

**UNIVERSITY OF NAIROBI**

**DEPARTMENT OF SOCIOLOGY AND SOCIAL WORK**

**AN ASSESSMENT OF PASTORALIST MANAGEMENT OF DROUGHT AS A  
STRATEGY OF DISASTER RISK REDUCTION: A CASE OF MANDERA  
COUNTY**

**BY**

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**REG. NO: C50/80191/2012**

**Research Project Submitted in Partial Fulfilment of the Requirements for the Award  
of the Degree of Master of Arts in Sociology (Advanced Disaster Management),  
University of Nairobi**

**OCTOBER, 2016**

**DECLARATION**

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

Signed..... Date.....

ABDIRIZAK MOHAMED IBRAHIM

**DECLARATION BY SUPERVISOR**

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

Signed..... Date.....

Prof. Edward K Mburugu

## **DEDICATION**

This research project is dedicated to everyone who taught me the values of life, knowledge, respect, integrity, hard work, and self-improvement and to those who taught me to simply stand up when I fall, to be good to people, and always encouraged me to dream and work hard towards my dreams. Most importantly, those who made me learn that life will never be straight line, we have to work hard every day and strive to remain positive in all circumstances and that when I fall, I should not remain down but wipe off the dust and soldier on.

A special gratitude goes to my dad Ugas Yarrow, my mum madam Nuria, my dear wife Rahma, my brother(s) and my sister(s) for their loving care, support and help during my study, for the peace of mind, assistance and support they accorded me during my research. I also dedicate this work to my many friends and colleagues who supported me throughout the process. I dedicate this work to my classmates, readers, future researchers and students in the field of disaster risk management. May the Almighty Allah continue to bless you all abundantly.

## **ACKNOWLEDGEMENTS**

I appreciate all those who contributed tirelessly towards compilation of this proposal in one way or another. Special thanks to my supervisor Prof Edward K Mburugu whose advice at different levels made this proposal a reality. I thank him for always being there to offer his guidance even when so busy with other tasks; for their patience, support and professional guidance, encouragement and their availability. To the University, I'm really humbled for molding me to the scholar I am from the student I was; to the staffs of the University for their support and assistance. I cannot forget their extravagant ideas, co-operation and encouragement.

I appreciate the most important people who directed and encouraged me in the adventure of academics and have been my anchor. They include my family who relentlessly stood by me even when I barely had time for them while pursuing this course. Their understanding and moral support went a long way in making this a success. I am also indebted to my friends and colleagues for their assistance and advice to me on how to go about research writing and also their support in my academic endeavors.

Finally, to all the others whose names I may not have mentioned, thank you so much, you are part of my success. May Allah bless you All.

<b>TABLE OF CONTENTS</b>	
<b>DECLARATION .....</b>	<b>ii</b>
<b>DEDICATION .....</b>	<b>iii</b>
<b>ACKNOWLEDGEMENT .....</b>	<b>iv</b>
<b>LIST OF TABLES.....</b>	<b>viii</b>
<b>LIST OF FIGURES.....</b>	<b>viii</b>
<b>LIST OF ABBREVIATIONS AND ACRONYMS.....</b>	<b>x</b>
<b>ABSTRACT.....</b>	<b>xi</b>
<b>CHAPTER ONE: INTRODUCTION.....</b>	<b>1</b>
1.1 Background of the Study .....	1
1.2 Statement of the Problem.....	3
1.3 Research Questions.....	4
1.4 Objectives of the Study .....	5
1.4.1 Main Objective .....	5
1.4.2 Specific Objectives.....	5
1.5 Justification of the Study .....	5
1.6 Scope and Limitations of the Study.....	6
<b>CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL FRAMEWORK 9</b>	
2.1 Introduction.....	9
2.2 Empirical Review.....	9
2.3 Drought Disaster Risk Management .....	11
2.4 Drought Contingency Planning.....	13
2.5 Drought Relief Strategy .....	15
2.6 Rehabilitation Mechanism .....	18
2.7 Theoretical Framework .....	19
2.7.1 Bordieu Theory of Cultural, Social, and Symbolic Capital .....	20
2.7.2 Community Empowerment Model .....	20
2.8 Conceptual Framework .....	22
<b>CHAPTER THREE: RESEARCH METHODOLOGY .....</b>	<b>24</b>
3.1 Introduction.....	24
3.2 Description of the Study Area .....	24

3.3 Research Design.....	25
3.4 Unit of Analysis and Unit of Observation .....	25
3.5 Target Population.....	26
3.6 Sample Size and Sampling Procedure.....	27
3.6.1 Sample Size .....	27
3.6.2 Sampling Procedure .....	27
3.7 Methods of Data Collection.....	27
3.7.1 Collection of Quantitative Data.....	28
3.7.2 Collection of Qualitative Data.....	28
3.8 Validity and Reliability of Research Instruments.....	29
3.9 Data analysis and presentation .....	30
3.10 Ethical Consideration .....	29
<b>CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND INTERPRETATION</b> .....	<b>31</b>
4.1 Introduction.....	31
4.2 Response Rate .....	31
4.3 Social and Demographic Characteristics .....	32
4.3.1 Gender Distribution.....	32
4.3.2 Categorization of the Respondents.....	33
4.3.3 Age Distribution .....	34
4.3.4 Level of Education .....	34
4.3.5 Size of Nuclear Families .....	35
4.3.6 Continuous Duration of Residing in Mandera .....	36
4.4 Drought Disaster Reduction Management.....	36
4.4.1 Frequency of Drought .....	36
4.4.2 Drought Disaster Risk Management Interventions .....	38
4.4.3 Sources of Water .....	39
4.4.4 Managing the Drought Problem .....	39
4.5 Drought Contingency Planning in Drought Disaster Reduction .....	40
4.5.1 Familiar with Drought Contingency Planning .....	40
4.5.2 Drought Contingency Planning on DDR Reduction .....	41

4.5.3 Pastoralists are involvement in Drought Contingency Planning .....	42
4.5.4 Factors affecting Drought Contingency Planning .....	43
4.5.5 How Contingency Planning is perceived to affect Disaster Risk Reducion .....	44
4.6 Drought Relief Strategy and Drought Disaster Risk Reduction .....	45
4.6.1 Knowledge of Drought Relief Strategy .....	45
4.6.2 Effectiveness of Relief Strategy on Drought Disaster Risk Reduction.....	46
4.6.3 Approaches in the Drought Disaster Reduction Strategy.....	46
4.7 Rehabilitation Mechanisms in Drought Disaster Risk Reduction .....	47
4.7.1 Knowledge of Rehabilitation Mechanisms in Drought Mitigation .....	47
4.7.2 Effectiveness of Process of Rehabilitation Mechanisms in Drought Mitigation ..	48
4.7.3 Effectiveness of Approaches Influencing Drought Disaster Risk Reduction .....	49
<b>CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>53</b>
5.1 Introduction.....	53
5.2 Summary of Findings .....	53
5.3 Conclusions.....	55
5.4 Recommendations.....	57
5.6 Suggestions for future research .....	59
<b>REFERENCES .....</b>	<b>60</b>
<b>APPENDICES.....</b>	<b>66</b>
Appendix I: Introduction Letter.....	66
Appendix II: Research Questionnaire.....	67
Appendix II: Key Informants Interview Giude .....	73
Appendix III: Focus Group Discussion Guide .....	74

## LIST OF TABLES

Table 3.1: Distribution of Households According to the Districts in Mandera.....	26
Table 3.2: Sample Distribution in the Selected Districts.....	27
Table 4.1: Response Rate .....	32
Table 4.2: Gender of the Respondents.....	33
Table 4.3: Size of the Nuclear Family .....	35
Table 4.4: Duration of Residing in Mandera.....	36
Table 4.5: Common Source of Water used by Households.....	39
Table 4.6: How the Pastoralists Get Out of the Drought Problem .....	39
Table 4.7: Extent to which pastoralists are familiar with drought contingency planning .....	41
Table 4.8: Extent to which Pastoralists are involved in Drought Contingency Planning.....	42
Table 4.9: Factors affecting the Drought Contingency Planning .....	43
Table 4.10: Agreements on Drought Contingency Planning for Disaster Risk Reduction ...	44
Table 4.11: Whether the Pastoralists are Knowledgeable about Drought Relief Strategy ....	45
Table 4.12: Activities of drought relief strategy influencing Drought Disaster reduction ....	46
Table 4.13: Effectiveness of process of rehabilitation mechanisms in drought mitigation...	48
Table 4.14: Effectiveness of Approaches influencing Drought Disaster Risk Reduction.....	49



## **LIST OF FIGURES**

Figure 2.1: Pastoralist Drought Management as a Strategy of Disaster Risk Reduction .....	22
Figure 4.1: Age Brackets of the Respondents .....	34
Figure 4.2: Highest Level of Education.....	35
Figure 4.3: Frequency that Pastoralists Experience Drought in their Areas.....	37
Figure 4.4: Availability of Drought Disaster Risk Management Interventions.....	38
Figure 4.5: Effectiveness of Drought Contingency Planning on DDR Reduction .....	41
Figure 4.6: Effectiveness of Relief Strategy on Drought Disaster Risk Reduction.....	46
Figure 4.7: Pastoralists Knowledge on Drought Rehabilitation Mechanisms .....	48

## **LIST OF ABBREVIATIONS AND ACRONYMS**

<b>ASALs</b>	Arid and Semi-Arid Lands
<b>CCMDRR</b>	Community Managed Disaster Risk Reduction
<b>DRM</b>	Disaster risk management
<b>DRR</b>	Disaster Risk Reduction
<b>EC</b>	European Community
<b>EWS</b>	Early Warning Systems
<b>IIRR</b>	International Institute of Rural Reconstruction
<b>ISDR</b>	International Strategy For Disaster Reduction
<b>LEWS</b>	Livestock Early warning System
<b>MCAs</b>	Member of County Assemblies
<b>MPs</b>	Member of Parliament
<b>NGOs</b>	Non-Governmental Organizations
<b>SPSS</b>	Statistical Package for Social Sciences
<b>UN</b>	United Nations
<b>UNDP</b>	United Nations Development Programme
<b>UNISDR</b>	United Nations International Strategy For Disaster Reduction
<b>WHO</b>	World Health Organization

## **ABSTRACT**

Despite the numerous studies documented on the disaster risk management, the political, economic and social marginalization of most pastoralists, decades of adverse national policies which have restricted their access to key natural resources, increased frequency and intensity of climate shocks such as drought, and endemic conflict have all contributed to significantly undermine their resilience. It was in this light that the current study sought to carry out an assessment on pastoralist management of drought as a strategy of disaster risk reduction in Mandera County with a focus on Mandera East, Mandera West and Mandera South sub counties. The research was designed as a cross sectional descriptive study. The target respondents included pastoralists from Mandera East, Mandera West and Mandera South sub counties in Mandera County. According to the County Government (2014) 89.1% (91,292) of the families are dependent on pastoralism for their upkeep. For the purpose of this study, household heads in each of the three selected sub counties were involved. This generated a sample of 120. To avoid biasness, the households were picked proportionally in the North, South, East and West directions of each from each of the sub county. Data was collected using both quantitative and qualitative methods including questionnaire administration to the various stakeholders, key informant interview and Focused Group Discussions. Quantitative data was then entered into the Statistical Package for Social Sciences (SPSS). The frequencies and percentages were obtained. Tables and figures were used to present the data while descriptive statistics such as percentages and frequencies were used to answer research questions. The results of the analyzed quantitative data were presented by use of tables. Qualitative data collected from key informants were analyzed and presented as confirmation to the quantitative data collected from the community. The study also found that most of the areas in Mandera County are frequently struck by drought and water scarcity putting the pastoralists at a great drought disaster. The study deduces that the pastoralists are familiar with drought contingency planning. Drought relief strategy affects drought disaster risk reduction in Mandera. The pastoralists are knowledgeable about rehabilitation mechanism as a mitigation strategy. The study ascertained that rehabilitation mechanisms as a mitigation strategy is not carried at the right time of the drought cycle. The study recommends that government should put in place veterinary interventions measures that will enhance drought mitigation to prevent loss of animals during drought within the County. The community, planners, professionals and the implementers of drought disaster risk management need to realize and rise to the awakening that drought affected people have the learning and the strength to develop coping and survivability capacities. There is a need to enhance community communication and feedback mechanism in the county. The study also recommends that the government of Kenya and development agencies working in the area need to invest in the provision of credit facilities to the pastoralists to assist them in coping with droughts. The study recommends funds should be allocated for effective supplementary feeding programmes.

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the Study**

Disasters and violent conflicts are among the two greatest threats to progress in human development in the 21st century (UNDP, 2011). The concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events (UNISDR, 2007). In practical terms DRR encompasses all actions taken to reduce disaster losses by addressing not only the hazards that cause disasters but also people's vulnerability to them. Disaster risk reduction interventions need to build capacity to withstand hazards both before and after they occur. Although there are distinct DRR interventions and activities, DRR is also about systematically incorporating risk reduction considerations into all development and humanitarian policy and programming.

Kanwar (2008) observes that catastrophic hazards, characterized by limited or lack of warning may result in catastrophic outcomes, hence viable mitigation actions that can be taken (at the local level) are those of preparedness, i.e. instituting plans and programs to cope with potential disruption or destruction of physical and social systems. According to ISDR (2009) drought leads to significant environmental, agricultural, health, economic and social consequences. It is a complex slow onset hazard that allows mitigation and preparedness. Drought phenomenon in most cases triggers emergency responses when the impact on local people is severe. The impacts depend upon the local peoples vulnerability to such shocks, and hence the need to understand the vulnerability to droughts as a prerequisite of designing preparedness, mitigation and relief policies and programmes. This would in turn prevent acute disaster by reducing disaster risk at the community level, through identification of the risks and translating the knowledge into preventive actions (Zwaagstra, Sharif, Wambile, de Leeuw, Said, Johnson, Njuki, Ericksen and Herrero, 2010).

The recurrence of severe drought is a cause of human suffering and a major blockage to pro-poor livestock development in sub-Saharan Africa, particularly in pastoral and agro pastoral systems (HPG, 2006). Disasters induced by drought account for about ninety percent of all disasters in the Region. Drought sets off a vicious cycle of socioeconomic impacts

beginning with crop-yield failure, unemployment, erosion of assets, decrease in income, worsening of living conditions, poor nutrition, and, subsequently, decreased coping capacity, and thus increasing vulnerability of the poor to another drought and other shocks as well as the risk of political instability and, in some cases, conflict (Walter, 2004).

The situation is compounded by the long-term trends related to population growth, urbanization and environmental degradation, coupled with other natural hazards (Morton, 2001). The combination of all of these factors turns shocks such as droughts and other type of hazards into catastrophic losses for the most vulnerable groups. In Kenya, the frequency and severity of drought has been on the increase due to climate change. The Arid and semi-Arid Lands (ASALs), especially Northern Kenya (Isiolo, Marsabit, Mandera and Samburu) are the most vulnerable (Cordaid & IIRR, 2011). The current ability of pastoralists to respond to drought is limited not only due to the increasing frequency of drought, but also due to increasing population, a dwindling resource base, conflict, changes in access to land and water, as well as the impact of other shocks such as flooding and disease outbreaks.

Kenya is a drought-prone country, primarily because of its peculiar eco-climatic conditions. According to Action Aid (2012) although dissected by the equator in its southern half, Kenya contains only a few pockets of high and regular rainfall (>2000mm). Arid and semi-arid lands (ASALs) cover 80% of the territory. In these areas, where annual rainfall varies from 200 to 500 mm, periodical droughts are part of the climate system. Given this kind of climatic condition, it is only proper to explore the effects of drought in the country and to suggest what could be done to cope with this perennial problem. Drought is by far the most common disaster in the dry lands in the Northern Kenya. It affects more people more frequently than any other disaster in the arid and semi arid areas in Kenya and in the horn-of Africa region. Pastoralism in the dry counties and specifically Mandera has been the most economically productive and environmentally sustainable use of marginal landscapes and dry lands where the majority for whom livelihood relies on pastoral livestock production and related activities (Huho & Kosonei, 2014).

Emergency interventions that tend to be implemented in response to drought are very effective in terms of saving lives, but they are not designed to address the chronic poverty or vulnerability that characterize the arid and semi-arid lands (Muhuba, 2013). Drought-related

policies and plans should emphasize risk reduction (prevention, mitigation and preparedness) rather than relying on drought relief. In Kenya, Mandera County is one of the Counties most hit by drought disaster. Three sub counties are severally under severe drought namely Mandera South, North and West. Most of the surface water sources dry up and congestion is witnessed in all livestock strategic boreholes. The impacts of drought have been felt by the community from the individual level to the social level. Affected areas have struggled in the face of the drought with the refugee influx from neighboring Somalia further intensifying the crisis. With an effective drought disaster management strategy the impacts of the drought disaster could be mitigated.

### **1.2 Statement of the Problem**

Pastoralists' livelihoods strategies have evolved over centuries to adapt to hot and dry climate with low and erratic rainfall, typical of the arid and semi-arid lands. According to Action Aid (2012) pastoralist communities are predisposed to disasters by a combination of factors such as poverty, aridity, settlement in areas prone to drought. Sophisticated and dynamic strategies such as tracking pasture and water in time and space and maintaining high levels of mobility across large tracts of land, allow pastoralists to effectively cope with the threats and risks that characterize their environment and to maintain a viable production and livelihoods system (Huho & Kosonei, 2014). There have been previous cases of unreliable seasonal forecast and no specific information on projected impacts with the data itself, not appropriately shared among the stakeholders. This has left both the government and communities ill-prepared to tackle subsequent droughts despite having previous experiences in droughts. Due to increasing global interdependence, there is need for all actors to at least share information and where appropriate act in tandem with government strategies where they exist or facilitate improvement of such strategies. However, climate change has recently brought some new challenges and forecast implications especially for the arid land ecosystems (Zamani, Gorgievski and Zarafshani, 2006).

Wamugi and Muchemi (2011) in their study on strengthening community managed drought risk reduction in northern Kenya and Southern Ethiopia (SCMDRR) focused on mapping of grazing corridors for the Garre and Degodia clans in Wajir and Mandera Counties in Northern Kenya and Moyale, Dolo Ado, Filtu and Hudet Woredas in Southern Ethiopia.

Their study noted that the migration of pastoralists in Northern Kenya and Southern Ethiopia is a systematic process that is largely dependent on traditionally accepted clan grazing ranges. Abdulfatah, (2012) did a study on the factors influencing implementation of drought mitigation strategies in Kenya: A case of Mandera County. The study concentrated on social factors, economic factors, level of community awareness and the mechanisms that could be put in place to minimize the effects of draughts. Muhuba (2013) in an assessment of community based drought cycle management as a strategy for disaster risk reduction: the case of community drought cycle management in Wajir County found that of the various coping strategies used, the community opted to move their animals and families to other places in search of pasture during drought.

Further, Musimba (2014) investigated the role of community participation in drought risk management in Kilifi County, Kenya and found that there was a significant role of community participation in drought risk management as the process was implemented by the community themselves although in most of the cases the criteria was predetermined and dominated by experts who assertively considered the contribution of community. Despite the numerous studies documented on the disaster risk management, the political, economic and social marginalization of most pastoralists, decades of adverse national policies which have restricted their access to key natural resources, increased frequency and intensity of climate shocks such as drought, and endemic conflict have all contributed to significantly undermine their resilience. It was in this light that the current study sought to carry out an assessment on pastoralist management of drought as a strategy of disaster risk reduction with a focus on Mandera County.

### **1.3 Research Questions**

This study sought to answer the following research questions:

- i. What are the effects of drought contingency planning on drought disaster risk reduction in Mandera County?
- ii. How does drought relief strategy affect drought disaster risk reduction in Mandera County?
- iii. How does rehabilitation mechanisms affect drought disaster risk reduction in Mandera County?

## **1.4 Objectives of the Study**

### **1.4.1 Main Objective**

The main objective of this study was to conduct an assessment on pastoralist management of drought as a strategy of disaster risk reduction where the context of focus was Mandera County.

### **1.4.2 Specific Objectives**

The study sought to achieve the following specific objectives:

- i. To investigate the effects of drought contingency planning on drought disaster risk reduction in Mandera County
- ii. To explore the impacts of drought relief strategy on drought disaster risk reduction in Mandera County
- iii. To ascertain the influence of rehabilitation mechanisms on drought disaster risk reduction in Mandera County

## **1.5 Justification of the Study**

Pastoral communities in arid and semi-arid regions of Africa live with the expectation of drought. They continue to suffer, and arguably increasingly suffer, catastrophic losses of livestock (capital and savings) during drought. The impact of drought is particularly acute for poorer members of communities with smaller livestock holdings and less developed social support networks. There is no doubt that livelihood interventions in emergencies are more complex than food aid responses, and that greater capacity is required to design and implement them. Robust drought-preparedness plans can help national and international actors to react swiftly to early warnings of crisis, and mount coordinated responses. A good plan includes appropriate programming options and triggers for action, and predetermined roles and responsibilities amongst different actors. It is hoped that the findings of the study would benefit the various groups who are directly involved when losses occur due to disaster. The study is hoped to benefit the following groups:

It is hoped that the recommendations of the findings would enable the government and other stakeholders to put in place mechanisms to mitigate losses in case of drought disaster risks.



This has the advantages of realizing more resilience, livelihoods of the pastoralists and economic growth at rapid rates.

The findings of the study and recommendations are hoped to arouse the disaster management consciousness in the arid and semi-arid areas in Kenya and beyond. This can help them to avoid risks in the event drought disaster strikes and this drastically reduces losses. It is hoped that the various relief organizations such as Action Aid and other NGOs may benefit from reduced cases of losses from the disaster risks. This would then enable them to invest the money at their in other areas of community development such as building of schools as well as other amenities as a way of helping the realization of the social pillar of Kenya's Vision 2030.

The policy makers within the livestock sector may rely on the recommendations to come up with relevant policies for curbing and mitigating losses caused by drought disasters in the Country. The government through the County governments is hoped to get the actual picture and situation about the necessary strategies to check incidences of drought disaster.

It is hoped that future researchers may use the findings of the study as a basis for further research. This can reduce unnecessary duplications and improve the quality of research being carried out in the country. It can also provide ready data for reference to various scholars.

### **1.6 Scope and Limitations of the Study**

The study was about pastoralist management of drought as a strategy of disaster risk reduction with a focus on case of Mandera County. Conceptually, the study covered three aspects of pastoralist management of drought as a strategy of disaster risk reduction, these are: drought contingency planning, drought relief strategy and drought rehabilitation mechanisms. Geographically, the study covered Mandera County, one of the dry counties in the northern region of Kenya and inhabited by pastoralist communities. The study covered pastoralists and Key Informants (usually local chiefs, elders, community/clan leaders, NGOs and politicians like MCAs, MPs and County Government officials) from Mandera East, Mandera West and Mandera South sub counties in Mandera County.

The study involved all the stakeholders in drought disaster risk reduction in Mandera East, Mandera West and Mandera South sub counties. The reason for this was that disaster cuts across all the stakeholders of a given population. The researcher used the transmittal letter from the University to gain entry into the various respondents place of work as well as stakeholders and assure the respondents that the information they would provide would strictly be used for academic purposes only. The researcher also used a pilot test to weed out questions that may pose a challenge to the various respondents. To increase the response rate, the researcher went back several times until a sufficient response was achieved.

The limitation of this study was the use of ex-post facto research design which has its own inherent limitations in that it only investigates causation through analysis of past events; the investigator is not able to control attitudes of respondents which likely affect research findings. At times, respondents might have given socially accepted answers to avoid offending the researcher. However, efforts were made in explaining to the respondents on the importance of the study and requesting the respondents to be sincere and honest.

Another limitation was low literacy levels amongst the pastoral communities which made it hard for the respondents to understand the questions posed, however effort was made by the researcher to explain questions in the local languages. Movement and migration by the pastoralist might also have hindered some of the target group's locations when required. The researcher however made use of the local elders to reach the respondents.

The study was also faced with logistical problems owing to the hostile weather conditions in the area and ruggedness of the terrain and infrastructure in the entire County. These conditions hindered access to some respondents in an attempt to get information regarding pastoralist management of drought as a strategy of disaster risk reduction. The researcher countered these problems by employing research assistants to criss-cross the selected sub counties in search of respondents as well as making arrangements to meet the respondents during the community meetings which are usually held in designated areas and are easily accessible. This ensured that the research assistants got many respondents in the systematic areas without getting to travel through the villages in search of the respondents in the rugged terrain.

Further, the researcher encountered problems of time as the research was being undertaken in a short period which would limit time for doing a wider research. However, the researcher countered the limitation by carrying out a comprehensive research of the County which enabled generalization of the study findings to such other counties with the same settings as that of Mandera County.

## **CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

### **2.1 Introduction**

This chapter delves into the literature on the pastoralist management of drought as a strategy of disaster risk reduction. The chapter also reviews literature done by other scholars touching on disaster management. The specific areas covered here include literature review which concentrates on drought contingency planning, drought relief strategy and rehabilitation mechanisms. The other sections cover theoretical framework and conceptual framework.

### **2.2 Empirical Review**

Drought phenomenon in most cases triggers emergency responses when the impact on local people is severe. The impacts depend upon the local peoples vulnerability to such shocks, and hence the need to understand the vulnerability to droughts as a prerequisite of designing preparedness, mitigation and relief policies and programmes. Drought affects more people than any other disaster in Africa (Rekacewicz, 2002) and its consequences is as a result of many interacting factors such as poverty, high dependency on rain-fed agriculture, population increase, lack of natural resource management and inadequate economic development. Rural areas are more vulnerable to drought because the rural economy is tied to the agriculture sector, which has lower technology and where climate change is a factor whose substitutability is very limited. In fact, Mendelsohn (2001) indicated that less developed regions are more likely to be vulnerable to climate change, due to the weaker capacity of local residents to adapt and recover from the impacts. This would in turn prevent acute disaster by reducing disaster risk at the community level, through identification of the risks and translating the knowledge into preventive actions.

Hisdal and Tallaksen, (2000) consider drought to be extreme rainfall deficits and the resulting periods of low flow of water, which can have severe effects on water managements in terms of river pollution, reservoir design and management, irrigation and drinking water supply. Wilhite et al. (2000) also described drought as a natural hazard that differs from other hazards because it has a slow onset, progresses over months or even years, affects a large spatial region and causes little cultural damage. According to them, its onset and end are often difficult to determine, just as its severity. The local people would become more

resilient and prepared to respond to the drought disaster, which would then be further enhanced by government disaster preparedness efforts.

The causes of vulnerability and poverty in Kenya's ASALs stem not only from recurrent drought but also conflict and insecurity, together with inadequate services associated with inappropriate development policies, and years of economic and political marginalization. However effective disaster management may be, it cannot replace the need for long-term development. Hisdal and Tallaksen (2000) believe that drought is by no means unusual or unnatural; their conclusion is that drought is by far the most costly to our society in comparison to all the natural disaster. The level of response to district-level early warning and assessment reports tends to be very low. At national level, forward-looking early warning reports are issued to alert the government, donors and other actors. However, it is the bi-annual seasonal assessments that actually trigger the appeal process that leads to an emergency response. The usefulness of the seasonal assessments in relation to decision-making has been questioned because they take a long time to be released, so their content tends to be backward-looking rather than forward-looking.

The current system thus has two problems: a lack of response to early-warning information, in which stakeholders prefer to see hard evidence of an actual crisis (as opposed to an emerging crisis) before responding; and a late and inadequate response to the prevailing situation as provided by the bi-annual assessment reports. Those agencies with their own contingency or emergency response funds were able to intervene earlier than those without access to such funds (Mainlay & Tan, 2012). Although contingency plans exist for the Districts where the ALRMP is operational, the quality of the plans varies, as does the ability to implement them in the event of a drought, though both the plans and the institutional structures are currently being strengthened through the EC-funded Drought Management Initiative. It is in this regard that the Government of Kenya (GoK), with support from EC, is establishing a national Drought Contingency Fund, a multi-donor basket where relevant stakeholders will contribute.

### **2.3 Drought Disaster Risk Management**

Drought is a weather-related natural hazard which may affect vast regions for months or years with protracted impacts on food production reducing life expectancy and the economic performance of large regions or entire countries (ISDR, 2009). Keddy (2007) elaborates drought as a recurrent feature of the climate occurring virtually in all climatic zones whose characteristics vary significantly among regions differing from aridity in that it is temporary whereas aridity is a permanent characteristic of regions with low rainfall. Drought is more than a physical phenomenon or natural event whose impact results from the relation between a natural event and demands on water supply and often exacerbated by human activities. Significant environmental, agricultural, health, economic and social consequences signifies drought periods.

According to George, et al (2003), drought is among World's earliest documented climatic events, present in the Epic of Gilgamesh and tied to the biblical story of Joseph's arrival in and the later exodus from Ancient Egypt. The Akkadian empire, under the rule of Sargon, collapsed abruptly in the beginning of 2200 B.C. after only a century of prosperity following a 300-year drought as depicted by microscopic analysis of soil moisture at the ruins of Akkadian cities in the northern farmlands, which disclosed that the onset of the drought was swift, and the consequences severe. In 2005, parts of the Amazon basin experienced the worst drought in 100 years (World Bank, 2010). According to Mayell (2002), the earliest exodus of humans out of Africa and into the rest of the world were the hunters and gatherers migration, linked to drought phenomenon, dating back to 9,500 BC. Immense droughts overwhelmed community coping and survivability capabilities owing to low level of preparedness and participation in drought risk reduction.

ISDR (2005) records that Sahel region suffered from a series of historic droughts, beginning the 17th century to the end of the 19th century where droughts caused dramatic environmental and societal effects upon the Sahel nations. The area was struck by severe famine from the late 1960s to early 1980s that claimed thousands lives, left many people dependent on food aid and severely destroyed livelihoods impacting economies, agriculture, livestock and human populations of much of Upper Volta countries. Ahmeda (2013) observed that people living in the drainage basin of the Himalayan Rivers would be at risk

of floods followed by droughts in coming decades affecting the Ganges while the west coast of North America, which gets much of its water from glaciers in mountain ranges were also be affected. Kenya (2009) indicates that there has been an increase in the intensity and frequency of occurrence of drought disasters over the past two decades.

UNDP (2011) illustrates that in the ASALs of Sub-Saharan Africa, it is likely that the forces of extreme weather events and aridity became more frequent and intense as a result of climate change thereby undermining and offsetting much of the progress already achieved in meeting the United Nations Millennium Development Goals and contribute to the continued downward spiral of poverty and environmental degradation. Oxfam (2011) elaborates that climate in the Horn is experiencing an increase in the rates of drought and that drought-related shocks used to occur every ten years, and they are now occurring every five years or less. Among Borana communities of Ethiopia, whereas droughts were recorded every 6-8 years in the past, they now occur every 1-2 years which is now the case over the entire East Africa region (Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, Sudan, Tanzania and Uganda) and come with inevitable uncertainties associated with localized impacts. They nonetheless show that even with moderate increases in the length of crop growing period in some patches of the region, agricultural productivity could decline dramatically due to climate change in the decades ahead as temperatures increase and rain patterns change.

On top of these projections, any incidence of extreme weather events like droughts would further be hit food production in the region. These reductions in food production would have severe consequences most directly for smallholder farmers and agro-pastoralists, who rely on farming for income, and for all those who purchase such crops. Kenya (2009) describes Kenya's disaster profile as being dominated by drought disasters that disrupt people's livelihoods, destroy infrastructure, divert planned use of resources, interrupt economic activities and retard development. Kenya (2009) records that 1999-2001 drought disaster response costs were more than would otherwise be the case if sufficient efforts had been put in place for effective disaster management. Drought disaster risk management involves systematic analysis and manage of the effects of droughts through reduced exposure, lessened vulnerability of people and property, wise management of land and the

environment, and improved preparedness for adverse events (ISDR, 2005). Community participation refers to members of the public taking part in the analysis and management of threats posed by drought and developing survivability capacities.

Goyet, (2009) challenges the myth that drought affected population would be too shocked and helpless to take responsibility for their own survival as superseded by the reality that many find new strength during emergencies. Communities affected by drought disasters have a role to play in disaster risk management and should be given the maximum opportunity to participate in risk reduction and response programmes. People are involved to solve their own problems and cannot be forced to participate in projects which affect their lives but should be given the opportunity for involvement as it is a basic human right and a fundamental principle of democracy (Mainlay & Tan, 2012). Citizens are involved in community needs assessment where the community expresses opinions about desirable improvements, prioritizing goals and negotiating with agencies for synergy building where they are engaged to plan and design interventions through formulation of appropriate objectives, setting goals, criticizing plans based on traditional knowledge of disaster risk management.

## **2.4 Drought Contingency Planning**

Contingency planning is a management tool used to analyze the impact of potential crises and ensure that adequate and appropriate arrangements are made in advance to respond in a timely, effective and appropriate way to the needs of the affected population (IASC, 2007). It is a management process that analyses specific potential events or emerging situations that might threaten society or the environment and establishes arrangements in advance to enable timely, effective and appropriate responses to such events and situations. Accordingly, Drought contingency planning is a systematic process of integrating drought risk management from well designed, coordinated and funded drought contingency plans. The emphasis in drought contingency planning is in formalizing and enforcing the process from clarity in the roles of different individuals, communities and institutions in managing drought risks.

According to UNISDR (2009), the percentage of persons affected by drought in the African continent between 1970 and 2008 is nearly 80 percent. According to Wilhite et. al., (2005),



past attempts to manage drought and its impacts has been ineffective, poorly coordinated, and untimely. In addition, the intrinsic value of drought management as a strategy, rather than as an operation, remains relatively unexplored (Caritas Czech Republic, 2009). Drought contingency planning as a decision making and fund raising tool for drought risk management, evolved from the 1970s to date. A number of models emerged since then to move the drought risk management into the agenda of governments and funding agencies. However, as many drought crisis management have exposed, more emphasis is in funding drought responses and less overall drought preparedness and early warning.

According to Levine et., al. (2011), the concept of drought cycle management as a planning, decision making, funding and management tool in drought management has proven futile in actual drought risk management. While the drought cycle management, a cyclic process that defines what actions to be taken in different stages of “a drought”, the plans themselves are static rather than dynamic with less or little changes in the specific stages of drought. This is particularly true in the designing of contingency plans during alert stages of drought cycle for activation (in similar way) during alarm and emergency stages of the drought cycle. Concentrating on development and mitigation activities has, therefore, been very difficult as focus is on short term repeated measures rather than larger scale – long term drought risk management.

Though drought contingency plans have various activities to support drought risk reduction by including minimal preparedness, response and recovery actions, there is very little link between preparedness, early warning and early action/ response. Contingency planning has not helped people to be on time because it had not told people when action would be needed (Levine, Crosskey, and Abdinoor, 2011). In fact, most drought contingency plans are response oriented with little emphasis on mitigation. This could be associated with technical capacity of those involved in contingency planning or timing and duration for its development is too short and not part of a bigger drought risk reduction strategy. Drought contingency plans are themselves insufficient to coordinate interagency drought contingency planning for effective preparedness and response. This is largely true in that most drought contingency plans are not only geographical focused but at times thematically defined. A good part of drought contingency plans reviewed are focused mostly on livestock.

The past practices however have largely focused on interventions after drought with little investments in strengthening the communities' capacities to manage risks on their own. Existing drought contingency plans, especially in northern Kenya and southern Ethiopia are usually ad hoc with little local level inputs and largely top down based on government's departmental level staffs' perception of the community needs. There is need to reverse this approach and focus on contingency plans that originate from the local population, and inbuilt into district and national level drought disaster plans (Mainlay & Tan, 2012). This would in turn fit into regional and international strategies and policies thereby integrating the planning systems into coherent strategic plans that would in future be ecosystem based and consequently create higher impact. If this is not handled properly most of the drought contingency plans will react rather proactively to complex livestock and non livestock livelihood based responses. The most significant gap is that agencies' policies and mandates for drought contingency planning are more policy-led than operationally driven.

## **2.5 Drought Relief Strategy**

The first guiding principle in any drought management programme should be the recognition that the occurrence of variability and unreliability of rainfall is the expected course of events in arid and semi-arid zones such as those experienced in Northern Kenya. According to UNDP (2011) coping with variable rainfall and drought therefore, has to be a major aim of any pastoral systems support programme. A prerequisite for support programmes is a clear understanding of the nature of, and responses to drought. As a result, fluctuations in livestock holdings and the subsistence production and income they provide for their owners are inevitable. Ndikumana et. al., (2000) noted that while pastoralists in Eastern Africa demonstrated an ability to describe their environment and indeed to recognize drought, they were unable to utilize that information in a predictive manner. There are also interrelations between mitigation measures, relief and rehabilitation.

Relief is ideally be targeted on particularly vulnerable sections of the population that cannot be reached by mitigation measures. It is also argued that restocking after drought will make livestock purchase as a mitigation measure easier. Scientists at times have been equally inept at tracking the dry-land environment in a predictive manner (Ndikumana et al., 2000). Early warning systems (EWS) instituted by national governments have over time focused on crop

production and thus utilize indicators which are geared more towards crop production than drought prone areas. The justification behind early warning is that it allows government and donors to intervene promptly and avoid humanitarian crises by early intervention to mitigate the impact of drought (Barton, 2001). The mitigation of the impact of drought on pastoral communities' livelihoods will be dependent upon a range of activities, and/or strategies, not all being required under each circumstance, some supported by the government, others by donors and, perhaps most important of all, by the communities themselves (Swift, 2001).

According to Ndikumana et al., (2000), institution of a reliable Livestock Early warning System (LEWS) which focus on the pastoral areas requires reliable indicators which are focused on the needs of pastoralists and can be translated into appropriate and timely action; coping mechanisms which are effective, enabling rapid response to indicator advisories and making provision for recovery; and a well-established and coordinated disaster management network at the local, regional, national and even international levels (since pastoralists do not necessarily respect inter-national borders) in order to effectively communicate the warning, and facilitate coping mechanisms and the recovery process. There are specific policy areas where states, at either local or national level can contribute to drought resilience among the pastoral communities, and enabling the functioning of specific mitigation strategies.

Pastoral associations should have a role to play in various ways including conflict resolution, negotiated tenure regimes for dry-season and drought-time grazing, communal management of water resources, the protection of grazing rights, access to and management of the natural resources, the delivery of human/livestock health services, revenue collection by charging for grazing rights and water use and collective livestock trade and marketing (Barton, 2001). These policy areas include pastoral institutions building, support of pastoral marketing, infrastructure and security. The current weakness of formal policies and structures allows for an approach to the current drought response system that is based on the mistaken notion that food security can be achieved predominantly through short-term measures relating only to the productive sectors, and the conventional (yet changing) view of humanitarian relief as primarily short-term interventions that aim to save lives rather than

also contributing towards preventing disaster or assisting in recovery through support to livelihoods.

Both of these notions contribute towards the persistence of an institutional dependency on food aid, in which the system has become geared towards food aid delivery; this is further supported by influential economic and political power structures that work to maintain the status quo. Such short-term thinking goes against existing good practice and conceptual models. Livelihoods are clearly evolving, but pastoralism remains the dominant production system in the ASALs and underpins its regional economy. In some counties it provides employment and food security to more than 70 per cent of households (UNDP, 2011). It also makes an important contribution to natural resource management and sound stewardship of the natural environment. There have always been strong social and economic ties between mobile and settled populations; these are being cemented still further as the diversification of urban livelihoods is tending to focus on value addition within the livestock sector. However, pastoralism has never been afforded the policy and institutional support which will allow it to flourish to the full, despite evidence of pastoralists' adaptability both to climate variability and emerging economic opportunities.

The African Union's Policy Framework for Pastoralism in Africa requires domesticating in the Kenyan context and measures taken to support mobility, a key drought management strategy (African Union, 2010). In terms of implementation, the capacity to identify, design, plan, coordinate and implement timely livelihoods interventions is limited by a poor understanding of pastoral livelihood systems by some senior decision-makers and a lack of consensus on what constitutes sectoral mitigation, emergency and recovery activities. This results in a lack of capacity to prepare proposals quickly at the national level, and implementation is further hampered by rigid planning systems and cumbersome financial procedures among key ministries and UN coordinating agencies, and – in some districts – a lack of implementation capacity, both in terms of coverage and technical expertise. Although early warning knowledge is extremely important, the focus must be on the mechanism by which such knowledge is translated into coping mechanisms to the pastoral system (Ndikumana et al., 2000).

An appropriate indicator that is translatable into timely action ensures protection through appropriate mitigation and promotion of the recovery of the pastoral economy. Retrospectively, most EWS have elicited a response in terms of provision of food entitlement (food aid), which in fact signals that the monitoring indicator and/or its translation into action were inappropriate (Ahmed et al., 2001). Assuming that funding is available, one way in which more timely interventions can be achieved in the non-food sectors is through following the example of the success of the food sector, in which plans and templates already exist, making the task of putting together proposals and appeals much easier and faster in the event of an emergency. However, the non-food aid actors in Kenya have first to demonstrate that there are effective, appropriate and beneficial livelihoods interventions which can be implemented as preparedness, mitigation, emergency and recovery measures to address drought impacts.

## **2.6 Rehabilitation Mechanism**

Livestock markets are essential for supporting pastoral livelihoods. Therefore, it is imperative for governments to establish markets in pastoral areas to enable smooth running of livestock trade. Marketing interventions during drought episodes should commence just before the onset of drought, since at this time pastoralists will sell their livestock at good prices and therefore boost their purchasing power (Barton, 2001). There are however, some macro-economic and sectoral policies e.g. external trade policies on livestock and livestock products and subsidies on crop inputs and feed that constrain pastoralism. Large areas of most ASAL districts of northern Kenya, for instance, are subject to restricted access and utilization due to resources use conflicts (Barton et al, 2001). Improved security is a prerequisite for more efficient grazing land-use and especially drought-time grazing in the region. Many of the areas of worst security happen to be in the remote ranges used for drought-time grazing.

Preparation for the provision of security should be a key consideration in drought contingency preparation and also in government's general policy towards pastoral areas (Barton, 2001). Pastoral communities have mechanisms for coping with and recovering from drought. Understanding these strategies and practices is essential for the development of policy, infrastructure and support services that enhance their ability to survive the drought.

Although a lot of work has been done in this area on various aspects such as development interventions, conflict management, drought occurrences, early warning systems, drought coping strategies, there is little information on the post-drought period in general and on the recovery strategies in particular. Strengthening and rebuilding of these appropriate post-drought recovery strategies, therefore, need to be emphasized. during droughts, pastoralists are usually faced with changes in terms of trade that adversely affect the purchasing power represented by their herds. This is because where drought conditions also touch the farming sector; there will be a reduced quantity of grain available to be marketed.

Moreover, demand by farming communities for livestock products is likely to fall, due to reduced productivity in the agricultural sector as a result of drought and poor condition of animals coupled with the relative fall in income and demand for livestock products such as milk and meat, in contrast to grain. According to Berkes and Jolly (2001) directly negotiated agreements between pastoralist groups are critical and this should be initiated and enforced by the government. Coping mechanisms are the actual responses to crisis on livelihood systems in the face of unwelcome situations, and are considered as short-term responses (Berkes and Jolly, 2001). Adaptive strategies are the strategies in which a region or a sector responds to changes in their livelihood through either autonomous or planned adaptation (Campbell, 2008). Coping mechanisms may develop into adaptive strategies through times. However, it is difficult to make a clear distinction between coping mechanisms and adaptations; this study considers both schemes as coping strategies.

## **2.7 Theoretical Framework**

The study employed disaster management theories. Disaster risk management (DRM) takes challenges for this interdisciplinary science which requires an appropriate combination of various approaches such as systems engineering, micro economics, sociology and behavioral science, as well as providing a holistic framework for the promotion of the science. In its methodological development efforts, DRM gives greater importance to proactive countermeasures such as mitigation policies, disaster insurance or fund, risk communication and social preparedness. The study is grounded on Bordieu's theory and Community Empowerment Model.

### **2.7.1 Bordieu Theory of Cultural, Social, and Symbolic Capital**

Bordieu's theory emerged from French sociologist, anthropologist, and philosopher Pierre Bourdieu (1930 – 2002). Bordieu's theory offers a way to examine the cultural, social, and symbolic capital within a community. Social capital means resources that one can acquire through their network of mutual relationships with others in order to secure benefits. Cultural capital is the non-financial social assets that are inherited and/or granted through academic credentials and qualifications and Symbolic Capital is the source of power one uses against those who are less powerful. Bordieu argue that individually each of us is impacted by our social location (s) which influence the judgement of taste meaning that the places we associate ourselves with have significance on what we opt for. Since CMDRR is built on the three pillars of appreciation of indigenous knowledge, local capacities and proactive planning to reduce risk and capacity development of community organizations, then it means that the implementers of CMDRR ought to be fully aware of the capital the community members and hold in order to understand the appropriate approach to promote participation in drought management.

### **2.7.2 Community Empowerment Model**

Empowerment is one of the important pillars in development and it has been used in many disciplines including health (WHO, 1986; Baum, 2008), education (Wallerstein and Edwards, 1988) and in political, gender, economical and community development (Laverack, 2009; Tesoriero, 2010). In the most general sense, empowerment refers to the ability of people to gain understanding and control over personal, social, economic, and political forces in order to take action to improve their life situations (WHO, 1986; Minkler, 1989; Baum, 2008). As a significant public health concept, Baum (2008) describes empowerment as the ability of people to gain understanding and control over personal, social, economic, and political forces in order to take action to improve the healthy living. As a methodology and the theory, community empowerment has developed significantly in the past three decades. It is described to comprise both processes and outcomes (Israel et al., 1994; Tesoriero, 2010) which themselves may lead to community development.

Empowerment has also been categorized as a multi-level construct and includes individual level, organisational, and the community level empowerment. At the level of individual,

psychological empowerment describes a concept that extends intrapsychic self-esteem to include people's perceived control in their lives, their critical awareness of their social context and their participation in changes. As Gershon (2006) argues, an empowering organisation incorporates the processes of organisation and provides avenues for the development of personal control, including competence to act and the development of interpersonal, social, and political skills. It is also acknowledged that an empowering organisation is democratically managed, in which members share information and power, utilize cooperative decision making processes, and are involved in the design, implementation, and control of efforts toward mutually defined goals (Zimmerman, 2000; Gershon, 2006).

An empowering organization recognizes and incorporates necessary linkages among members, such as interest groups, status groups, and formal subunits. Additionally, an empowered organization also has influence within the larger system of which it is a part. Thus, empowerment at the organizational level incorporates both processes that enable individuals to increase their control within the organization, and the organization to influence policies and decisions in the larger community. The concept of the organization as both empowered and empowering helps provide the link between the organization level and the individual and community levels of empowerment.

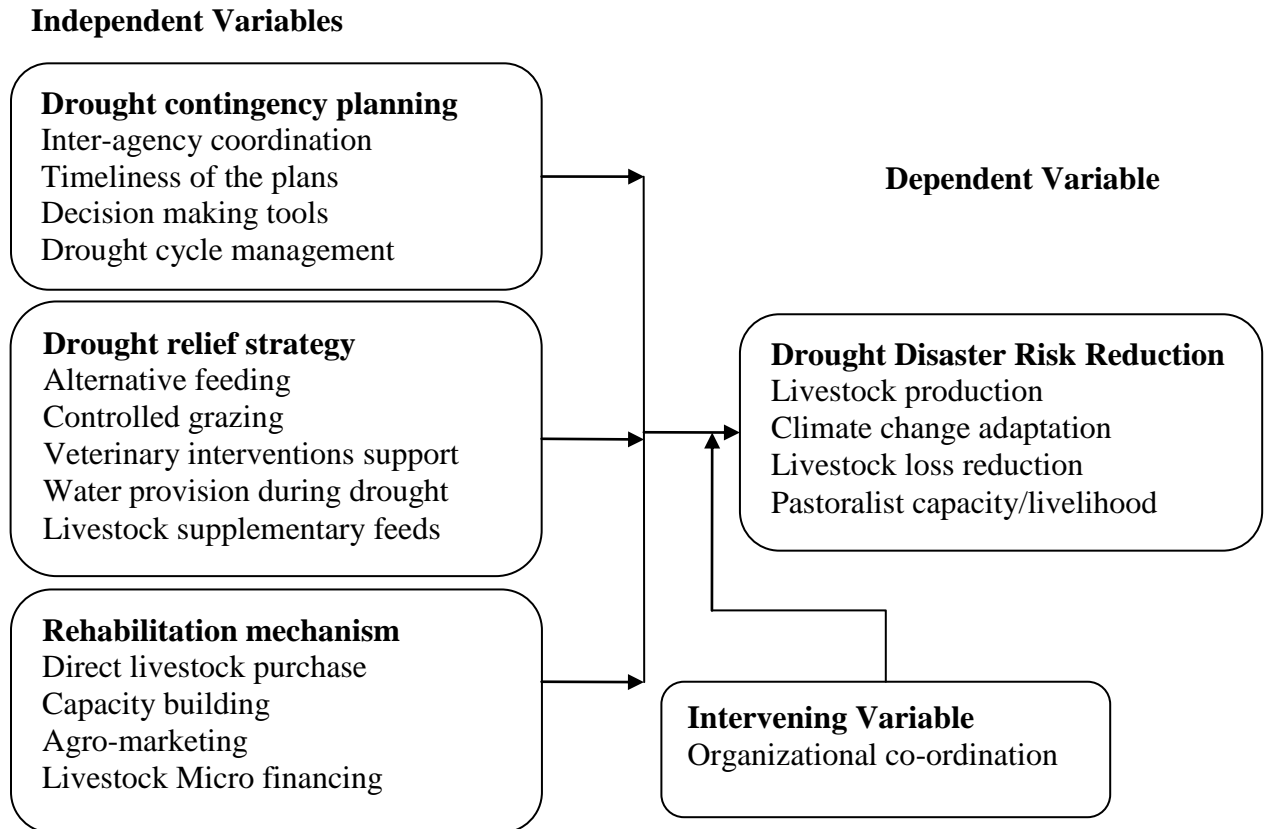
At the community level, an empowered community makes it possible for individuals and organizations to apply their skills and resources in collective efforts to meet their respective needs. As such an empowered community has the ability to influence decisions and changes in the larger social system. Braithwaite and Lythcott (1989) support this argument and describe that empowerment at the community level is connected with empowerment at the individual and organizational levels. In practical sense, and as McMurray (2007) states, empowerment brings back power to the people by improving people's participation, increasing individual and community control over various programs that impact their development and also improves a sense of local ownership and collaboration.



## 2.8 Conceptual Framework

To guide the assessment on pastoralist management of drought as a strategy of disaster risk reduction in Mandera County the interrelationship between variables discussed in the literature review is presented in the conceptual framework model shown in Fig. 2.1. A conceptual framework is a tool researcher's use to guide their inquiry; it is a set of ideas used to structure the research, a sort of a map (Kothari, 2004). It is the researcher's own position on the problem and gives direction to the study. It may be an adaptation of a model used in a previous study, with modifications to suit the inquiry. Aside from showing the direction of the study, through the conceptual framework, the researcher can be able to show the relationships of the different constructs that he wants to investigate. As shown in figure 2.1, the independent variables include drought contingency planning, drought relief strategy and rehabilitation mechanism, while the dependent variable will be drought disaster risk reduction.

**Figure 2.1: Pastoralist Drought Management as a Strategy of Disaster Risk Reduction**



Source: Author, 2016

**Drought contingency planning:** To ensure long term sustainable funding, contingency planning links with all stages of drought risk management and are treated as part of the development process. The contingency planning process, guidelines and evaluation affect effective drought preparedness and response at community levels. Inter-agency coordination, timeliness of the plans, decision making tools and drought cycle management play a critical role in ensuring that the disaster risk is reduced significantly in the area. Coordinated national drought resilience policies include comprehensive monitoring, early warning and information systems, impact assessment procedures, risk management measures, drought preparedness plans, and emergency response programs.

**Drought Relief Strategy:** Drought relief schemes as part of a national effort assist affected to deal with disaster risks. These strategies include alternative feeding, controlled grazing, veterinary interventions support, water provision during drought and livestock supplementary feeds. Emergency relief provides a safety net for those elements of society that are most vulnerable while promoting self-reliance and the principles of a national drought policy based on the concept of risk reduction. As a result, external assistance becomes more fully integrated into the areas prone to drought disaster as survival strategies.

**Rehabilitation mechanism:** Rehabilitation actions in the event of drought provided support in the formulation of policies and plans for development in the pastoral areas. The mechanisms applied include direct livestock purchase, capacity building, agro-marketing and livestock micro financing. Measures to anticipate and cope with drought by focusing on long-term drought-resilience in addition to short-term response are in light of the evolving climate conditions.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter sets out various stages and phases that were followed in completing the study. It involves a blueprint for the collection, measurement and analysis of data. The research identifies the procedures and techniques that were used in the collection, processing and analysis of data. Specifically the following subsections were included; research design, location of the study or site description, target population, unit of analysis and unit of observation, sample size and sampling procedure, method of data collection, validity and reliability of research instruments, data analysis and presentation and ethical consideration

### **3.2 Description of the Study Area**

Mandera County falls within the semi-arid area which occupies the greater North Eastern province in the tip of Kenya towards the border. The choice of the study area is hinged on two main factors. First, the Mandera County ethnic community that inhabits the area practice pastoralism as a source of livelihood. The community has lived in the area for a long period of time to identify with the climatic and environmental conditions in that area and region. Second, in the recent past, droughts have been so frequent in the North Eastern region inhabited by this pastoral group and yet they have not abandoned their livelihood strategy to adopt other means of survival, so it was in the interest of the study to find out how this community has been able to cope with and recover from droughts.

Mandera County is a largely semi-arid and most areas lack permanent water sources or water mass, and reporting low rainfalls throughout the year. Most of the region under study happens to be arid and with very similar characteristics. Mandera is an expansive County covering a total of 26,474 square kilometers. The region has a population of 1,025,756 million. Majority of the population in the region are pastoralists who lead a nomadic life and have no permanent homes. Majority of homesteads in the region are grass thatched huts that are scattered widely. Harsh climatic conditions poorly developed infrastructure make the County a hardship area. The nearest tarmac roads in the district are a distant 614 km and 744 km at Garissa and Isiolo respectively. Travelling and surveying the region requires substantial resources and time.

The needs of the region are very similar in most of northern half of the country as most regions have similar characteristic and therefore identified projects suitable for one area can be replicated elsewhere. Due to the arid conditions, surface water is scarce and most of these water sources are recharged by rainfall. Other water sources are dependent on underground reservoirs whose supply is unknown and are often affected by insufficient recharge (Ndikumana et al., 2000). Quality of water is also affected by climatic factors. Extended dry periods result in the drying up of water sources resulting in a dwindling water supply, unfit for livestock and human consumption. Flooding causes excessive runoff from adjacent areas, resulting in disease agents and other pollutants washing into water sources. The main economic activity in the district is pastoralism which practiced by 80% of the people and supporting 90% of the population.

### **3.3 Research Design**

A research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions. The research was designed as a cross sectional descriptive study. Cross-sectional studies, also known as surveys, are a useful way to gather information on important health-related aspects of people's knowledge, attitudes, and practices. The purpose of a survey is to explore and describe a phenomenon. According to Kothari (2009), surveys are more efficient and economical as they help the researcher to know much about opinions and attitudes of the respondents. Cross sectional survey also seeks to obtain information that describes existing phenomenon by asking individuals about their perceptions, attitudes, behaviors or values with the aim of assessing pastoralist management of drought as a strategy of disaster risk reduction where the context of focus was Mandera County.

### **3.4 Unit of Analysis and Unit of Observation**

In this study the households were recognized as the unit of observations which included more than one individual (although a single individual can also constitute a household), who share economic activities necessary for the survival of the household and for the generation of wellbeing for its members. The rural poor who depend on pastoralism constitute the target population while the unit of analysis was the pastoralists. According to the County Government of Mandera (2014) the county had a population of 1,025,756 at the end of year

2014 making a total of 102,573 households in the County spreading across the six sub counties. According to the County Government (2014) 89.1% (91,292) of these families are dependent on pastoralism for their upkeep.

For the purpose of this study, the household heads of approximately 18,250 in each of the six sub counties formed the target population. The study also selected key informants who included local leaders (usually local chiefs, elders, community/clan leaders), livestock officers, arid and semi-arid land officials, politicians (like MCAs, MPs and County Government officials), pastoralists from Mandera County and civil society personnel (e.g. NGOs and politicians like MCAs, MPs and County Government officials). This was done through the County governments who assisted the researcher to identify those persons who had lived in the area for more than ten years. All these data sources constituted the units of analysis.

### **3.5 Target Population**

Target population in statistics is the specific population about which information is desired. According to Ngechu (2004), a population is a well-defined or set of people, services, elements, events, group of things or households that are being investigated. The target respondents included pastoralists from Mandera County. This population was spread across the sub counties in Mandera County which included Mandera South, Mandera East, Mandera West, Lafey, Mandera North and Banisa. The entire Mandera County has a total of 102,573 households spread over the six districts. These households constitute the target population. Table 3.1 shows how the households are distributed across the districts.

**Table 3.1: Distribution of Households According to the Districts in Mandera**

<b>District</b>	<b>Number of households</b>
Mandera East	18,268
Banisa	11,377
Mandera South	27,429
Mandera North	15,333
Lafey	10,789
Mandera West	19,377
<b>Total</b>	<b>102,573</b>

### 3.6 Sample Size and Sampling Procedure

#### 3.6.1 Sample Size

A sample of 120 households was drawn from three of the six districts in Mandera County. The three districts namely Mandera East, Mandera West and Mandera South Sub counties were randomly selected through the lottery method. The three sub counties had a total of 65,074 households as can be seen in Table 3.2 below. From these households a sample of 120 households was proportionately drawn to represent the three sub counties. The distribution of the sample is shown in Table 3.2.

**Table 3.2: Sample Distribution in the Selected Districts**

<b>Districts</b>	<b>Number of households</b>	<b>Percentage of Total</b>	<b>Sample Distribution</b>
Mandera East	18,268	28.3	34
Mandera West	19,377	30.0	36
Mandera South	27,429	41.7	50
<b>Total</b>	<b>65,074</b>	<b>100.0</b>	<b>120</b>

#### 3.6.2 Sampling Procedure

From each of the Sub counties, respondents were picked using systematic random sampling where households were selected at intervals of every 7<sup>th</sup> household radiating in the four directions of the compass from the center of the sub county. The four directions were to the north, south, east and west of each sub county. This way a sample of 120 households was obtained. The head of the household who was either a man or a woman was identified as the respondent.

### 3.7 Methods of Data Collection

The researcher exploited more than one method of data collections in order to enhance generation of deeper and broader insights on the area of study and also enable confirmation and validation of the collected data. Data was collected using both quantitative and qualitative methods including questionnaire administration to the various stakeholders, key informant interview and Focused Group Discussions. According to Mugenda and Mugenda (2012), a researcher needs to develop instruments with which to collect data.

### **3.7.1 Collection of Quantitative Data**

The researcher relied on self-administered questionnaires. A questionnaire is a research instrument that gathers data over a large sample (Kombo & Tromp, 2006). The advantages of using questionnaires are: the person administering the instrument has an opportunity to establish rapport, explain the purpose of the study and explain the meaning of items that may not be clear. Questionnaires give respondents freedom to express their views or opinions and also to make suggestions. Questionnaires are also anonymous. Anonymity helps to produce more candid answers than it is possible in an interview (Orodho, 2004).

On the other hand, the disadvantages of questionnaires include that the researcher has no control over participant interpretation, they can at times realize low response rates, there is usually uncertainty about who actually filled out the questionnaire, and they can be rendered useless with non-literate, illiterate populations or hard-to-reach populations (Orodho, 2004). The researcher sought a research permit from the University of Nairobi and thereafter wrote letters to the authorities in Madera County to be allowed to do the study. The selected samples were visited and the questionnaires administered to the respondents. The respondents were assured that strict confidentiality would be maintained in dealing with their identities. The completed questionnaires were collected at the agreed time (Orodho, 2004).

### **3.7.2 Collection of Qualitative Data**

Qualitative data was collected using interview guides administered using face to face method. In this study, the main criteria for selecting the key informants was their extensive knowledge of the pastoralist management of drought both today and in the past and their length of stay in the area of study. Individuals who are participating in the drought management programs were interviewed on issues relating to pastoralist management of drought as a strategy of disaster risk reduction with a focus on case of Mandera County. These included livestock officers, arid and semi-arid land officials, politicians (like MCAs, MPs and County Government officials) and civil society personnel (e.g. NGOs). Key informants and community leaders (e.g. chiefs) were also invited while community members, group of men, women and youth constituted focus group discussions. Each of these groups was handled as a separate entity.

### **3.8 Validity and Reliability of Research Instruments**

Validity is defined as the accuracy and meaningfulness of inferences, which are based on the research result (Mugenda and Mugenda, 2003). Validity is the degree to which a test measures what it purports to measure. The internal validity which involved controlling the extraneous variables in the structure was done through the administration questionnaire. The researcher sought assistance from the supervisor in order to improve content validity of the instruments. Mugenda and Mugenda (2003) defines reliability as a measure of the degree to which a research instrument yields consistent results or data after repeated tests when administered a number of times.

The aim of pre-testing was to gauge the clarity and relevance of the instrument items so that those items found to be inadequate for measuring variables were either discarded or modified to improve the quality of the research instruments. This ensured that the instruments were captured the required data. The procedure for getting an estimate of reliability was obtained from the administration of Test-Retest reliability method which involved administering the same instrument twice to the same group of subject with a time lapse between the first and second test.

The reliability of the research instrument was tested using a Cronbach's Alpha Test. Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. A "high" value of alpha is often used as evidence that the items measure an underlying (or latent) construct. Reliability with a predetermined threshold of 0.7 is considered acceptable. A reliability of above 0.7 was considered reliable as recommended by Zikmund & Barin (2012) who recommended that a reliability test which yields a coefficient greater than or equal to 0.7 is sufficient enough. The respondents were also informed that the research was meant for academic purposes only and that the study had no intention of using the information for personal gains. The respondents were not required to indicate their names and participation in the study was on voluntary basis.

### **3.9 Ethical Consideration**

For the purpose of this study, permission was first sought from relevant authorities and a letter granted to allow the researcher to carry out the research. Furthermore, the researcher explained the purpose of the study to the respondents and assured them of confidentiality of



their responses and identities. The research followed a set of ethical guidelines as stipulated by Schenk and Williamson (2005). Throughout the research process, the principles of anonymity and of confidentiality were strictly applied. The principle of informed consent was applied in that the researcher explained what the research is about and how the results were used in a way that the stakeholders can understand and benefit.

### **3.10 Data analysis and presentation**

After the data is collected there was cross-examination to ascertain their accuracy, competences and identify those items wrongly responded to, spelling mistakes and blank spaces. Quantitative data was then entered into the computer for analysis using the Statistical Package for Social Sciences (SPSS) Version 22.0. The frequencies and percentages were obtained. Tables were used to present the data while descriptive statistics such as percentages and frequencies were used to answer research questions. Qualitative data was analyzed according to the themes in the research objectives. The results of the analyzed quantitative data were presented by use of tables. Qualitative data collected from key informants was analyzed and presented as confirmation to the quantitative data collected from the community. The study also used to establish the relationship between the dependent and independent variables.

## **CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND INTERPRETATION**

### **4.1 Introduction**

This chapter presents research findings and discussion of the findings. This chapter presents the response rate, sample characteristics, and descriptive analysis of the data. The chapter is divided into different sections. The main section presents descriptive statistics featuring the survey response rate; demographic profiles of respondents that took part in the study; the confirmatory frequency/percentage analysis and the description of the variables. The percentages, means, frequencies, standard deviations, are computed and presented. The other section presents the results of the test of hypotheses and the discussion of research findings. The descriptive data presented forms the basis for hypotheses testing and further inferences.

The chapter further presents the findings from the tests drawn from the objectives. Attempts are made to explain why the findings are the way they are and to what extent they are consistent with or contrary to past empirical findings and theoretical arguments. The discussion of the findings is guided by objectives of the study. The specific objectives were to investigate the effects of drought contingency planning, drought relief strategy and rehabilitation mechanisms on drought disaster risk reduction in Mandera County. To enhance quality of data obtained, structured and unstructured types of questions were included. The data obtained was fed into SPSS version 22.0 and the output was used to compute the ratios needed to conduct an assessment on pastoralist management of drought as a strategy of disaster risk reduction where the context of focus was Mandera County. The information and data obtained were presented in form of frequency tables.

### **4.2 Response Rate**

Orodho (2003) defines response rate as the extent to which the final data sets includes all sample members and is calculated as the number of respondents with whom interviews are completed and divided by the total number of respondents in the entire sample including non-respondents. From the target population, a sample of 120 respondents was selected from in collecting data with regard to pastoralist management of drought as a strategy of disaster risk reduction in Mandera County, Kenya. The questionnaire return rate results are shown in Table 4.1.

**Table 4.1: Response Rate (N=111)**

<b>Districts</b>	<b>Responded</b>		<b>Not Responded</b>		<b>Total</b>	
	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
Mandera East	32	26.7	2	1.7	34	28.3
Mandera West	34	28.3	2	1.7	36	30.0
Mandera South	45	37.5	5	4.2	50	41.7
<b>Total</b>	<b>111</b>	<b>92.5</b>	<b>9</b>	<b>7.5</b>	<b>120</b>	<b>100.0</b>

As shown in Table 4.1, 111 out of the 120 questionnaires distributed among the pastoralist households were received back from the respondents fully filled which accounts to 92.5% response rate. On the other hand nine (9) of the questionnaires were received incomplete and therefore were not considered in the analysis. Of the 111 responses received during the study, 45 of them (comprising of 37.5%) were collected from Mandera South Sub county, 34 of the respondents (accounting for 28.3% response) were obtained from Mandera West while 32 of the respondents (comprising of 26.72% of the sample size) were obtained from Mandera East. The response rate demonstrates a willingness of the respondents to participate in the study.

According to Mugenda & Mugenda (2003) 50% response rate is adequate, 60% is good, while 70% and above is rated to be very good. This also collaborates with Bailey's (2000) assertion that a response rate of 50% is adequate, while a response rate greater than 70% is very good. This implies that based on this assertion, the response rate in our case of 92.5% is therefore very good. From the foregoing, the response rate provides adequate data to proceed with the analysis. The use of self-administered method, personal visits, and follow-up telephone calls to the respondents, explaining the purpose of the study and its usefulness to the pastoral community improved the response rate. This was supplemented with a letter of introduction to the area authorities from the University and a letter of authority to conduct the research.

### **4.3 Social and Demographic Characteristics**

#### **4.3.1 Gender Distribution**

One of the parameters that were to be determined was the gender of the respondents. While the gender of the respondents may not have a direct impact on the objectives of the study,

there is need to ensure that the gender composition is as near as possible to equal numbers. The respondents sampled gave a result as per Table 4.2.

**Table 4.2: Gender of the Respondents (N=111)**

<b>Gender</b>	<b>Frequency</b>	<b>Percentage</b>
Male	74	66.7
Female	37	33.3
<b>Total</b>	<b>111</b>	<b>100.0</b>

Majority of the responses were obtained from the male respondents. From the study, 66.7% of the respondents comprised of male respondents, while 33.3% of them were female respondents. As such, the various households in Mandera County have both male and female heads; however the male are more than the female. The high percentage (66.7%) of male respondents is attributed by the community roles of men acting as the household heads and key decision makers in the households, making it possible to be easily reached during household survey such as the current one. However, a significant 33.3% of female respondents are good, female drive animals to drink water, thus, among the first to be accessed during drought management strategies meaning they are knowledgeable on certain issues regarding these pastoralist management of drought as a strategy of disaster risk reduction significant to this study.

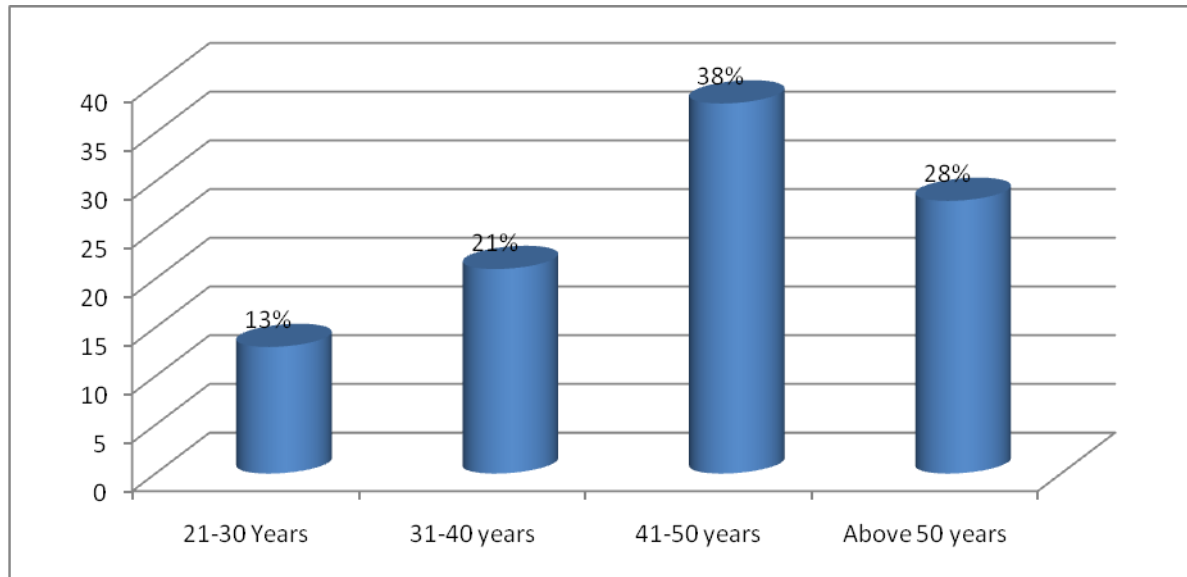
#### **4.3.2 Categorization of the Respondents**

On the distribution of the respondents in various categories, an overwhelming majority (comprising of 111) of the respondents were community member/pastoralist household heads. The other participants of this study included the local elders (9), community/clan leaders (9), 2 local chiefs (4), livestock officers (3), while the smallest proportion comprised of other stakeholders in other institutions such as NGOs and the county government. The economy of the arid district is dominated by mobile pastoralism, while in the better watered and better serviced semi-arid areas a more mixed economy prevails, including rain fed and irrigated agriculture, agro-pastoralism, small businesses based on dry land products and conservation or tourism related activities.

### 4.3.3 Age Distribution

This study sought to investigate the composition of the respondents in terms of age brackets. This aspect was aimed at understanding how the respondents were distributed across the various age brackets and consequently their opinions on the topic of study. Majority (38%) of the respondents indicated that their ages fell between 41 and 50 years, 28.0% of the respondents recalled that they were aged above 50 years, 21% of them indicated that they were aged between 31 and 40 years, while 13.0% of the respondents were between 21 and 30 years of age. From the results depicted in Figure 4.1, the respondents were well distributed in terms of age and that they are active in advancements and productivity and hence can contribute constructively in this study on the pastoralist management of drought as a strategy of disaster risk reduction in Mandera County, Kenya. Figure 4.1 show the results of the findings on the age brackets of the respondents.

**Figure 4.1: Age Brackets of the Respondents (N=111)**

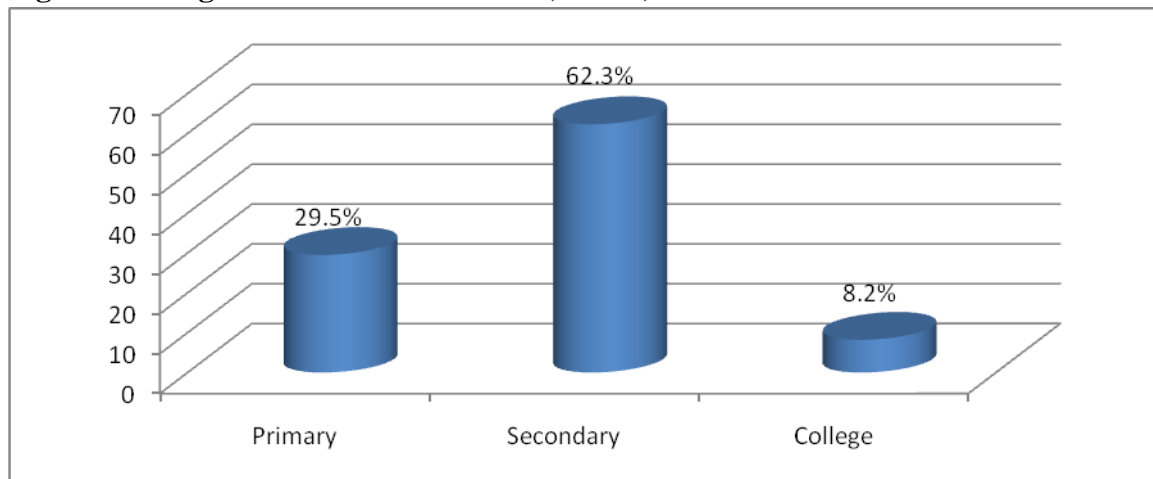


### 4.3.4 Level of Education

The respondents were asked to indicate the highest level of education attained. The target population comprised of people in different qualifications. This difference might contribute to differences in the responses given by the respondents. The outcome depicted in Figure 4.1 show that majority of the respondents were literate and hence understood the information sought by this study. That is, 62.3% of the respondents indicated that they had attained a secondary school level of education, 29.5% of them had acquired a primary level of

education, while 8.2% of the respondents reiterated that they had acquired college level of education. These outcomes imply that majority of the respondents had at least a secondary level of education and hence understood the information sought by this study. These findings further imply that all the respondents were academically qualified and also familiar with their duties and could dispense them effectively in terms of professional work ability and performance.

**Figure 4.2: Highest Level of Education (N=111)**



#### 4.3.5 Size of Nuclear Families

The study further sought to establish the size of the nuclear families of the pastoralist communities. Table 4.3 shows the results obtained.

**Table 4.3: Size of the Nuclear Family**

Size of the Family	Frequency	Percent
2 members	6	5.5
3-5 members	10	8.8
6-8 members	66	59.3
9-11 members	24	21.9
More than 11 members	5	4.5
<b>Total</b>	<b>111</b>	<b>100.0</b>

From the results depicted in Table 4.3, majority (59.3%) of the respondents indicated that their nuclear families consisted of 6-8 members, 21.9% of them indicated that their nuclear families had 9-11 members, 8.8% of the respondents indicated that their families were made up of 3-5 members, 5.5% of them had families consisting of 2 members, while 4.5% of the respondents indicated that their families had more than 11 members. According to the

foregoing results, majority of the nuclear families in the selected Sub counties in Mandera consist of at least six (6) family members. From the results, it was evident that livestock keeping in Mandera encompass various family sizes consisting of varying members and ages whose responsibilities and exposure vary significantly.

#### 4.3.6 Continuous Duration of Residing in Mandera

**Table 4.4: Duration of Residing in Mandera**

<b>Duration of Residing in Mandera</b>	<b>Frequency</b>	<b>Percent</b>
Born here	89	80.4
Less than 5 years	0	0.0
5-10 years	0	0.0
11-15 years	3	2.6
16-20 years	9	8.2
Over 20 year	10	8.8
<b>Total</b>	<b>111</b>	<b>100.0</b>

According to the results shown in Table 4.4, 80.4% of the respondents were born in the area, 8.8% of the respondents indicated that they had lived in the area for a period of over 20 years, 8.2% of them had been residing in the area for a period of 16-20 years, while 2.6% of the respondents had been living in Mandera for a period of 11-15 years. These results imply that most of the respondents participating in this study had been residing in Mandera for a long period of time thus they were conversant of the information sought by the study regarding pastoralist management of drought as a strategy of disaster risk reduction.

#### 4.4 Drought Disaster Reduction Management

##### 4.4.1 Frequency of Drought

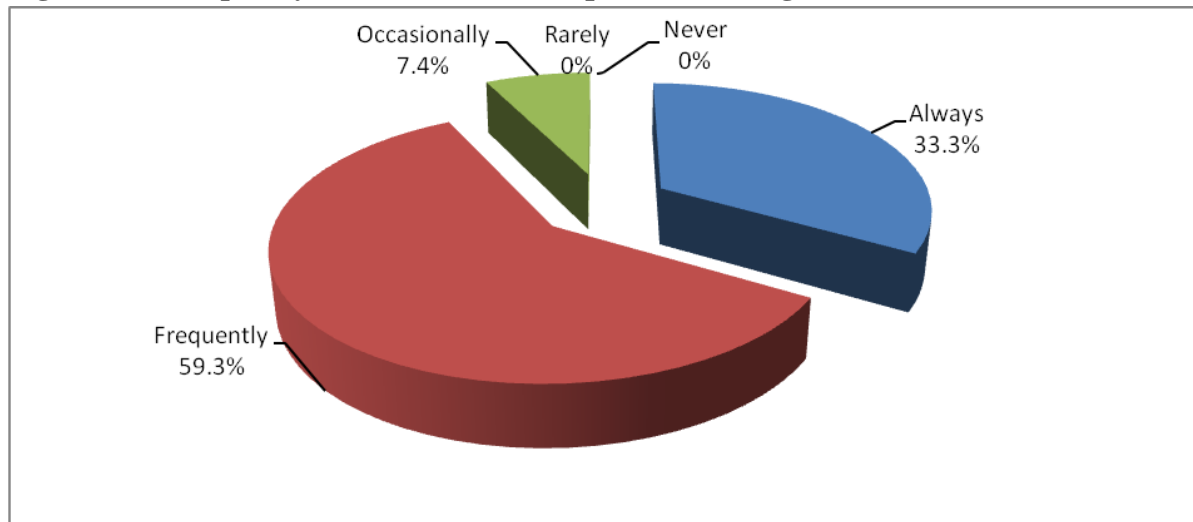
The main objective of this study was to conduct an assessment on pastoralist management of drought as a strategy of disaster risk reduction where the context of focus was Mandera County. As such, the respondents were required to indicate the type and number of livestock that are kept in their households. The study established that an overwhelming majority of the respondents kept goats, sheep, cattle and camels. The other types of animals kept by the pastoralists in Mandera include poultry and donkeys in small numbers. These findings

evidently depict that the study population comprised of all possible livestock keepers' hence the views expressed on this study were comprehensive and representative.

With regard to understanding of drought, the key informants and the focus group discussions were categorical on that the community in Mandera County was faced with severe droughts frequently and much intervention of drought disaster risk reduction programs would help a great deal. An overwhelming majority of the key Informants as well as the focus group discussions indicated that they understand drought as a prolonged period of abnormally low rainfall, leading to a shortage of water. Others added that it is a period of dryness especially when prolonged; specifically: one that causes extensive damage to crops or prevents their successful growth.

On how often the pastoralists experience drought/water scarcity in the areas of study, 59.3% of the respondents unanimously indicated that their areas frequently experience drought/water scarcity, 33.3% of them recapped that they always experience drought/water scarcity, while 7.4% of the respondents indicated that they occasionally experience drought/water scarcity in their area. These results imply that most of the areas in Mandera County are frequently struck by drought and water scarcity putting the pastoralists at a great drought disaster.

**Figure 4.3: Frequency that Pastoralists Experience Drought in their Areas (N=111)**



Most of the key informants and focus groups confirmed that most people suffered from effects of drought and really needed the intervention of the program to enable them manage



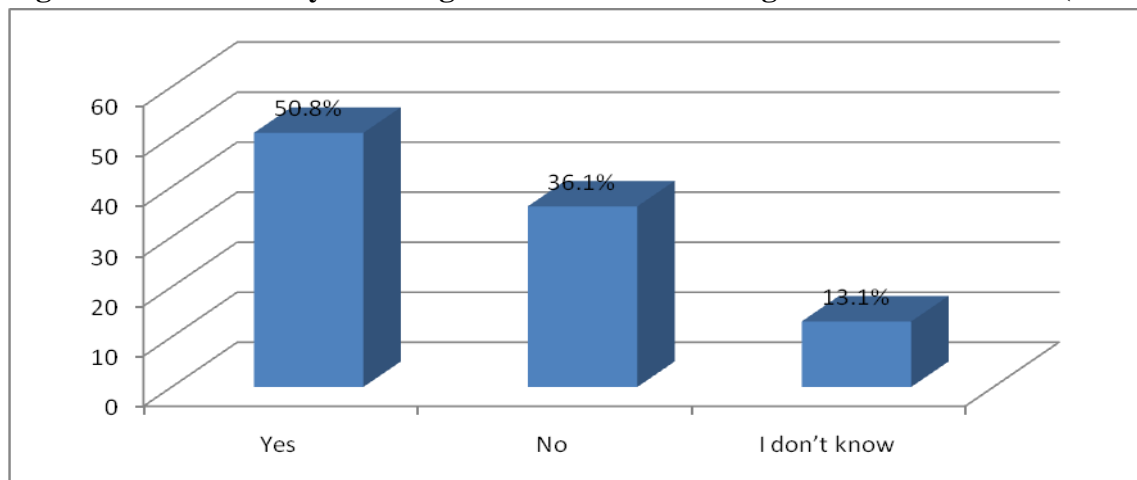
to sustain their lifestyles and keep their families healthy and well fed. Those who did not feel any negative effect might have been those with children working and therefore needed not to depend on the pastoral activities for their livelihoods.

On how drought affected the interviewees' lives as a person or household, the key informants and group discussion members reiterated that drought has had an impact on water sources, pastures and food production which reduces life expectancy and the economic performance of pastoralists in the region. Others echoed that pastoralists lose their animals to the vagaries of climate, diseases, absence of water and pasture, and they have no choice except to retire to agricultural villages. The high frequency and recurrence of drought have scuttled their traditional mechanisms for early warning and would welcome any advanced form of information that would help the respond to drought well to minimize the loss of their livestock.

#### 4.4.2 Drought Disaster Risk Management Interventions

Figure 4.4 shows the results on whether there are drought disaster risk management interventions in the various areas studied in Mandera County. Accordingly, 50.8% of the respondents agreed that there are drought disaster risk management interventions in their areas, as compared to 36.1% of those who indicated that there are no drought disaster risk management interventions in their areas. A small proportion (13.1%) of the respondents reiterated that they didn't know of availability of drought disaster risk management interventions in their areas.

**Figure 4.4: Availability of Drought Disaster Risk Management Interventions (N=111)**



#### 4.4.3 Sources of Water

Drought risk is a product of a region's exposure to the natural hazard and its vulnerability to extended periods of water shortage. In the light of this statement the respondents were required to indicate the most common source of water used by households in their areas. Table 4.5 shows the results obtained by the study.

**Table 4.5: Common Source of Water used by Households (N=111)**

Source of Water	Frequency	Percentage
Dam	69	62.3
Tap	9	8.2
Well	66	59.3
River	15	13.1
Borehole	33	29.5

From the study, 62.3% of the respondents indicated that the most common sources of water in their areas were dams, followed by 59.3% of those who indicated that they mainly obtained water from well, 29.5% of them indicated that their main source of water was boreholes, 13.1% indicated that they mainly obtained water from the river, while only 8.2% of the respondents indicated that their main source of water was tapped water. These results imply that there are no reliable sources of water to cushion the pastoralists against drought. Drought is more than a physical phenomenon or natural event whose impact results from the relation between a natural event and demands on water supply and often exacerbated by human activities.

#### 4.4.4 Managing the Drought Problem

**Table 4.6: How the Pastoralists Get Out of the Drought Problem**

Source of Assistance out of Drought	Frequency	Percentage
Family (Own initiatives)	12	10.8
Assistance from relatives	8	7.2
Friends	4	3.6
Relief from the authorities	38	34.2
Others (none)	49	44.1
<b>Total</b>	<b>111</b>	<b>100.0</b>

On how the pastoralists get out of the drought problem, 44.1% of the respondents indicated that they neither got assistance on how to get out of the drought problem, 34.2% of the respondents recalled that they obtained relief from the authorities, 10.8% of them reported that they got out of the drought problem through family or own initiatives, 7.2% of the respondents indicated that they got assistance on how to get out of the drought problem with the assistance from relatives, while 3.6% of them obtained drought relief assistance from friends residing outside the area. Series of historic droughts in the regions cause serious environmental and societal effects, claiming lives, destroying livelihoods and rendering scores depended on relief assistance thus negatively impacting economies, agriculture, livestock and human populations. Drought kills millions of animals, and reduces millions of people to destitution and reliance on food relief.

On the traditional practices put in place to recover from drought, the key informants indicated that the pastoralists prepare for drought and epizootics by “lending” their animals to relatives or friends in exchange for looking after some of their animals in return. Members of the group discussions indicated that as natural response to range heterogeneity, pastoralists move their herds sequentially across a series of environments such that each reaches its peak carrying capacity at the time of visit. The adaptive advantage of mobility for pastoral producers in areas of low and uncertain rainfall is that herds are able to move to make the most of localized rainfall, avoiding the risk of relying on rainfall received within a confined area. It also became clear that cattle-raiding in some places is “one method of restocking a herd. In addition, animals were also distributed through loans and exchanges with other herders reducing the effects of localized droughts, raids and diseases on stock and at the same time creating and re-enforcing social ties between households.

#### **4.5 Drought Contingency Planning in Drought Disaster Reduction**

##### **4.5.1 Familiar with Drought Contingency Planning**

To investigate the effects of drought contingency planning on drought disaster risk reduction in Mandera County, the respondents were required to indicate the extent to which the pastoralists are familiar with drought contingency planning. Table 4.7 shows the results.

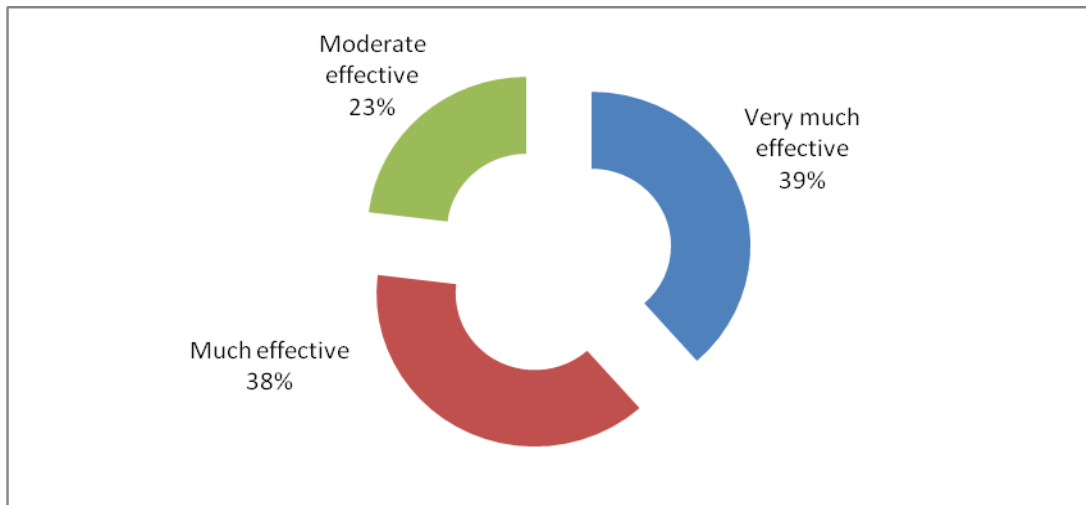
**Table 4.7: Extent to which pastoralists are familiar with drought contingency planning**

<b>Extent</b>	<b>Frequency</b>	<b>Percent</b>
To a little extent	2	2.0
To a moderate extent	48	43.0
To a great extent	54	49.0
To a very great extent	7	6.0
<b>Total</b>	<b>111</b>	<b>100.0</b>

Based on the results as tabulated in table 4.7, 49% of the responses were indicating that the pastoralists are familiar with drought contingency planning to a great extent, 43% of them indicated to a moderate extent, 6% of them comprised of opinion that the pastoralists are familiar with drought contingency planning to a very great extent, whereas 2% of the respondents recapped that the pastoralists are familiar with drought contingency planning to a little extent. These results imply that there is a high familiar with drought contingency planning among the pastoralist community in Mandera county.

#### 4.5.2 Drought Contingency Planning on DDR Reduction

**Figure 4.5: Effectiveness of Drought Contingency Planning on DDR Reduction (N=111)**



On the effectiveness of drought contingency planning on drought disaster risk reduction in Mandera County, majority of the respondents (comprising 39.0% of the population studied) rated the drought contingency planning to be very much effective on drought disaster risk reduction in Mandera, another 38.5% of them rated the drought contingency planning on drought disaster risk reduction in Mandera to be much effective, while 23.1% of them rated the drought contingency planning on drought disaster risk reduction in Mandera to be

moderate effective. These results imply that the drought contingency planning approaches are relatively effective in drought disaster risk reduction in Mandera.

The key informants and the focus group discussions revealed that so many people experienced a lot of improvement in pastoralism management due to drought contingency planning. This then forced them to come together and work it out to success. Even after the program, they might have remained together just to continue with the started work of this program and use it to their advantage. The other group may have been affected and experienced no improvement at all maybe because none was willing to bring the family members together or because there was a great disparity among the members beyond repair by just a new introduced program in the community.

#### **4.5.3 Pastoralists are involvement in Drought Contingency Planning**

The study sought to ascertain the extent to which the pastoralist communities are involved in drought contingency planning as a drought disaster risk reduction in Mandera County. The results are as depicted in Table 4.8.

**Table 4.8: Extent to which Pastoralists are involved in Drought Contingency Planning**

<b>Extents</b>	<b>Frequency</b>	<b>Percent</b>
To a little extent	2	2.0
To a moderate extent	44	40.0
To a great extent	60	54.0
To a very great extent	4	4.0
<b>Total</b>	<b>111</b>	<b>100.0</b>

From the study, 54.0% of the respondents indicated that pastoralist communities are involved in drought contingency planning as a drought disaster risk reduction to a great extent, 40.0% of the respondents indicated that pastoralist communities are involved in drought contingency planning as a drought disaster risk reduction in Mandera to a moderate extent, 4.0% of them indicated to a very great extent, while 2.0% of the respondents indicated that pastoralist communities are involved in drought contingency planning as a drought disaster risk reduction in Mandera to a little extent. These results imply that there is a high level of involvement of the pastoralist communities in drought contingency planning hence can enhance drought disaster risk reduction disaster. This is because contingency

plans generated at the community level are expected to form the basis for district/regional contingency plans.

On the drought contingency planning activities that the pastoralist communities are involved in as a drought disaster risk reduction in Mandera County, the respondents recapped that they are involved in drilling of contingency boreholes used during drought, strengthening the existing village committees through capacity building, offloading and storage of food aid, facilitating distribution, targeting and registration of the vulnerable household and identification of water trucking points, source of information of cases of sick persons and identify malnourished children.

#### 4.5.4 Factors affecting Drought Contingency Planning

Table 4.9 below represents factors affecting drought contingency planning in Mandera County.

**Table 4.9: Factors affecting the Drought Contingency Planning**

Factors affecting the drought contingency planning	Extent of the Effect					Total		Mean
	No extent	Little extent	Moderate extent	Large extent	Very large extent	Percent	N	
Inter-agency coordination	0.0	4.2	37.5	53.1	5.2	100.0	111	3.5937
Timeliness of the plans	0.0	5.2	36.5	50.0	8.3	100.0	111	3.6146
Decision making tools	0.0	3.1	49.0	43.8	4.2	100.0	111	3.4896
Drought preparedness	0.0	6.3	37.5	51.0	5.2	100.0	111	3.5521
Fund management	0.0	1.0	46.9	46.9	5.2	100.0	111	3.5625
Drought cycle management	0.0	6.3	45.8	43.8	4.2	100.0	111	3.4583
Response and recovery actions	0.0	5.2	38.5	50.0	6.3	100.0	111	3.5729

Majority of the respondents indicated that timeliness of the plans affect the drought contingency planning as a strategy of disaster risk reduction in Mandera to a great extent as shown by a mean score of 3.6146, as well as inter-agency coordination shown by a mean score of 3.5937, response and recovery actions shown by a mean score of 3.5729, fund management shown by a mean score of 3.5625 and drought preparedness shown by a mean score of 3.5521. On the other hand they recapped that decision making tools and drought cycle management affect the drought contingency planning as a strategy of disaster risk

reduction in Mandera to moderate extents as shown by mean scores of 3.4896 and 3.4583 respectively. Droughts may result in catastrophic outcomes, hence viable mitigation actions that can be taken (at the local level) are those of preparedness, i.e. instituting plans and programs to cope with potential disruption or destruction of physical and social systems. The impacts depend upon the local peoples vulnerability to such shocks, and hence the need to understand the vulnerability to droughts as a prerequisite of designing preparedness, mitigation and relief policies and programmes. This would in turn prevent acute disaster by reducing disaster risk at the community level, through identification of the risks and translating the knowledge into preventive actions.

#### 4.5.5 How Contingency Planning is perceived to affect Disaster Risk Reducion

Drought contingency planning is a systematic process of integrating drought risk management from well designed, coordinated and funded drought contingency plans. With regard to Mandera County, the respondents were required to indicate their level of agreement with these statements on drought contingency planning as a strategy of disaster risk reduction.

**Table 4.10: Agreements on Drought Contingency Planning for Disaster Risk Reduction**

Statements on drought contingency planning	Agreements					Total		Mean
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Percentage	N	
Drought contingency plans are response oriented with little emphasis on mitigation.	0.0	4.2	34.4	53.1	8.3	100.0	111	3.6563
Contingency planning has not helped people to be on time because it had not told people when action would be needed.	0.0	3.1	50.0	42.7	4.2	100.0	111	3.4792
There is very little link between preparedness, early warning and early action/ response.	0.0	5.2	34.4	55.2	5.2	100.0	111	3.6042
Drought contingency plans are insufficient to coordinate interagency drought contingency planning.	0.0	4.2	37.5	53.1	5.2	100.0	111	3.5937

From the results depicted in Table 4.10, majority of the respondents agreed that drought contingency plans are response oriented with little emphasis on mitigation as shown by

mean scores of 3.6563, there is very little link between preparedness, early warning and early action/ response as shown by mean scores of 3.6042 and drought contingency plans are insufficient to coordinate interagency drought contingency planning as shown by mean scores of 3.5937, while contingency planning has not helped people to be on time because it had not told people when action would be needed as shown by mean scores of 3.4792. According to these results, Community contingency planning is achieved through the participatory disaster risk assessment process.

#### **4.6 Drought Relief Strategy and Drought Disaster Risk Reduction**

##### **4.6.1 Knowledge of Drought Relief Strategy**

The second objective of the study was to explore the impacts of drought relief strategy on drought disaster risk reduction in Mandera County. In this regard, the respondents were required to indicate whether the pastoralists are knowledgeable about drought relief strategy.

**Table 4.11: Whether the Pastoralists are Knowledgeable about Drought Relief Strategy**

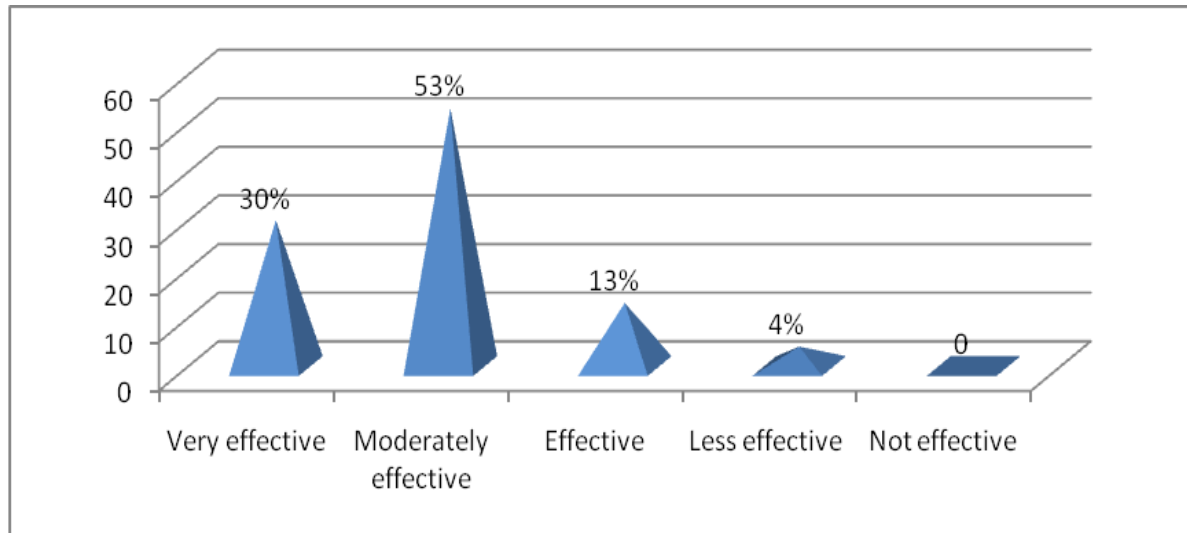
<b>Responses</b>	<b>Frequency</b>	<b>Percent</b>
Yes	75	67.0
No	36	33.0
<b>Total</b>	<b>111</b>	<b>100.0</b>

According to the study, 67.0% of the respondents indicated that the pastoralists are knowledgeable about drought relief strategy, while 33.0% of them indicated that they do not. A prerequisite for support programmes is a clear understanding of the nature of, and responses to drought. In terms of implementation, the capacity to identify, design, plan, coordinate and implement timely livelihoods interventions is limited by a poor understanding of pastoral livelihood systems by some senior decision-makers and a lack of consensus on what constitutes sectoral mitigation, emergency and recovery activities. This results in a lack of capacity to prepare proposals quickly at the national level, and implementation is further hampered by rigid planning systems and cumbersome financial procedures among key ministries and UN coordinating agencies, and – in some districts – a lack of implementation capacity, both in terms of coverage and technical expertise.



#### 4.6.2 Effectiveness of Relief Strategy on Drought Disaster Risk Reduction

**Figure 4.6: Effectiveness of Relief Strategy on Drought Disaster Risk Reduction (N=111)**



On the effectiveness of drought relief strategy on drought disaster risk reduction in Mandera County, 53.0% of the respondents reiterated that the drought relief strategy on drought disaster risk reduction in Mandera has been moderately effective, 30.0% of them indicated that the implementation has been very effective, 13.0% of the respondents indicated effective while 4.0% of the respondents indicated that the drought relief strategy on drought disaster risk reduction in Mandera County has been less effective. The results are as depicted in Figure 4.6. These results are a clear indication that the drought relief strategy on drought disaster risk reduction in Mandera County is quite effective.

#### 4.6.3 Approaches in the Drought Disaster Reduction Strategy

The respondents were also requested to indicate the extent to which various activities of drought relief strategy influence drought disaster risk reduction in Mandera County. Table 4.12 shows the results obtained.

**Table 4.12: Activities of drought relief strategy influencing Drought Disaster reduction (N=111)**

Approaches of drought relief	Extent	Total	Mean
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strategy	No extent	Little extent	Moderate extent	Large extent	Very large extent	Percent	N	
Preserving fodder for animals.	0.0	1.0	42.7	52.1	4.2	100.0	111	3.5938
Alternative feeding of animals.	0.0	6.3	42.7	44.8	6.3	100.0	111	3.5104
Controlled grazing.	0.0	2.1	47.9	45.8	4.2	100.0	111	3.5208
Veterinary interventions support.	0.0	5.2	36.5	50.0	8.3	100.0	111	3.6146
Water provision during drought.	0.0	6.3	45.8	43.8	4.2	100.0	111	3.4583
Livestock supplementary feeds.	0.0	5.2	38.5	50.0	6.3	100.0	111	3.5729

From the study, majority of the respondents reiterated that veterinary interventions support influences drought disaster risk reduction in Mandera to a great extent as shown by a mean score of 3.6146, preserving fodder for animals influences drought disaster risk reduction in Mandera to a great extent as shown by a mean score of 3.5938, livestock supplementary feeds influences drought disaster risk reduction in Mandera to a great extent as shown by a mean score of 3.5729, controlled grazing influences drought disaster risk reduction in Mandera to a great extent as shown by a mean score of 3.5208 and that alternative feeding of animals influences drought disaster risk reduction in Mandera to a great extent as shown by a mean score of 3.5104, while water provision during drought influences drought disaster risk reduction in Mandera to a moderate extent as shown by a mean score of 3.4583.

#### **4.7 Rehabilitation Mechanisms in Drought Disaster Risk Reduction**

##### **4.7.1 Knowledge of Rehabilitation Mechanisms in Drought Mitigation**

Rehabilitation mechanisms also affect drought disaster risk reduction in districts in Mandera Mandera County. To ascertain the extent to which rehabilitation mechanisms affects drought disaster risk reduction in Mandera County, the study thus sought to establish whether the pastoralists are knowledgeable about rehabilitation mechanisms as a mitigation strategy. According to the results depicted in Figure 4.7, 58.0% of the respondents reported that indeed the pastoralists are knowledgeable about rehabilitation mechanisms as a mitigation strategy while 42% of them indicated that the pastoralists are not knowledgeable about rehabilitation mechanisms as a mitigation strategy in Mandera.

**Figure 4.7: Pastoralists Knowledge on Drought Rehabilitation Mechanisms (N=111)**



#### 4.7.2 Effectiveness of Process of Rehabilitation Mechanisms in Drought Mitigation

On whether the rehabilitation mechanism as a mitigation strategy is carried at the right time of the drought cycle, all the respondents (making a proportion of 100%) recapped disagreement on that rehabilitation mechanisms as a mitigation strategy is carried at the right time of the drought cycle. The study further sought to establish the respondents' rating on the effectiveness of the whole process of rehabilitation mechanisms as a drought mitigation strategy in Mandera County.

**Table 4.13: Effectiveness of process of rehabilitation mechanisms in drought mitigation (N=111)**

Effectiveness	Frequency	Percent
Very effective	9	8.2
Moderately effective	42	37.7
Effective	7	6.6
Less effective	53	47.5
<b>Total</b>	<b>111</b>	<b>100.0</b>

According to the results shown in Table 4.13, 47.5% of the respondents indicated that the whole process of rehabilitation mechanisms as a drought mitigation strategy in Mandera can be rated to be less effective, 37.7% of them rated the process to be moderately effective, 8.2% of the respondents rate the process of rehabilitation mechanisms in Mandera to be very effective, while 6.6% of the respondents reported that the whole process of rehabilitation mechanisms as a drought mitigation strategy in Mandera is effective.

The key informants indicated that since the local market is not dynamic and reaching the outside market to do trade with is not easy, the locals find the option of migrating to other places in search of pasture the easier option. The other factor contributing to migration is that even if they opted to slaughter for local consumption, the meat will be too much for one family since every family owns at least one type of animal or the other.

#### 4.7.3 Effectiveness of Approaches Influencing Drought Disaster Risk Reduction

The respondents were further required to rate the effectiveness of various approaches that influence drought disaster risk reduction in Mandera County. Table 4.14 shows the results.

**Table 4.14: Effectiveness of Approaches influencing Drought Disaster Risk Reduction (N=111)**

Intervention	Effectiveness					Total		Mean
	Very much effective	Much Effective	Fairly effective	Less effective	Not effective	Percent	N	
Direct livestock purchase	19.7	1.6	0.0	57.4	21.3	100.0	111	3.5902
Transport subsidy for livestock traders	2.5	30	32.5	32.5	2.5	100.0	111	2.975
Micro financing livestock traders	22.6	41.3	6.7	27.1	2.3	100.0	111	3.548
Water harvesting	5.0	27.5	30	27.5	10.0	100.0	111	2.9
Income generation	8.2	16.4	9.8	50.8	14.8	100.0	111	3.4754
Capacity building	0.0	17.5	32.5	32.5	17.5	100.0	111	2.5
Agro-marketing	13.1	11.5	3.3	59.0	13.1	100.0	111	3.4754
Food security	16.4	8.2	3.3	59.0	13.1	100.0	111	3.4426

From the study, majority of the respondents restated that direct livestock purchase and micro financing livestock traders are much effective in influencing drought disaster risk reduction in Mandera County as shown by mean scores of 3.5902 and 3.5480 respectively. In addition, the respondents recapped that income generation, agro-marketing, food security, transport subsidy for livestock traders, water harvesting and capacity building are fairly effective in influencing drought disaster risk reduction in Mandera County as shown by mean scores of 3.4754, 3.4754, 3.4750, 3.4426, 2.9750, 2.9000 and 2.5000 in that order. Relief should ideally be targeted on particularly vulnerable sections of the population that cannot be

reached by mitigation measures. Restocking after drought will make livestock purchase as a mitigation measure easier.

The key informants and focus group discussion members were requested to indicate the major challenges faced during the post drought period. The members of the focus groups reported that, a fall in fodder (depending on how serious the drought is) may spark several effects such as changes in wealth, fall in herd productivity and long distance migration. They further added that a drought, which lasts for several years, can result in severe variations in the proportions of the herd, which at any particular time are giving milk or are dry. According to the community leaders interviewed, most cattle conceive and give birth only during the periods of sufficient rains. In a dry year, animals suffer both a lower rate of conception, probably due to a tardy and incomplete return to peak bodyweight during the rains, and higher rates of miscarriage and stillbirth in the subsequent period of pregnancy and calving, due to the high level of stress experienced by animals as the dry season proceeds. Thus, drought in one year will lead to lower calving rates in the following year. This fall in the number of new calves entering the herd is further aggravated by high mortality rates among young stock.

On how they cope with the challenges during the post drought period, some of the key informants interviewed reported that pastoralists and external agents respond to the situation in a variety of ways. As was found out during the study, the recovery period is more severe for the poor members of the community as most of their capital is lost during the drought, and dependence on the external agents is therefore very high. For the richer members, the recovery is not much harder as they can afford to restock from cash saved in the banks or livestock loaned to others during the drought.

The study was inquisive of the decision makers on resource management and when to migrate. The key informants and discussion groups confirmed that decision on resource management and when to migrate involved broad based consensus, policymakers and lead contribution from the Office of the President (Arid Lands Resource Management Programme); International development organizations such as UNDP; Ministry of Environment; and other stakeholders.

On the traditional practices help pastoralists to adapt to droughts in relation to water and pasture management, the interviewees indicated that they practice traditional pastoral production systems, gathering of wild products, traditional open wells, micro-catchments, traditional uses of the natural resource base and cross-border mobility. From the interviewees insights, the various development agencies working in the area that assist pastoralists most both directly and indirectly include Action Aid, other NGOs, EWS set up to serve donor and UN food aid institutions, the Government of Kenya.

The key informants and group discussion members described the efforts by the government and development agencies in the area in terms of facilitation of the coping and recovery strategies to be effective in management of drought disaster risk. Through trainings and response mechanisms by the government and the agencies, the high frequency and recurrence of drought have scuttled their traditional mechanisms for early warning and would welcome any advanced form of information that would help the respond to drought well to minimize the loss of their livestock.

On what the government can do better in order to reduce pastoralists' vulnerability to drought, the interviewees recapped that The Government policy should support the development of EWS and preparation of disaster preparedness and prevention plans in a participatory manner at the local level. The government should design approaches to reduce conflict, strengthen reciprocity agreements and enhance traditional law, including its integration into State law. These activities will be enhanced where government supports community driven development and builds capacity at all levels for its success. There is need for the government and development partners working in the area to substantially strengthen pastoralist advocacy and substantially invest in human capital, infrastructure and range management techniques in pastoral areas in order to improve range management and reduce pastoralists vulnerability to drought.

On how the development organizations facilitate the recovery of the pastoral household During the post drought recovery, the interviewees reiterated that pasture and water availability in the area are at sufficient levels to support animals but most of the households have already exhausted their livestock resources either through forced sales or death during drought. In the inter-drought cycle, the post-drought recovery phase comes between the

drought period and the high-density phase. According to the local leaders, the post drought period is characterized by increasing rates of milk output due to a growing stocking rate of cows; aggressive and opportunistic production values being manifested by households seeking to rapidly rebuild their cattle herds; intensive efforts to cultivate cereals to make up for milk deficit per unit area; extensive recovery of the grass layer from previous heavy grazing, the extent of recovery being dependent on rainfall; increased sales of milk from peri-urban households needing grain to cover large deficits in energy foods; increased sales of small ruminants to buy grains; and traditional groups being honored allowing unrestricted access.

The interviewees were further required to suggest how strategies for coping with and recovery from drought can be strengthened in the Country. According to the key informants, training on drought mitigation should be emphasized for the pastoralist to be enlightened on the consequences of improper treatment of the livestock and their benefit if properly treated. The government should put in place veterinary interventions measures that will enhance drought mitigation to prevent loss of animals during drought. The group discussion members also recapped that modern approaches and intervention measures taken should be communicated effectively so as to benefit the community as well to save the County and the Country at large. The government should commit itself in distribution of drugs so as to effectively mitigate drought and challenges facing management of water and other points of water should fully be resolved to ensure that there is effective supply of water to all without favoritism.

## **CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter summarizes whole study process from the introduction to the end of data analysis. The study sought to carry out an assessment on pastoralist management of drought as a strategy of disaster risk reduction with a focus on Mandera County, Kenya. Having collected and analyzed data in chapter four, this chapter is aimed at presenting a summary, the study objectives, research methodology and findings. This chapter provides the summary of the findings from chapter four, and it also gives the discussions and conclusions and recommendations of the study based on the objectives of the study. The various sections presented in this chapter are based on the research objectives which were: To investigate the effects of drought contingency planning on drought disaster risk reduction in Mandera County; To explore the impacts of drought relief strategy on drought disaster risk reduction in Mandera County; and to ascertain the extent to which rehabilitation mechanism affects drought disaster risk reduction in Mandera County.

### **5.2 Summary of Findings**

The purpose of the study was to conduct an assessment on pastoralist management of drought as a strategy of disaster risk reduction Mandera County where the context of focus was Mandera East, Mandera West and Mandera South Sub counties. The study found that the economy of the arid district is dominated by pastoralism, while in the better watered and better serviced semi-arid areas a more mixed economy prevails, including rain fed and irrigated agriculture, agro-pastoralism, small businesses based on dry land products and conservation or tourism related activities. Majority of the nuclear families in the selected Sub counties in Mandera consist of at least six (6) family members. In addition, livestock keeping in Mandera encompass various family sizes consisting of varying members and ages whose responsibilities and exposure vary significantly. The study found that majority of the livestock kept include goats, sheep, cattle and camels, while the least livestock reared by the pastoralists in Mandera include poultry and donkeys.

The study also found that most of the areas in Mandera County are frequently struck by drought and water scarcity putting the pastoralists at a great drought disaster. Accordingly, there are drought disaster risk management interventions in the various areas studied in



Mandera. Drought was found to have a huge negative effect on the pastoralists. Loss of pasture which causes fall in herd productivity, long distance migration and changes in wealth distribution was a major effect of drought on pastoral household; loss of water and loss of income are the main effects of drought on pastoral. From the study, drought risk is a product of a region's exposure to the natural hazard and its vulnerability to extended periods of water shortage. Accordingly, the most common sources of water in the County are dams, followed by well then boreholes, river and finally tapped water. This is an implication that there are no reliable sources of water to cushion the pastoralists against drought. The study established that majority of the pastoralists didn't obtain any relief to get out of the drought problem, others obtained relief from the authorities, family or own initiatives, assistance from relatives and from friends residing outside the area.

The study also found that the pastoralists are familiar with drought contingency planning to a great extent. The drought contingency planning was found to be very much effective on drought disaster risk reduction in Mandera. The pastoralist communities are involved in drought contingency planning as a drought disaster risk reduction to a great extent. There is a high level of involvement of the pastoralist communities are involved in drought contingency planning hence can enhance drought disaster risk reduction disaster. This is because contingency plans generated at the community level are expected to form the basis for district/regional contingency plans. The pastoralists are involved in drilling of contingency boreholes used during drought, strengthening the existing village committees through capacity building, offloading and storage of food aid, facilitating distribution, targeting and registration of the vulnerable household and identification of water trucking points, source of information of cases of sick persons and identify malnourished children. It was clear from the study that drought contingency plans are response oriented with little emphasis on mitigation, there is very little link between preparedness, early warning and early action/ response and drought contingency plans are insufficient to coordinate interagency drought contingency planning. However, it was unclear on whether contingency planning has not helped people to be on time because it had not told people when action would be needed. The study found that there are various aspects that affect the drought contingency planning as a strategy of disaster risk reduction in Mandera. They include timeliness of the plans, inter-agency coordination, response and recovery actions, fund

management and drought preparedness with great extents, while decision making tools and drought cycle management affect the drought contingency planning as a strategy of disaster risk reduction in Mandera to moderate extents.

The study further found that drought relief strategy affects drought disaster risk reduction in Mandera. From the results, majority of the pastoralists are knowledgeable about drought relief strategy, the drought relief strategy on drought disaster risk reduction in Mandera has been moderately effective implying that the drought relief strategy on drought disaster risk reduction in Mandera County is quite effective. Veterinary interventions support, preserving fodder for animals, livestock supplementary feeds, controlled grazing and alternative feeding of animals influence drought disaster risk reduction in Mandera to a great extent. On the other hand, water provision during drought influences drought disaster risk reduction in Mandera to a moderate extent.

The study finally found that the pastoralists are knowledgeable about rehabilitation mechanism as a mitigation strategy. The study established that rehabilitation mechanism as a mitigation strategy is not carried at the right time of the drought cycle. From the study, the whole process of rehabilitation mechanism as a drought mitigation strategy in Mandera was rated to be less effective. The study found that direct livestock purchase and micro financing livestock traders are much effective in influencing drought disaster risk reduction in Mandera, while income generation, agro-marketing, food security, transport subsidy for livestock traders, water harvesting and capacity building are fairly effective in influencing drought disaster risk reduction in Mandera.

### **5.3 Conclusions**

The study concludes that most of the areas in Mandera County are frequently struck by drought and water scarcity putting the pastoralists at a great drought disaster. There are drought disaster risk management interventions in the areas. Drought risk is a product of a region's exposure to the natural hazard and its vulnerability to extended periods of water shortage. The most common sources of water in the County are dams, followed by well then boreholes, river and finally tapped water. The pastoralists didn't obtain any relief to get out of the drought problem, others obtained relief from the authorities, family or own initiatives, assistance from relatives and from friends residing outside the area.

The study also deduces that the pastoralists are familiar with drought contingency planning. The drought contingency planning was found to be very much effective on drought disaster risk reduction in Mandera. The pastoralist communities are involved in drought contingency planning as a drought disaster risk reduction. There is a high level of involvement of the pastoralist communities are involved in drought contingency planning hence can enhance drought disaster risk reduction disaster. According to the findings, drought contingency plans are response oriented with little emphasis on mitigation, there is very little link between preparedness, early warning and early action/ response and drought contingency plans are insufficient to coordinate interagency drought contingency planning. The study concludes that timeliness of the plans, inter-agency coordination, response and recovery actions, fund management and drought preparedness affect the drought contingency planning as a strategy of disaster risk reduction in Mandera. Communities employ different strategies for coping with loss of access to strategic resources. In addition, civil society organizations have played a critical role in the search for lasting peace between the two communities as well as in helping the communities cope with the impacts of conflict. At times the pastoralists take the risk and travel to the rangelands, prepared for the prospect of violence, especially during droughts when they have no alternatives.

The study further concludes that that drought relief strategy affects drought disaster risk reduction in Mandera. The study deduces that the pastoralists are knowledgeable about drought relief strategy and the drought relief strategy on drought disaster risk reduction in Mandera has been moderately effective. The drought relief strategy on drought disaster risk reduction in Mandera County is quite effective. From the study findings, it was clear that Veterinary interventions support, preserving fodder for animals, livestock supplementary feeds, controlled grazing and alternative feeding of animals influence drought disaster risk reduction in Mandera. Community level dialogue when pursued under the right circumstances is a tremendous instrument for creating and maintaining peace. If we operate with the general assumption that people who talk to each other would rarely fight; or at the very least would not allow misunderstandings to deteriorate into physical confrontation, then ipso facto, maintaining a dialogue between communities should serve the same purpose. At other times they seek the support of government in the form of security as they water and pasture their livestock. Education and the influence of modernization is also having an

impact on the viability and continued relevance of pastoralist. Civil society organizations including religious organizations, women and youth should take a lead in peacebuilding initiatives, explore more traditional and customary of establishing the root causes of conflict hence more attention is given to local problem solving method.

The study finally concludes that the pastoralists are knowledgeable about rehabilitation mechanism as a mitigation strategy. The study ascertained that rehabilitation mechanism as a mitigation strategy is not carried at the right time of the drought cycle. Accordingly, the whole process of rehabilitation mechanism as a drought mitigation strategy in Mandera was established to be less effective. The study deduces that direct livestock purchase and micro financing livestock traders are much effective in influencing drought disaster risk reduction in Mandera, while income generation, agro-marketing, food security, transport subsidy for livestock traders, water harvesting and capacity building are fairly effective in influencing drought disaster risk reduction in Mandera. The most important factors in the success of an intervention are willingness of parties to engage in dialogue, adequate preparation by the facilitators, ensure that parties understand what is at stake and the ground rules are clear meaning everyone to be on the same page and minimal outside influence.

#### **5.4 Recommendations**

There is need for the government and development partners working in the area to substantially strengthen pastoralist advocacy and substantially invest in human capital, infrastructure and range management techniques in pastoral areas in order to improve range management and reduce pastoralists vulnerability to drought. The study recommends that government should put in place veterinary interventions measures that will enhance drought mitigation to prevent loss of animals during drought within the County. The community, planners, professionals and the implementers of drought disaster risk management need to realize and rise to the awakening that drought affected people have the learning and the strength to develop coping and survivability capacities. The county and national governments should play a leading role in coordinating drought risk reduction to ensure that the basic fundamental rights of the citizens are guarded and upheld. The government agencies need to take a leading role in civic education and develop a common public

engagement framework that recognizes the role of community participation to synergize the ambitions of the development partners to make them fruitful.

There is a need to enhance community communication and feedback mechanism in the county. The county information and communication infrastructure was wanting and the available channels of communication do not effectively deliver information to the communities. Further, there is need to the government to strengthen the autonomous adaptation processes of the pastoralists to improve their capacity to cope with and recover from drought. The pastoralists have local communal and household strategies that they use to manage drought and such mechanisms need to be recognized by the government in planning and policy formulation and implementation. The study recommends that approaches and intervention measures taken by the government be communicated effectively so as to benefit the community as well to save the county and country. Further the study recommended that government should commit itself in distribution of drugs so as to effectively mitigate drought.

The study also recommends that the government of Kenya and development agencies working in the area need to invest in the provision of credit facilities to the pastoralists to assist them in coping with droughts. During good season, the pastoralists can convert some of the stock in to cash and deposit with credit providers. Such cash can be used in the post drought period to purchase animals for restock. The study recommends that water should be availed to all pastoralists. Further, the study recommended that challenges facing management of water and other points of water should fully be resolved to ensure that there is effective supply of water to all without favoritism.

The study recommends funds should be allocated for effective supplementary feeding programmes. Accordingly, the study recommended that training on drought mitigation should be emphasized for the pastoralist to be enlightened on the consequences of improper treatment of the livestock and their benefit if properly treated.

## **5.6 Suggestions for future research**

It is evident from the study that it is necessary to conduct further studies to identify the role of pastoralist management of drought in disaster risk reduction in a different setting in Kenya. Similarly, another study should deeply evaluate the metrics of successful community participation on disaster risk management. Based on the findings of this study, it may be necessary to evaluate the effects of indigenous drought early warning systems on drought risk management.

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## **APPENDICES**

### **Appendix I: Introduction Letter**

The Respondent,

Dear Sir/Madam,

#### **Re: Request for Research Data**

I am a Postgraduate student at the University of Nairobi pursuing a Master of Arts Degree in Disaster Management. My research project topic is **“AN ASSESSMENT OF PASTORALIST MANAGEMENT OF DROUGHT AS A STRATEGY OF DISASTER RISK REDUCTION: A CASE OF MANDERA COUNTY”**

In order to carry out the research, you have been selected to form part of those to provide the necessary data. The data will be gathered through research questionnaire with the undersigned. The focus of my research will be on drought contingency planning, policies for resilience, drought relief strategy and rehabilitation mechanism and this will involve use of questionnaires administered to local chiefs, elders, community/clan leaders, livestock officers, arid and semi-arid land officials, politicians, society personnel and pastoralists in Mandera County.

I kindly request you to participate in this study by assisting in filling the questionnaire and providing with any other relevant information. The information collected will be treated with utmost confidentiality and is for academic purpose only. The findings and recommendations of the research will be availed to you upon completion of the research.

Student : Abdirizak Mohamed Ibrahim

Supervisor : Prof. Edward K Mburugu

**Appendix II: Research Questionnaire**

This research is in partial fulfillment of requirements for a degree in Masters of Arts from the University of Nairobi and I will be most grateful if you could kindly complete this questionnaire. This questionnaire consists of two major parts. Kindly answer all the questions by ticking in the appropriate box or filling the spaces provided. The questionnaire below has been set in relation to the objectives of the study. Any issue that may need any clarification will be discussed by the researcher during administration of the questionnaire or when picking the completed questionnaire. The information given here will only be used for purposes of this study and will be treated with utmost confidentiality. Your cooperation will be highly appreciated.

**PART A: GENERAL INFORMATION**

1. Name of your area.....

2. Tick your gender?

Male [ ] Female [ ]

3. What is your category as a respondents

Community member/pastoralist [ ] Local chiefs [ ]  
Local elder [ ] Community/clan leader [ ]  
Livestock officer [ ] MP [ ]  
MCA [ ] Society personnel [ ]  
Others (Specify.....) [ ]

4. Indicate your age category:

Below 20 years [ ] 41-50 years [ ]  
21-30 years [ ] Above 51 years [ ]  
31-40 years [ ]

5. What is your highest level of education?

Post Graduate [ ] College Diploma [ ]  
Graduate [ ] College Certificate [ ]  
Secondary school level [ ] Primary school level [ ]  
Didn't go to school [ ] Other (specify.....)[ ]

6. What is the size of your nuclear family?

- 1 (alone)                       2 members   
 3-5 members                       6-8 members   
 9-11 members                       More than 11 members

7. How long have you lived in this area?

- Born here                       Less than 5 years   
 5-10 years                       11-15 years   
 16-20 years                       Over 20 year

**PART B: PASTORALIST MANAGEMENT IN DROUGHT DISASTER REDUCTION**

8. Kindly indicate the type and number of livestock that are kept in the household?

Type	Amount/Number
Cattle	
Sheep	
Goats	
Camels	
Donkeys	
Poultry	
Others (Specify.....)	

9. How often do you experience drought/water scarcity in this area?

- Always                       Frequently   
 Occasionally                       Rarely   
 Never

10. Are there drought disaster risk management interventions in this area?

- Yes                       No                       I don't know

11. What is the most common source of water used by households in this area?

- Dam                       Tap   
 Well                       River   
 Tank                       Borehole

12. In case of drought how do pastoralists get out of the problem?

- Family (Own initiatives)                       Assistance from relatives   
 Friends                       Relief from the authorities   
 Others (Specify.....)

**DROUGHT CONTINGENCY PLANNING IN DROUGHT DISASTER REDUCTION**

13. To what extent are the pastoralists familiar with drought contingency planning?

To a very great extent	To a great extent	To a moderate extent	To a little extent	To no extent

14. What is the effectiveness of drought contingency planning on drought disaster risk reduction in Mandera County?

- Very much effective [ ]                      Much effective [ ]
- Moderate effective [ ]                      Less effective [ ]
- Not effective [ ]

15. To what extent are the pastoralist communities involved in drought contingency planning as a drought disaster risk reduction in Mandera County?

To a very great extent	To a great extent	To a moderate extent	To a little extent	To no extent

16. What drought contingency planning activities are the pastoralist communities involved in as a drought disaster risk reduction in Mandera County?

.....

.....

.....

17. Drought contingency planning is a systematic process of integrating drought risk management from well designed, coordinated and funded drought contingency plans. With regard to this County, what is your level of agreement with these statements on drought contingency planning as a strategy of disaster risk reduction?

<b>Statements on drought contingency planning</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Drought contingency plans are response oriented with little emphasis on mitigation					
Contingency planning has not helped people to be on time because it had not told people when action would be needed					
there is very little link between preparedness, early warning and early action/ response					
Drought contingency plans are insufficient to coordinate					



interagency drought contingency planning					
Other (Specify.....)					

18. To what extent do the following factors affect the drought contingency planning as a strategy of disaster risk reduction in Mandera County? Use a scale of 1 to 5 where 1= no extent, 2= little extent, 3= moderate extent, 4= large extent and 5 is to a very large extent.

<b>Factors affecting the drought contingency planning</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Inter-agency coordination					
Timeliness of the plans					
Decision making tools					
Drought preparedness					
Fund management					
Drought cycle management					
Response and recovery actions					
Other (Specify.....)					

### **DROUGHT RELIEF STRATEGY AND DROUGHT DISASTER RISK REDUCTION**

19. Are the pastoralists knowledgeable about drought relief strategy?

Yes [ ] No [ ]

20. What is the effectiveness of drought relief strategy on drought disaster risk reduction in Mandera County?

Very much effective [ ] Much effective [ ]  
 Moderate effective [ ] Less effective [ ]  
 Not effective [ ]

21. To what extent do the following activities of drought relief strategy influence drought disaster risk reduction in Mandera County? Use a scale of 1-5 where 5 is to a very large extent, 4 is to a great extent, 3 is medium extent, 2 is small extent and 1 is no extent at all.

<b>Approaches of drought relief strategy</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Preserving fodder for animals					
Alternative feeding of animals					

Controlled grazing					
veterinary interventions support					
water provision during drought					
livestock supplementary feeds					
Other (Specify.....)					

22. Which aspects of drought relief strategy in disaster risk reduction do you think should be strengthened to cope with drought disaster in this County? Explain

.....

.....

.....

**REHABILITATION MECHANISM IN DROUGHT DISASTER RISK REDUCTION**

23. Are the pastoralists knowledgeable about rehabilitation mechanisms as a mitigation strategy?

Yes [ ] No [ ]

24. Is rehabilitation mechanisms as a mitigation strategy carried at the right time of the drought cycle?

Yes [ ] No [ ] I don't know [ ]

25. How would you rate the whole process of rehabilitation mechanisms as a drought mitigation strategy in Mandera County?

Very much effective [ ] Much Effective [ ]  
 Fairly effective [ ] Less effective [ ]  
 Not effective [ ]

26. How do you rate the effectiveness of the following approaches influence drought disaster risk reduction in Mandera County?

<b>Intervention</b>	<b>Very much effective</b>	<b>Much Effective</b>	<b>Fairly effective</b>	<b>Less effective</b>	<b>Not effective</b>
Direct livestock purchase					
Transport subsidy for livestock traders					

Micro financing livestock traders					
Water harvesting					
Income generation					
Capacity building					
Agro-marketing					
Food security					
Other (Specify.....)					

27. What other information would you like to share about pastoralist management of drought as a strategy of disaster risk reduction in Mandera County, Kenya?

.....  
 .....

28. In your opinion, what do you think should be done to enhance pastoralist management of drought as a strategy of disaster risk reduction in Kenya?

.....  
 .....

**THANK YOU!!!**

## **Appendix II: Key Informants Interview Guide**

1. What is your understanding of drought?
2. How has drought affected your life as a person or household?
3. What traditional practices do you put in place to recover from drought?
4. During the post drought period, what are your major challenges?
5. Who makes decision on resource management and when to migrate?
6. How do you cope with the challenges during the post drought period?
7. What has been the most significant change in the way you manage droughts resulting from the information and training(s) received
8. What traditional practices help you to adapt to droughts in relation to water and pasture management?
9. Which Development agency working in the area assist you most both directly and indirectly?
10. How would you describe the efforts by the government and development agencies in this area in terms of facilitation of the coping and recovery strategies?
11. What do you think the government can do better in order to reduce pastoralists' vulnerability to drought?
12. During the post drought recovery, how do the development organizations facilitate the recovery of the pastoral household?
13. Which development organizations are actively involved in helping the pastoralists in this district?
14. How can strategies for coping with and recovery from drought be strengthened in the Country?
15. What are some of the policy issues that need to be addressed to reduce vulnerability of the pastoral household to drought?

### **Appendix III: Focus Group Discussion Guide**

1. What is your understanding of drought?
2. How has drought affected your life as a person or household?
3. What traditional practices do you put in place to recover from drought?
4. During the post drought period, what are your major challenges?
5. Who makes decision on resource management and when to migrate?
6. How do you cope with the challenges during the post drought period?
7. What has been the most significant change in the way you manage droughts resulting from the information and training(s) received
8. What traditional practices help you to adapt to droughts in relation to water and pasture management?
9. Which Development agency working in the area assist you most both directly and indirectly?
10. How would you describe the efforts by the government and development agencies in this area in terms of facilitation of the coping and recovery strategies?
11. What do you think the government can do better in order to reduce pastoralists' vulnerability to drought?
12. During the post drought recovery, how do the development organizations facilitate the recovery of the pastoral household?
13. Which development organizations are actively involved in helping the pastoralists in this district?
14. How can strategies for coping with and recovery from drought be strengthened in the Country?
15. What are some of the policy issues that need to be addressed to reduce vulnerability of the pastoral household to drought?