflict among them Swift, (1999), recommend research on integration of customary and formal conflict resolution institutions at household and regional levels. Therefore, it is anticipated that the study which is based on Waso Borana households within the framework of traditional concept of resource use and livelihood systems does provide new direction in risk and conflict management with the view of finding long term solutions.

Finally, the study solicited data from Key Informants (KI), Focused Group Discussion (FGD) and observations on changes and continuity of Waso Borana pastoralism from wide spectrum of informants. These included outsiders' views to ascertain the currently reported rampant conflicts among the contemporary Waso Borana pastoralism.

3.5.1 Sampling Frame, Design and Sample Size

Since it is impractical to obtain data from the universe, because of time and financial limits, sampling was done. Pastoral population comprising people in Sericho, Garba Tulla, and Kinna divisions estimated at 35,000 formed the sampling frame for the study (Isiolo District Development Plan, 2004). Both probability and non–probability

random sampling procedures were used to acquire the necessary data for the study. These two types of sampling were used hand in hand, in different stages of data acquisition as explained before.

3.5.2 Research Design

Primary data were collected through sociological survey method using a structured questionnaire that was administered to the selected households. Group discussion and key informants' interview were used to generate the required information. The structured questionnaire that contained both open and close-ended questions for survey is a ppended as Appendix III while, Key informants interview and group discussion guidelines are presented as Appendices IV and V, respectively.

3.5.3 Non-Probability Sampling

Purposive non-probability sampling procedure was also used to select key study units for the study. Nine *dheda* that stretch across three divisions of Kinna, GarbaTulla and Sericho were purposively selected for increasing incidences of resource-based conflicts within neighbouring pastoral groups and other risks. These are Kulamawe, Kinna, Rapsu, Garbatulla, Malka-daka, Gafarsa, Ires-aboru, Sericho and Mado Gashe *dheda*.

Mado Gashe, Garba Tulla and Kinna are old pastoral centres linked to major livestock marketing routes in northern Kenya and are often areas of conflict particularly on market days. Two categories of key informants were selected for interview. These include; one selected elder from every *dheda,* political leaders, religious leaders, government officers from relevant departments and non–government organizations operating in the area.

The second category of key informants was composed of some government officers and selected leaders from immediate neighbouring pastoral districts of Samburu, Garissa, Wajir, and Marsabit. They were selected on the basis of their rich understanding and insights into pastoral resource conflicts issues in their districts, and because of their ability to provide outsiders views on Waso Borana pastoralism. Non-probability sampling procedure was used in the selection of key informants.

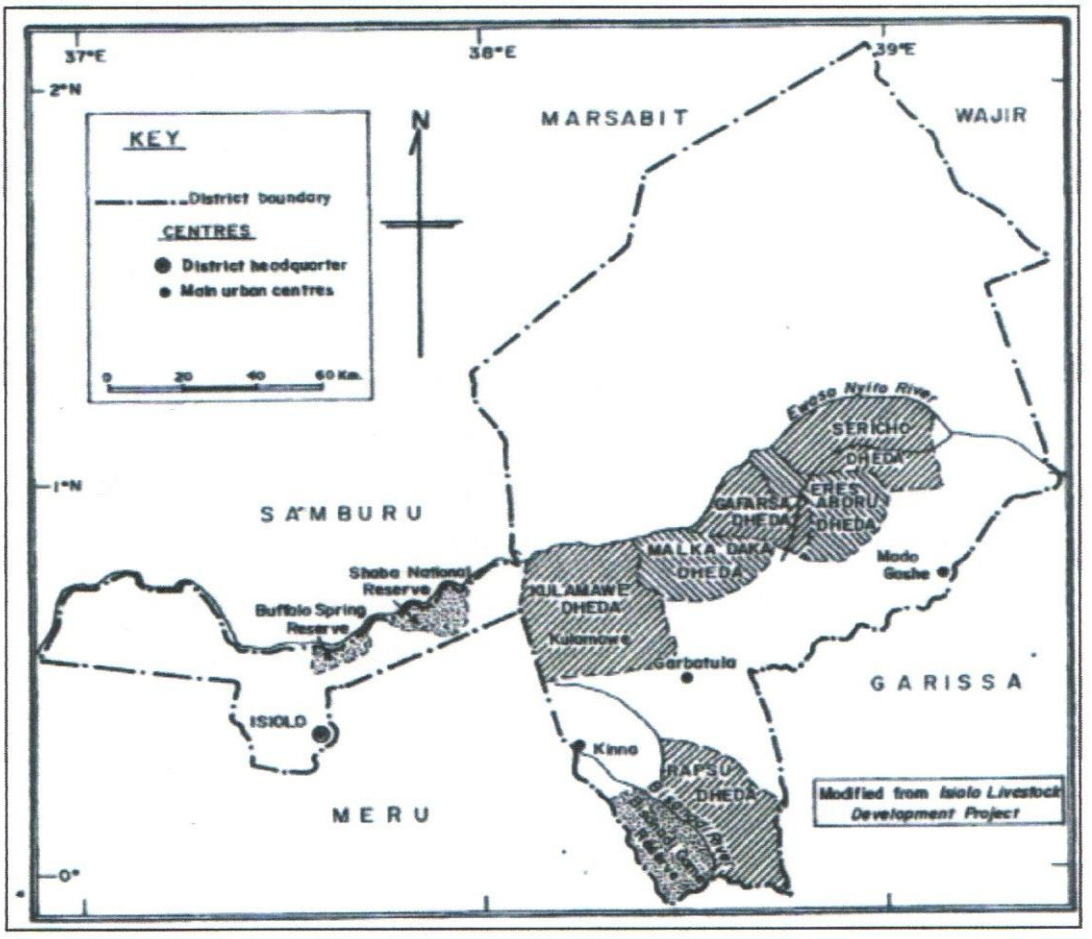

Figure 4: Sample Dheda and Main Urban Centres in the Study area

The type of data collected from purposely selected informants includes; data on Waso Borana livelihood systems, trend of resource conflicts in the area, and proposed mechanisms of conflict resolution.

3.5.4 Probability Sampling

This was used to obtain both qualitative and quantitative data. A random sample of 540 respondents was obtained through probability sampling techniques for interview by the researcher in the selected working units as detailed below. These respondents included various categories of pastoral households with diverse characteristics in terms of education, sex, age, and wealth status. However, the actual composition of the selected sample by location, production systems and gender participation (Table 5). The sample presented in Table 5 shows the number of respondents who were interviewed in each study unit. These were obtained on the basis of household head or delegated head who declared an

undertaking of main agro-pastoral or pastoral activities and other forms of livelihoods in the area. Out of 540 respondents, 72 percent were men while only 28 percent were women. Previous studies conducted in Waso Borana pastoral systems indicate that Borana women do not participate in *Dheda* council meetings, where issues of resource management are discussed (Swift and Umar, 1991; Dahl, 1979).

The study had previously proposed to use the chiefs' lists which were to be obtained at locational headquarters, but later it was found out that, the use of such lists would be inappropriate. The current chiefs' list available at the locational headquarters was one used for distribution of relief food. This list could not reflect all the households in the selected *dheda* as the distribution only targets vulnerable households. Secondly, due to seasonal mobility of the pastoral households across *dheda*, it was not possible to confirm from the register, whether some households which were on the food distribution lists in the previous seasons were actually present or not at the time of the survey. For these reasons, the researcher decided to use the probability random sampling techniques as suggested by Franzel and Crawford (1987).

This techniques was used as follows; the researcher started from the estimated centre of the study unit and proceeded in different directions using the available routes in the area. The selection of the routes was done based on probability sampling procedures in order to remove bias and make it possible to get valid conclusions (Ary *et al.*, 1972; Ebdon, 1985; Franzel and Crawford, 1987). At least two different routes were used to transect each selected area starting from the middle leading either South or North.

Table 4: Waso Borana Resource management units and Gender Participation in the survey

	Study Unit *Dheda*	Production Systems	H/h no.s	Frequeny	% of gender respondents	
					Male	Female
1	Kulamawe	Chari pastoral	420	60	36 (60)	24 (40)
2	Kinna	Urban pastoral	906	60	43 (71.6)	17 (29.4)
3	Garba Tulla	Urban pastoral	842	60	40 (66.6)	20 (33.40
4	Rapsu	Agro-pastoral	231	59	40 (68)	19 (32)
5	Malkadaka	Chari pastoral	324	60	48 (80.0)	12 (20)
6	Gafarsa	Agro-pastoral	502	58	43 (74)	15 (26)
7	Eres-Aboru	Waso pastoral	396	60	48 (80)	12 (20)
8	Sericho	Waso pastoral	663	60	41 (68)	19 (32)
9	Mado Gashe	Urban pastoral	842	60	49 (82)	11 (18)
Total	9	4	5,126	537	388 (72%)	146 (28%)

Values in parenthesis are percentage of gender participation.

Source: Fieldwork Survey Data-2004

Due to proximity of households in some study units such as Garba Tulla, Kinna and Mado Gashe, every 10th household was selected and interviewed. But in more dispersed areas such as Rapsu and Gafarsa located in agro-pastoral systems, every fifth household was selected, while for households in Chari pastoral systems mobile pastoral camps were used as sampling unit. With this technique, few cases of absentee respondents were encountered. Most of the cases encountered were in agro-pastoral *dheda* where labour involvement are intensive, as women were busy on farms while men were out herding. In cases of urban pastoral *dheda*, absenteeism was noted on market days, during which even women are involved. Where, some selected households could not be interviewed, because of the absenteeism of the household head at the time of the interview and the interview was repeated for the Household involved.

3.5.5 Sample size

Sampling is undertaken due to the difficulties entcountered in studying whole populations. The practical problems of financial limitations and time frame could not allow the study of every household in the study region with over 5,400 pastoral households (Isiolo District Dev. Plan 2004). In view of these, sampling was done in order to interview

a specific number of households for the purpose of this study using a pre-determined sample of selected 60 house holds from every study site or *Dheda*. A more representative sample would have been based on prescribed statistical procedures as discussed in Franzel and Crawford (1987). The researchers give a predetermined representative sample based on the mathematical formula as shown below.

$$S=\frac{X^2NP(1-P)}{d^2(N-1)+X^2P(1-P)}$$

Where:

S = Required sample size.

N = Population of household in the study area.

P = Sample proportion which is favoured in the amount of 0.05 of the population or 95% (percent) confidence level.

d = Degree of accuracy which is reflected by the amount of error that can be tolerated in the fluctuations of the sample proportion P.

X^2 = Chi square value corresponding to one degree of freedom relative to the desired level of confidence (95 percent): 2 degrees of freedom.

In view of this procedure, and allotment of:

N = 35,000 total pastoral population in the study area (Isiolo Dist. Dev. Plan, 2004).

d= 0.002–degree of accuracy.

P = 0.2 (20%)

X^2 = 0.016 at 0.05

For this study area, representative sample based on this formula would have been:

$S = [X^2 NP(1-P)]/ [d^2(n-1)+X^2p(1-p)]$

$S = [0.016(35,000)(0.2)(1-0.2)]/ [(0.002)^2(35,000-1)+0.016(0.2)(1-0.2)] = 628.524$

Using this formula, a representative sample of pastoral households would have involved an analysis of about 629 households. However, based on the above concept of the pre-determined sample described above, the researcher selected 540 households for analysis in the study area, i.e. sixty households from each of the nine *dheda*, a sample which represents 11% of the total human population in the study area that forms the sample frame.

3.6.0 Data Collection Procedures

Several data collection procedures were used either singly or in combination to obtain all the necessary primary and secondary data required for the study. The field preparation and collection of both primary and secondary data was organized in several phases. The first phase involved field preparation work. The following activities were conducted between September, 2003 and to September, 2004, when actual fieldwork was in force. Exploratory survey of the study area, procurement of the research permit from the Ministry of Education, Science and Technology-Nairobi, acquitance with relevant government officers, area chiefs, *Dheda* Council of Elders in the selected study units; selection, training of the three field assistants; and questionnaire pre-testing. The selected field assistants, chiefs and some members of the *Dheda* Council assisted in the development of rapport with the pastoral households.

This served to gain confidence with the interviewees and facilitated easier entry into the study area by the researcher during the actual field survey. The results of pre-test survey helped in restructuring of the questionnaire by incorporating the missing information, omitting sensitive and any irrelevant questions and paraphrasing questions that appeared ambiguous to the respondents. These culminated in the questionnaire used in the survey (Appendix III). Modification of the methodology to fit the needs of the study was done after questionnaire pre-test.

Phase two involved the actual fieldwork. This focused on primary data collection conducted between September,2003 to April, 2004. The methods used in primary data collection consisted of questionnaire, structured interviews for key informants and observations. Group discussions were conducted in the advanced stage of data collection to obtain views from *Dheda* council members of all the study units. Phase three of the study was undertaken from May to August 2004. This phase involved collection of additional information of secondary type from both published and unpublished sources.

3.6.1 Questionnaire Administration

A scheduled questionnaire (Appendix III) was administered to the selected respondents. The language used in the administration of the questionnaire was English. There were no problems experienced in communication since the principle researcher

understood the local language. The interviewees were first enlightened by the researcher about the needs and importance of the study before proceeding with the interview.

The questionnaire was divided into four main sections. Section one enlisted response on socio-economic profile of the pastoral household such as household size, gender, age, education level, household livestock structure and contributions. The second section assessed the communities' perceptions of resource base structure that support pastoral livelihoods, resource tenure and decisions over resources. The third section examined the changes in pastoral livelihoods, social economic patterns and food security over the last forty years. The fourth section assessed the communities' perceptions about major risks affecting them, sources of conflicts and perceived solutions.

The open–ended nature in the interview schedule allowed respondents the freedom to go beyond simple responses to the questions asked, and to reveal their views in a way they perceived. Results obtained from such views help to generate and clarify the dimensions discussed in the study.

3.6.2 Focused Group Discussions

Nine focus group discussions were conducted to collect information on how the Waso Borana pastoral institutions used to administer their resources and manage conflict and the effectiveness of this in the current changes of resource use patterns. Six individuals participated in each group discussion. These were selected based on their unique but common knowledge on the community. To meet the objectives of the study, probing questions were asked. These questions were drawn from key research themes namely: resource management, perceived risks and changes in pastoral livelihood systems over the years, issues of resource conflicts and perceived solutions (Appendix V). The groups were able to fully discuss problems that affect pastoral development in historical context, including traditional resource ownership systems, sharing mechanisms and how disputes over pastoral resources can be resolved. The information solicited through group discussions helped to explain, reinforce and enrich survey results.

3.6.3 Key Informant Interviews

Twenty four key informants from both traditional and non-traditional leadership were interviewed from the study area. The study collected views from twenty four key informants from traditional and non-traditional leaders categories. The views were collected from ten officers working in the area with government and non-governmental organization. In addition, ten community leaders who included the chiefs and members of the dheda council with key responsibilities for pastoral resource management and conflict resolutions were interviewed.

These include; two area Member of Parliament, two area councilors, three religious leaders, three members of Non- Governmental Organization (NGO), five Government officers from departments of livestock, water and social services, nine members of the *dheda* council with one key member from each *dheda*. Religious leaders interwied included two Imams and a Catholic Priest based at Garba-Tulla Parish. They were selected on the basis of their ability to articulate various issues of risks and current conflicts affecting Waso Borana pastoral communities in the study area. The researcher also interviewed three Members of Parliament from the neighbouring districts in order to have outsiders' views of Waso Borana pastoralism, and particularly the problems of resource conflict and how they can be resolved.

3.6.4 Non-Participants Observation

A fourth method used for data collection was non-participant observation. Besides actual issues of resource management, perceived risks and resource-based conflicts, the researcher observed various features of the day-to-day functioning of the pastoral households such as routine watering and grazing patterns and household participations in non-pastoral activities. In additions, the researcher made observations of the functions of both indigenous and hybrid institutions in conflict resolution, such as women group activities, their role in conflict resolution and interactions with other actors including government. The changing role of Women organizations in pastoral development and conflict resolution and women participation in day-to-day livelihood activities were observed.

3.7.0 Data Analysis and Presentation

The qualitative data were collected using structured questionnaires. Questionnaires were examined and edited to assess for completeness and consistency and were consequently numbered. Questionnaires were then coded and entered on a computer spreadsheet to facilitate data analysis using the Statistical Package for Social Science (SPSS) for data analysis.

Data has been presented using various methods including, maps, tables, charts, figures, diagramatic representation, qualitative reporting and descriptive analysis. Maps have been drawn to characterize various occurrences. These includes a map showing ethnic distribution, traditional resource use patterns and conflict, location of the study area, ecological zones, pastoral land use systems, sample *dheda* and urban centres. Descriptive statistics especially, frequency distribution were used to summarise and describe the data set. Cross-tabulations between key study variables were computed. This was done to qualify relationships between the number of different variables in resource management, perceived risks, causes of conflict and reccommended solutions.

Similarly, diagrammatic representation is used to highlight conceptual framework of the study showing Waso Borana resource management, risks and conflict transformation in historical perspectives. Charts, figures and a number of tables have been used depending on their applicability to the data collected from the field within the various chapters of the study. Tables present useful summaries of data under considerations, providing a quick visual impression, more specifically in its qualitative aspects.

CHAPTER FOUR:
RESULTS AND DISCUSSION

4.0 Introduction

The study was informed by three objectives. Objective one sought sought to investigate and analyse social economic and resource management issues affecting Waso Borana pastoral livelihoods; The second objectives focused on analysis of the perceptions of the waso Borana pastoralists about major risks in their livelihoods, conflicts and their solutions; while the third objective was to analyse findings from the results of the study with the purpose of drawing conclusions and recommendations that can improve on the current situation of the Waso Borana pastoralsim.

The investigative results and discussions based on the analysis of the results of the survey of 540 sample households from the nine *dheda* in the study area are collaborated with the views from the key informants interviwed and findings from focused group discussions and Non-participants observations.

This chapter is divided into three sections. The first section discusses Waso Borana pastoral livelihood systems, social economic chracteristics of the households and subsistence systems. The second section provides the assessement of of the Waso Borana resource base structure and management, while the the third section of the chapter discusses; Main perceived risks by Waso Borana pastoralists, risk factors associated with pastoral household mobility, conflict and solutions.

4.1 Pastoral Livelihood Characteristics

There are four main pastoral livelihood systems among the Waso Borana that have emerged in the last four decades.namely; sedentary pastoral systems, urban pastoral systems; semi-sedentary agro-pastroal system and mobile Chari pastoral system".

The sedentary systems are currently the most commonly practiced in the study area, while the mobile systems are the least practiced. This is in contrast to the historical patterns where mobile system were the norm. For example, the sedentary urban pastoral system is located in three of our study units namely; Kinna, GarbaTulla, and Mado Gashe, and making up 51 percent of total household in the study area. The semi-sedentary agro-

pastoral and Waso systems are located in four study units namely Rapsu, Gafarsa, Eres-Aboru and Sericho and constituted 35 percent of the total households in the study area (Table 5).

The mobile Chari pastoral system is located in two study units, Kulamawe and Malkadaka, comprise only 15 percent of the total households. The emergence of the urban and agro-pastoral production systems reflect attemps at livelihood diversification. The field survey based on the 540 household study, shows that Waso Borana pastoralists have diversified their livelihoods into trade and agriculture (Table 5).

Table 5: Waso Borana pastoral livelihold Characteristics

	Study units	Productions system	Household No.s	Household characteristics	
				Mobility	Diversification
1	Kulamawe	Chari pastoral	420	Mobile	Trade, cattle, shoats[1] and camels
2	Kinna	Urban pastoral	906	Sedentary	Trade, agriculture, cattle and shoats
3	Garba tulla	Urban pastoral	842	Sedentary	Trade, shoats and camels
4	Rapsu	Ago-pastoral	231	Semi-sedentary	Agriculture, trade and shoats
5	Malkadaka	Chari pastoral	324	Mobile	Trade, shoats, cattle and camels
6	Gafarsa	Agro-pastorla	502	Semi-sedentary	Agriculture, shoats, cattle and trade
7	Eras-aboru	Waso pastoral	396	Semi-sedentary	Cattle, sheep, trade
8	Sericho	Waso pastlra	663	Semi-sedentary	Cattle, sheep, trade
9	Mado-gashe	Urban pastoral	842	Sedentary	Trade, shoats and cattle
Total	**9**	**4**	**5,126**		

[1]*Shoats is a term for goats and sheep combined.*

Source; Survey Data-2004

Waso Borana pastorsalists traditionally subsist on rearing of multi-species livestock such as cattle, sheep, goats, camels and donkeys as basis of their livelihood.

The use of multi-species herd, besides being a strategy that allows effective use of complex vegatation resources that characterize Waso pastoral system is also a means of

herd diversification as well as a risk aversion strategy against drought, diseases, and raiding. Waso Borana pastoralists have also been known to be strategically diversifying their livestock species in anticipation of livestock losses due to risk of recurrent drought and epidemics.

Waso Borana pastoralists have also adopted risk minimizing strategies such as mobility and herd division. Livestock differ in their needs for water, feeds, and types of forage favoured by the different species as found in dispersed *dheda*. For instace, Chari pastoral system includes mainly ruminant browsers, camels and goats; while in Waso pastoral systems the main species are grazers such as cattle and sheep. Agro and urban-based pastoralism combine various small species of herd particularly small stock with non-pastoral activities.

A number of scholars among them Swift and Umar (1989) Dahl (1979) Oba (1997) have observed that Waso Borana pastoralists have faced a process of multiple marginalization over the last four decades due to inappropriate national and international development policies, escalating resource based conflict with their neigbours, widespread violence and consequent impoverishment.

4.1.1 Gender and Age Characteristics

It may be observed from (Table 6), that the highest number of the respondents who participated in the study were men, while women comprised only about 16%. In terms of age distribution, it is evident that the highest number of the respondents are over 40 years of age, while just about 34% are under forty years of age. Gender among the pastoral nomads just like any other society is about men and women. Borana pastoral economy used to be a monopoly of the elders age-set of men and women who own livestock control resources, dispose off marriage and maintains social institutions.

According to Baxter (1979), age-sets among the Borana-Oromo are virtual associations of people that cut across kin-linkages structured into circles of associations; apportioned according to a fixed number of years with traditional series of names.

Table 6: Gender and Age Characteristics of Respondents in the nine *dheda* of the study area

Character	Traits/ Frequencies	
Gender	Male 449 (83.1)*	Female 87 (16.1)
Age	Under 40 years 182 (33.7)	Over 40 years 351 (65.0)

Figures in parenthesis represent percentages, asterisk is significant at 5% probability level

Source: Survey Data 2004

Age set organization as institutions with specific values and behavior among most pastoral nomads of Kenya, are often associated with warfare (Guliver, 1953; Baxter and Almagor, 1978). According to early ethnographers, traditionally most raids and wars should first be approved by the elders, although young men often decided on secrecy and took action quickly without informing the elders of their intentions.They contend that, warfare and conflicts in pastoral areas are characterized by antagonistic interests between age-sets although young men are usually fighters in all cases.

In pastoral context, elders have usually their own herds and family and therefore, their interest is to ensure good relations, widen access to resources and promote security. Married women feed their family and it is their responsibility to safeguard their children and to increase milk production. Young men who are waiting to start their homestead, want to raise their prestige levels and respect within the community, attract girls and afford marriage through raiding, as it is practice among most pastoral groups. Among Waso Borana pastoralists young people are poor by definition to the point that, should a young man inherit the herd and family responsibilities, he becomes an "elder" regardless of his age.

4.1.2 Gender Participation per *Dheda* in the Study Area

In a survey of 540 households in the study, about 72% of the respondents were men while 28% are women. There are also high variations in between *dheda* in terms of male and female respondents participation as shown in the table below. The observation is that there is relatively good participation of women in all the pastoral production systems with slight varaiation across *Dheda.*

Table7: Gender Participation Per Dheda in The Study Area

Dheda	Sex		Total
	Male	Female	
Sericho	41	19	60
Iresaboru	48	12	60
Modogashe	49	11	60
MalkaDaka	48	12	60
Gafarsa	43	15	58
Kulamawe	36	24	60
Kinna	43	17	60
Rapsu	40	19	59
Garba-Tulla	40	20	60
Total	**388**	**149**	**537**

Survey Data-2004

An earlier study carried out on the Borana pastoral systems by Swift and Umar (1991), and research findings in the region, show that Borana women do not participate in the *dheda* forum, which of late has evolved as a development unit. Traditional roles of Borana women in the society were still restricted to their relations with men as fathers or brothers or sons or husbands. Borana women performed all the tasks commonly associated with the domestic sphere and fulfilled pivotal roles in the intersection of pastoral production and reproduction. However, the relatively high percentage of the women respondents in the survey is an indication of the significance of conflicts to women. Women and children are the main victims of conflicts in the pastoral areas.

Traditional gender division of labour among Borana, restricts women to reproductive roles and therefore women are protected from higher risk occupations such as fighting in war. But like in many pastoral societies, it is observed that, Borana women sing war songs for heroes that usually taunts men and incite them toward more fighting. Such songs are used for resource mobilization from elders, youths and business elites and politicians and are an important source of motivation for conflicts

Various authors among them Belshaw (1997), and Oba (1997), have reported that protracted conflicts and insecurity in pastoral areas of Kenya have contributed to displacement of population in pastoral areas where women and children are in urban centres to seek for famine relief in state of abandonment.

In this study, it is observed that among the Waso Borana, there is hardly any activity in the pastoral economies including those of herding, marketing and drawing water

from wells in which women do not participate directly or indirectly. These changes in gender roles, could be as as result of changes in social-economic and life styles among the Waso Borana which is being reported over the last years.

4.1.3 Household Size Distribution

Figure 4 shows household structure and family size in the study area. It is observed that about 50% of the households in the area have a family size ranging between 5-8 persons. According to Isiolo District Development Plan (2001), the average family size in the area was about seven persons per household.

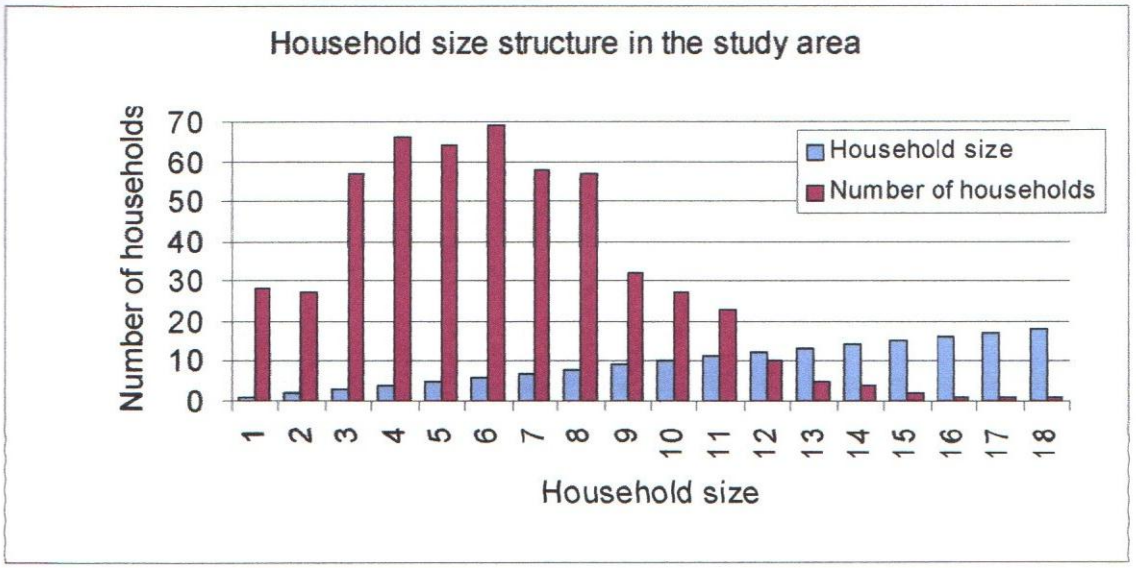

Figure 5: House hold size structure in the study area

The size of the household is an important factor in sustaining pastoral livelihoods, since pastoralism is a labour intensive activity. The availabity of household labour for herding is an important livelihood resource for Waso Borana pastoralism, particulary in this era where every child is expected to go to school. For instance, tending large herds with different species requires a certain number of healthy family members of both gender to tender different species of livestock and to beare in other divesified livelihood activities.

According to previous studies on pastoral livelihoods in Northern Kenya conducted by Little (2001), poorer households among the pastoralists communities tend to migrate to

towns and trading centres, than wealthier households with diverse livestock species.The reason for maintaining this proximity to town other than in proximaty to social services such as schools, is that poorer households depend more on casual wages, milk sales, and remittances from family members who have either migrated to towns or are in regular employment.

Family as a social unit of production is a fundamental priority for social stability in any given society and is of particular importance in pastoral set ups. The relationships between family and conflicts and other activities that pastoral households undertake, can be understood in terms of specific roles that a member of the family plays and the nature of livelihood systems that they are involved.

4.1.4 Marital Status in the Study Area

Out of the 540 survey respondents in the study, it is observed that over 90% are married, while level of widowed and divorces are relatively high (Figure 6). Besides high number of respondents being married men and women, there are also relatively higher numbers of households showing single parenthood probabably contributed through divorce. In traditional Boran family setup single parenthood is uncommon. However, in view of the current social changes and urbanization this is possible. Divorce was traditionally not allowed in Borana but under Islamic laws and norms, both divorce and re-marriage are now allowed. Currently, rates of divorce among muslim families particularly in urban areas are high due to rapid social change in the society.

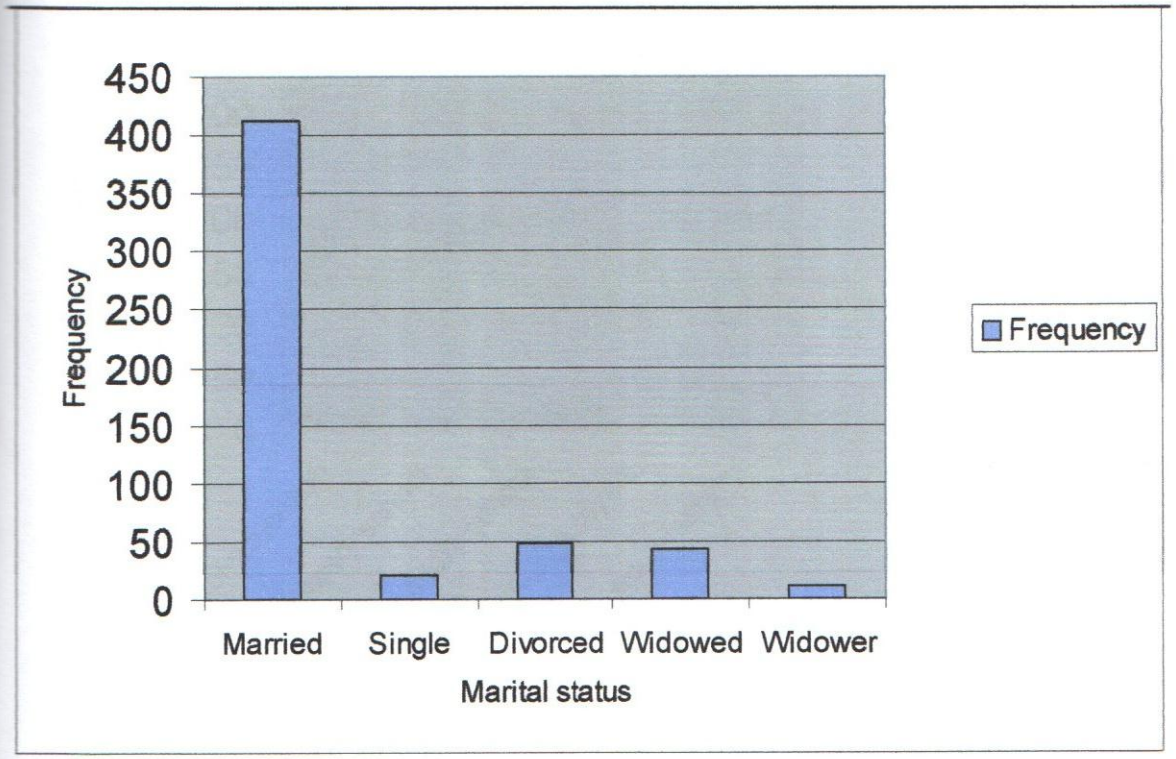

Figure 6: Marital status Differentiation for the Nine Dheda Forming the Study Area

It may thus be observed that the number of women widowed are relatively higher than that of men (Figure 6). The likely explanation for this, in addition to likely death of males caused by natural circumstances could be attributed to conflicts that target young men who are major combatants in war.

4.1.5 Level of Education in the Study Area

The education structure in the study area reflects that most households among Waso Borana pastoralists have no formal education. Similarly, adult literacy rates are very low (Figure 7).

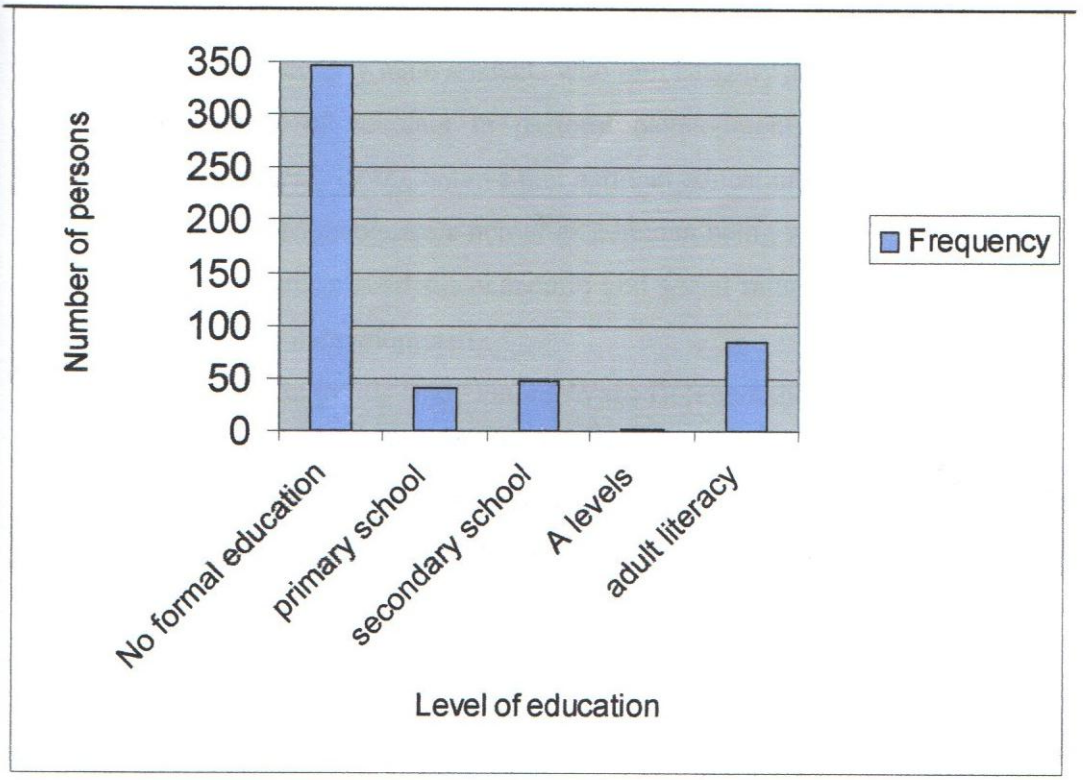

Figure 7: Education Structure of the Study Area

One of the thorny issues among the nomadic pastoral households in northern Kenya is access to education. Access to education among pastoral societies is affected by long distance to schools and lack of boarding facilities. This problem is further compounded by communities' contrasting perceptions of education relative to the immediate needs and social economic returns to households through the management of livestock.

Studies conducted among the Waso Borana (see Kenneni, 1997) show that the drop-out rate for girls in primary schools before reaching fifteen years is about 70%, while that of boys from herding families is about 45%. It is further observed that while school going boys can be withdrawn for herding, most families still feel that it is not a priority to take girls to school because they will eventually get married at the age of 15 years.

One of the most obvious effects of conflict and current frequent droughts on education of the pastoralist's children is that it disrupts patterns of livelihood and destroys social institutions, such as schools and causes displacements of parents and children. According to UNDP reports (2004) on persons displaced by conflicts, school children in

particular are said to experience disruptions in their studies with those losing in education opportunities particularly male students who join banditry and cattle rustlings as options.

A number of scholars in pastoral development, among them (Aboud, 1982, Farah,1996, Kenneni, 1997), believe that national education policies articulated for pastoral communities should recognize a herder as a human being within his livelihood and cosmo-vision. Hence, there is need for economic and social intergration of nomadic groups into mainstream national development.

Observation in this study among Waso Borana indicate that currently there is a real struggle for pastoral households to invest in education both at secondary and post-secondary education levels, with the belief that better education increases chances of getting employed in better paid jobs and that education can be an alternative investment to livestock keeping.

4.2 Livestock Ownership and species variation within the Waso Borana Pastoral systems

4.2.1 Livestock Ownership Strucure

Waso Borana pastoralism traditionally supports the subsistence economy based on cattle, sheep and goats, and camels popularly referred to as *'The three with sweet milk'*. Data indicates that the livestock ownership structure in the study area has changed over the years compared to historical bench mark holdings of 60 cattle per household that was earlier reported before independence. Evidence from the research data reveals that besides reduction in overall number of herds, there is tremendous inequitable distribution of animals among households with notable variations across *dheda* within the Waso pastoral systems (Table 8).

Table 8: Livestock Ownership Structure Among the Waso Borana Pastorlists

Population	Livestock Species				
	Cattle	Sheep	Goats	Camels	Donkeys
<5	102 (18.9)	79 (14.8)	97 (18.0)	33 (6.2)	265 (49.1)
6 to 10	73 (13.5)	58 (10.8)	88 (16.3)	4 (0.8)	6 (1.2)
11 to 20	72 (13.5)	78 (14.5)	54 (10.1)	3 (0.6)	
21 to 50	77 (14.4)	93 (9.1)	33 (6.7)	2 (0.4)	
51 to 100	44 (8.5)	48 (4.5)	15 (3.0)		
101 to 150	9 (1.7)	28 (5.1)	11 (22)		
151 to 200	14 (2.7)	23 (4.4)	21 (4.1)		
201 to 250	1 (0.2)	2 (0.4)	14 (2.7)		
>251	6 (1.2)	2 (0.4)	22 (5.2)		

Survey Data, 2004

Analysis of the survey results shows that more than 251 households out of 540 surveyed, owned only six head of cattle. While only five households own most of the livestock (i.e.19 per cent of the cattle, 15 per cent of the sheep, 18 per cent of the goats, six per cent of the camels, and forty nine per cent of the donkeys. Further evidence from the data shows that about 251 households, making slightly over 46 percent of the total households surveyed, own some cattle, sheep and goats with no camels nor donkeys.

Some scholars and observers of Waso Borana pastoralism in 1970's among them Dahl (1979) reported that in the study area of Kinna and Garba-Tulla, a herdsman with 60 head of cattle was regarded as well off, while in the period before Shifta War of 1960s, this would have been regarded as poor.

A social economic research carried out among the Waso Borana in the late 1980s, by Swift and Umar (1991) using wealth ranking methodology gave some over-view of wealth differentiation in the study area. The study found out that communities, whether pastoral or agro-pastoral, perceive wealth primarily in terms of livestock, and that livestock ownership structure was highly skewed in favor of few households who were also found to have other means of economic livelihoods.

The current picture reflected by this ownership structure shows that majority of the households among Waso Borana pastoralists have a lesser number of livestock for

subsistence and rely on alternative livelihood activities. This finding links to the risk management options open to Waso Borana pastoralists, and the best is diversification.

4.2.2 Distribution of Cattle across Dheda within Waso Borana pastoral systems

Cattle, the major species of livestock traditionally preffered by Borana, are found across all *dheda* except in agro-pastoral and urban based pastoralism, where the grazing land is reduced due to other economic activities (Figure 5).

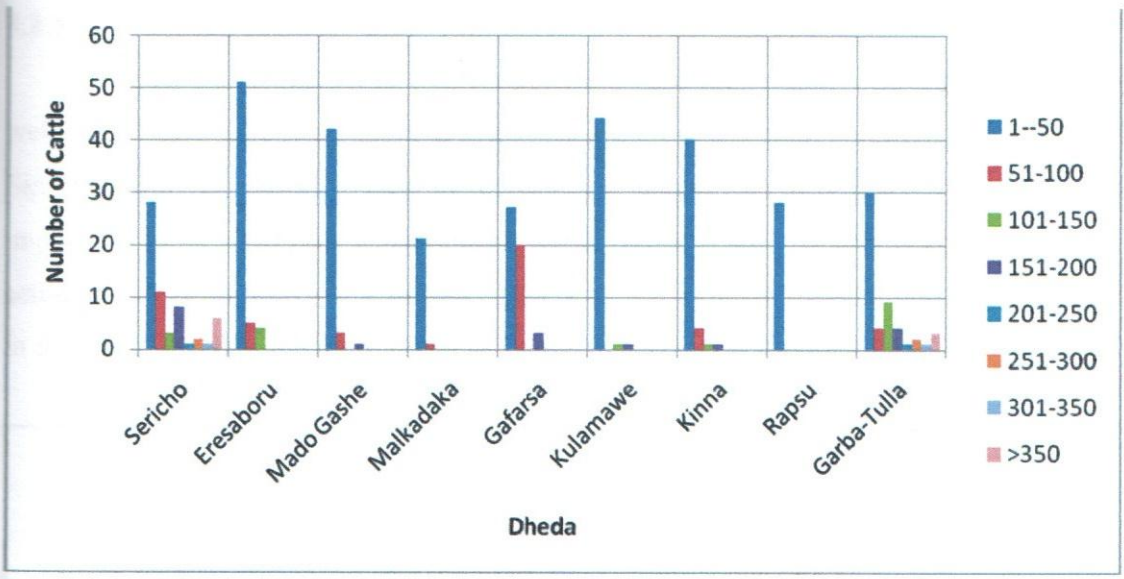

Figure: 8: Distribution of Cattle across Dheda

Earlier studies conducted in Northern Kenya region found that, Waso Borana pastoralists still maintain higher mean herd ratio of cattle within their pastoral systems, than other pastoral groups in northern Kenya. This stable herd ratio, which has been sustained over the years, is an indication of relative better range condition, hence reason for escalating resource-based conflict due to competition for access to pasture and water resources by their neighbours.

Waso Borana pastoralists often spread their cattle herds, across a number of widely dispersed range areas, through herd splitting which allows a manipulation of the mix of grazing species according to ecological potential. Herd stratification, where the milk herds remain with the family in areas of residence, while the rest of the livestock are managed in a more mobile fashion by younger men, is a common strategy used in Borana pastoral

systems.

Waso Borana pastoralists also disperse their herds among friends and relatives as part of social security system often referred to as "*Dabare*" (lending in Borana). In addition, the loans and entrustments also work to separate and distribute a household's livestock wealth, thereby lowering the exposure to location-specific risks (disease, raids etc) at minimal labour cost.

4.2.3 Distribution of Sheep across *Dheda* within Waso Borana pastoral systems

Sheep, one of the major small stock valued for food security by the pastoralists are well distributed across *dheda* and are owned by most pastoral households (Figure 6). Similarly, on the basis of pastoral production categories, it is noted that sheep were important in all categories including "urban pastoralism" where degradation due to settlements has reduced ground cover. This is a clear indication of the importance of sheep in the pastoral economy, particularly in supplementing food supply.

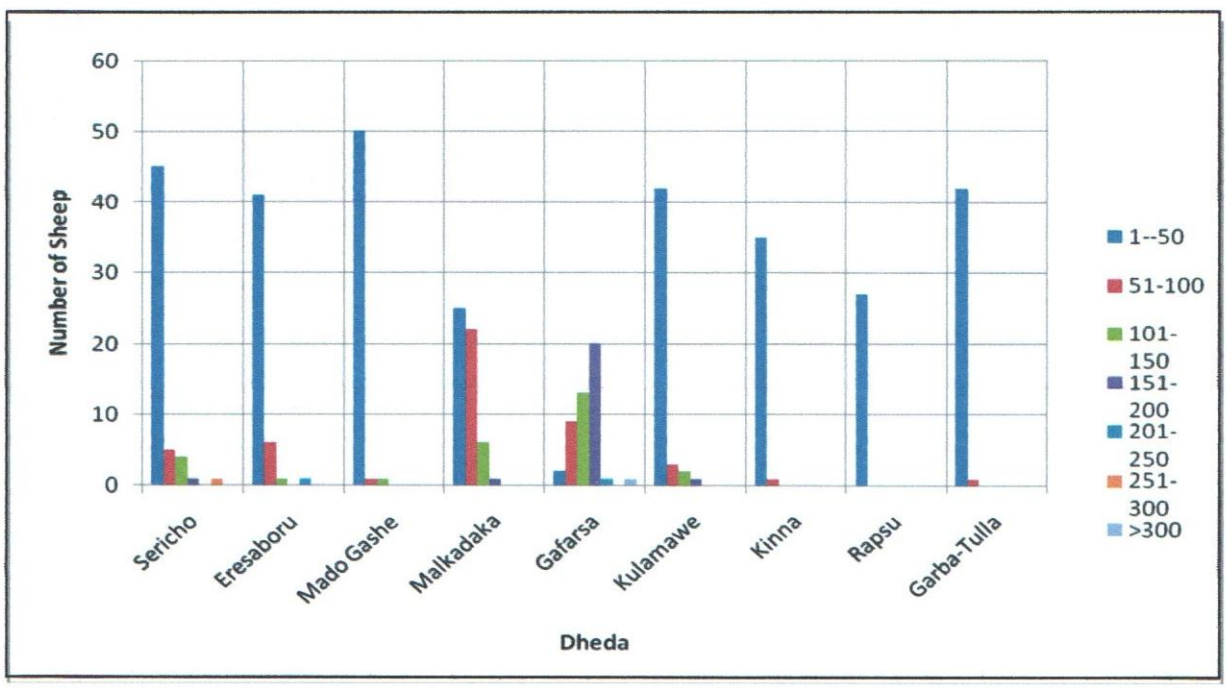

Figure 9: Distribution of Sheep across Dheda

4.2.4 Distribution of Goats Across *Dheda* within Waso Borana pastoral systems

Goats, one of the major species of livestock highly valued for milk and meat in Waso Borana pastoral economy are well distributed across *dheda* with relatively fewer households owning above 50 (Figure7).

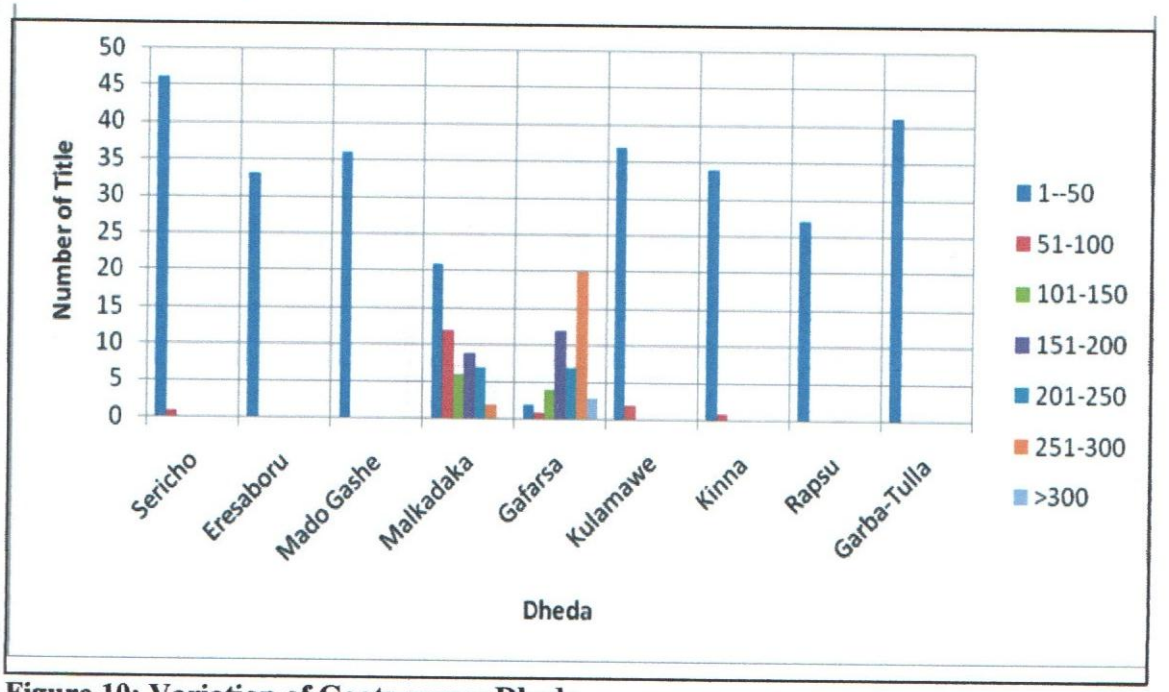

Figure 10: Variation of Goats across Dheda

The distribution of goats within Waso Borana pastoral systems, despite their economic importance is restricted by the distribution of the vegetation. The highest number of goats, is evident among households predominantly within Charri pastoral system covering Kulamawe, Garba-Tulla and Malka-daka *dheda*. Chari is the dry scrubland to the south and northwest of the Ewaso-Nyiro flood zones. It is characterized by good quality browse, but lacks surface or shallow water and hence dependence on boreholes, deep wells or artificial water pans. Goats and camels are suited to this environment.

4.2.5 Distribution of Camels across *Dheda* within Waso Borana pastoral systems

Camels are a major species valued for food security in ASAL, but have the lowest distribution among households across *dheda* (Figure 8).

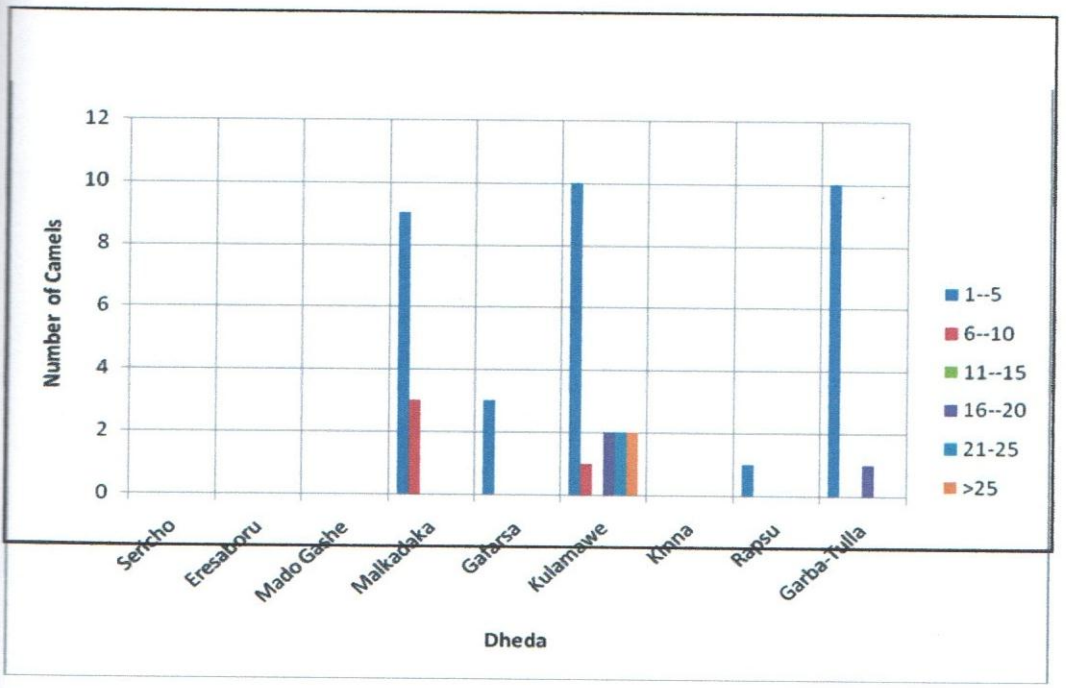

Figure 11: Distribution of Camels across Dheda

The highest number of camels just like goats, is found among the households predominantly within Charri pastoral system covering Kulamawe, Garba-Tulla and Malka-daka *dheda*. This pastoral system is characterized by good quality browse, but lacks surface or shallow water and dependends on boreholes, deep wells or artificial water pans.

Camels were valued among Waso Borana pastoralists mostly for use as beasts of burden and sources of food, particularly meat and milk although of late the use of camels for riding purposes for tourist attraction is rising in urban centres. Camels are potentially the most hardy species of livestock for 80% of Kenya which is ASAL.

Among the Waso Borana pastoralists, the camel economy collapsed during the 'Shifta' War of 1960s. Some scholars of Waso Borana pastoralism among them (Dahl, 1979, Hogg, 1980, Swift and Umar 1991), believe that the population of camels for Waso Borana was reduced by between 85- 95% by the war. Currently, there is an upsurge for

revival of camel pastoralism, with strong growing interest in the camels by the elites both working class and business communities among Waso Borana. This is mainly due to the threat caused by prolonged and frequent droughts over the last decades, which have deciminated cattle population.

Anumber of scholars in the study of pastoralism in Africa among them Swift (1979) have also indicated this new surge in camel pastoralism after the Sahelian drought of 1970's. Similarly, some studies conducted in Kenya by Simpkin et al, (1995) confirm that the camel is the most efficient producer of meat in ASAL and causes less damage to environment than other animals.

Observation made in this study demonstrate that, an important risk management strategy of Waso Borana pastoral group is diversification, which is evident in many ways. For instance, a diverse mix of livestock species managed by the same household, better serves subsistence needs and more fully utilizes the range of fodder resources, but also reduces risk from different external shocks such as dought, livestock raid and diseases.

4.3 Economic Subsistence Activities, Other than Livestock that Contribute Towards Waso Borana Household Economy

Majority of respondents in this study cite trade (23.5%), farming (23.1%) and employment (16.3 %); as the main activities other than rearing livestock, that contribute towards households subsistence (Figure,12). Other activities that contribute towards subsistence of Waso Borana pastoralists include; charcoal sales (7.2%), gathering of fire wood, gum, resins and wild fruits (10.2%).

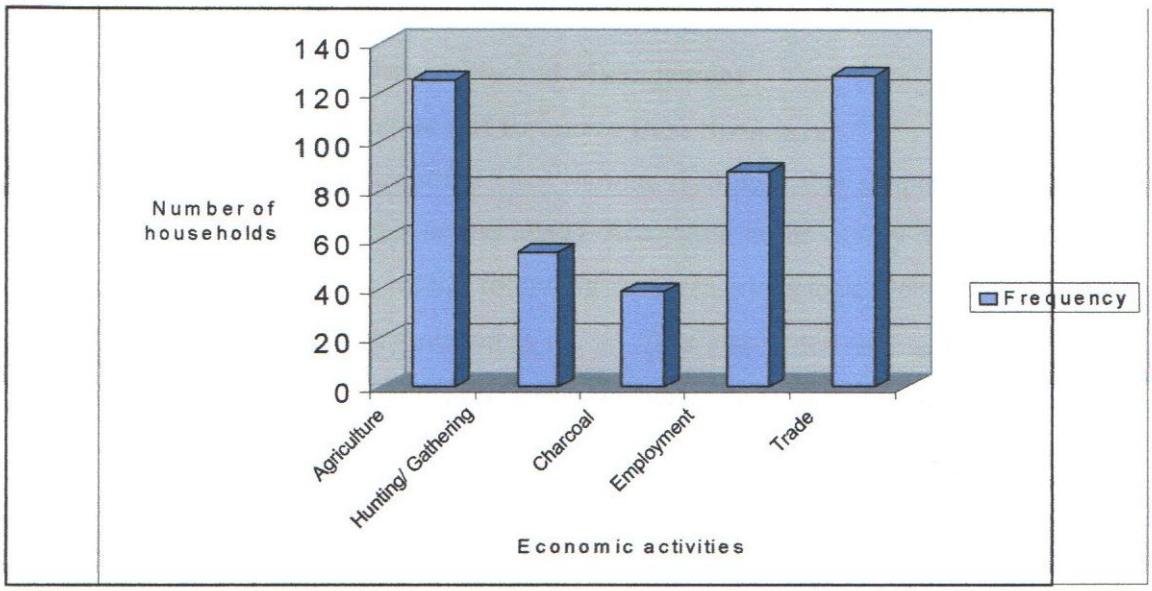

Figure 12: Other economic activities that contribute towards household economy

Pastoralists have been known to be involved in a variety of economic activities and for which they derive a significant portion of their subsistence, other than livestock raising. These activities include; farming, wage labour, trade, regular employments, charcoal sales, crafts and eco-tourism.

The Waso Borana pastoralist community has experienced rapid diversification of their livelihoods. Poor households diversify mainly into those economic options relegated to marginal activities such as sales of fuel wood, gum arabic, charcoal burning and sale, and petty trade. It shoud be noted that these marginal activities, except petty trade have implications for resource-based conflicts. For instance, encroachment by farming into traditional dry season grazing areas reflected by a number of households involved in agriculturein in Kinna, Rapsu and Gafarsa pitting pastoralists against farmers thus resulting in conflicts. Similarly, felling of trees for charcoal burning and firewood is generating tensions in the urban-based pastoral ism of Garba-Tulla and Mado Gashe *dheda* leading to high rate of degradation.

4.4. Waso Borana Perceptions of Resource Base Structure that Support their Livelihoods, Resource Ownership and Management

4.4.1 Waso Borana perception of Resource Base Structure

Respondents in this study cited various resources that support pastoral livelihood systems of the Waso Borana across *dheda.* According to the survey data, the Waso Borana livelihoods are supported by the following resources; livestock (96%), land (88%), water (87%), pasture and forestry resources (87%). It is also noted that agricultural crop-based production contributes about 34% to Waso Borana livelihoods while wildlife resources contribute about 16% (Table 9).

Table 9: Waso Borana perception of resource base structure.

Dheda	Resources						
	Livestock	Wildlife	Agriculture	Pasture/ Forestry	Land	Water	**Total**
Sericho	59	2	0	60	60	60	**60**
Eresaboru	60	5	8	59	58	57	**60**
Mado Gashe	6 0	1	1	59	60	60	**60**
Malkadaka	60	37	0	59	60	60	**60**
Gafarsa	55	32	53	54	55	55	**68**
Kulamawe	57	0	0	58	58	58	**60**
Kinna	51	3	27	25	27	25	**60**
Rapsu	60	3	60	60	60		**59**
Garba-Tulla	54	1	31	30	37	36	**60**

Source: Survey Data, 2004

Findings from group discussions confirm that livestock still remains the mainstay of Waso Borana pastoralists. Participants in FGD also agreed that other resources that support pastoral livelihoods, and which are currently sources of conflicts are land, water, and

pasture. The group also agreed that the community owns the major resources in the area (livestock, land, water, pasture and agriculture) but the government, without adequate consultation with owners takes some unilateral decisions particularly over land use.

It is further observed from FGDs that besides the escalating resource based conflicts in the area, Waso Borana pastoralists are faced with various risks and vulnearabilities. Some of the dimensions of vulnearabilities they face include: poverty, lack of food, shelter, clothing, limited access to health services, illiteracy and lack of education opportunities. In addition, respondents absence that these problems are compounded by insecurity, which increases vulnerability to events such as natural disasters and social-economic crisis and marginalization.

4.4.2 Waso Borana Perception of Resource Ownership

Respondents in the survey perceive that Waso Borana pastoralists own and control main pastoral resources in the study area either individually or communally, while some resources are owned and controlled by the government (Table 10).

Table 1: Community perception of resource ownership

Resource base	Individuals	Community	Government
Wildlife			537 (99.4)
Land		537 (99.4)	1 (0.2)
Pasture/ forestry		360 (66.7)	179 (33.1)
Water		538 (99.6)	
Livestock	539 (99.8)		

Source: Survey Data, 2004

Respondents state that livestock is owned and controlled by individual households (99.8%), while water and land both critical resources in Waso Boran pastoralism are owned and controlled by the community 99.6% and 99.4%, respectively. The respondents further state that 99.4% of wild life resources are owned and controlled by the government along with some pasture and forestry resources. The implication of this resource control and ownership in terms of conflict reduction is that the management of water and land has to be mainly done by the community.

The study further reveals that Waso Borana pastoralists own and control land and land-based resources under traditional institutions of resource governance. According to a numder of scholars among them (Dahl (1979) Swift and Umar (1990), Waso Borana pastoralists perceive current resource-based conflicts as an aggression against their rights and that is perpetuated by the state in violation of their communal land ownership. In Waso Borana pastoral areas, the land tenure rules and the introduction of land alienation for non–pastoral purposes introduced by the government, have often been in conflict with the needs and perceived land rights of the communities. For instance, agricultural expansion into Waso Borana pastoral lands and annexation of part of the traditional drought refuge areas for game reserves has posed major risks in resource management practices.

Further observations made in this study, indicate that the current escalation of resource-based conflict is as a result of failure to respect Waso Borana principles of traditional land use systems and external influence over their decisions leading to periodic tensions. For instance, agricultural expansion into Waso Borana pastoral lands and annexation of part of the traditional drought refuge areas for game reserves has posed major risks in resource management practices.

It is also observed that the current escalation of resource-based conflict is as a result of failure to respect Waso Borana principles of traditional land use systems and external influence over their decisions creating periodic tensions between different tribes and group of other land users. Waso Borana pastoralists have an institution of *Dheda* council that guides resource management and issues of conflict resolutions with customary patterns of ownership and control of livestock generating social boundaries.

Dahl (1979), Swift and Umar (1990), earliern observed that among these communities, there are variety of relations in the form of resource use, and animal exchange with networks of social relations based on reciprocity. It should be noted that these types of relations establish social networks between and within ethnic groups, reducing the risk of conflicts and providing grounds for negotiations.

4.4.3 Communities' Perception of Resource Management and Decision Making

The majority of the respondents in the survey confirm that the Waso Borana pastoralists administrate and take decisions over the use and management of resources that support their livelihoods (Fig 12).

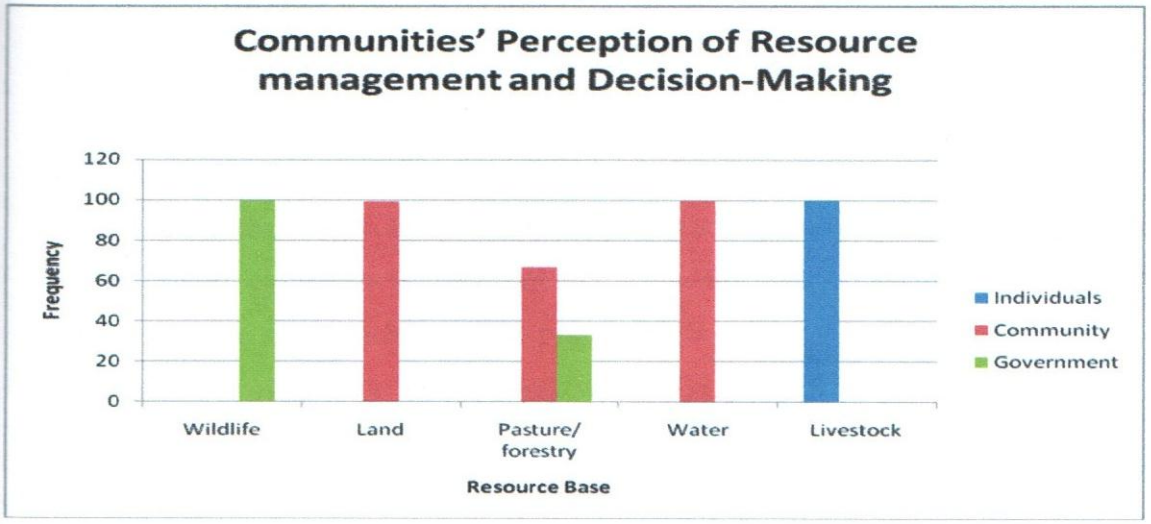

Figure 13: Communities' perception on resource management and decision making

The critical resources that communities administrate over, and manage on day-to - day basis include; water (99.8%), land (99.6%), pasture and forestry (67%) and livestock (99.4%), owned individually and managed by families. It is further observed that the management and administration decisions over wildlife resources lies with the government (99.6%), while the community excercises some control over the use of pasture land and forestry resources jointly with the government (32.8%). Historically, Waso Borana pastoralists have evolved livelihood system suited to their environment and have managed their land-based resources sustainably. They have evolved sound ecological strategies to enable them to live in harmony with their environment, where they keep different livestock species, use wild foods and carry out smallscale sustainable crop productions.

According to several authors on pastoral development among them Little, (1999) Swift (1988), the modern state with its strong centralized decisions over natural resources, has made the people who sustained themselves on their land for centuries, most

marginalized and least visible politically and economically. For instance, Waso Borana pastoralists are the best managers of land-based resources, particularly water management, based on the supervision of wells management council usually headed by *Abaherega*. These traditional Borana systems of resource management were self-regulating and resolves resource based conflict with their neighbours.

Survey results and information provided by key informants indicate that over the last four decades, there has been an emergence of land use systems among the Waso Borana pastoralists such as land alienation for urbanization, agriculture and land for wildlife conservation. Traditionally Waso Borana pastoral resources are owned communally and communities took collective decisions over their use.

Observation made in this study suggest that the emerging land tenure systems are largely based on statutory laws that are nationally and politically driven and often unresponsive to local needs and management of their resources. Results further show that the land tenure rules and land alienation for non–pastoral purposes introduced by the government have been in conflict with the needs and perceived land rights of the communities. For instance, agricultural expansion into Waso Borana pastoral lands and annexation of part of the traditional drought refuge areas for game reserves has posed major complications in resource management practices. Indeed, it should be observed that the current escalation of resource-based conflict is as result of failure to respect Waso Borana principles of traditional land use systems and external influence over their decisions creating periodic tensions between different clans, tribes and other land users.

4.4.4 Perceptions of Changes in Resource Management by Waso Borana Pastoralists

Results show varying magnitudes of perceptions of changes by Waso Borana pastoralists. The following factors are considered important in bringing about changes in resource management in the last four decades, namely; rapid sedentarisation perceived by 92.6% of the respondents, influx of human and livestock (63%), displacement of human population (45.9%), and land alienation for non-pastoral use (34%), as major changes experienced by Waso Borana pastoralists over the last four decades (Figure 10).

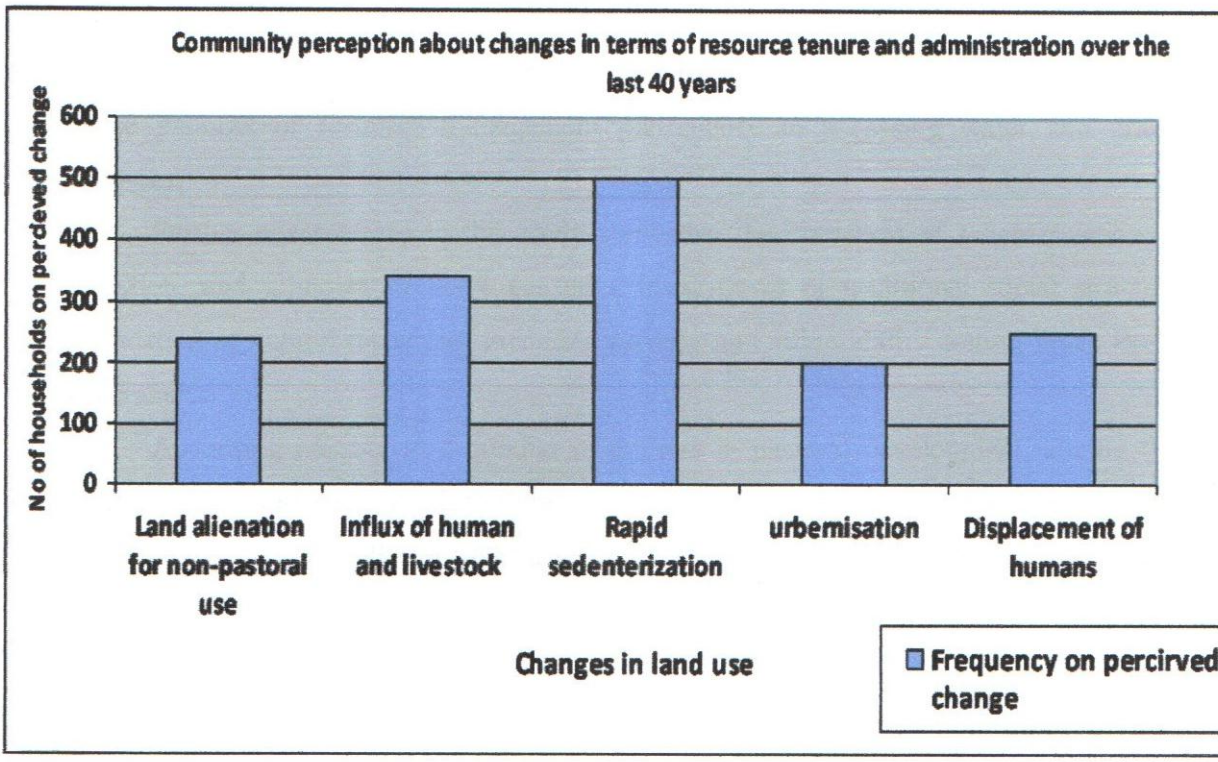

Figure 14: Community perception about changes in terms of resource management

One major observable factor with significant effects on Waso Borana pastoral life styles is rapid sedentarization and urbanization experienced over the last forty years. According to information gathered from key informant interviewed, the process of rapid sedentarization and urbanization of the Waso Borana and consequent pauperization of the population is as a result of massive loss of livestock during the Shifta War of 1960s. During this period, Waso Borana pastoralists were demobilized and forced into concentration camps *(Daaba)*, by Kenyan military forces leading to total loss of their pastoral livelihoods. The interventions that followed these deliberate restrictions were in the form of selected provision of relief food, support to irrigation agriculture, missionary rehabilitation centres, education facilities, health and water supply facilities, activities which all encouraged sedentary-type of life style.

Additional findings from key infortmants and group discussions indicate that rapid sedentarization among Waso Borana over the last four decades has had some historical implications inherent in the policies of both colonial and independent Kenya governments which encouraged settlement of pastoralists. For instance, the colonial government

imposed boundaries and restricted Borana movements in the early 20th century to avoid tribal conflict. These restrictions caused some form of partial sedenterization and changes in the patterns of resource management particularly in accessing water and grazing resources.

Further observations in this study showsthat the processes of sedentarization, out migration, and urbanization have caused a break-down of traditional social structures, degradation of natural resources, increased poverty and vulnerability among Waso Borana pastoralists.

According number to a number of authors in pastoral development, among them Swift (1979), increased sedenterization of pastoral population has characterized most arid and semi-arid region of the Sub-Saharan Africa over the past two millennia. He observes that in sub-Saharan Africa, accelerated settlements of herder population and diversification into urban based activities over the past century is not in any away an indication of departure from pastoralism. He further contends that sedentary livelihood has always been a survival strategy for impoverished pastoralists, while wealthy herders have pursued urban life styles to promote new investments and engage in diversified activities such as livestock and retail trade, irrigated agriculture, compared to the poor.

4.4.5 Influence of changes in resource management and Food security of the Households

Survey results show that majority of the respondents (90%), changed their food consumption habits as a result of changes in resource management and household food insecurity. Inaccessibility to markets for selling of produce and purchase of supplementary food products (44.1%) for domestic consumption and scarcity of food (28.7%) are also mentioned as some of the factors that influenced the changing patterns of the households food security (Figure11).

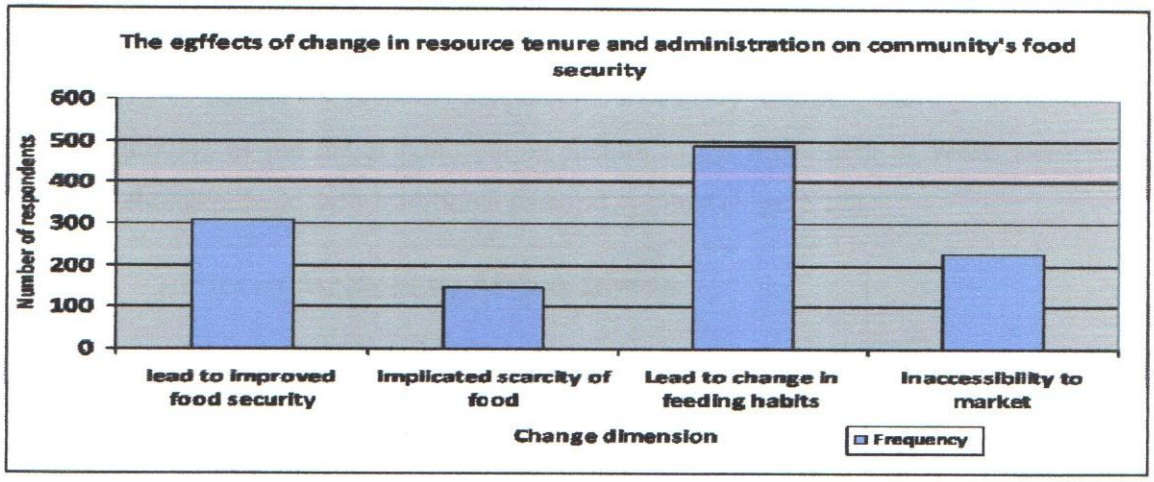

Figure 15: The Effects of Changes on Community's Food Security

According to a number of researchers on pastoralism in Northern Kenya, the principle element of urban population growth observed in the region is attributable to the influx of migrant pastoral populations impoverished by effects of drought and conflict. During these periods of stress, pastoralists are faced with famine and diseases.

Surveys conducted by UNICEF in the pastoral districts of Marsabit, Kajiado, Turkana, and this particular study area indicate that until the mid of last Century the diet of pastoral children in the region after weaning consisted mainly of milk and butter which were rich in protein. Eating habits and food consumption patterns of the Waso Borana pastoralists have been changing over the years, due to factors such as impacts of development activities, low income, and inability of livestock to support growing populations and changes in life styles. These have contributed to a growing number of pastoralists to become destitutes.

4.5 Waso Borana Perception of Major Risks in their Livelihoods

Waso Borana pastoral societies live as they do in harsh and fragile environments of Northern Kenya. Indeed in this is one of the defining characteristics feature of their existence, which conditions their patterns of production and reproduction. The risks the pastoralists are exposed to include; mobility, prolonged drought, unstable market and

insecurity. This has served to exacerbate vulnearability among Waso Borana pastoralists.

4.5.1 Risk Factors associted with mobility by Waso Borana pastoralists.

Majority of the survey respondents perceive insecurity, drought, shortage of water, shortage of grazing, as the major contributing factors to the movement of Waso Borana pastoral households outside their traditional pastoral systems (Figure 12).

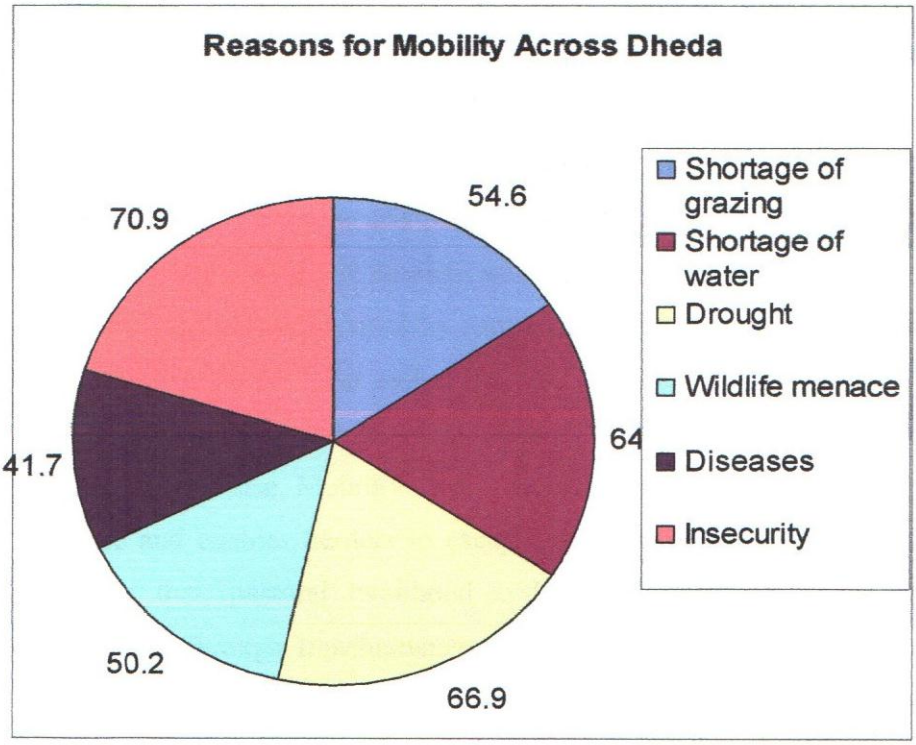

Figure 16: Risk Factors Associted with Mobility by Waso Borana pastoralists.

Some of the respondents stated further that they either avoid or move out of certain parts of their traditional pastoral systems due to wildlife predation, disease and vectors out breaks such as high tick infestations and some biting flies (Fig12).

Waso Borana pastoralists practice wet and dry season grazing systems based on *dheda* concept of resource management that enables them to distribute their livestock between patures wit in pastoral systems. Although the quality of water and forage are of paramount concern to pastoralists, other factors also influence movement patterns and distribution of livestock. These factors may include; response to risk of drought, salt requirements, outbreak of livestock diseases, need for proximity to market, and threats of resource conflicts that could lead to cattle rustling.

It is further observed that reduction of mobility through sedentarization among Waso Borana pastoralist is another strategy of risk spreading. However, it is notable that not whole family members become sedentarised in response to risks. Only the most vulnerable members; women of child bearing age, children too young to follow the herds or in schools and old or disabled persons are involved. Other household members continue to move with the herds, and economically both groups benefit from one another. The groups that move with the herds often supply milk and even livestock for sale, while those that become sedentarized, send back consumer goods including famine relief rations. It is also evident that groups that find themselves vulnerable to conflicts and raids are increasingly sedentarising around securiy police posts in urban centres.

Systems of territoriality and movement among African pastoralists have been reported to be characterized by continous, short term movements of herds between critical resources such as water and seasonality of pastures. Swift (1979) observes that mobility among pastoralists is a rational response to the scarcity, scatteredness, and seasonality of the resource base. Mobility allows optimal exploitation of resources scattered in time and space and enables herders to escape from ecological crisis and localized epidemics. He argues that, pastoral livelihood systems differ by degree of movement from highly nomadic, through transhumance to sedentary. Mobility is one of the best adopted and effective means of obtaining livestock requirements, in an ever variable pastoral environments. Other factors that may influence pastoral mobility include; restrictive territorial boundaries, and social relations with neigbhours especially alliances and enemities.

4.5.2 Drought and other types of Major risk Perceived by Waso Borana Pastoralists

Majority of the survey respondents perceive drought, shortage of water, insecurity food shortage, pasture shortage, resource conflicts and human diseases as the major types of risks encountered over the last four decades (Figure 13). Other Minor risks perceived by the respondents are; lack of access to livestock market, land tenure issue, and livestock diseases, as the least perceived risk over the period.

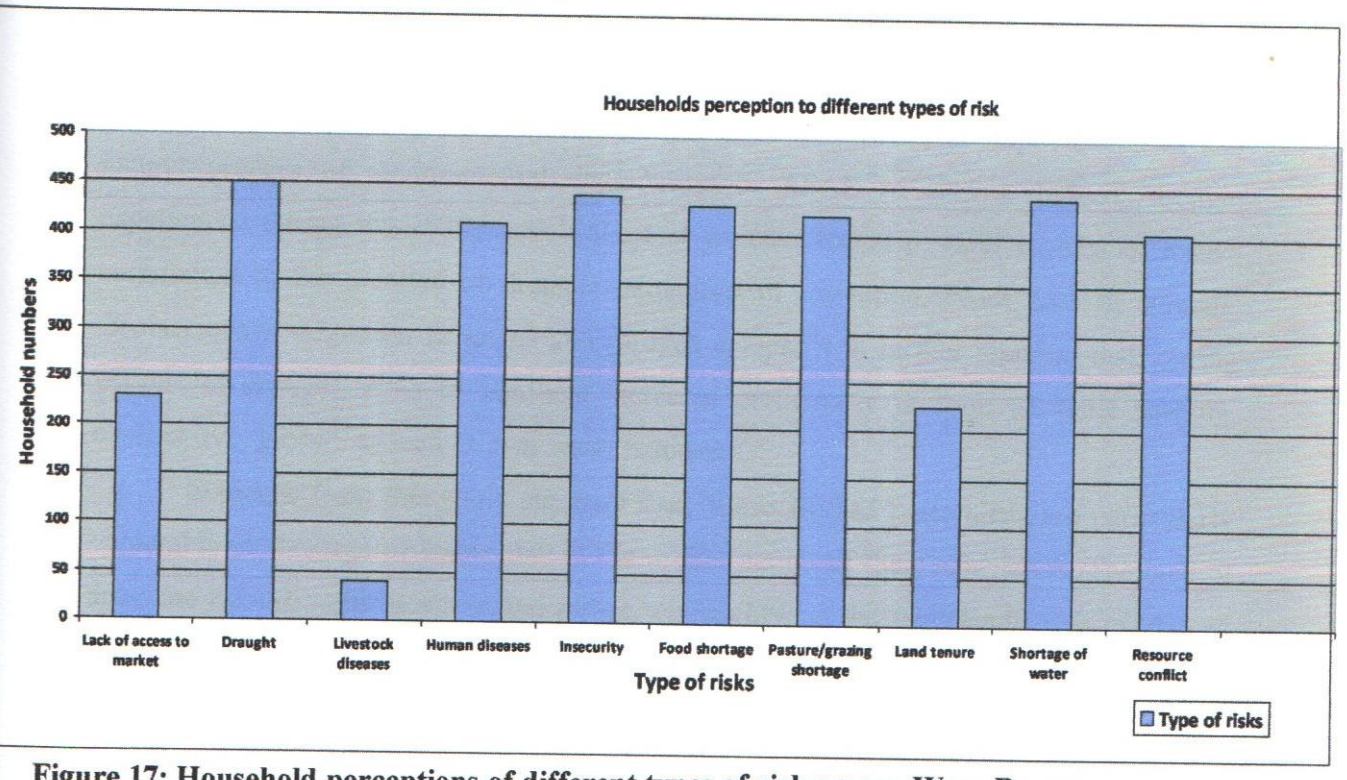

Figure 17: Household perceptions of different types of risk among Waso Borana

Drought is perceived as major risk in Waso Borana pastoral systems. In ASAL regions of Kenya, drought is reported to cause high livestock mortality, rampant crop facilures leading to grain shortage, and high level of food insecurity. The extended drought that is currently ravaging the Horn of Africa is causing causing an unprecidented loss of livestock in the study area as being witnessed in this 2010 and 2011 as results of serious shortage of rainfall.

According to information gathered through key informants and observations, poorer households owning small herds are more vulnerable to drought than wealthier house-holds and the possession of a larger pre-drought herds ensures a reasonable post-drought herd size. Moreover, wealthier herders go through a drought period better than the poorer counter parts, because the former may also enjoy more political influence and thus preferential access to water, grazing, credit from user services such as drug, food stores, water, and veterinary department. Wealthier pastoralist households are also known to be better equipped to diversify during drought, for example, by engaging in petty trade,

livestock emergency off-take marketing and migration, all of which enhances their capacity to recover over the post-drought periods.

According to a report by ALRMP (2003), drought caused by rainfall deficit is a major climatic crisis that serves as a catalyst to socal process of impoverishment and natural process of environmental degradation in ASAL of Kenya. Indeed, drought experienced during the 1970s and 1980s and which affected pastoral regions of Kenya contributed to the creation of dramatic situations of starvation, death, loss of animals, displacements, migration to towns and refugee camps. It is further reported that, during periods of drought, risks of conflicts increases particularly in form of cattle rustling, conflict over pasture as well as over water resources.

Evidence from this study suggests that, Waso Borana pastoralists are particularly vulnerable to shortage of water, due to the aridity nature of their rangelands. The lack of adequate rainfall reduces water and forage availability on the rangelands This creates an imbalance between the number of livestock and available fodder, leading to emaciation and some times death of livestock.

According to survey data, insecurity and resource conflicts are some of the major risks encountered by Waso Borana pastoralists. Insecurity and conflict often disrupt stock routes and traditional market networks. The situation is more prounounced during drought seasons because, there is urge to sell as many livestock as possible during these periods before the quality of these animals' deteriorates. In addition, Waso Borana pastoralists are vulnerable to risk of violent conflict over the years. This has caused displacement, death, and suffering over the years. According to a number of key informants interviewed and information gathered from the focused group discussions, the risk of insecurity emanated from the Shifta War of 1960s. The risks of violent conflicts is reported to be those between pastoralists groups mainly occurring over pasture and water but often excerbated by use of modern weapons. It is further reported that other risks of conflicts are those involving pastoralists and wildlife conservation, and between herders and farmers. It is observed that, these conflicts increasingly arise because of growing human and livestock populations that has resulted in increasing competition over water and pasture.

Respondents further recognosed human diseases as one of the major challenges encountered by Waso Borana pastoralists compared to livestock diseases (Fig13).

According to the reports from the Veteriary Officers who participated as key informants in the study, livestock related diseases are not as rampant in the region as before. According to the sources, the two main cattle epidemic diseases in the past were the East Coast Fever (ECF) and the contagious bovine pleuro-pneumonic (CBPP) which are under government surveillance. These diseases which historically have been are known to be major risks to pastoralists of the north are now contained. Availability and accessibility of modern veterinary drugs for livestock disease management, and the confidence of some pastoralists maintaining their ethno-veterinary systems, and somewhat effective control of the major notifiable diseases, could be responsible for lower prevalence of livestock diseases reported.

According to information gathered from key informant interviwed, Waso Borana pastoralists, face the risk of animal diseases that often turn into epidemic proportions with the possibility of eliminating an entire herd and spread over wide areas. Borana pastoralists recall the nasty history of rinderspest epidemics which swept through all Borana land, devastated pastoral herds in the late 19thCentury and almost brought cattling herding system to an end. According to veterinarians in the study area, rinderspest is now almost eradicatedin kenya but the threat of resurgence are often reported in Somalia and Ethiopia 'ecosystems'. Waso Borana herders are still faced with the threat of some important diseases such as; foot and mouth diseases, contagious Bovine Pleuro Noumonia (CBPP), and Rift valley Fever with major bearing on production and marketing.

Respondents report a high rate of risks of human diseases among Waso Borana pastoralists. Waso Borana pastoralists are faced with risks of human diseases in their environment such as malaria, tuberculosis and various other illnesis. Given the growing market intergration of Waso Borana pastoralist, rates of migration to towns, and cities in search of employment and growing settlement along the major trade routes, there is a major threats in that the health status of the pastoralists could be affected by HIV/AIDs epidermic.

It is further observed from survey data that, Waso Borana pastoralists suffered from inaccessibility to market for their livestock and livestock products. According to information gathered from key informants and corroborated with views from focus group discussions, Waso Borana pastoralists suffer from the risk of exclusion from domestic and

international markets for their livestock and livestock products. For instance, the pastoralists from the region were important trade partners to the Gulf countries in livestock export in 1970's, but today, they are excluded from the international markets due to failure of the government to promote compliance with the set health standard on animal products for export.

4.5.3 Variation in risk perception by households among different Waso Borana pastoral groups

Households among different Waso Borana pastoral *dheda* groups perceive risks that affect their liveliohoods differently; these include; reccuring drought, grazing and water shortage for human and livestock use, conflict and insecurity, occassional food shortage, problems of human and livestock diseases, problems related to land tenure and inaccessibility to market for livestock and agricultural produce (Table 11) .

Table 11: Perception of risks by different pastoral groups

Source(Risk Factor s).	Type of Pastoral Group			
	Sedentary pastoral *dheda*	**Semi-Sedentary Pastoral *dheda***	**Mobile pastoral *dheda***	**No. of Household**
Access to market	20%	51%	28%	232
Drought	61%	50%	92%	388
Human diseases	61%	46%	25%	364
Livestock diseases	4%	2%	13%	58
Insecurity	62%	51%	86%	378
Food Shortage	56%	50%	90%	377
Grazing shortage	64%	53%	87%	386
Water shortage	62%	50%	89%	384
Land tenure	58%	64%	24%	238
Resource conflict	59%	51%	78%	354
Total	**180**	**117**	**240**	**537**

Source: Survey Data, 2004

Drought, among Waso Borana pastoralists is ranked as the main problem by all

dheda pastoral groups with highest risk factor reported among mobile pastoral *dheda* followed by the semi-sendentary and sendentary pastoral *dheda* groups. The major reason for these variations is that, in the mobile pastoral *dheda* group where drought is ranked as highest risk factor the main livelihood is livestock rearing. Hence, drought has been reported to be a major cause of livestock loss to Waso Borana pastoralists with consequent impoverishment. Drought also causes failre of crops, disrupts the livestock marketing chain, affects grain supplies from hinterlands with major consequences on mobile pastoral *dheda* groups.

Similarly, the mobile pastoral *dheda* group is characterized by poor ground cover and unreliable water sources unlike sedentary and semi-sedentary pastoral *dheda* which have more reliable water sources. Other reasons for variations in risk perceptions is that sendentary and semi-sedentary pastoral groups, which are mainly in either urban or agro-pastoral areas, have diversified livelihoods with non-pastoral income sources such as trade, agriculture and employement opportunities. These make such areas resilient to risks a raising from drought.

The sample respondents rank human diseases as one of the major risks particularly in comparison to livestock diseases. Human diseases are perceived by the sedentary pastoral group as being more prevalent than the semi-sedentary and mobile pastoral groups. The higher incidence of human diseases reported by sedentary pastoral groups could be associated with current pandemics of HIV/AIDs, tuberculosis and malaria. According to further information gathered from key informants and corroborated with those from focus group discussions, malaria is more prevalent in agro-pastoral areas especially in irrigation schemes, while the HIV/AIDS pandemics is more of a risk among the urban and pre-urban based populations probably due to poverty and immoral behaviour. Similarly, incidence of tuberculosis is currently reported as being high among Waso Borana pastoralists due to poor nutrition and cultural chaging practices. The relatively higher risk of disease incidence reported by semi-sedentary and mobile pastoral groups can be associated with malaria, which is highly common in the Euaso Nyiro River flood plain.

Resource-based conflict is perceived as constituting the highest risk by the mobile pastoral groups in comparison to sedentary and semi-sedentary groups. Pasture and water which are the main pastoral resources are perpetually scarce and usually form the main

causes of resource- based conflicts. Similarly, the relatively high risk of conflict perceived by the sedentary group could be as a result of scarcity of resources caused by land degradation and intensive population pressure around settlements as well as intense competition over land use.

General insecurity is reported to be a major risk to mobile pastoral group than it is for sedentary and semi-sedentary groups. The mobile pastoral group are likely to come into clashes with hostile neighbouring groups over water and pasture while at the same time they are targets of livestock raids. The relatively higher risk of insecurity reported by the sedentary pastoral group may be attributed to highway banditry rampant in the study area, since it is this group that participate mostly in trade with neighbouring communities. Seasonal food and grazing shortage are reported to be the highest among the sedentary pastoral group, than it is for mobile pastoral group. This may be due to prevalence of chronic food insecurity situation among pre-urban poor population, while grazing shortage is due to degradation around unplanned urban centres.

Shortage of water for livestock is reported as one of the highest perceived risks by the mobile pastoral group, compared to sedentary and semi-sedentary pastoral groups due to reliance of the mobile pastoralist groups on seasonal water sources. For instance, in both Chari and Waso pastoral systems, which form the basis of mobile pastoralism for Waso Borana, the main source of water are surface pans and hand-dug wells on seasonal river beds. The risk of shortage of water for sedentary pastoral groups reported could be as a result of frequent break-downs of bore-holes which serve urban based human and livestock populations.

Land tenure issues are perceived to constitute high risk among the sedentary pastoral groups while they are of minimal risk to the mobile pastoral group. Urban centres and agro-pastoral irrigation schemes where sedentary and semi-sedentary pastoral groups are based, are often adjudicated arbitrarily in form of plots and farming units and therefore, face problems of land tenure. Access to market for livestock and livestock products is perceived to be of higher risk to mobile pastoral group than sedentary and semi-sedentary pastoral group. The reasons for these variations include the fact that mobile pastoral groups usually operate far from market infrastructure, and that during drought and ethnic conflicts the routes are distrupted.

4.5.4 Perceived Causes of Conflicts by Waso Borana Pastoralists

The major causes of conflicts cited by the respondents in the survey include; ethnic differences of the resource users (97%), influx of weapons (96%), shortage of water for human and livestock use (74%), shortage of grazing for livestock (66%), and human/wildlife conflicts over resources (70%) (Table12).

Other causes identified include resource tenure (41%), encroachment of farming on pasture land (27%), development intervention (26%), high livestock numbers (19%), and political incitement (13%). Ethnic differences were cited by majority of the residents as one of the main causes of resource conflicts across all *dheda*. Ethnic conflicts between pastoralists and other communities involving control of pasture and watering points and cattle rustling, have been known to be part and parcel of pastoralists culture.

However, Waso Borana pastoralists have historically shared pasture and water resources with their neigbouring communities under traditional regulations of resource management which advocate reciprocation. Waso Borana pastoralists have a culture of peaceful co-existence based on the "Nagaa Borana" the peace of the Borana. The Borana have strong traditional institutions that prevent violent conflicts amongst themselves and with their neighbours, particularly over resources.

Table 12: Main causes of Pastoral resource conflicts

	Causes of conflicts										
	Resource tenure	Development intervention	Ethnicity	Influx of weapons	Agriculture	Wildlife	High l/s Nos.	Shortage of water	Shortage of grazing land	Politic	Total
Sericho	0	0	60	59	0	36	1	58	48	0	60
Eresaboru	1	0	59	57	1	54	1	59	59	4	60
Mado Gashe	0	0	60	60	0	20	5	60	48	0	60
Malkadaka	1	1	59	59	0	6	35	10	36	3	60
Gafarsa	0	0	52	52	9	44	4	0	28	0	58
Kulamawe	53	57	60	60	5	60	3	60	13	0	60
Kinna	53	34	55	56	32	51	15	53	56	27	60
Rapsu	58	1	58	58	58	58	3	42	15	0	59
Garba-	55	45	57	57	38	49	37	55	53	33	60
Total	221	138	520	518	143	378	104	397	356	67	537

Source: Survey Data, 2004

According to views expressed by some key informants in the study, this situation has now changed due to loss of autonomy of Waso Borana pastoralists over the control of their land resource's management after independence; and with the removal of ethnic boundaries and non-restrictive movements of the neighbouring pastoral groups into the Waso Borana land, particularly Somalis who are ever on west-ward expansion.

According to views from a number of key informants corroborated with those from focused group discussions, resource based conflicts in northern Kenya have been transformed from the traditional patterns of resource use negotiations to use of force since the 1980s. During this period to date, neighbouring countries along Kenya's northern border particularly Ethiopia and Somalia have been shaken by political unrest and internal wars and thousands of light weapons and ammunitions have become available. These are used for raiding opponents and for revenge. A recent analysis of the literature on conflicts reveals that proliferation of arms has affected different areas in pastoral regions at different times, and have changed balance of power between neighbouring groups. Belshaw (1999), states that the balance of power together with increasing pressure on resources have resulted in escalation of conflicts, resulting in massive livestock raids.

Majority of the respondents cite influx of small arms into the study area as a major cause of escalating resource-based conflicts (Table 12). The proliferation of illicit arms has made traditional raiding more severe, frequent, deadly and of commercial proportion. The use of automatic weapons instead of spears, bows, and old rifles has increased the number of fatalities and the intensity of violence during the attacks. The most striking example of such an increase in violence is the most recent indiscriminate killing of women and children in Mandera District during the conflicts over pasture, between Garre and Murulle clan (*Daily Nation,* 16th January 2005).

A number of respondents cite shortage of pasture and water as one of the causes of heightened resource conflicts in the study area. Waso Borana pastoralists are still largely nomadic and depend on livestock for their livelihoods and therefore, access to pasture and water for the survival of their livestock. Moreover, the increasing competition of growing populations over fixed land based natural resources especially in the light of threats of increasing environmental degradation and declining resource base, increases competition

for scarce resources hence heightening conflict.

Number of respondents cite the expansion of wildlife sanctuariesas contributing to heighted human-wildlife conflicts in the study area. Waso Borana rangelands are still remote, have low population density and still serve as natural habitats or areas of retreat for wildlife with distinct fauna and flora. Over the last decades, the`number of protected areas earmarked for conservation has also increased putting into consideration that most of these areas are in traditionally drought refuge areas for the pastoralists. Another factor that escalates human-wildlife conflicts in the area is the growing human population and increase in the agricultural production by agro-pastoralists. In the study area most of the agro-pastoral activities are placed along Ewaso Ngiro River and Bisan-Adi rivers bordering game reserves and national parks.

According to views gathered from focus group discussions and corraborated with those of key informants, privatization of land or arbitrary alienation of land for non-pastoral use is one cause of resource conflicts for Waso Borana pastoralists. For instance, after independence, potential land areas in Isiolo District were alienated for game reserves and National Parks since all Borana pastoral areas are said to be under Trustland.This has made it easy for the government to made it easy to acquire land for military bases, irrigation schemes and urban settlements. These block pastoralists access to valuable grazing land and water points. Further information gathered from key informants and members of *dheda* council confirms that, poor pastoral groups and other cultivators were creeping into the pastoral areas, setting up farms in traditional dry season grazing lands without respecting traditional grazing arrangements. Hence, escalation of resource-based conflicts occurs when one group encroaches upon the pastureland with impunity without regard for the principles that govern the use of resources.

Some of the respondents cited political incitement and erroneous decisions by government over development issues as some of the contributers to the cause of conflicts in the area. Waso Borana pastoralists are among the most politically and economically marginalized groups in the country with under representation in National forums. Most of the development policies and decisions that affect their lives such as those in education, provision of health, location of water services and provision of marketing infrastructure has not been consultative thereby causing some conflicts.

Results from the key informants concur that conflict in the study area has been transformed over the last four decades. Key informants suggest that the main causes of the resource-based conflicts were the influx of small weapons and the rise in human population. Other causes of the conflicts indentified included encroachment of pastoral land by agriculture and establishment of wildlife conservation areas in traditionally dry season grazing areas. The key informants further observed that conflict among Waso Borana pastoralist areas over resources are minimal and that the main groups in conflict are the resident Borana pastoralists group and their immediate eastern neigbours, the Somalis.

Interwiews with Members of Parliament during the field survey from neigbhoring pastoral districts also confirmed that almost all the peripherial grazing resources in all pastoral districts are under-utilized. Communities avoid these areas due to fear of attack from their neighbours and that the traditional mechanism of conflict resolution has also been eroded. All key informants agree that natural resources-based pastoral conflicts in northern Kenya have been transformed from the traditional patterns of resource use negotiations to the use of force since the 1980's. From that period, to date, the neighbouring communities along Kenya's northern border particularly Ethiopia and Somalia have been affected by political unrest and internal wars. According to informants, thousands of light weapons and small arms have become easily available and are used for raiding opponents and for revenge among the pastoral groups.

A recent analysis of the literature on conflics reveals that proliferation of arms has affected different areas in pastoralist regions at different times, and has changed the balance of power between neighbouring groups. The balance of power together with increasing pressure on resources has resulted in escalation of conflicts, particularly livestock raids which have now assumed commercial dimensions and are being fuelled by market forces and other externalities.

Some key informants in the study area also report that the increase in water points and settlements have led to less productive livestock, which are more prone to disease particularly ticks, and worm infestation, and that this situation coupled escalating resource based conflict, has made them more food insecure with consequent deterioration in the

quality of their life.

Finally, some of the views from the key informants indicate that since Kenya is an agricultural based country, the continued marginalization of the pastoralists could be as results of the embedded knowledge gap of policy makers who are mostly from farming areas and have little knowledge about pastoral livelihoods. Hence, the fact that Waso Borana pastoralists do not have the politica leverage, to ensure resource conflict mitigation policies are designed in their favour, could imply that most of the decisions taken by the state or other external agents could be fuelling conflicts over resource use in the area.

Discussing the links between "tribal warfare" and political conflicts, Franklin (1994), argues that a government policy of low response or non-intervention in the context of increasing ethnic fighting, is an indictor of vested interest and should be added to the list of the causes of conflicts. Ethnic conflicts and the high level of insecurity and violent situations in pastoral regions, allow the government to maintain extra ordinary power in its relation with the population. For instance, all of the North Eastern Province of Kenya, the Upper Eastern region that includes the study area and part of the coastal region of Tana River and Lamu remained under the state of emergency law (under the Public Security Act Cap), which was only repealed recently with the advent of multi-party political party era in 1992. The Act gave the administration the power to kill on sight, on the ground of suspicion, declare states of emergencies that has led to a number of reported massacres in the region.

4.5.5 Perceived Solutions to Conflict by Waso Borana pastoralists

The majority of survey respondents (95%) across *dheda* cite control of illicit weapons enforcement of ethnic boundaries along traditional tribal grazing zones (94%), permanent occupation of traditional dry-season grazing lands (80%) and adequate provision of water in conflict prone areas (74%) as solutions to resource-based conflict (Table 14). Some survey respondents propose revival of traditional resource tenure systems (43%), control of expansion of agriculture and wildlife sanctuaries into traditional dry season grazing areas (40%), as some of the factors that can reduce resource-based conflicts in the area. Other respondents also perceive that reduction in livestock numbers cited by

(21%) of the responden,t and control of political interferences and incitementcited by (11%) and enforcement of tradional boundaries, can resolve some dimension of resource based conflicts in the area.

The key to understanding conflicts in societies and its resolution depends highly on knowledge about source and causes of conflicts. Observations in this study show that current resource conflict among Waso Borana is characterized by various factors, including those of use of illicit weapons that has transformed conflicts, changing the traditional mechanisms of conflict resolution. Violent conflicts in Waso Borana region are mounting between the neighbouring pastoralist groups, farmers and wildlife. Some of the solutions cited include enforcement of ethnic boundary that restricts individual pastoralist groups to their traditional territorial grazing zones.

The historical impacts of state on ethnic identities and resource boundaries have instigated demands for cultural autonomy leading to ethnic competition over the use of natural resources. Some respondents suggested increasing water availability by construction of earth dams, boreholes and protection of water catchments areas and enforcement of traditional water regulations as some of the interventions that can mitigate conflicts over watering points.

A number of sample respondents perceive political interference as one of the significant factors contributing to resource-based conflicts in the study area. Traditionally, the Borana pastoralists had their social political system under Gada institutions and therefore, did not understand the intricacies of modern politics and its operation. It is observed in this study that relegation of social institutions for conflict management, resource tenure relations between pastoralists, and the settler communities imposed through current political systems by modern states, is the main cause of resource related conflicts.

Dheda	Solutions to conflicts								Total
	Enforcing land tenure	Improving water facilities	Stoppage of influx of weapons	Controlling encroaching wildlife and agriculture	Enforcing boundaries	Reducing livestock numbers	Land occupancy	Stoppage of political interference	
Sericho	0	57	59	9	60	1	53	0	60
Eresaboru	1	59	58	5	59	2	57	2	60
Mado Gashe	0	60	60	0	60	1	23	0	60
Malkadaka	4	8	57	1	57	25	47	0	60
Gafarsa	4	2	52	2	49	10	40	0	58
Kulamawe	60	60	60	59	59	5	59	0	60
Kinna	53	53	55	39	53	12	54	14	60
Rapsu	49	40	49	48	49	8	36	1	59
Garba-Tulla	59	59	59	52	58	48	58	42	60
Total	230	398	509	213	504	112	427	59	537

Source: Survey Data 2004

Development intervention has been cited by some respondents as one of the factors prompting resource-based conflicts in the area. Community based development activities and land use systems were said to bear a profound negative effects on pastoralism. Some of the interventions of particular concern are siting of boreholes and water pans in wet seasons grazing areas and development of game reserves in traditional dry season's grazing zones. Sample respondents cited shortage of water and grazing land as major causes of conflicts in the study area (Table 13).

A critical analysis of the genesis of conflicts in pastoral areas of Kenya and the ongoing tribal clashes in various parst of the country, are about scramble over grazing and access to watering points. Water is perhaps the most important resource and its availability for livestock and human consumption, is a perpetual pre-occupation among pastoralists. Its access and acquisition has often been a source of conflicts between pastoral groups.

Survey respondents cited human-wildlife conflicts as one of the main causes of resource-based conflicts in the area. In the recent past, Waso Borana pastoralists have witnessed a decrease in the co-existence of their livestock and wildlife. Some of the factors that contributed to this decline is removal of key production areas through creation of game reserves and National parks, de-stabilization of bio-diversity and sedentarization of human populations. These factors coupled with increased human and livestock population and sedentarization has increased human-wildlife conflicts in the area. Further observations indicate that some of these changes have affected the migration patterns of livestock and wildlife thus resulting in changes in wildlife behavour. Some of the cases reported include those of stray elephants, buffallos which has been displaced out of their natural habitats trampling on people and eating live goats by baboons.

Respondents also reported on issues of lack of compensation for people and their animals killed or disabled, and crops destroyed by wildlife, as one major factor that raises human-wildlife conflicts. These complains are common among the communities bordering game reserves and agro-pastoral areas in Kinna and Rapsu and those in common grazing areas. According to most respondents, conflict mitigation by Kenya Wildlife Service (KWS) is very slow and cases of compensation take too far too long to be determined through courts.

Anumber of key informants interviewed and members of group discussions believe that, enforcement of ethnic boundaries, reviewing of traditional structure of conflict resolutions, and control of proliferation of small arms can resolve conflicts. They further recommend that increase in development interventions in the form of water, education facilities, creation of employment opportunities for the youth and community participation in peace campaigns and promotion of traditional reconciliation mechanism can minimize conflicts in the area. It is noted for example that, Borana traditional institution of *dheda* council for control of grazing and water resources has been relegated and replaced with user associations under control of government. As a result, there has been rising causes of ecological resource degradation and conflict, since the government institutions that try to manage local institutions are not informed with adequate indigenous knowledge of resource management. Empowerement of such institutions will provide a basis for effective conflict resolution mechanisms that would address the prevailing situation of resource use conflicts in the area.

The Borana a democratic community who rely on concensus building as a mechanism in resolving conflicts. Accoding to Legesse (1973), this tendency to settle issues through discussions and consensus originates from the egalitarian nature of Oromo society embodied in the Gada traditional institutions. Therefore, the importance of traditional social organizations and institutions among Waso Borana pastoralists for resource management and conflict resolutions need not be under estimated. For instance, traditional *Dheda* concept of grazing has evolved into a stable resource management unit synonymous with administrative location. The *dheda* council (committee) which manages and coordinates the locational development resources, also manages neighborhood conflict. The collapse of these systems of resource management and other viable indigenous institutions was attributed to the lack of provisions in Kenyan Laws that sanction customary authorities. If these provisions were made to protect institutions dealing with resource management and conflict resolutions, it would have been possible for the council of elders to punish or deter violators and thus sustain the traditional institutions.

4.5.6 Perceived Causes of Conflict by Households among Different Pastoral Groups

Households in different pastoral groups perceive causes of conflicts differently (Table 14). The semi sedentary pastoral group perceives land tenure issues as one of the causes of conflicts, while these are least perceived as a problem by those among the mobile and semi-sedentary pastoral *dheda*. Land tenure issues is a rising problem in urban and permanent settlement areas where communities are engaged in farming activities. Development interventions are also perceived as causing some conflict in mobile pastoral and sedentary *dheda*. Some of the problems cited by the mobile pastoral groups are location of bore-holes and water pans in dry season grazing areas, health, and education policies.

Ethnic differences and influx of weapons are perceived as major causes of resource based conflicts by all the groups with slight variations among them. Most pastoral groups of northern Kenya had ethnic based territorial grazing zones where access to resources between communities were negotiated. However, with the removal of ethnic boundaries and non-restrictive moments resources are now negotiated through the barrel of the gun. Encroaching agriculture as recent land use systems, is perceived as a less important problem associated with resource-based conflict by the mobile pastoral group. Among the semi-sedentary and sedentary pastoral groups, pressure on lands are linked between herders and other users including charcoal burners, who often select main browse species like acacia for felling.

Wildlife human conflict is perceived by all groups as major problem associated with resource- based conflicts. In mobile pastoral group, the major problem with wildlife is predation and inaccessibility to game reserves during drought; while the sedentary pastoral groups perceive this as an additional source of land pressure. For instance, the two game reserves of Bisaan Adi and Shaaba are all located in traditional drought refuge grazing zones. A number of respondents cite Water shortage and shortage of grazing lands are perceived as main causes of resource based conflicts by all the pastoral groups with low rank among the semi-sedentary group. The variation may be influenced by number of herds owned by the groups and influx from neighbouring communities.

Table 14: Variation in Perception of Causes of Conflict by Households

Causes of conflicts	Type of Pastoral Group			
	Sedentary Pastoral *Dheda*	Semi-sedentary Pastoral *Dheda*	Mobile Pastoral *Dheda*	Household No Total
Resource Tenure	60%	50%	23%	221
Development Interventions	44%	1%	24%	138
Ethnic Differences	90%	100%	74%	458
Influx of weapons	96%	94%	73%	458
Agriculture	39%	57%	3%	143
Wildlife	72%	87%	65%	387
Livestock numbers	32%	6%	17%	104
Water Shortage	87%	36%	78%	386
Shortage of grazing land	87%	37%	65%	355
Political incitement	33%	0%	3%	67
Total	180	117	240	537

Source: Survey Data, 2004

Political incitement is perceived as a major cause of resource-based conflict by sedentary pastoral group, while not perceived at all as a problem by mobile pastoral group. The variation is "a world a part", the explanation to these may be that, since the sedentary pastoral groups are urban based, they can interpret the political issues better, and they are more informed about national issues.

According to some views gathered from key informants interviewed and corroborated with participatory observations from the field, pastoral resource conflicts are currently characterized by a multiplicity of actors, with ranging interests, and that conflict landscape and opportunities for peace building initiatives are changing. The current escalating conflicts reported frequently in pastoral regions with large-scale day light attacks and all out war, require a degree of organization and mobilization that could only be within

the power of elders or war leaders. Some observers of pastoral conflicts in Northern Kenya cite the case of clan conflicts in Wajir district in 1992-1995, which were driven by elders who staredt violent conflicts to gain access to resources or political power. Similar observations are made in the conflicts of 2000-2002 in the study area, between Borana pastoralists and Degodia-Murulle alliance which many believe, were incited by politicians.

4.5.7 Perceived Solutions to Conflict by Households in Different Pastoral group

Households in different pastoral *dheda* groups perceive solutions of resource-based conflict in many different ways (Table 15). Improved water facilities, control of influx of weapons and enforcement of ethnic boundaries are found by all groups as main solution to resource based conflict. Enforcing land tenure as a solution for resource–based conflict is mainly advocated by sedentary pastoral groups, while it is least perceived as a solution by others.

Table 15: Variation in Perceptions of Conflict Resolutions by Households of different pastoral groups

Solutions cited to end conflict by households	Type of Pastoral Group			
	Sedentary Pastoral *Dheda*	Semi-sedentary Pastoral *Dheda*	Mobile Pastoral *Dheda*	Total No. households
Enforcing Land Tenure	112	53	65	230
Improved water facilities	172	51	183	306
Control of weapon influx	174	101	233	448
Control and encroaching wildlife and agriculture	91	60	74	225
Enforce ethnic boundaries	171	167	235	410
Red ucing livestock numbers	113	76	32	130
Occupy all land	113	76	216	405
Stop political interference	56	1	2	59
Total	180	117	240	537

Source: Survey Data, 2004

Controlling encroachment of agriculture and wildlife conservation as land–use systems is perceived by all group as a solution to resource-based conflict. The implication of this is that, both agriculture and wildlife have some contribution towards livelihoods of Waso Borana pastoralists (Table,15). Reduction of livestock numbers as a solution to resource-based conflict was perceived highly by sedentary and semi-sedentary pastoral groups and least cited as a problem by mobile pastoral groups. The reasons for these could be that those in sedentary pastoral groups have diversified livelihoods while those in mobile pastoral groups depend solely upon livestock.

Occupation of all grazing lands through permanent settlement is perceived as a solution to resource-based conflict by all the groups except mobile pastoral groups who believe that herd mobility is a survival strategy of pastoralism. Control of political interference and incitement is perceived as some form of solution to resource based conflict by sedentary pastoral *dheda* group, while least perceived as a solution by others.

CHAPTER FIVE
SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

This chapter is based on the third objective of the study as indicated in the introductory chapter. The objective is to provide summary of findings from the results of the study with the purpose of drawing conclusions and recommendations that can improve on the current situation of the Waso Borana pastoralists. Hence, the chapter presents the summary of the major finding of the study, conclusion and recommendations.

5.1 Findings on social-economic changes and Subsistence Systems of Waso Borana

The study has established that Waso Borana pastoralists have indergone some changes over the years, with large portions of the population still persuing pastoral and a gro-pastoral economic activities. The findings also indicate that significant numbers of pastoral population also derive their livelihoods from other activities such as agriculture, trade and regular employments. The study also found that these changes have been boosted by a combination of factors such as growth and participation in social development, access to education and social development, which also has implication on changes in gender roles particularly for women.

Further findings and observations from the study indicate that Waso Borana pastoralists had traditional institutions and practices which served to handle complex issues of great social and economic importance such as management and use of resources, mobilization of collective labour for herding and watering of livestock and resolution of inter-ethnic conflicts. These traditional institutions are now gradually disintegrating as state backed structures; such as chiefs, provincial administration and committees, with some times exclusive jurisdiction over these institutions are involved in matters such as conflict resolutions and resource management.

5.2 Findigs on changes in resource base structures which support Waso Borana pastoral livelihoods

The study has shown that Waso Borana pastoralists have lost traditional autonomy over resource management, which they enjoyed during the colonial period resulting in distortion of traditional systems of regulating resource use, access and management. Currently, there is prevalent encroachment of non-pastoral land use systems with different values on Waso Borana pastoral lands. Land alienation for game parks and reserves, irrigation schemes, general agriculture, mushrooming urban trading centres with schools and health facilities; is slow but steady, and this is contributing towards displacing pastoralists from areas they have always used.

This study has established that land-based resources, such as pasture, water and forestry contribute highly to the sustainance of the pastoralists and therefore, should be administered appropriately. In addition, livestock, agriculture, and wildlife contribute over 50% of the sustainance of pastoral livelihoods, and should be similarly administered effectively. Borana pastoralists have traditional and cultural attachment to land and believe in equal rights to all land-based resources. The critical resources of concern to Borana pastoralists are water, trees, key production areas, and wet and dry season grazing pastures. Water is the most critical resource and its availability and management for livestock and humans is a perpetual pre-occupation among Waso Borana pastoralists.

This study reveals that acquisition and accessibility to water sources is one of the major causes of conflicts between Borana pastoralists and their neigbours. The study also reveals that traditionally, Waso Borana pastoralists use natural ponds and water-pans during the wet seasons, and gradually shift to shallow wells and rivers in the dry season. They also use the distribution of water points and timing of their use, as a tool of resource management.

The study also reveals that Borana pastoralists have adopted watering regimes, which have positive impacts on the rangelands. For instance, Borana water small stock after every two days, cattle every other day and camels every seven days. But this can be extended to every third day for small stock, up to ten days for camels, and two days for cattle during dry seasons. These strategies applied for resource management have great potential to increase the radius of rangeland used, thus catering for more numbers of user

groups and consequently minimize conflicts. Waso Borana pastoralists are intimately knowledgeable about livestock and wildlife behaviour, as well as their preferences for *forage* and water requirements. The pastoralists often consider these needs in their day-to-day resource manegement practices.

This study observes that although Waso Borana community claim that they own most of the resources such as grassland, water and pasture communally, most management decisions over these resources are weak due to lack of legitimate community based institutions. The study has established that involvement of communities in resource management should imply that there is proper participation in a decision-making and actions by the community that sustains their livelihoods.

This study has established that Waso Borana pastoral households suffered effects of changes in resource tenure and management with implications for changes in trend on food consumption patterns and security. The study has further demonstrated that pastoralism, the most pre-dominant form of livelihood system of Waso Borana has undergone transformation over the last four decades. It is observed that increased human and livestock population, shrinking resource base from expanding cultivation, removal of key production areas through creation of game parks and reserves, inaccessibility to traditional wet and dry season grazing areas are some of the features of change and transformation.

The study observed that some of these changes reported over the years, have encouraged a tendency towards diversification of economic livelihoods evolving into the following activities i.e. agro-pastoralism, urban–based pastoralism and Waso and Chari pastoral systems. Agro-pastoral and urban based pastoralism came about as a response to destitution and poverty after massive loss of livestock, caused by conflicts and drought. It has been observed in this study that the increased involvement of Borana herders in farming and non-pastoral activities over the years, may be attributed to changes in terms of trade disadvantageous to livestock products, and process and loss of traditional pasture areas due to general insecurity, escalating resources, and land alienation for non-pastoral use.

The study has revealed that despite social economic changes and transformation that have taken place over the last three or four decades, livestock remains the mainstay of

Waso Borana pastoralism. Livestock ownership structure reflects diversity of livestock species owned by households and livestock still contributes over 50% of subsistence for households in the area. Other economic activities that contribute towards household subsistence in the study area include: trade, farming, regular employment, hunting, gathering, fuel wood, gum collections and charcoal sales; and insecurity with minimum social distruptions.

5.3 Findings on Waso Borana perceptions of major risk and conflicts and variation in risk and conflict perceptions by different pastoral groups and their solutions.

This study has demonstrated that Waso Borana pastoralists have survived in Northern Kenya region for over a century amidst a history of conflicts over pasture and water with their neighbours. Their pastoral systems traditionally supported multi-species pastoral activities consisting of raisng cattle, camels, sheep, goats, and donkeys for subsistence, and as means of social net-works and security. This is a strategy that allows effective use of complex eco-vegetation communities, and livelihood diversification for moderation of risks of herd loss from drought, diseases, and raids. The strategy also employs other high flexibility risk spreading mechanism such as; mobility, communal land ownership, and resource management practices based on concept of recipricatory neighbourhood systems.

The study has demonstrated that a major risk factor for Waso Borana pastoralists with significant effects on changes in resource management and livelihood systems, was the Shifta Conflict of 1960s, and occurrence of frequent droughts that followed in 1970s and 1980's. These events greatly affected the Waso Borana pastoralists, destroyed livestock resource base, disrupted economic activies and displaced large proportions of people out of pastoral sector. Other risk factors reported include; shortage of water, insecurity, food shortage, shortage of grazing lands, human and livestock diseases, inaccessibility to market, and land tenure issues.

Further the study has established that Waso Borana pastoral system can be grouped into sedentary, semi-sedentary and mobile pastoral *dedha* groups based on features of mobility and livelihoods. In addition, the study reveals that households in different pastoral *dheda* groups perceive risks and their solutions differently. For instance, access to market

for livestock, livestock disease, and seasonal food shortage are perceived to carry higher risks to mobile pastoral groups than to sedentary and semi–sedentary groups. Drought and problems related to land tenure, encroaching agriculture, ethnic differences as causes of conflicts and shortage of water, resource-based conflict were perceived by mobile pastoral groups to be of higher risks compared to sendentary and semi-sedentary groups. Similarly, influx of weapons, human-wildlife conflict and shortage of grazing lands, are perceived by all groups as main causes of resource based conflict.

The study has also shown that households in different pastoral *dheda* groups perceive solutions to resource based conflict differently. For instance, improved water facilities, control of illicit weapons and enforcement of ethnic boundaries are perceived by all groups as solutions to resource–based conflict, while adoption of land tenure policy is proposed as a solution by sedentary groups and was least perceived as solution by others.

In overall terms, variations in perception by households in different pastoral groups over conflicts is characterized by nature of production systems and livehood patterns. Participatory observation with communities and various stakeholders in the area, suggests that revival of traditional mechanisms for conflict resolution and promotion of community based peace initiatives can bring about sustainable conflict management measures in the area.

5.4 Conclusions

Araising from the foregoing summary of findings, the following conclusions are made. Over the last four decades or so, Waso Borana pastoralism has gone through some social economic transformations related to changes in resource management systems, increasing drought related risk and insecurity that emanates from escalating resource conflicts. This has compelled the herders to diversify their livelihoods leading to activities such as dry land farming, petty trade, wage employement which are now commonly practiced along side with one or another form of pastoralism. Based on these observations it is tempting to conclude that whereas pastoralism will persist as a principal economic activitiy of the Waso Borana, the current changes taking place will in the near future significantly reduce the imporntance hitherto attached to pastoralism.

Given the conclusion a raising from this study, it will be illusory to resolve the current problems of rising risks and conflict among Waso Borana pastoralist in isolation from other social-economic problems through single intervention. Changes in resource management and escalating conflicts of mutually reinforcing social-economic and environmental risk factors such as drought, changing climatic conditions and food insecurity, have changed Waso Borana pastoral livelihood systems. Conflict resolution and management among multiple resource users, is usually hampered by contradicting and incompatible problem perception, which often lead to biased decisions in favour of the more influential groups. This situation is complicated by poor understanding of pastoral systems by policy makers and lack of political leverage by pastoralists to influence policy processes thereby, leading to erroneous development interventions and decisions that boost rather than mitigate conflict.

It is widely believed that some of the resource conflict problems in northern Kenya have international roots. For instance, unrest in Ethiopia and Somalia occasionally spills over into the region. The infiltration of modern weapons that comes with such spillovers has interferred with the nature of conflict resolution from traditional pattern of negotiation to the use of force. It is therefore, concluded that in the context of the prevailing social and economic transformations, rising risks associated with climatic fluctuations and conflicts over declining resource base, the welfare of Waso Borana pastoralists cannot be improved through any development effort, unless issues of resource conflicts and associated risks in their livehoods are resolved.

Finally, it may be concluded that it is the responsibility of the government to minimize risk of marginalization of Waso Borana pastoralists by promoting understanding of pastoral livelihoods among policy makers who are often from non-pastoral backgrounds and enhance the capacity of pastoral groups to promote their interest by giving them representations and voice in national and international fora. International coordination, cooperation and cross-border community networks and collaboration involving communities, non-govermental organizations and governments of the region are required.

5.5 Recommendations for policy making

The study recommends a broad based approach that will address the immediate policy formulation, which can articulate issues of improved resource management and bring about positive changes in pastoral livelihoods, risk reduction and conflict mitigation. Due to the nature of pastoralism and marginalization that communities have suffrered over the years, therefore, there is is need to promote education and advocacy to empower the community.

Almost all recommended policies fall largely within the public domain given the government's critical leadership role in creating and enabling policy environment for better resource management, as well as its substantial involvement in the financing of pastoral development projects and delivery of basic services. The following are therefore the proposed policy guidelines for the development of Waso Borana pastoral livelihoods.

5.5.1 Policy consideration for Education and Social-Economic Development

Traditional Waso Borana pastoralists have survived in the arid regions of northern Kenya through the practice of indigenous knowledge that was based on intricate information base generated locally and passed on through generations. However, the events of the last four decades of colonial and post-colonial policies of resource management, coupled with rising insecurity and conflict have brought about social economic transformation.

The study proposes strong policy considerations in the provision of both formal and informal education services with affirmative action to build the capacity of the Waso Borana pastoralists to improve and sustain their livelihoods. Bulding capacities of the communities will make them understand the dynamics of their own livelihood systems in relation to the broader national policy environments. Hence, improved knowledge will enable the communities to identify their own solutions to current problems according to their values and priorities.

The government should promote policies that would provide active and equal opportunity participation in formal education for Borana pastoralists. There is need for overhaul of national curriculum, learning facilities for schools to make them more relevant and sensitive to pastoralist's lifestyles, livelihood systems and environment. Hence,

curriculum content needs to address practical issues of lifestyle, means of production, sources of income, the social and physical environment and prepare youths for the challenge they face. Curriculum contents should also aim at general awareness, and encouraging pastoralists and pastoral children to adopt new activities such as bio-diversity utilization, and its management; animal product utilization and processing, energy promotion from available local materials which can contribute to ASAL economic diversification of livelihoods.

General advocacy programmes by government and the civil society and community elites should seek an affirmative action for education policy framework that will encompass a ppropriate educational facilities, community oriented skills development for middle colleges, relevant education skills that can contribute to reduction of poverty, curriculum contents that must recognize positive cultural tradition maintained by pastoralist communities.

The government should extend policies in extension education that will tap on positive cultural values of the Borana pastoralism in resource management, conservation and promotion of indigenous institutions for resource management. Since colonial times, school education has been seen as a means to modernize the communities. Borana cultural forms of education and communication have not been recognized or understood by governments; rather they have been ignored and under-rated or even actively opposed by official policies.

Further government departments, NGO's, and development partners working in Waso Borana lands should promote policies for education in sustainable development for the local community. The focus of such education should be to increase awareness about the consequences of climate change adoptation, environmental resource depletion and sustainable utilization of the limited resources that include; land, water, vegetation, wildlife, energy and fuel-wood. Government policy should also consider provision of health and sanitation services for Borana pastoralists that need to be a dopted to the peoples' need and lifestyles. For instance, provision of permanent health facilities for human and livestock should be balanced with the need to provide mobile health delivery systems. Similarly, improvement of shelter should be made on the basis of relevant structures, with locally available materials of low cost with minimal ecological and social impacts on the physical environment.

The current campaign by the government and NGOs working on the HIV/AIDs epidemic should be integrated into extension education and development programme in Waso Borana pastoral areas. HIV/AIDs is both a health and structural problem with considerable effects for escalation of poverty. HIV/AIDs is likely to be a potential problem in the ASAL's and among Borana pastoral commuities. The current trend of migration of men who go to big towns in search for employment as watchmen and who leave their families behind, coupled with mobility of pastoralists toward relief centres during emergency situations and displacements through drought and conflicts all can contribute potentially to the spread of the HIV virus and AIDs.

Finally, the study proposes that the government and other stakeholders should adopt the spirit of affirmative action in promoting gender equity as an integral part of social justice. As a matter of policy all, development projects should aim at creating an environment that offers equal opportunity to both men and women particularly in the control, management and distributions of resources. In particular there is need for policy to focus on women empowerement in areas of education and capacity building to enable women to participate in small scale enterprises.

It is recommended that, policies and strategies that deal with Waso Borana pastoral livelihoods must engage the pastoralists at various levels of productions and promote their participation income generating activities to supplement pastoralism. The policy to promote investment opportunities for pastoral people should consider strategies based on creation of access to credit, financial resources, and development of investment skills that can enhance success of alternative income generating activities.

5.5.2 Policy considerations for improving Waso Borana resource management and economy

Findings from the study indicate that there is need for a serious and comprehensive national policy that can integrate Waso Borana pastoralism into the national economy. Apolicy on livestock development and particularly trade among and between pastoralists and the rest of the economy needs to be articulated and put in place in order to capture the importance of this significant sector. This policy needs to be comprehensive enough to include modalities that would not only guide livestock traders and protect their rights to

trade but also provide price incentives to general producers for sustainability of the enterprises.

Comprehensive livestock marketing policies that have regulatory bodies and standard procedures with self-regulating private organization are also reccommended. The policies should encourage and promote pastoralists into the monetary economy, have both micro and macro insuarance financing schemes that can be a hall-mark for herding households during times of drought and other emergencies such as disease outbreaks.

The government should further develop strategic livestock marketing policies that will enable the pastoralists to access external markets. Such markets, will earn the country the much needed foreign exchange from the livestock trade, drive up the local prices of meat, increase purchasing power of pastoralists to buy grains and other services from other parts of the country and enable them invest the surplus in other sectors including education for their children.

Further, the government should embark on an urgent policy of establishing strategically placed medium sized abattoirs which will reduce major costs in transportation of live animals by traders and producers to terminal markets, while at the same time providing emergency slaughter facilities that need to be used during drought. Moving animals on the hoof over long distances or transporting them by trucks reduces their body weight due to stress and increases the risk for the trader and primary producer as a result of low quality products. In overall terms, it is anticipated that establishment of abattoirs in local areas can provide incentives to pastoralists to sale livestock and livestock by-products generated from local slaughters, hence promoting small-scale industries and create employment.

The study has revealed that one major shortfall in development of the Waso Borana pastoralism is lack of integrated policy that recognizes and promote all aspects of pastoralist livelihoods and institutions of resource management. Hence, there is need to formulate policies that will strengthen traditional authority structures and the power of regulating access, control and management of resources accorded to local communities. Such policy will promote the participation of local communittie in matters of resource management and livelihood systems, and sustain initiatives that would minimize overall risk of pastoral production systems.

5.5.3 Policy consideration for minimizing major risks and mitigating conflicts in Waso Borana Pastoral Production systems

In view of raising resource conflicts involving wildlife and other land users in the area, there is need for urgent policy consideration for general improved livelihoods and conflict mitigation. In particular, there is need to consider a policy that will revive traditional Waso Borana institutions for defining resource use, access and management to reduce friction during drought, when water and pasture are scarce. Particular attention should be given to issues of resource conflicts involving wildlife predation on livestock, wildlife destruction of crops and human security. This policy should also consider the nature of economic benefits that accrue from wildlife resources. The current policy of wildlife conservation in the area should consider an aspect of investing in community priority projects to create harmony and sense of belonging particularly with those communities living near the conservation areas.

In a nutshell, a clear policy guideline for resource management is needed if Waso Borana pastoralists have to thrive in the region, and reclaim the past glory of yester years. There is need for a policy framework that will address the issues of boundary disputes and claims over specific resource areas, which often, is the source of conflicts by those who think they have ancestral rights over them or would like to start new initatives. These groups may include; former hunter gatherers, cultivators, gum collectors, youth, women groups and others investors who may be involved in new enterprises that may not be directly compatible with pastoralism. In addition, policies to address the issues of sedentarization, conversion of high potential rangelands to other land uses, settlements around water points, planning for urban centers, must be put in place in order to minimise risks involved in resource management.

5.5.4 Recommendations for further Research

General insecurity, resource-based conflicts and changes in resource use patterns have shaped the social-economic organization and general livelihoods of Waso Borana pastoralist for well over three decades. These factors coupled with the gaps in research and lack of strategies for pastoral development, have caused social economic marginalisation of

the Waso Borana pastoralists. Therefore, the study observes that informed policy makers, influenced through concerted policy research directed towards building institutional framework for risk and conflict management, and improved livelihoods; can best handle the feelings of desperation by the Waso Borana pastoralists.

In view of these, furher research should focus on the following. First, there is need for collaborative research on food security, poverty reduction and environmental sustainability through strategic partnerships between development agencies and research institutions and universities. This approach can use risk and vulnerability assessement research methods used by the PARIMA project to map out changes in the use of resources, community based risk and vulnearability mapping and support to social institutions that can influence policy decisions. In addition, an appropriate strategy for livestock insurance and pastoral enterprise needs to be researched as one of the policies of developing risk management strategies during drought and other related catastrophes.

Finally, research should also be conducted in the Borana pastoral areas to identify and examine the recent resurgence of new range land users such as emerging conservancy iniative groups and institutions such as Kenya Wildlife Service research in order to forge alliances to exploit and manage resources for attractive livelihoods. When policy makers genuinely recognize and mainstream these groups and their institutional identities into development iniatives, they can become a positive force for unity and reconciliation and thus promote future prospects for conflict resolution and management.

Finally, research needs to be conducted to identify major issues of conflict and emerging risks that should be harmonized with the needs of the communities, their changing livelihoods and the requirements of other resource users to determine legal framework for conflict resolutions and management that blends traditional mechanisms of disputes resolutions with those of modern judiciary systems.

REFERENCES

Abbink, J 1994. Changing patterns of "ethnic " violence: peasants pastoralists confrontation- on Southern Ethiopia and its implication for a theory of violence. Sociologus 44 (1) :66-67

Abbink, J. 1994. Changing patterns of "Ethnic" violence: Peasant pastoralist confrontation in southern Ethiopia and its implication for a theory of violence. Sociologus 44(1):66-78

Abdelghaffar M. Ahmed 1989. Ecological degradation in the Sahel: the political Dimension. In: Hjort and M.A Mohammed Sahel (eds). Ecoloyg and politics. Environmental stress and Security in Africa. Uppsala. Scandinavian Institute of African

Aboud, A. A. 1982. Range Management extension services on pastoral societies of Kenya Unpuplished, M.Sc. Thesis, Department of Agricultural Economics and Rural Sociology; Ohio State University.

Aguilar, M. I. 1996. Historical and cultural interaction: symbiosis and clientele. Waso Borana and Somali of Eastern Kenya. Africa world press, inc.

Aldev, 1955. Africa land development in Kenya Report 1946–1955, Ministry of Lands, Nairobi.

ALRMP/GoK 2002. Annual Report. Office of the President. Nairobi

Annual Report.1968. Ministry of Agriculture, Range Management Division, Nairobi

Anyumba, G. 2000. Diversity and assortment of environmental conflict in Africa in conflicts in contemporary Africa , Okot & Ogot (eds), JKF, Nairobi.

Amora, S. 2005. Role of Small arms in Africa civil wars and conflict. African Union Report, Addis Ababa, Ethiopia.

Baxter, P. T. W. 1966. Acceptance and rejection of Islam among the Borana of the Northern

Baxter P. T. W. and Hogg, R. (eds). 1987. Property, poverty and people: Changing rights in property and problems of pastoral development. Manchester: university, Manchester.

Baxter, P.T.W. 1954. The social organization of the Galla of northern Kenya. Unpublished Ph.D Thesis, Oxford.

Bennett, J. W. 1984. Political ecology and development projects affecting pastoralists in East Africa. Washington University, St. Louis, U.S.A.

Berber, J. 1968. Imperial frontier: A study of relations between the British and pastoral tribes of North East Uganda. East African Publishing House, Nairobi.

Bogfiglioli, A. M. (ed.) 1992. Pastoralists at cross roads, survival and development issues in African pastoralism. UNICEF/UNSON project for nomadic pastoralists in Africa, Nairobi.

Coppock, D. L. 1994. The Borana plateau of southern Ethiopia: Synthesis of pastoral research, development and change,1980-91. International Livestock Centre for Africa, Addis Ababa, Ethiopia.

Coppock, L. 1999. First Biennal Research, and outreach workshop for Ethiopia and Kenya: improving pastoral risk management on East African Rangelands. International Livestock Research institutes (ILRI), Addis Ababa, Ethiopia.

Ced Hesse and Odhiambo M. 2006. Strengthening pastoralists voice in shaping for sustainable poverty reduction in ASAL regions of East Africa. A policy Coference Held at Nairobi, Kenya.

Chambers, R. J. H. 1969. Report on the social and administrative aspects of the range management in northern eastern Kenya, Nairobi.

Dahl, G. 1979. Suffering Grass: Subsistence and Society of Waso Borana, University of Stockholm, Sweden.

Dahl, G. and S. Sandford. 1978. Which way to Go? A study of people and pastoralism in Isiolo District Kenya, A report for the Canadian International Development Agency and ILCA.

Daily Nation, January 22, 2005. Kwanza clashes, special report: Another man short dead in water dispute, by George Owonso.

Deng, F. M. and L. W. Zartman,. 1991. Conflict resolution in Africa. The brooking

Desta S. 1999. Diversification of Livestock assets for risk management in the Borana Pastoral systems of Southern Ethiopia. Utah State University.

Desta, S.1999. Diversification of livestock assets for risk management in the Borana pastoral system of southern Ethiopia. Uttah State University.

District Agricultural Officer. 1998. Annual Report, Isiolo, Kenya.

Doornbos Martin, & J. Markakis 1991. The crisis of pastoralism and the role of the state. Trends and issues in Johstone (ed), Pastoral economies in Africa and long term Response to droughts. Proceedings of acollogium at the University Aberdeen. African Study groups. Pp. 270-278.

Doyo, G. 2000. Land and environment: A discussion paper presented at the PPG-Civil society round table consultative meeting, Machakos-Kenya.

Dyson–Hudson, N. 1980. Strategies of resource exploitation among East African savanna pastoralists: in human ecology in savanna environments Pg. 171-85, Academic Press, London.

East African Standard Tuesday, September 7, 2004. Herders raid sanctuary; Ministerial orders ignored as migrants join. National news, by Job Were

East African Standard, Tuesday, September 7 2004. Farmer attacked. land feuds leads to clashes at border. provincial news by Lawrence Kinoti.

FAO 1971. Rangeland surveys Kenya. Range development in Isiolo District, Report prepared for the government of Kenya by the Food and Agriculture Organization of the United Nations technical Report 3.

Farah, K. O. 1996. Management and development of the arid communal rangelands in North eastern Kenya: Critical analysis of the past and present, The African pastoral forum: working paper Series No. 7, PINEP, University of Nairobi, Kenya.

Franzel and Crawford 1987. Research and Statistical methods. Cambridge University Press, London.

Gebre, A. 2001. Pastoralism under pressure: Land alienation and pastoral transformation among the Karrayu of Eastern Ethiopia, 1941 to the Present, Netherlands, Shanker publishing.

GL-CRSP July1999. Nairobi, Kenya. Economic diversification and risk management among the east African herders: a preliminary assessment and literature review.

GoK. 1992. Development policy in the arid and semi-arid lands of Kenya (ASAL), Nairobi, Kenya

GoK. 2000. Interim poverty reduction strategy paper for the period 2000–2003, Ministry of finance and planning, Nairobi.

Goto, P. 1972. The Borana of Northern Kenya, Unpublished B.A. dissertation, University

of Nairobi.

GoK. 2003. Economic recovery strategy for wealth and employment creation, 2003-2007, Ministry of Finance and Planning.

Hardin, G. 1968. The Tragedy of the Commons. Science 162:1243–8.

Herald Tribune, 12th April,1988. Modern Arms and Ancient feuds. Massacre in Kenya points up threat from raiders. by Blaine Harden, Washington post service.

Herlocker J. 1999. Range management Hand book. Ministry of Agriculture, Kenya.

Hogg, R. 1981. The social and economic organization of the Borana of Isiolo District, Kenya. PhD, Un-published thesis University of Manchester.

Hogg, R. 1985. Re-stocking pastoralists in Kenya. strategy for relief and rehabilitation. pastoral development network 19c ODI, London.

Hogg, R. 1990. An institutional approach to pastoral development: An example from Ethiopia. pastoral development network, paper 30c ODI London.

IIED,1998. International Institue of Environment and Development, Drylands programmes IDS. London

ILCA 1989. International Livestock Centre for Africa (ILCA), Addis Ababa, Ethiopia

Isiolo Distrct Development Plan 2004. Ministry of Planning and National Development, Nairobi-Kenya

Jillo, A. D. 1993. The Development Potential of Gum Arabic and related products in ASAL. The case of the Borana Pastoral Systems in Northern Kenya. M.Sc. Thesis, Un-published, University of East Anglia, Norwich, England.

Johnson, R. and J. P. Tayler.(eds). 1992. A world in crisis. Geographical perspectives. BlackWell Publishers, Oxford U.K.

Kenneni, L. 1997. Research on determinants of educational access and participation of Boran people in Kenya, Consultancy Report, Action Aid, Kenya.

Khazanov, R. 1984. Common types of pastoralism in Euro-Asia and Africa.Camridge, Book, Press.

KHRC 2004. Kenya Human Rights Commission Report. Series 4.

Krath, S. and J. Swift. 1999. Understanding and managing pastoral conflict in Kenya: a literature Review University of Sussex, U.K.

Legesse, A. 1973. Gadda three way approach to African studies. Oxford Press, London.

Lesorogol, C. K. 1985. Life in the margins; Perspectives on pastoralism and development. A paper submitted to USAID/Kenya.

Lewis, I. M. 1994. Blood and Bone: The call of kinship in Somali Society. The Red Sea Press (FRSP) Inc.

Little P.D, B.Cellarius, and D.L.Coppock 1999. Economic Diversification and Risk Management among East African Herders. A preliminary assessment and Literature review , GL- CRSP-Pastoral Risk Management project. Technical Report. 02/99, Utah State University, Logan.

Little P.D. 2001. Income diversification among East African Pastoralists. Pastoral risk management project, University of Kentucky.

Little, P. D. 2001. Income diversification among east African pastoralists. Pastoral risk management project, University of Kentucky.John Willy and Sons , London.

London.John willy & sons

Maritim. G.K., 1998. ALRMP Study on Land Tenure and Resources Management in Kenya.

Markakis, J. 1993. Conflict and the decline of pastoralism in the Horn of Africa. Cambridge. Cambridge University Press.

Markakis, J. 2004. Pastoralism on the margin: Minority right group international report.

Ministry of Planning and National Development. 1989. Isiolo District Development Plan 1989-1993. Nairobi, Kenya.

Migot-Adholla, SE & P. Little, 1981. Evolution of policy towards the development of pastoral a reas in Kenya. In J. Galaty (eds). The future of pastoral peoples. Ottawa. International Development Research Centre (IDRC), Canada.

Mugenda, O. M. and A. G. Mugenda. 1999. Research methods: quantitative & Qualitative approaches. Nairobi, Kenya. African centre for technology studies.

Nassiuma, D. K. 2000. Survey sampling: Theory and methods. Nairobi – Kenya. Nairobi University press.

NFD Report. 1962. Northern Frontier District Commission, London.

Niamir, M. 1991. Herders decision making in natural resources management in ASAL Africa. FAO, ROME.

O'loughun, J. 1992. World–Power competition and local conflicts in the third world. In A

world in Crisis. Johnster & Tagler (eds). Geographical perspective pg 289 – 332.

Oba, G. 1994. The role of indigenous range management knowledge for desertification control in northern Kenya. Linkoping, Sweden.

Oba, G. 1996. Shifting identies along resource border. In Baxter et al 1996, 117-131. African Series, Sweden.

Oba, G. 1997. Pastoralists traditional drought coping strategies in northern Kenya, consultancy report for drought preparedness, intervention and recovery programme, Nairobi, Kenya.

Odhiambo, M. O. 1996. Liberalization, law and the management of common property resources in Kenya. The case of public land and forest. A paper presented for East African symposium on common property management, Uganda International Conference Centre, 26-28 March 1996.

Okoth P.G, Transformations in Africa after the Cold War. Journal of the third World Studies, Vol. XIX, Spring 202 pg-137-149.

Okoth, P.G, and Okumu, J 2000. Conflict in contemporary África. Nairobi- Kenya. Jomo Kenyatta Foundation.

Okoth–Ogendo, H. W. O. 1991. Tenants of the crown. Evaluation of agrarian law and institutions in Kenya. African Centre for Technology Studies Nairobi, Kenya.

Olson, T. K 1978. Preliminary surface water report, Isiolo District, Eastern Province, Ministry of Water Development, Nairobi.

Ominde 1968. Climate and land use in Kenya. Oxford Press.

Oxford, London.

Pastoralist Thematic Group. 2001. Poverty reduction strategy paper. Office of the President, Arid Land Resource Management Project, Nairobi.

Proposal management plan for Isiolo District, 1990. Isiolo Livestock Development Project-(EMI-ASAL Programme) Isiolo, Kenya.

Pratt, D. J. and D. M. Gwynne. 1977. Range lands management and ecology in East Africa. Hodder and Stroughton–London.

Pratt, D. J., F. L. Gall and D. Haan. 1995. Investing in pastoralism: Sustainable natural resource use in Arid Africa and the Middle East. World Bank Technical paper no 365, Washington, D.C.

PRSP 2001. Poverty Reduction Strategy Paper- G.O.K/ Ministry of Planning.

Rice, H. W. 1978. Preliminary rangelands report, Isiolo District, Eastern Province. Ministry of Agriculture, Nairobi.

Russel B. 1994: Research methods in Anthropology. Qualitative and Quantative Methods. Third edition. Littlefield Publishers, inc. New York.

Sandford S. 1983. Management of pastoral Development in the third world. Oxford Press, London.

Schlee, G. 2004. Brothers of the Borana Oromo once again. On the fading popularity of Eastern Somali identities in Northern Kenya. A paper presented at Arusha Conference on Pastoralism and Conflict – April 2004.

Scones, T. 1998. Sustainable rural livelihoods. A framework for analysis IDS working paper 72.

Simpson, G. L. 1994. On the frontiers of empire: British Administration in Kenya's Northern Region.Oxford Press, London.

Simpkin, S.P 1985. The effects of diseases as constrains to camel productions In:IPAL Technical Reports, UNESCO-Nairobi

Sobania, 1980. The historical tradition of the Eastern Lake Turkana Basin1846-1921. University of London. Ph.D. Thesis, unpublished.

Sombroek , W.G and H.M Braun. 1982. Explanatory Soil Map of Kenya with agro-ecological zones. Report No. 6. Kenya Soil Survey Nairobi.

Sombroek, W. G. and H. M. H. Braun. 1980. Exploratory soil map of Kenya with agro climatic zones. Report No. R6. Kenyan soil survey, Nairobi.

Sunday Nation, January 23. 2005. Five killed as water war intensifies in Longonot. By: Mwangi Macharia and Kennedy Masibo

Swift, J. 1977. Sahelian pastoralists: Under development, desertification and famine. Annual review of Anthropology.6,457-78.

Swift, J. 1988. Major issues in pastoral developments with special emphasis on selected African countries. Food and Agricultural Organization of the United Nations. Rome. IDS, Sussex.

Swift, J. 1999. Understanding and managing conflict in Kenya. Institute of Development Studies, University of Sussex, U.K.

Swift, J. and A. Umar. 1991. Participatory pastoral development in Isiolo district. Socio-economic Research in the ILDP, Emi/ASAL Programme, Final Report.

Teleki, S. 1889. Count Telekis discoveries in eastern Africa. Scottish Geographical Magazines 5: 96 – 100.

Touber, L. 1993. Land forms and soils in Isiolo District. Range management HandBook of Kenya. G.T.Z./ Ministry of Livestock Development, Nairobi.

Turton, David 1987. The Mursi and National Park Development in the lower Omo valley. In Anderson D. and R. Grove (eds): Conservation in Africa: People, Policies, and practices: Cambridge. Cambridge University Press.

Turton, E. R. 1970. The education and development of education facilities for Somalis of Kenya. In History of education quarterly, fall, London.

United Nation Development Programme(UNDP), Conflict and Insecurity, Annual Report.2003-Nairobi.

Wako F.1998. 'Of mending cracked earth and earth that don't crack". Gada as indigenous model of conflict prevention and resolution among the Borana Oromo. Ethiopia in Broader Perspectives. Series II.

Wako, F. and D. E. Ekuam. 2005. A critical look at the existing institutional framework on conflict resolution and peace building. Rationalization of conflicts in Northern Kenya, September 2005.CEMIRIDE, Nairobi.

Watson, E. 2001. Inter-institutional alliances and conflicts in natural resource management. preliminary research findings from Borana, Oromo region, Ethiopia. Marena research project, working paper No. 4

Watson, R. M. 1970. Aerial livestock and land use surveys for Marsabit and Isiolo district. Resource management and research, Nairobi Kenya.

World Bank 1989. Sub-Saharan Africa: From crisis to self-sustainable growth . Washington D.C.

World Resources Institute. World Resources 1998 pg. 244.

Zartman, I. W. (ed.) 1997. Governance as conflict management; Politics and violence in West Africa. Brookings Institute Press, Washington D.C

APPENDICES

Appendix I Waso Borana Perception of Environment

Soil Classification

Boran Soil Name	**Description or Characteristic**	**Correlated FAO/UNESCO classes**
Boji	Very whitish limestone soil, common in lowland area.	Solonchaks
Kooticha	Generally black, hard, and cracking when dry. Does not contain pepples. Poor trafficability	Vertisol
Malbe	Similar to Kooticha but grayish, soft, may have stones. Generally, soils of bottom land.	Chromic Vertisol
Ra'amata	Brownish-white soils of alluvial plains, not sticky.	Luvisols
O'Mar	Grayish-white loamy soil, hard, not sticky. Variable in colour.	Lithosols
Wayaam	Red sandy soils, of deciduous vegetation.	Regosols
Shur	Reddish, fine, dusty soils, without pebbles.	Xerosols
Bulle	Lava rock areas, can bear combination of soils or one soil type. Surface stones and boulders especially notorious to livestock movement.	Combination of soils

Seasonal Classification

Short dry season:	January - March (*Bon Hagaya*)
Long rainy season:	April - May (*Gana*)
Long dry season:	June - October (*Adolessa*)
Short rains:	November - December (*Hagaya*)
Drought:	Abstainance of seasonal rains (*O'la*)

Source: Jillo A.D (1993)

APPENDIX II: HOUSEHOLD SURVEY QUESTIONNAIRE

Introduction

My name is Abdullahi Dima Jillo. I am conducting a Research on Waso Borana Pastoral System of Southern Isiolo (Garba Tulla Sub - District). The main purpose of the research is to find out from you what you perceive as main risks in these pastoral production systems over the last 3 decades and possible solutions.

The answers you provide to these questions will be treated with confidence and will only be used for the purpose of this research. It is important that you respond to these questions in the order arranged since your name is already arranged in a scientifically selected random sample.

Name of the Interviewer:_____

Time _____

Date: _____

SECTION A: House Hold Identification and Economy

(1) Location of the Household

Location / *Dheda* _____

Division / Madda_____

Pastoral System_____

2) Household Heads Name _____

SEX (M) (F) AGE: Under 40 Over 40

Marital Status

Single

Divorced

Widowed

Widower

3) Size of Household including yourself _____

Level of Education -

No formal Education

Adult literacy

Specify.

4) Household, Economy

Species and number of Livestock owned:-

Cattle:-

Sheep :-

Goats :-

Camels:-

Donkeys:-

5) Other economic activities - Agriculture

Employment

Trade

Specify

6) What is the contribution of livestock towards the annual subsistence of your household

Nil

over 50 %

less than 50 %

7) What other complementary activities do you then carry out for your subsistence?

Farming:-

Trade:-

Regular :-

Employment:-

Other Specify:-

8) What is the contribution of each of these activities towards the subsistence of your House hold?

Less than 50%

more than 50%

Other (Specify).

Section B

9. What are the main resources that support your livelihood in this pastoral system during the colonial time and now?

10. How are these resources administered?

11. What changes in terms of resource management and administration have you experienced over the last forty years?

12. What is the implication of these changes in terms of food security and marketing

13. What are the main risks that you have encountered in your pastoral livelihood systems over the last three decades or so?

Access to marketing:-

Drought:-

Diseases - Livestock / Human:-

Insecurity:-

Food shortage:-

Pasture grazing shortage:-

Land Tenure:-

Water shortage:-

Other (specify) :-

14. How often do you move out these pastoral systems to other areas?

Give a possible account of these movements.

15. What are the main reasons for your movements outside these pastoral systems

Shortage of grazing areas:-

Shortage of water:-

Drought:-

Wildlife menace:-

Diseases:-

Insecurity:-

Salt Lick:-

Others (specify) :-

16. What are the solutions to these problems in your opinion?

17. Conflict in pastoral areas is escalating. Give an account of your own experience in this area?

18. What are the main causes of conflicts in this pastoral system?

Resource Tenure:-

Development intervention:-

Ethnic differences:-

Influx of weapons:-

Encroaching Agriculture:-

Wild life:-

High number of livestock:-

Shortage of water facilities:-

Shortage of grazing land:-

Politics:-

Other (specify) :-

19. What are the solutions to these conflicts?

Enforce ethnic boundary:-

Enforce land tenure policy:-

Stop influx of weapons:-

Control encroaching wildlife Sanctuaries and Agriculture:-

Reduce number of livestock:-

Develop or improve water facilities:-

Occupy all grazing lands:-

Stop politics:-

THANK YOU VERY MUCH FOR YOUR CO-OPERATION

GOD BLESS YOU

APPENDIX IIII: KEY INFORMANT METHOD

Persons and Institutions to be Contacted as Key Informants

Garba Tulla Development Organization an NGO.

Garba Tulla Catholic Mission.

Merti Quran Centre / Catholic Mission, Merti.

Action Aid Kenya Regional Office.

District Officers , Garba Tulla, Kinna, Sericho

Divisional Education Officers

District Commissioner - Isiolo

District Water Officer - Isiolo

District Agricultural and Extension Officer - Isiolo

Arid Land Resource Management Projects; Isiolo District.

11) Members of parliament from neighbouring pastoral districts.

Points to capture from the discussions with key informants.

1) Name - (Optional) ..... Year of existence .....

Section A:

1) What main activities do you carry out in this area over the years?
2) What are the main constraints in your operations?
3) Conflicts in pastoral areas is said to be escalating this region. Give accounts of your experience.
4) What type of conflicts are rampant in this region? Who are the conflicting partie
5) How do you relate the current issues of conflicts and recurring food and water crisis in the regions?

6) In your opinion, how would these conflicts be resolved?

SECTION B: Name (Optional) ..... Profession/Position .....

1) Current Escalating conflicts among the pastoral societies of Northern Kenya has caused dilemma in resource administration policies and development.

Give account of your views and experience.

2) What is the possible link between the current escalating conflicts and the decade of crisis in the Horn of Africa region?

3) Ambiguity of land tenure system and property regimes in pastoral land could be the cause of resource conflicts. Which way forward for the pastoralists in the current constitutional review debate and land reform programme?

4) What is the future of pastoralism

APPENDIX IV. FOCUS GROUP DISCUSSION

Some points to capture from the focus group discussions with members of *Dheda* council.

1. What are the main indigenous regulations that governs resource use among the Borana?

2. How are these rules enforced to administer resources?
3. What are the main risks that has been experienced in Borana pastoral systems? Give account of these risks in chronological order?

4. What are the major problems and risks that you experience in this *Dheda* over the last four decades?

5. Conflict in pastoral areas is said to be escalating? Discuss this in relation to your *Dheda* over this decade.

6. Is conflict in your *Dheda* external or internal? What is the solution to these conflicts?

7. What is your perception about land management in Borana land?

8. What is the future of pastoralism for the Waso Borana? What changes would you like to see over the next 5, 10 or 20 years?

9. How do you compare the issues of resource tenure and conflict management now and during colonial times?