



PASTORALISTS' ADAPTATION AND MITIGATION TO THE EFFECTS OF DROUGHT IN KAJIADO COUNTY

Presented by

PHILIP OLE KIOK

AGR-3- 3219-3/2016

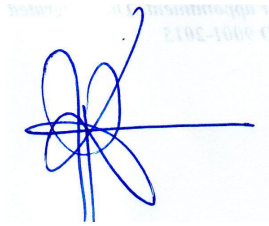
"

**A Research Thesis Submitted to the Department of Agriculture and Natural Resources in Partial
Fulfillment of the Requirements for the Award of the Degree of Master of Science in Agricultural
and rural development**

May 2019

DECLARATION AND RECOMMENDATION

I declare that this research proposal is my original work and has not been submitted for the award of a degree in this or any other university.



Signature _____

20.08.2020

Date

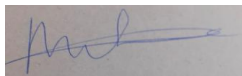
Philip Ole Kiok

Reg. No Agri-3- 3219-3/2016

Recommendation

This proposal has been submitted for examination with our recommendation as university supervisors:

Martin Koome

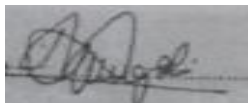


Signature _____

Date 20.08.2020

Department of Agriculture and Natural Resources

Dr. Mworio Mugambi



Signature _____

Date 20.08.2020

Department of Agriculture and Natural Resources

DEDICATION

This thesis is dedicated to my father Ole Kiok who has assisted and encouraged me throughout my education

ACKNOWLEDGEMENT

First, I want to thank the almighty God for his gift of life and the guidance though out my study. Special thanks go to my resolute supervisors Mr. Martin Koome and Dr. Mworio for their advice. Also to all the Departmental members and other students whose support will be very crucial for the completion of my studies

ABSTRACT

Dry season and starvation are perceived as qualities of parched and semi-dry locales when all is said in done, and the Horn of Africa peaceful zones specifically. Dry season has been the subject of a few logical examinations by researchers from different foundations and fields, as a characteristic risk. Peaceful practices just as encounters of outer specialists in alleviating dry spells have not been enough explored and archived. Along these lines, a top to bottom investigation is expected to improve and reestablish suitable alleviation measures for dryness and post-dry spell recuperation systems. This mindfulness is exceptionally valuable in foreseeing food emergency for different partners working in peaceful territories, including nearby networks, and furthermore in proposing viable activities to relieve the emergency. This is the reason for the commencement of this investigation to consider the variation and relief of pastoralists with the impacts of dry spell in Kajiado County. The examination plans to;

- i. Determine the social networks and capacity building used by pastoralists in Kajiado County to improve the resilience.
- ii. To analyze the technological innovations used by pastoralists in mitigating the effects of draught;
- iii. To identify the technologies used by livestock management to create pastoralist resilience to drought in Kajiado County.
- iv. To determine how scientists, disseminate adaptation and coping strategies to pastoralists;

The report would use the research method for a descriptive survey. Specifically, it will target Kajiado County since the county 's population is predominantly dependent on pastoral nomad-ism as the main source of living. For the research the target population was 384 pastoral households. Stratified sampling will ensure all Kajiado County administrative units and NGO's have a chance to be included in the sample. The primary data will be analyzed using descriptive and inferential statistics.

List of acronyms

ALRMP - Arid Lands Resource Management Programme.

ASAL - Arid and semiarid areas

CIDA - Canadian International Development Agency

EMC - Environmental Management Committees

DLMC - District Livestock Marketing Councils.

DLPO - District Livestock Production Office.

FAO – Food and Agricultural Organization

KLMC - Kenya Livestock Marketing Council.

NALEP - National Agriculture and Livestock Extension Project

NGO - Non Governmental Organization

NCST - National Council of Science and Technology

NEPDP - North Eastern Pastoralist Development Project

UN – United Nations

UK – United Kingdom

UNCC - United Nations Convention to Combat Desertification

SPSS - Statistical Package for Social Sciences.

WMO - World Metrology Organization

WUA – water users associations

CHAPTER ONE: INTRODUCTION

1.0: Background Information

Pastoralism is one of the most significant financial practices in the Horn of Africa from which a huge number of individuals infer their employments. Sub-Saharan Africa contains a large portion of the peaceful individuals of the world (Fratklyn 2001). Such pastoralists live in the mainland's minor zones regularly with discontinuous precipitation in both existence bringing about low asset base or flighty and unstable degrees of profitability in the scavenge. Beside keeping domesticated animals, this condition offers restricted open doors for means exercises (Coppock 2001). Individuals raise animals including ponies, camels, goats, sheep and jackasses utilized for milk, meat, blood, transportation and exchange.

Regardless of natural issues, during the pre-pioneer period (Bovin and Manger 1990), African migrants rehearsed a generally versatile and environmentally solid method of creation. Through different methodologies inside their interpersonal organizations, pastoralists ought to have the option to adapt through biological weights, for example, enhancement of undertakings, scattering of creature and human networks, and methods of redistribution and correspondence. Yet, today land misfortune and covering land-use approaches endanger peaceful flexibility. The situation is with the end goal that pastoralists seem caught between desert advance and cultivator ambush, agribusiness concerns, farmers and protectionists of wild game. Dietz and Salih 1997 additionally note that the job of the State during the provincial and post-autonomy organizations and the authentic cycles of impoverishment and financial stagnation have offered ascend to an intriguing wonder with regards to which pastoralists are right now confronting genuine change issues brought about by intermittent dry spell, infections and starvations. Yet, the inquiry that is applicable and relentless is: Can pastoralists adjust to their evolving condition?

1.1: Problem statement

Water shortage and destitution are among the main contributory elements of instability in peaceful networks in Sub-Saharan Africa. It is in this manner basic for alleviation intending to comprehend peaceful weakness to dry season and starvation and their indigenous versatile procedures. Despite the fact that there is a developing and compelling group of writing about improvement mediation disappointment, peace promotion, dry season. Events, early admonition frameworks however little endeavor has been made in Kajiado County to relieve the dry spell. A large portion of the examinations completed are in provincial networks for the advertising and creation of animals. Pastoralist exercises just as outer specialist encounters in relieving the dry season have not been appropriately investigated and reported. In this manner, a top to bottom examination is expected to reinforce and modify suitable post-dry spell recuperation systems. This information is extremely helpful for various partners working in peaceful regions, including nearby networks, in foreseeing food emergencies and in recognizing suitable measures to alleviate the emergency. It is centered around this previously mentioned how this investigation is being started to assess the moderation of effect of environmental change in Kenya's bone-dry and semi-parched parts

1.2: Objective

The primary point of this research is to look at the variation techniques of the Pastoralists to the effect of environmental change in Kajiado County.

1.3: Specific objectives

- i. Establish resources in the area of study that improve pastoralist resilience in Kajiado County.
- ii. Determine the different forms of adaptation methods used to alleviate the drought impacts.

iii. Determine factors that affect the proper adaptation of Kajiado's coping strategies

iv. Determine the role of government, extension officers, NGOs and UN agencies in resolving drought.

1.5: Justification

Because pastoralists depend almost entirely on natural resources, several difficulties are irredeemably exposed to nomadic livelihoods. For example, in non-equilibrium contexts such as African arid areas the vegetation cover of pastures relies on unforeseen rainfall patterns and other climatic factors (Scoones 1994). Nomads therefore respond to these uncertainties (crises) by employing various mechanisms of livelihood. It is therefore interesting to explore how Kajiado people, within their social networks, deal with such uncertainties (namely droughts). Therefore, this knowledge will improve our theoretical and empirical understanding of the indigenous ways of coping with drought and famine in the Kajiado nomads today, as indicative of how nomads uniformly behave under similar circumstances.

Second, the findings will allow us to recognize key variables in local adjustment trends that could be assisted, changed or improved to establish long-range frameworks for the management of drought and famine. The preparation of low-cost, but high-benefit solutions to coping with droughts demands that they be based on local adaptation trends. The knowledge gained through this research would also help to determine the appropriateness of the current intermediation strategy in Kajiado and whether there has been enough effort to find alternative approaches.

Lastly, this is a small-scale study whose results may add to established literature on human drought adaptation. If we extend and deepen our knowledge of adaptation, new approaches should be established that would not only allow pastoralists to cope with droughts but also enhance our understanding of their livelihoods, which could help us to rethink the existence and content of external livelihood interventions, be more in line with the different ways pastoralists make their lives and create their worlds. In the current situation in Sub-Saharan Africa where droughts are becoming both more frequent and more serious than ever, this is even more important. Together with a general fall in food production, the importance of the challenge becomes imperative.

CHAPTER TWO: LITERATURE REVIEW

2.1: IMPACTS OF DROUGHT ON AGRICULTURISTS

2.1.1: Drought

Fluctuating precipitation and dry spell recurrence are perceived attributes of dry and semi-dry regions all in all, and the Horn of Africa peaceful territories specifically. Dry spell has been the subject of a few logical examinations by researchers from different foundations and fields, as a characteristic peril. Subsequently, the ideas of dry spell fluctuated relying upon the kind of water or dampness needs. There have been various changes to a typical idea tending to rain disappointment in its standard season. The occasional dry spell, unexpected dry season, meteorological dry spell, horticultural dry spell and hydrological dry season incorporated a few terms and definitions for dry spell. Different terms, for example, "peaceful dry season" and "environment dry spell" (FAO 2002) will be proposed to qualify a dry season as indicated by land use or need. The World Metrology Organization proposed two definitions for dry spell: a) delayed nonappearance or helpless precipitation conveyance; and b) adequately drawn out time of unusually dry climate for ~lack of precipitation to cause a genuine hydro-coherent unevenness. Moreover, Article 1 of the United Nations Convention on Combating Desertification (UNCC) gave the accompanying definition: "Dry season" signifies the characteristic marvel that exists when precipitation has been essentially underneath typical recorded levels, causing extreme hydro-legitimate awkward nature that antagonistically influence the creation frameworks of land assets. "The accompanying definition was likewise given for a dry season related measure: 'Alleviating the impacts of dry spell implies exercises identified with dry season expectation and planned for decreasing the weakness of society and regular frameworks to dry spell as it identifies with the battle against desertification.'" (FAO 2002). In this manner, dry season is firmly connected to the lives of pastoralists in the Horn of Africa for a considerable length of time, yet it had extended itself to starvation and degraded neediness.

2.1.2: Water shortage as a natural phenomenon

Dry season is regularly taken as a physical occasion over some undefined time frame comprising of some level of precipitation deficits. This thus influences the degree of essential plant creation (grasses, trees, and yields) that continue animals and people (Toulmin 1983). Wince and Marriage (1999) propose the misconception so that "atmosphere checking, figuring, and displaying is regularly considered as a logical issue left to meteorologists and isolated from both the approach and emergency the board domains." This implies "researchers are giving logical information, while policymakers, alleviation organizations and NGOs need to concoct adequate reactions." They guarantee that such an oversimplified division can't be kept up. On the other hand, it is focused on that "worldwide climate frameworks speak to solidarity, yet climatic conditions and occasions are ordered by social developments." According to this recommendation, there is dry season "comparable to what is seen to be normal precipitation as opposed to as wonders that can be impartially recognized." Ergo, absence of precipitation is viewed as a deficient proportion of the ensuing changes in field and domesticated animals efficiency and to conjecture the effect dependent on these on human populaces. Initially, it is essential to separate between complete precipitation and valuable precipitation, the last alludes to rain which plants can utilize adequately to develop and create to development. Without information on the dispersion of precipitation during the stormy season and corresponding to the development patterns of various plants, it is hard to reach inferences regarding the impacts of a decrease in the general got precipitation (de Vries 1983). Second, it can't be inferred that there would be a proportionate lessening in domesticated animals efficiency for any abatement in field yield, in light of the fact that a straight relationship between the two factors is incomprehensible. Creatures may eat an a lot higher extent of dry issue delivered during field deficiencies, and may munch scrounge not eaten during typical years (Sandford 1976). Also, crowd the executives works on during dry spell can alter so as to improve the group's capacity to utilize a particular zone of touching. (2009 in Stanley)

Thirdly, to evaluate its physical and social effect, the precipitation experience of a solitary year ought to be identified with past patterns. Fourthly, and corresponding to the abovementioned, the effect of any rummage creation setback will rely upon current and past degrees of misuse comparative with aggregate and normal field conveying limit. Where creature stockpiling levels have arrived at the drawn out limit of the assortment consistently, decline in precipitation and scavenge quality would have a more articulated effect because of diminished stock and field conditions (Toulmin 2003). At last, any, dry spell estimation should mull over the geographic spread of these conditions. Along these lines, while confined dry seasons might be exceptionally normal occasions around which peaceful frameworks can sort out themselves, conventional frameworks of collaboration and sharing on a local scale will most likely be unable to adapt to the dry spell conditions (Hjort 2006).

2.1.3: The ramifications of dry spell

The focal job of dry spell in conventional peaceful creation frameworks could be perceived corresponding to (i) the components by which the harmony between people, groups and fields is kept up, and (ii) portrayals of the individual investors' administration and farming choices. The greater part of the definitions given above basically saw dry season as an occurrence including absence of water, ordinarily because of disappointment in the precipitation. At the point when the downpours return a dry season is viewed as finished. Nonetheless, for the casualties of dry season the seriousness of a dry spell isn't just connected to the frequency of downpour, however it likewise to a great extent relies upon other valuable assets being accessible. All the more significantly, the time of recuperation from dry spell might be any longer among peaceful individuals than the arrival of the downpours would lead us to assume. One of a specific deferral as a result is the worldly connection among precipitation and food creation. A decent downpour takes into account the development of grains, for example, millet and sorghum for an instance

of dry regions however the yield must be collected following three to five months. Until they can give milk the creatures need to get pregnant. How not long after downpour they can be drained relies upon the sort of creature, how rapidly they respond to an improvement in the field and how long their pregnancy will last. After a large portion of a year, sheep and goats give milk, however with camels and cows the deferral is longer, as they convey their calves for longer periods. 10 For the situation of camels, the main calves are conceived in an ideal opportunity for the following year's downpours. A decent year can have enduring impacts for the whole year that follows, regardless of whether that ought to be terrible. The individuals who have camels and cows are still permitted to get milk. Surplus grains from a decent reap might be put something aside for the terrible year, and utilized for both family and group taking care of. However, the framework works in this ideal route consistently. Absence of downpour that goes on for quite a while can cause serious varieties in group extents, which give milk or are dry at some random time. A decent year after a long dry spell makes all camels pregnant and the next year there will be a lot of milk yet no creature, which can be impregnated openly. The following year again there will be a milk lack, paying little heed to how much rain falls. Notwithstanding such efficiency changes, the segment impacts of the fiasco are additionally present. Excessive number of fatalities of certain creature age classes, or a break in births, make influxes of awkwardness in the arrangement of the creature populace over an extremely long haul. After some time, an even advancement of the crowds and their creation is a basic and troublesome issue.

Dependable field that can be used in dry years and strong induction to additional feed in the purchased grain are the gadgets expected to address these troubles and as such cutoff mortality (Hjort and Dahl 2001). For quite a long while, the results of delayed dry spells may must be lived with, regardless of whether the grass is growing, green and peruse. It's a progressing dry spell emergency that will in general pull in most inclusion, regardless of whether we're pondering broad communications, sociology research, verifiable records or society recollections. The individuals straightforwardly hit by them

experience the drawn out impacts as difficulties and destitution, however next to no examination has been done on them anyplace on the planet up until this point. At the point when the requirement for such examination is understood, the fundamental pattern study is generally past the point of no return, and the larger part advancement situated exploration, Depending on RRA, PRA or whatever, the timespan is too restricted to even think about covering and welcome these techniques.

Dry spell ought not be found in the peaceful setting as some outside occasion that is distanced to the peaceful economy's understanding and work, yet rather as a component inside the creation framework itself around which makers situate their exercises, deciding types of association and methodologies to follow.

In this way, a translation of peaceful networks' activities and procedures ought to be centered around understanding that society puts substantially more spotlight on limiting the effect of downturns on monetary thriving than on capitalizing on it from rise. As such, it is more obvious ordinary peaceful frameworks on the off chance that one accepts that they are more worried about limiting future misfortunes than improving individual advantages.

2.1.4: Drought affects in rural areas

The Horn of Africa area today is among the most influenced by regular and synthetic catastrophes. The greater part of the number of inhabitants in the nation exists on not exactly US\$ 1 daily, and a great many the world's hungriest individuals live in this piece of the world, as per the FAO (2002). Dry spell and strife are recognized as the primary driver in the area, which regularly fuel the issue of food creation, conveyance and access in a previously testing condition of delicate biological systems, hardship, and now and then poor financial execution and the board.

To see how dry season influences pastoralism, it is essential to solicit, "how are the occupations of pastoralists influenced by dry spell?" The most immediate effect of a lack of precipitation on the vocations of pastoralists is the evaporating of water sources and declining scrounge assets for domesticated animals. Water and scrounge are the most significant assets for pastoralism and enormously change their accessibility for pastoralists, is straightforwardly subject to admittance to rummage and water assets. Admittance to rummage and water assets will in general abatement during an enormous scope dry spell with the outcome that pastoralists lose resources.

During dry spell, pastoralists are primarily faced with two cycles which unfavorably influence their capacity to help themselves, adequately raising the base number of crowds expected to keep up the family unit. Initially, they are confronted with a drop-in efficiency levels from their crowds following misfortunes in their animal's capital from higher death rates, low or zero calving rates, decreased milk creation, and creature weight reduction, which lessens their fairly estimated worth. These components alone would make the peaceful undertaking and the family unit less equipped for fulfilling their requirements. For instance, Coppock (2004) shows that the dry spell of 1983-84 in Borena, Ethiopia, diminished cows thickness by 60 percent because of a 42 percent loss of domesticated animals mortality, 14 percent lost because of constrained deals and 4 percent lost because of butcher. He additionally referenced that there will be a high decrease in milk creation, 92 percent. This constrained families to change the synthesis of their eating routine from more milk to more grain and diminish their calorie admissions.

Second, other than lower profitability levels inside the domesticated animal's division, pastoralists are typically confronted with changes regarding exchange during dry spells that unfavorably influence the buying power spoke to by their groups. This is on the grounds that the states of dry season additionally sway the rural part; a diminished amount of grain will be accessible for commercialization. What's more, interest for animal's items by cultivating networks is probably going to decrease because of diminished

profitability in the horticultural part because of dry season and helpless creature wellbeing, combined with generally flexible interest for domesticated animals' items, for example, milk and meat, as compared to grain. For comparison purposes, Coppock (2004) points out that the above-mentioned drought in Borena caused a 90 per cent fall in the pastoral terms of trade as a result of a fall in livestock prices and an increase in grain prices.

Dry spell transforms into starvation if the worth drops to the point that they can no longer purchase the food they have to support themselves. Needy individuals are the most defenseless against dry spell, since they have less buying power, which means less right to food (Oba 2007). Starvation isn't the main hazard related with dry season; desperation is another significant threat in the long haul (Summer 2008). Appetite is professed to be the first and impending danger, yet the drawn-out hazard is the hardship of pastoralists. When pastoralists become dejected, food weakness turns into an incessant – instead of a brief – issue, in light of the fact that the financial open doors in peaceful territories outside the peaceful segment are commonly poor. A few contextual analyses show the examples of progress in various dry season cycles are indistinguishable. For instance, Toulmin (2006) partitioned the dry spell cycle into three stages, in view of field creation conditions, animals' numbers and conditions, and grain and animals' costs.

2.2: The Context: The Pastoral Sector

Pastoralism is recognized as a financial action based on chosen attributes which are generally considered while recognizing this part from others. A few pastoralists work in the Horn of Africa are centered around at least one of these chose highlights to portray peaceful social orders' activities in light of changes in the financial and environmental atmosphere (Helland 2000)

To outline the peaceful segment in the Horn of Africa district, the accompanying six attributes are distinguished; These are viewed as of specific significance while examining dry season and recuperation systems among peaceful family units in the sub-area being thought of.

2.2.1: Livestock Reliance

The first and most key quality of peaceful social orders is their direction towards the touching of domesticated animals on common fields. A peaceful family unit's pay is commonly gotten from explicit financial exercises, where the most significant patrons are animals and animals related exercises (Zaal 1999). This basic trait of a peaceful family demonstrates a few results considering the present situation for the lead of capital amassing of families. Hogg (1997) depicts the four in this regard critical impacts. Right off the bat, peaceful capital can replicate itself with no market component mediating.

Consequently, except if group proprietors have reasonable elective types of venture, they tend to reinvest in crowd development for pastoralists. One of the unavoidable outcomes of this circumstance is that the animals' populaces will inevitably surpass the limit of the range, taking everything into account. Also, on the grounds that pastoralism is outfitted to group rearing, there will definitely be an excess of creatures that can be discarded without influencing the crowd's regenerative limit. Third, in contrast to the cultivators' case, post-dry season recuperation among peaceful family units is a long and moderate cycle since re-constitution of groups after dry spell is a long, slow cycle. Fourthly, dependence on animals normally makes peaceful family units helpless against changes as far as exchange, particularly among domesticated animals and grain, which is more regrettable during the dry spell time frame.

2.2.3: Arid and semi-parched environmental factors

The second significant attribute of nomad communities stems from the physical condition where they live. Horn of Africa Countries are among the 36 nations wherein most of the land has a place with the parched and semi-dry atmosphere. Such bone-dry and semi-dry conditions are set apart by extraordinary volatility and rainfall unreliability, both between different years and in the same year, between different

locations. Therefore, these zones are described by shortage and occasional fluctuation of vegetation and weakness to dry season/peaceful regions, while some yield species might be created in acceptable years, and are commonly minimal for escalated crop creation.

As an outcome, domesticated animals' creation is by all accounts the main option accessible under the current innovations. By the by, this minor part of the physical condition additionally forces a few imperatives on "examples of advancement and settlement of domesticated animals" Following Hogg (1997a, 4) somewhere in the range of five ramifications of the physical attributes of the peaceful environment could be expressed in the feeling of dry spell and recuperation procedures. Right off the bat, the versatility to dry season and sickness decides the creation of animals over profitability. Thus, pastoralists will in general amplify number than efficiency per head instead of what the standard talk on animals' advancement proposes. That is on the grounds that more effective species could be more defenseless against hunger than inadequately performing creatures (Coppock 2004, 11). The second significant suspicion getting from this bone-dry and semi-dry atmosphere is portability,' which is a basic response to the 'spatial impacts of precipitation variances on grain and water. Third, crowd broadening is ordinarily worked on moderating the impulses of this minimal naturally cordial asset. Fourthly, the development of crowds "is craftier than traditionalist." This circumstance powers pastoralists to follow the "system of checking the accessibility of touching" instead of "limiting the quantity of groups" due to their weakness to dry season thus, "in great years, the quantity of domesticated animals can just increment to crash in terrible years." Fifthly, it builds up network responsibility for rangeland, which in any case confines admittance to a wide assortment of potential brushing zones.

2.2.4: Affect and Change

The issues of progress and transformation are considered with regards to peaceful creation frameworks in Africa, as in pastoralism is anything but a static financial movement yet an action that continually modifies itself to changes in the biological and social atmosphere guided by both inward and outer

powers. Trough (2000, 3-4), for instance, shows East African Pastoralists' transformation and recommends that:

The regular habitat in East Africa is changed, with height varieties, dry and wet season precipitation designs, waterway frameworks, soil types, and vegetation spread. This fluctuated design has impacted the appropriation of settlements and populace developments and the conveyance of monetary exercises, for example, cultivating and touching in crucial ways. The human reactions to this variety were to create versatile examples that were adequately adaptable to adapt to the variety and limit hazard. This adapting was described by developments in various seasons across zones and by blend of Many exercises yield and creature cultivation; chasing and assembling; wage work, and so on. Such a blended economy places requests on the work intensity of financial units, on their examples of advancement, and on information and authoritative limit. Trough (2000, 4) additionally expresses that peaceful transformation systems have influenced social and political wildernesses. Populace developments can be seen in this sense, truly just as contemporary. These developments and variations have likewise manufactured associations between gatherings: savage ones, for example, cows stirring and attacks, helpful ones, for example, organizations, complementary connections dependent on creature sharing and communitarian ones, for example, making a system of work. Provincial business sectors and exchanging focuses, just as urban areas, will be significant gathering places that additional further to relationship development. The equivalent applies to the development of various force places.

Hogg (1997, 106) contends on the issues of progress and variation that conventional peaceful "land residency isn't something fixed in time and spot, however something continually adjusting to new conditions." He further clarifies that these "land residency changes are an impression of more extensive financial and social changes in the nature and type of peaceful social orders and land-use rehearses." To the individuals who contend for advancement intercessions to assist peaceful with adjusting to a given evolving condition, the circumstance is of useful significance.

2.2.5: Differencing

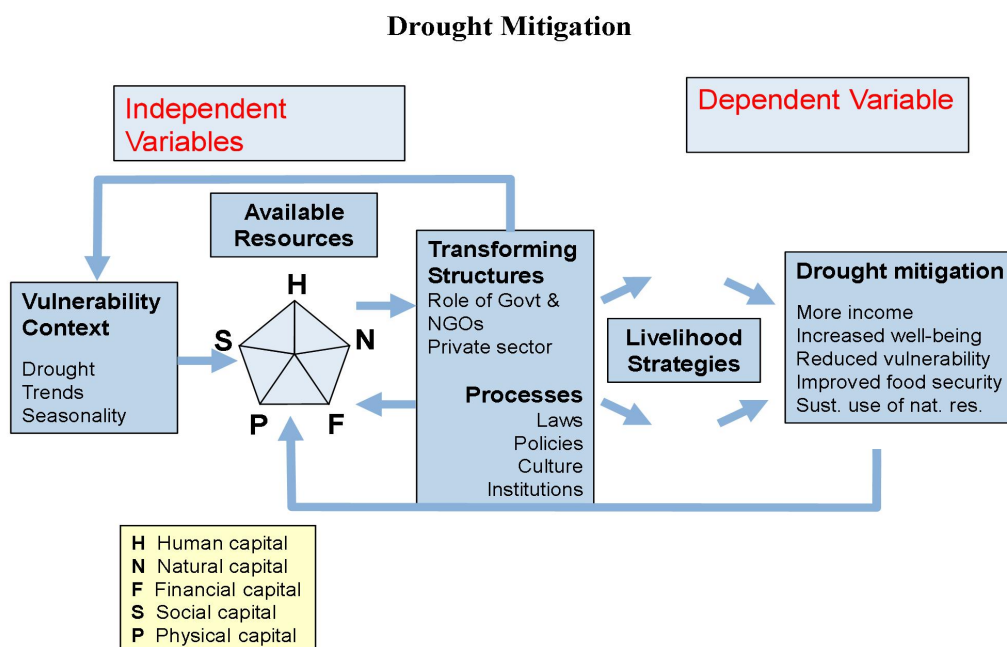
In spite of the fact that somehow or another there are shared characteristics, peaceful gatherings are separated by, for instance, their topographical area and ethnic foundation along specific factors. The idea of separation by and large underscores that not all pastoralists in Sub-Saharan Africa face similar way of life and imperatives, and subsequently there is plainly a need to recognize more between various sorts of peaceful networks in strategy and mediation structure instead of basically alluding to a "homogeneous" gathering of "African pastoralists," as is regularly the situation in writing. It is critical to take note of that while there are numerous likenesses in the kinds of stress and versatile procedures confronted, there are likewise noteworthy contrasts that influence their vocations. A portion of the networks are transient, while others are transhumance pastoralists, living in their towns for part of the year and moving with their crowds as seasons and accessibility of water and brushing for their animal's needs. Peaceful social orders are likewise divided fittingly (Coppock 2004) contends that African pastoralists are different and in this way the idea of "normal family unit" has little use in understanding the elements of the framework or in endorsing general intercession draws near. Actually, Coppock further focuses to the developing pattern of understudies at separation as the idea of "normal family unit" is less substantial today than it was 30 years back when social orders would not be so assorted. Similarly, Opchoor (2001) takes note of that "it is essential to get contrasts and to comprehend the natural, monetary and political issues explicit to each gathering and setting." with regards to dry spell, water deficiency the executives and recuperation, these assorted variety of family units and territorial varieties would suggest various degrees of weakness to the IU impacts of dry season, just as specificities of adapting and recuperation procedures.

2.2.6: Geographic location

Different peaceful gatherings in the Horn of Africa are discovered adjoining one another and, by and large, in the fringe districts of their individual nations. For instance, in Ethiopia, most of peaceful land is

found in low-lying fringe regions encompassing good country cultivating networks, circumscribing other peaceful gatherings in neighboring nations. This course of action would have some significant ramifications. One is that in discovering field and water, the customary method of creation requires occasional portability, including cross-fringe versatility. Nonetheless, the circumstance in the Horn of Africa is getting progressively troublesome because of various components, including political unsteadiness. Another result of this geological area is that limited dry seasons are probably going to spread to different gatherings of pastoralists as the influenced bunches will in general move with their creatures and to apply pressure on peaceful assets somewhere else.

CONCEPTUAL FRAMEWORK



CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The part gives special conventions to be followed in directing the proposed examination and clarifies the exploration strategy. This clarifies the idea of the examination, the area of the investigation, the examination populace, test size, inspecting techniques, tweak, legitimacy, unwavering quality, assortment of information, association and assessment. This additionally gives motivations to choosing various procedures that will be utilized in the examination.

3.2 Research Design

The report used the research method for the descriptive survey. A analysis involved analyzing predicament, as it is in an effort to explain why and how the situation is the way it is, according to Wiersma (1995). This design permitted accounting and adequate explanations of events, items, and individuals. This form of design provided not only definitions and explanations but also defined and projected relationships within and between the study variables.

The research was in Kajiado West Sub-County.

3.4 Target Population

All pastoral households constituted the target population for study.

3.5 Sampling Procedures and Sample Size

An example bunch is a plausible methodology determined for gathering an example from a given populace before information is really gathered (Orotho, 2005). The investigation target populace was 174,609 men. The mean size of the family is seven individuals. Subsequently there are 24,944 family units in the examination zone. A likelihood examining procedure was then decided utilizing a normalized widespread recipe given by Yamane (1967) to a 95 % level of certainty and accuracy of ± 5 percent. The definition is as per the following:

$$n = N / (1 + N(e)^2)$$

$$n = 24,944 / (1 + 24,944(0.05)^2)$$

$$n = 394$$

Inspecting method gave an opportunity to every managerial unit and NGOs in Kajiado County to be remembered for the example (Kathuri and Pals, 1993). As per (Borg and Gall 1996, Mugenda and Mugenda 2003), separated examining guarantees consideration into the example, subgroups that would some way or another be totally excluded by other inspecting techniques because of their modest number in the populace. Fraenkel and Norman, 1990; Kathuri and Pals, 1993 further suggest that at least 100 subjects be required for enlightening investigations. Respondents who partook in the examination were then chosen by essentially irregular inspecting.

3.6 Instrumentation

The research utilized both a shut and an open-finished survey and timetables for meetings to gather essential information. The overview questions were commonly isolated into two fundamental parts; the initial segment assembled data about the respondent's profile, for example, age, sexual orientation, work involvement with the examination zone and conjugal status. The subsequent area managed questions identifying with the targets of the report. The meeting plans had a portion of similar inquiries as the survey, however were to be utilized to demand the respondents' data to increase a more profound knowledge into topics or issues that were either excessively close to home or complex for the respondent to react straightforwardly to.

3.6.1 Validity

Legitimacy implies that the information assortment instrument genuinely computes what it is planned to figure. Consequently, the instrument was given to farming expansion specialists at the Kenya Methodist University Department of Agriculture, chiefs and companions who helped with assessing the apparatus to talk about its substance and face legitimacy after the making of the poll. This included abstract audit of the articles to decide if they spread the material evaluated by the gadget, and guaranteeing that important information from which surmising's were drawn was given by the instrument. It was to utilize their remarks to improve the instrument.

The poll was pre-tried to guarantee that the instrument used to assemble information would precisely gauge what it should compute. Pre-testing included testing the field poll on a little chosen test of roughly 10 percent of the real example size of 92 cases. In Narok County, pre-testing was performed and the strategies utilized were like those utilized during genuine information assortment. The subjects were welcome to offer comments and suggestions about the bearings, explanation and significance of the inquiries presented.

3.6.2 Reliability

The Cronbach alpha coefficient was used to assess the reliability of the questionnaire products. According to Mugenda and Mugenda (1999), a good measure of dependability is provided by the coefficient because keeping other factors constant, the more similar the test content and the conditions of administration are, the greater the internal consistency. Bryman and Cramer (1997) propose a value of 0.70 and above for reliability.

3.7 Data Collection Procedures

The analyst has looked for an examination license from the National Council of Science and Technology (NCST) subsequent to accepting endorsement letter from the doctoral level college of Kenya Methodist University. Pre-study visits were made to the individual area animals workplaces and Kajiado County territorial rural workplaces to plan the examination to find and overview the expansion staff and book arrangements for ensuing meetings. Tested expansion laborers assembled information during normal working days. At every possible opportunity, the analyst managed the poll to the respondents, permitted them some an ideal opportunity to finish and gather the survey things around the same time. For circumstances where the respondents were inaccessible for face-to - face conference, the polls were sent to the review augmentation laborers by means of email delivers to fill in and return through a similar cycle. Pastoralists from each area were distinguished and met on their recognition and assumption about the conveyance of value agrarian augmentation administration.

3.8 Data Analysis

The information assembled was audited, checked, and stacked into the data set for any likely mistakes. The information examines is done utilizing the Social Sciences Statistical System (SPSS version 20). The targets were examined utilizing frequencies and rates and the discoveries introduced utilizing tables and an investigation of substance.

They likewise utilized inferential insights, for example Relapse and relapse, and breaking down the reason.

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1: Resources within the area of study

4.1.1: Resources of Water

Water asset focuses are critical for animals' creation and for household use. They likewise influence other land use and monetary works on (counting search creation) subject to appropriate water positions and other related assets. The water-related activities (counting the development and reclamation of wells and boreholes) additionally lead to sparing lives and vocations, just as improving the opposition of pastoralists to dry season and different fiascos. Brushing designs, occasional relocations, and profitability of the two creatures and people are additionally elements of water accessibility.

Sources of Water during the Dry Seasons

Family unit study members characterized the key wellsprings of water during the dry seasons (see Figure (4.1): the fundamental wellsprings of water during the dry seasons) as the accompanying as far as criticalness communicated by the level of respondents: earth dams (cited at 25.1 percent); water skillet (22.7 percent); streams/streams (19.2 percent); shallow wells (16.7 percent); boreholes (10.2 percent); and rock catchment.

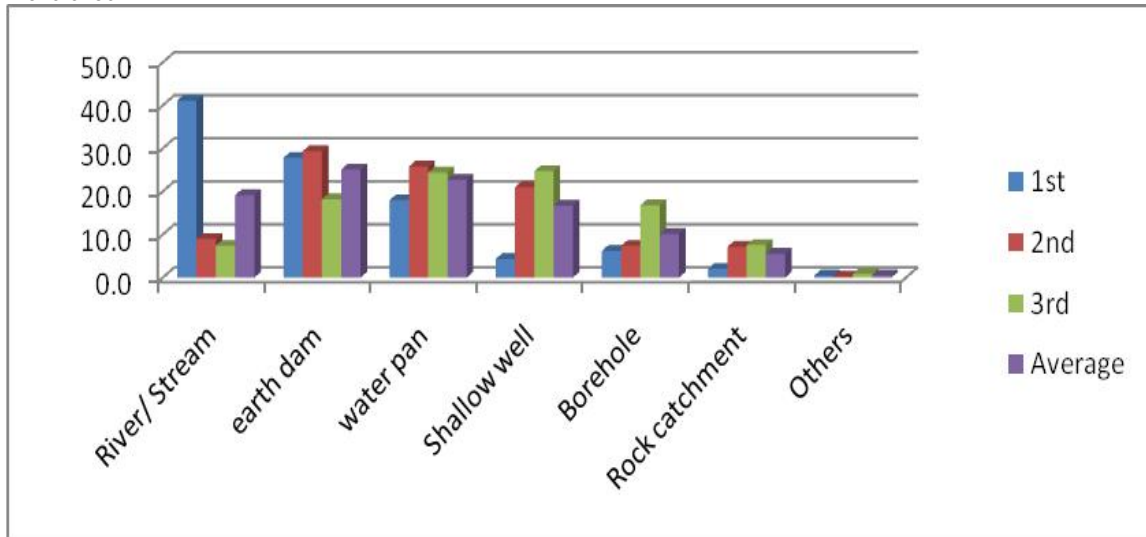


Figure 4.1: Main Sources of Water during the Dry Seasons

Distances to Water Points during Dry Seasons

The subtleties assembled across concentrating on bunch discussions and key witnesses proposed that family units in Kajiado travel considerably longer separations looking for water and lining at water focuses. This antagonistically impacts the profitability of steers for pastoralists. Likewise, the inclination showed by the family unit study respondents is that, in a perfect world, the separation between the principle water focuses ought to be between 2 km and 6 km (4 km to 12 km with the arrival venture). Perceptions through different investigations have arrived at a normal separation of 12 km without stress (Mati, et al , 2006).

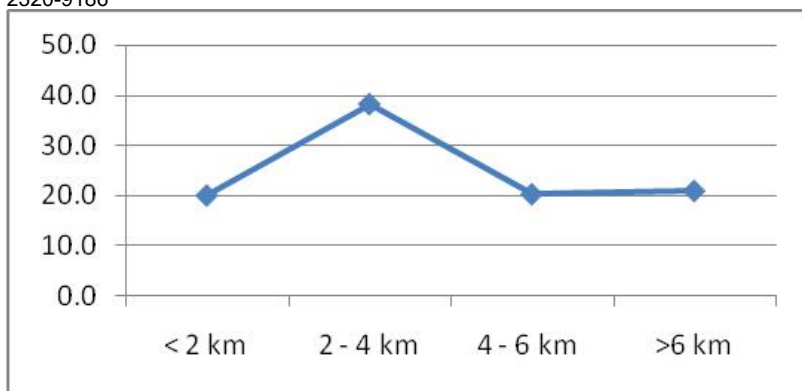


Figure 4.2: Distance between the Main Water Points

4.1.2: Resources for Rangeland

Native Plants as a Significant Rangeland Resource

Characteristic vegetation is a significant land-use asset in Kajiado. Items, for example, live animals on the homestead, animals feed, milk and other domesticated animals' items that are as a rule subject to common vegetation can possibly create critical salary for pastoralists and agro-pastoralists. The endurance of populaces in the rangeland regions depends on the assurance of this essential asset (ESGPIP, 2009). In this explanation, skill, experience and set up strategies in the utilization and the board of normal vegetation have been utilized throughout the most recent decades

Institutions Governing the Usage of Pasture and Water Resources

Already, the network establishments engaged with overseeing the use of field and water assets have been either gatherings of seniors who are answerable for dynamic as identifies with asset use and control, or ordinary organizations, for example, Natural Administration Advisory groups – EMC or water clients' affiliations – WUAs), or a mix of both (van't Land and Wekesa, 2008). The family unit study was utilized to evaluate the flow patterns in regard to organizations administering the utilization of field and water with specific enthusiasm for building up foundations which are as yet assuming a significant job in such manner. The organizations that would should be centered around as of now were recorded as

consequently arranged by the key jobs play as reflected by the showed level of the respondents (see also

Figure 4.3 below):

Conventional older folks (53.4 percent); ii) Water clients affiliations (24.6 percent); iii) Ecological administration councils (20.5 percent) others 1.5 percent.

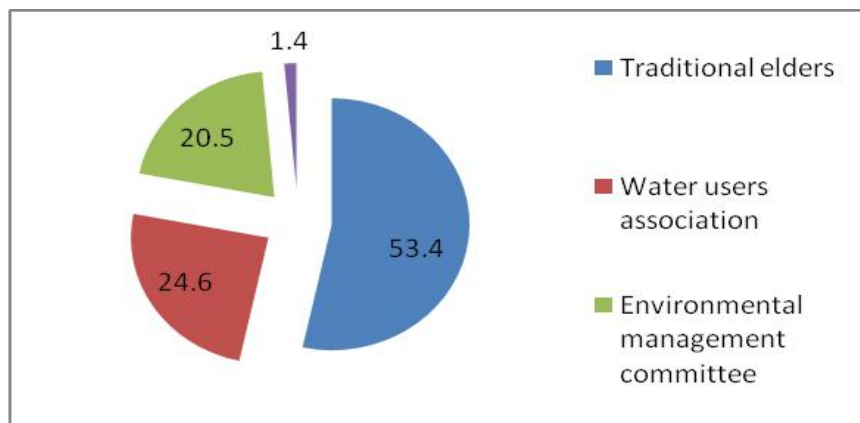


Figure 4.3: Institutions governing the use of Pasture and Water Resources

4.2: Adapting to Pasture Deficiencies

The discoveries of the family overview inside Kajiado recorded the accompanying methodologies (see additionally Figure 4.4 beneath) as the fundamental adapting techniques in tending to pasture deficiencies especially during the dry seasons or times of serious dry spell as introduced arranged by significance: I) Parting of crowds by species/types; ii) Admittance to advantageous feed/feed; iii) Movement to touching stores; iv) Brushing reservation and security.

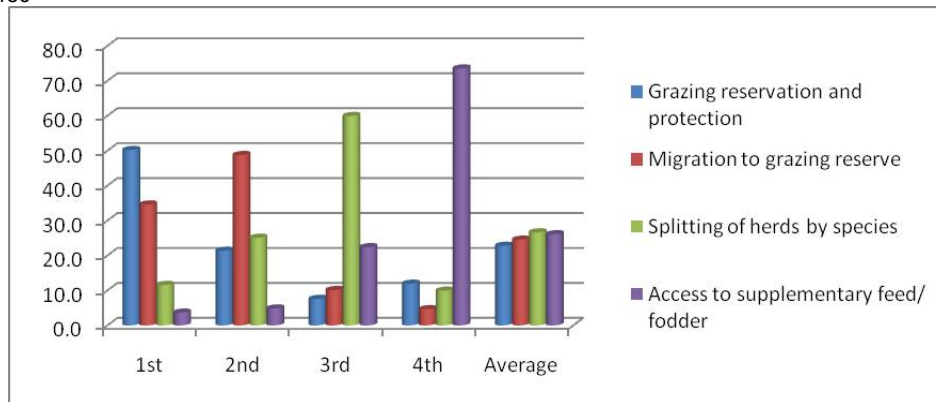


Figure 4.4: Key Mechanisms for Coping with Pasture Shortages

Extra data from key witness interviews, center gatherings conversations and writing survey demonstrated that the pastoralists' ability for adapting to pasture and different assets (remembering key developments for search of feed and water); different crowd the board methodologies, for example, group parting, crowd enhancement and group boost to guarantee that they spread the danger of animals misfortune from dry seasons, sicknesses and robbery) is reducing because of waning asset base, changes in residency and admittance to land and water, just as the effect of different stuns, for example, flooding (prompting loss of water through run-off and decreased limit with respect to soil water maintenance

4.3: Potential for Domesticated Animals Creation Improvement through Usage of Other Non-Domesticated Animals Rangeland Assets

The society inspected through family audit and focus gathering discussions, perceived key non-trained creatures' rangeland resources open in the area with potential for overhauling the current creatures' creation business or headway of elective ones in their districts. The recorded choices were analyzed through assessment of fiscal sensibility, thing openness and normal impact of misuse. The unmistakable points of interest recognized which were considered as having potential for improving tamed creatures' creation (see furthermore Figure 4.5 underneath) included: I) ecotourism (37.2 percent);

ii) restorative plants (25.5 percent); iii) mineral assets (12.8 percent); and iv) building sand (9.4 percent).

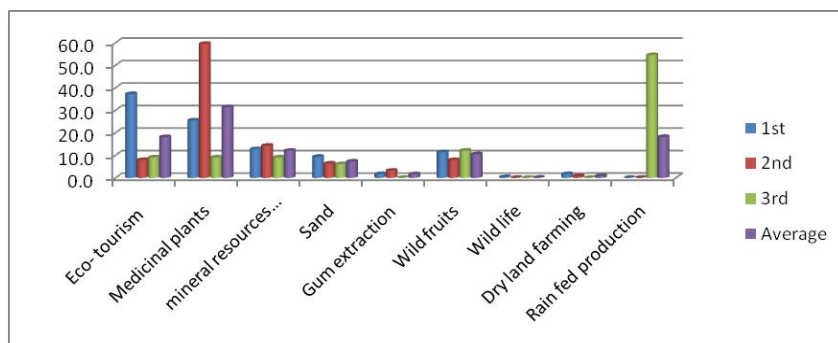


Fig. 4.5: Open doors for Usage of Non-animals' rangeland Assets Features on the Referred to Circumstances: -

a. Wild-life/Eco-tourism industry

Ecotourism (similarly delineated as system untamed life the movement business) inside the dry grounds of Kenya (these being honored with regular vegetation and characteristic life) which maintain 80% of the country's eco-the movement business (IUCN, 2009) has exhibited to be a practical decision for improving the rangeland economy and building the pastoralist systems' adaptability to dry season and ecological change. Ecotourism has therefore wind up being suggests for arrange incorporation in biodiversity insurance and normal resource the chiefs; and as commonsense business and means for cash age from trademark resources for the pastoralists inside the northern rangelands.

b. Medicinal Plants:

The necessities and critical degree of shortcoming radiating from the inability to deal with the expense of or nearness of decreases in present day veterinary organizations in which trained creatures owners can't rely upon veterinary organizations for control of various huge tamed creatures sicknesses, have impacted the pastoralists who have far off, inaccessible zones of the dry and semi-completely dry regions. Consequently, restorative plants in the ethno-veterinary practices have been

used as a utilitarian response for such issues (ALRMP, 2005). The fixes from the respectably sensible sources have given the indispensable backup course of action, or have reasonably enhanced present day veterinary prescription. There is in like manner potential for business use of restorative plants (for instance Aloe Vera, Prunus Africana, etc.) that create in the northern rangeland zones. Such resources give elective wellsprings of nuclear family pay. In any case, the current noteworthy objectives impacting all the fuller abuse for this potential endeavor consolidate lacking neighborhood capacity to handle the advantage, and vulnerable market information and access.

c. Sand harvesting (scooping)

Sand social occasion can be a critical wellspring of pay and can give elective wellsprings of employments among the Kajiado pastoralist systems. Nevertheless, there is basic prerequisite for keeping an eye on the current aimless and environmentally unrealistic maltreatment of this trademark resource.

Regardless, as Figure 4.6 underneath shows, there are key issues that would ought to be tended to in order to grow the focal points from maltreatment of the non-creature's rangeland resources. The recorded top three among them are: 1) Rivalry for water among creatures and characteristic life; 2) Untamed life predation; 3) Untamed life disease transmission/water contamination; and 4) A couple of plants being harmful during the dry seasons.

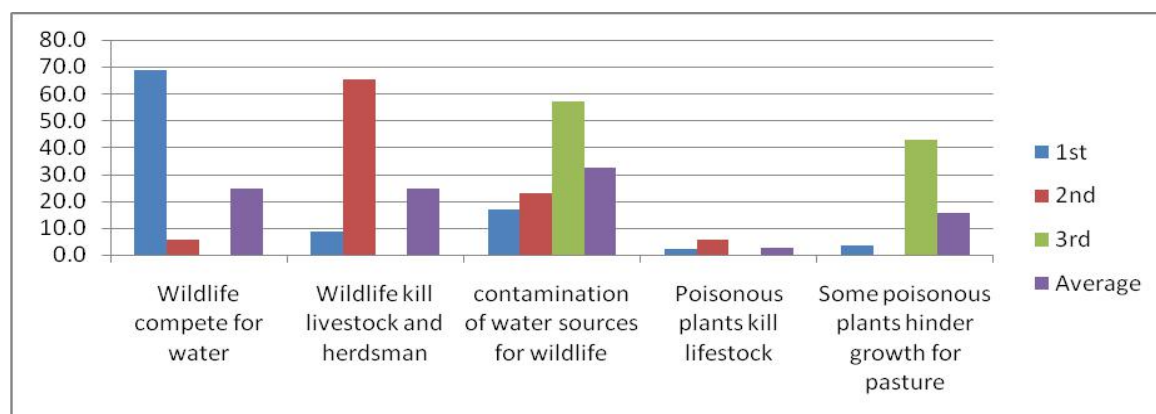


Figure 4.6: Non-Livestock Resources Hampering Livestock Production

Cultivated Fodder

There is huge decline in herbage availability for creatures in the quiet domains during the dry time span. The rot impacts both the sum and nature of scavenge and the size depends upon the earnestness of dry season. The disaster in supplements on various rangelands can go up to around 70 percent foul protein joined with noteworthy adversities in consumable protein and supplement A.

Disintegrating of worth is connected with quick augmentations in lignin content which cuts down feed absorbability subsequently aggravating the reduction in nutritive assessment of scrounge.

At the completion of the dry season and as it so happens in the turbulent season, creatures are under most noteworthy concern comparing to deal with affirmation and sustenance nature of their eating schedule. There is having to help issues related with low sum and nature of dry season feed through supplementation with various feedstuffs, for instance, apportioned grain, crop developments and agro-current reactions if available.

4.4: Adaptation methods in Kajiado County

There are different habits by which pastoralists react to ecological change. The different change types are called typologies. In this portion the ensuing objective will be answered by understanding the different habits by which the people in Kajiado acclimate to natural change. The typologies found in the assessment area with their relative rates are showed up in the table underneath;

Table 4.1: Adaptation methods used in the study area

Method	Relative percentage
Autonomous method	100
Social networks method	67
Reciprocity method	36
Neighborhood method	61
Stock-associates and Bond-friendships method	38
Splitting herds and families method	26
Pooling resources method	22
Species mix method	16

4.4.1: Autonomous method

Independent variety is a change which is customary or "not organized" or learning by doing. For example, keeping indigenous creatures in Kajiado in light of the fact that they are more changed in accordance with those climatic conditions is an instance of self-administering kind of change. All the families met used this adaptable measure.

4.2.2: Social networks method

Long range relational correspondence has been a lot of depicted in both sociological and anthropological composition (Davern 1997). 67 percent of the nuclear families use this adaption strategy. To perceive

how the thought capacities for Kajiado families standing up to a crisis, this hypothesis will insinuate pieces of various makers: Davern (1997) describes a casual association as a movement of prompt and underhanded ties from one performer to a combination of others, regardless of whether the central performer is an individual or an aggregation of individuals (nuclear families); Moser (1998) describes it as corresponding associations which rely upon family and spot of cause; Dasgupta (2000) depicts it as the encapsulation of social capital; Ellis (2000) bases on casual associations formed by near and dear or family associations that commonly include close or far off family similarly as close family. The families are spread out over a various extent of zones and can respond when past kindnesses need to reacted; and for Johnson (1999), frameworks are associations with the past, present, and future. Johnson battles that a framework perspective licenses one to cut across family characterizations and focus on the associations among dynamic and inactive associations and that it is a relationship with people who can give material assistance to those defying a crisis, for instance, when there is food vulnerability. With the ultimate objective of this examination and as a significant part of our appreciation of how Kajiado people get by in an irrefutably inconvenient, dry condition, the possibility of correspondence shapes the most huge part. As a matter of fact, my respondents battled that their frameworks organization direct was deliberately neglected in the arrangement of critical business game plans in their overall region. They affirmed that the turn of events and backing of social relations is an orchestrated activity strategy and a technique for overseeing work dazes, and implies unequivocally to non-market moves of items and undertakings between families. Respondents explained that an individual's framework includes people who share food, exchange creatures, talk about provisional plans, share information, make decisions and participate in normally warm work.

4.4.3: Reciprocity method

Correspondence is a huge insurance system. Only 36% of the respondents used this procedure. It is set up and kept up by the reliable exchange of creature's gifts. Danny de Vries, et al. (2006) keeps up that pastoralists swarm stock to engage them to oil relative relationship through the dissemination of trained creature's enrichments. Reciprocal cases are considered as a saving cycle. In various resources, Kajiado people believe them to be as having a spot with individuals, yet notwithstanding the more removed family. In some cases, the amount of creatures paid as woman wealth is every now and again significantly greater than one man can pay, and the size and course of action of woman of great importance wealth depends upon the bounty of the mate and that of his more far off family. According to key sources, relatives, neighbors and allies (stock accomplices) will help and contribute an animal. Animals gave by others are not completely favors, and the people who offer would like to repay a later stage. The comparing case can go beginning with one age then onto the following. Witnesses re-validated that the Kajiado open usually see the reciprocal structure as a segment of peril the board as it enables the system to set up social commitments of shared trait between auxiliary get-togethers.

4.4.4: Neighborhood method

According to Gulliver (1955), neighborhood insinuates a specific social event of habitations or customary locales of contacting. It is a free assembling of mates and relatives, which may move together to follow new fields. As demonstrated by witnesses, there may be three or four properties purposely collected at basic issues, for instance, in a valley or along a major water course. These contacting affiliations, or neighborhoods, are regularly a transient explanation of more constant ties between relatives, guardians in law, and partners. Most of the respondents used this method as a variety to natural change.

There are fundamental and discretionary neighborhoods. Fundamental neighborhoods are little social affairs of bequests in a given geological territory, for instance, on a plain. The domain may number up to three families which are arranged about 500m isolated. An assistant neighborhood may be incorporated up to a couple of fundamental neighborhoods in a domain of about 10km². The living arrangements are topographically almost each other and use a comparative water centers and fields or eating locales.

Neighborhoods' give some security from likely assaults by bandits or neighboring families. neighborhoods moreover expect a regulatory activity supervising permission to water, field, and general standard resource use by all people in a given topographical region. For example, during a deferred drought, people from basic and discretionary neighborhoods' may use comparative fields and water centers.

Beside sharing resources, living arrangements share corporate obligation with respect to keeping up water openings. Sources pointed out that territories go about as a corporate system whereby people share food, for instance, meat, milk, and grain in adversarial natural conditions. For example, heads of nuclear families would butcher animals hence and offer meat with all people from the region.

Neighborhoods' moreover perform social occupations or limits. Meeting centers in a territory, for instance, water pools become natural surroundings for the spread of information on the state of fields, timing of functions, striking plans or a spot to deal goats, skins for grain or iron item

A zone is authentically not an enduring social foundation. It isolates normally and units would pull together due to characteristic changes. Changes in climatic conditions, for instance, the change from wet to dry season serene conditions realize the improvement of habitations and consequently the disintegrating of neighborhoods. The piece and zones of neighborhoods sways comprehensively from year to year; my discernment during hands on work is that when the peril of ambushes or food crises is more vital, the relationship creates, is more solid, and moves as a unit.

4.4.5: Stock-associates and Bond-friendships method

Stock-accomplice transport has been a preparation among the Kajiado people since pre-commonplace events, and were not formed cautiously inside Kajiado borders. These game plans are a noteworthy association of composed exertion among individual Kajiado herders. It fuses relatives and outstanding mates whose associations are built or braced by normal assistance or the gift exchange of stock animals.

One may search for stock in time of shortage and give stock when others are stuck between a rock and a hard place. 38 percent of the respondents use this method as a variety to natural change. As demonstrated by sources, when stock is depleted by pandemics or frustrations of fields or dry season, a person with lacking stock to warrant his own one of a kind distinctive camp would collect his stock with other stock accomplices to restrict the threat of disease or setback from assaulting. Thusly, stock accomplice transport is the focal point of social relations among the Kajiado people whereby one may go to feasts and get food and shelter in the home of a stock accomplice. Each man's float of stock accomplices is a substitute framework, both socially and geologically, and gives him such an assistance structure and regular security.

The essential grouping incorporates close agnates, for instance, guardians in law. In this grouping, corresponding rights would incorporate endowments of steers and the associations are outrageous, trustworthy, and proceed for a long time. The second arrangement of stock accomplice transport incorporates partners or outcasts. Relating endowments would incorporate goats or sheep. The relationship diminishes with time and in the long run bites the dust (Gulliver 1955).

4.4.6: Splitting herds and families' method

In pastoral communities, the exhibit of isolating social events and families is a general piece of life. This is done by spatial and flashing alterability of the rangeland vegetation. Kajiado individuals recognize that isolating packs extra and shield extend assets from being ruined and overgrazed in an irreversible

manner. During the 2005-2006 dry seasons, near to individuals had an explained bundle isolating technique, and gatherings and runs were part in base camps and satellite camps.

It ought to be seen that base camp and satellite get-together sizes are dynamic, and are coordinated by factors, for example, transparency of feed, water, and Work. For example, because of the nonattendance of enough water and field around the towns during the 2005-2006 dry seasons, I watched a move of some piece of the base camp gathering to a satellite social event inciting an advancement in satellite get-together size. The backwards began to occur by October 2012 when the blustery season had started, and the state of field improved. I would battle here that such headways could be equipped in future as an early marker of rising intensity of dry spell emergency for profitable dry season likelihood organizing and intervention in the Kajiado Area.

4.4.7: Pooling assets strategy.

There was proof which suggested that during and after the 2005-2006 dry season and starvation, herders participated in corporate get-togethers and pooled their enduring stock so as to mishandle economies of scale. The respondents said that once the prepared animals had been so pooled, they were left in the responsibility for few picked men or families in the pasturelands as the rest moved looking for food. Pilgrims had correspondingly left their families and prepared animals with family and neighbors or mates as they went out looking for business and other pay conveying works out.

The respondents kept on clarifying that this instrument of pooling assets during and after dry spell or loss of prepared animals from upheavals is standard. Truly fit now clutched pastoralists would spurn whatever had stayed of their stock and "vanish" into wiped out scenes to settle and work there rapidly.

As indicated by respondents, the individuals who left during the 2005-2006 dry season and starvation would get a lot of the made prepared animals from the pooling structure when they return.

This Kajiado direct of correspondence looks like what has been seen among different frameworks in Sub-Saharan Africa. For example, Mauss (1967) called attention to that in various new developments, trades and understandings occur as presents; on a crucial level these are stubborn, at any rate truly they are given and responded essentially.

4.4.8: Species mix method

The Kajiado pastoralists have species mix anyway there should be more fundamental headway of various species creation structures dependent on the climatic zones. Only 16% of the respondents used this system. Progression and assessment on camels and their things has been commonly deferred since the accentuation has been on steers. The multi species approach used by the serene systems ought to be maintained and improved by propelling better organization and publicizing of camels and little ruminants especially through worth development of their things. Camels and goats are specific feeders and bear best during dry periods over dairy animals or sheep.

In the very dry zone, keeping up various species synergizes on the close to central purposes of each specie surveyed dependent on supporting constraint of families to the extent meat and milk creation. In this activity, camels and little ruminants are twice as productive as dairy animals. This is a direct result of the high milk yielding cutoff with respect to camels from one point of view and the high meat conveying breaking point of little ruminants on the other. Camels moreover stand separated for their course of action of transport and little ruminants for their conceptive cutoff which allows high paces of advancement to be practiced. The last attributes consider quick recuperation after dry spell or sickness

frequency. Most extreme crowd development rates assessed for camels are 8 percent, cows' 11 percent and little ruminants at 40 percent.

4.5: Role of The Government and Ngo's

The activity of methodology is articulated in sec. 3.6.1. The organization and explicitly MoLD is centered around execution of the Strategy to Revitalizing Agriculture (SRA) (2005) through various undertakings. In such way, the National Agricultural Livestock Extension Program (NALEP) needs to expect a huge activity in reviving development and guidance organizations to the grass builds up particularly in the dry ASALs that include the huge bit of the assessment locale. Execution of progression procedures for improved creature's creation and promoting requires collaboration and co-arrangement of the significant government and non-authoritative associations working in the district. A bit of the noteworthy accomplices that ought to accept an occupation and fit on their exercises are: Ministries and government divisions, Regional Development Authorities, for instance, ENDDA, research foundations, farmer/serene affiliations, NGOs, CBOs, FBOs, etc. The National Livestock Policy (2008) has furthermore articulated diverse methodology issues, goals and proposed technique mediations tantamount to improving creature's improvement including that of tranquil zones.

The components of the MoLD fundamentally address the vital interventions for overhauling trained creatures' creation in the ASALs. Key among these are: - Developing tasks for improving the trained creatures' territory, bracing enlargement organizations and extension research linkages, overhauling information the heads for the tamed creatures part and, coordinating organization and quality control of data sources and consequences of tamed creatures.

Fortifying usage and observing of these capacities in the ASAL regions and especially the examination area would go far in reducing a large number of the referenced limitations especially beginning at the strategy level. There is need additionally for expanded direct interests in arrangement of water assets and backing administrations for animal's creation, advertising, sickness control and framework.

4.5.1: Government Activities with Donors in ASAL Areas

In ASAL domains, the organization is working with patrons surprisingly USAID/AU-IBAR in North Eastern Pastoralist Development Project (NEPDP) with the fragments of institutional bracing of KLMC and LTMS-K, cash related and advancing organizations, affliction perception and improving help for associations in tranquil zones. It moreover works with World Bank sponsored ALRMP which has fragments of drought checking and normal resources the chiefs, arrange driven unforeseen development and support to neighborhood improvement.

The AfDB-ASAL Livestock Development Program is similarly being encouraged by the organization with the essential activities to consolidate acceptable provincial occupations, animal prosperity improvement, food security overhaul and trained creature's improvement.

Other uneven and equal colleagues in ASAL headway fuse ILRI, GTZ, DFID (UK), FAO, France, EAC on TDAs control, and IGAD among others.

Table 4.2: Grassroots Pastoralist Groups

District	Total Groups	Category of Group
Kajiado	31	1 Water Users Association 11 Drug Users Associations 19 Water and Drug Users Associations

These gatherings are significant as key section focuses for dispersal of augmentation bundles, offer of medications and animals advertising. At the local level, they structure the District Peaceful Associations which are subsidiary to District Livestock Marketing Councils (DLMC).

4.5.2: Services and Institutional Support

i. Extension and Training Services:

Kenya has an efficient farming and domesticated animals expansion framework that gives animals uphold offices and administrations to progress and advance improved domesticated animals creation strategies through versatile exploration, improved augmentation and preparing administrations concentrated on domesticated animals and normal asset the board. Such administrations are worked at public, commonplace, region, divisional, and grassroots levels by government organizations, for example, the National Agriculture and Livestock Extension Project - NALEP, Arid Lands Resource Management Program – ALRMP and ASAL Based Livestock and Rural Livelihood Support Project – ALLPRO (MoLD, 2007; UNESCO, 2007). Be that as it may, the fuller acknowledgment of the normal effect has been hampered by the expanded weakness and low versatile limit of the pastoralist networks of northern Kenya.

Institutional support for the livestock marketing sector:

The ALRMP and ALLPRO as a team with the District Livestock Production Office (DLPO) have encouraged limit working for establishments associated with the animals area with the end goal of improving domesticated animals creation and showcasing (counting advertising offices improvement and promoting data dispersal. The principle objective in such manner is to make proficient advertising frameworks that are planned for improving the domesticated animals makers' salary. The help establishments have included: the Kenya Livestock Marketing Council (KLMC), the region animals advertising boards (DLMCs) and the province committees; NGOs (both neighborhood and universal) and CBOs; nearby animals dealers gatherings/affiliations and different partners. A portion of these foundations have been engaged with the administration of animals advertising related offices. For example, the Isiolo Holding Ground Users Association and the Isiolo County Council) have been engaged with the restoration of the isolate station inside the Isiolo Holding Ground to guarantee all offices in the holding ground are working appropriately.

ii. Livestock marketing information services:

Animals advertising data at the grassroots level is generally insufficient or missing inside and out, yet such data is essential for the achievement of domesticated animals promoting exercises in the northern rangelands, especially with the requirement for improving the animals makers' disposition and dynamic on getting to and contributing on animals showcasing as an elective employment and means for money age. One of the key targets for the Kenya Livestock Marketing Council's in such manner is: To upgrade promoting data, scattering and correspondence to makers and brokers (KLMC, 2005).

iii. Provision of animal health/veterinary services and capacity building for the key players in the sub-sector :

The legislature has increased expansion benefits that help improvement of creature wellbeing and veterinary administrations so as to upgrade malady control; innovation take-up and to improve animals

creation, in view of pertinent examination discoveries and advancement of proper innovation and practices in the territories of veterinary and creature creation (Orodho, 2009). In any case, there are still holes in the arrangement of effort limit building, specialized and augmentation administrations focused on the control of endemic creation restricting illnesses, intermittent event of intense and irresistible plague infections. So as to address these imperatives, the Veterinary Department and different partners have given preparing and backing offices (for example conveyance of starter packs for the prepared CAHWs), with the target improving creature wellbeing and diminishing creature mortality. The Kenya Livestock Marketing Council (KLMC) and its subsidiaries – the District Livestock Marketing Councils has the goal for working of the limits of client gatherings (specifically animals promoting gatherings or relationship) to reasonably oversee animals related foundation and attempt network based malady control measures.

4.6: The factors influencing drought mitigation

The following factors were found to affect drought mitigation in Kajiado County.

Table 4. 3: Multiple Regression of factors determining drought mitigation

. (Dependent variable- drought mitigation)

Variable	Coefficient	S.E	significance
offcome	0.187	8.336	0.079
depndants	-4.262	0.457	0.057
Education	0.006	1.652	0.083
Extension	0.195	1.452	0.172
Purpose	0.389	0.937	0.015

EWS	0.309	28.674	0.098
Constant	19.768	73.830	0.772
Chi-square	76.139		
Log likelihood	56.90		
Cox&snell Rsquare	0.520		
% prediction	65.838		

The
vari

able 'offcome' is critical at 10% level. This is off ranch pay. It speaks to different earnings separated from creatures. Pastoralists with different livelihoods are better adjusted to climatic stuns as a result of the pay broadening and informal communication with numerous individuals.

The variable 'dependents' is huge at 10% level. This variable speaks to the quantity of dependants in a family. The coefficient is negative implying that as the quantity of the dependants in a family expands the versatile limit diminishes.

The variable 'Instruction' is huge at 10% level. This is the degree of instruction of the family unit head. At the point when you go to class one associates with numerous individuals and as indicated by Collier (1998), social collaboration can produce sturdy externalities that incorporate information about different operators, information about the world, and advantages of aggregate activity. Johnson (1997), in his investigation, he discovered that long range interpersonal communication can be utilized in obtaining monetary capital (cash and materials), human capital (work and information), and characteristic capital (land and water), and is thus significant for job maintainability

The variable 'Expansion' isn't noteworthy. This variable speaks to Agricultural expansion. This variable was required to be critical so pastoralists who get warning and preparing from the Agricultural staff are preferable embraced over the individuals who don't. This was never the situation on the grounds that despite the fact that Kenya has an efficient horticultural and animals expansion framework that gives domesticated animals uphold offices and administrations to progress and advance improved domesticated animals creation methods through versatile examination, improved augmentation and preparing administrations concentrated on animals and characteristic asset the executives the more full acknowledgment of the normal effect has been hampered by the expanded weakness and low versatile limit of the pastoralist networks of northern Kenya.

The variable 'Reason for existing' is noteworthy at 5% level. This variable is the principle motivation behind keeping animals. Ranchers who save animals for business intentions supposedly had a superior versatile limit than the individuals who saved for resource and glory purposes. A focal discussion has been whether pastoralists save creatures for monetary reasons, or are cheerful just to collect creatures for glory and such purposes. The natural photos of the misuse of kicking the bucket creatures during repetitive dry spells bring fourth admonishments that pastoralists ought to figure out how to sell their creatures. Whatever the benefits of the contentions, key financial changes in the course of the most recent decade may have chosen the needs of conclusion concerning inspirations of family units for keeping domesticated animals. The principle reason for keeping animals apparently was for means needs of the families.

The variable 'EWS' is critical at 10% level. This is the Early Warning Systems. The pastoralists who knew a large portion of the early notice frameworks appeared to be more versatile than the individuals who don't have a clue.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

Different technique recommendations could be gotten from the disclosures of this assessment to help improve the pastoralists' close by limits concerning administering future dry seasons and starvation. A segment of the issues which need explicit thought by the methodology makers are highlighted.

This assessment has demonstrated that Kajiado pastoralist have defied drought and starvation by depending on an extent of occupation frameworks which both draw upon standard casual associations and practices yet which moreover misuse new open entryways in gets together with the serious external world.

Their responses are eccentric, dynamic and reasonable. As to technique responses, it is basic to see the genuine elements of regular daily existence in the area and the way in which people's length both ordinary practices and new linkages.

Techniques should not be founded on the view that Kajiado people are dormant and vulnerable despite trouble anyway have broad ability to alter and respond. On one hand, procedures should see the criticalness of the traditional trained creature's economy and the way where its ability to respond to crisis has been sabotaged by past methodologies, (for instance, the confining of improvement) similarly as land corruption and masses and creatures pressure.

Having seen the noteworthiness of long standing standard casual associations, approaches may convey the need to reestablish such linkages, either through measures to help end the conflict with the neighboring factions or through allowing a more unmistakable degree of advancement of people and stock across borders.

Measures to help with rebuilding of contacting grounds or water supplies could similarly help. Of course, measures should see the way Kajiado Pastoralist can use new open entryways in the affiliation with the outside world. We have seen how during periods of starvation, nuclear families enough used systems, for instance, sending kids away to class or moving unexpectedly for work in various regions.

These could be updated through measures that develop these associations. Improvement of establishment is especially appealing. There is prerequisite for noteworthy enthusiasm for key system, for instance, lanes, voyaging courses, and markets. Markets enable arrangements and exchange of trained creatures during dry season and starvation.

In any case, Turkana people's ability to participate in the market depends upon their physical breaking point, preparing and capacities.

For instance, prosperity and sustenance are principal parts of the physical human capital which unequivocally impacts the restriction of individuals to increase a compensation. Compensation picking up openings and productivity moreover depend upon their guidance and aptitudes.

This is the explanation the headway of market speculation for the Kajiado pastoralists must be joined with open ventures and spending on prosperity, preparing and social government help which help to keep up and increment human capital in the two its physical and unimportant signs. The way that those Turkana pastoralists who have arranged permission to non-tranquil money related open entryways seem to regulate drought and starvation better than the people who stay separated in the field suggests that there is moreover a desperate need to ask Kajiado people to upgrade their serene economy. This should help the pastoralists with having sensible choices as opposed to tranquil things when their creatures pass on from dry seasons.

Beside separating the quiet economy, system makers should look for after progress approaches made arrangements for entering the nation locales in the Kajiado District where the vast majority of pastoralists live. For now, there is a tendency to hoard improvement tries in a few picked urban concentrations while leaving the provincial districts with an incapably advanced establishment. Organizations should be taken to the people where they live. Schools in the domain should moreover be improved and, if possible be outfitted with boarding workplaces and free food to charm Kajiado people to enroll and learn. It is moreover basic to highlight here that drought and starvation are open issues in Kenya and should be the subject of more certifiable thinking and explanation behind movement than has usually been the circumstance. In order to decrease the cost of dry season and starvation, there would be a prerequisite for Kenya to genuinely consider setting up a 'Drought and Famine Monitoring Research Institute'. This is definitively considering the way that, in various models, the nation is ordinarily gotten unaware of advancing toward dry seasons and starvation, subsequently expanding expenses and raising undeniably more hell in controlling the condition than could some way or another be the circumstance with the establishment of such an assessment foundation

Adger W. N., Arnell N. W. and Tompkins E. L. 2005. Successful adaptation to climate change across scales, in: *Global Environmental Change* 15 (2), 77–86; doi:10.1016/j.gloenvcha.2004.12.005.

Biermann, F., 2007. ‘Earth system governance’ as a crosscutting theme of global change research. *Global Environmental Change* (2007), doi:10.1016/j.gloenvcha.2006.11.010.

Bovin K. and Manger J. 2005. Adaptive governance of social- ecological systems. *Annu. Rev. Environ. Resour.* 2005. 30:441–73. doi: 10.1146/annurev.energy.30.050504.144511.

Coppock (2001). Livestock Marketing in Arid and Semi-Arid areas in Kenya: A description of Opportunities and Bottlenecks. Report for SNV-Kenya, Nairobi.

Dasgumpa (2000) The Rendille economy: Some preliminary findings in trading activities. IDS Working Paper No. 385. Nairobi, Kenya.

Babiker 2007. Adaptive capacity and human cognition: The process of individual adaptation to climate change. *Global Environmental Change* 15 (2005) 199–213. doi:10.1016/j.gloenvcha.2005.01.002.

Blench S. J., and Marrige P. 1999. Agricultural Extension Services and Adaptation to Climate Change in Kenya. Draft Report. June 2009. German Development Institute Bonn, Germany.

Bryman D.N and Cramer K. 1997. Measuring adaptive river basin management. Adaptive management of water resources. 2006 AWRA Summer specialty conference, June 26-28, 2006 Missoula, Montana.

Davern T.R 1997 Turkana Livestock Marketing Feasibility Study. Report for Ministry of Livestock Development, Nairobi, Kenya.

Danny De Vries Little, M. A., Dyson-Hudson, N., Dyson-Hudson, R., Ellis, J. E and Swift, D. M. (1983).

Human Biology and the Development of the Ecosystem Approach: Past Studies and the South Turkana Ecosystem Project. In: The Ecosystems Approach in Anthropology. Ed. Moran, E.F. Westview Press, Boulder.

Dietz and Salih 1997. Livestock keeping and indigenous knowledge in the Horn of Africa: Personal reflections on 25 years of Experience. In: Catley, A and Mariner, J (Eds). Participatory Epidemiology- Lessons Learned and Future Directions. Proceedings of a workshop held on November 15th to 17th 2001. Addis Ababa, Ethiopia.

De Vries (1983). The Fields of the Foe-Amana Ecosystem: Factors Constraining Agricultural Output and Farmers' Capacity for Participation. University of Bergen.116

Ellis R. (2000). Livestock Marketing from Pastoral Areas of Kenya: A strategy for Pastoral Development. Report for ALRMP, SNV, OXFAM (GB), World Concern, Nairobi.

Fratklin 2001 Surviving drought and development: Ariaal pastoralists of Northern Kenya. Wet View press, Colorado, USA.

Fraenkel S and Norman K 1990 Socioeconomics of the current livestock marketing production, utilization and marketing in arid and semi-arid lands, with special reference to Kajiado District. National Range Research center, Kiboko, Kenya.

Hendrickson M., Armon T.R., and Mearns 1998 Development Proposal for the Arid and Semi-Arid Lands. Ministry of Agriculture and Rural Development, Animal Production Division, Nairobi.

Helland G.N. 1997 Integrated resource management plan for western Marsabit District of Northern Kenya. IPAL report No. A-6. Nairobi, Kenya.

Hjort A. and Dahl 2001 Participatory Epidemiology: Methods for the Collection of Action-oriented Epidemiological Intelligence. Vetworld, UK, Edinburgh and RDP Livestock Services, Zeist.

Hogg T. R 1997 Preliminary Study of the Livestock Sector-Turkana District. Report for Turkana Rural Development Programme, NORAD and GoK.

Gulliver H.W. 1955 Levels and causes of household food and nutrition insecurity in dryland Kenya. Ecology of food and nutrition, 41 (2), 155-167. 123

Johnson W. 1999 Nomadic pastoralists in Kenya: human-ecological aspect of East-Pokot. IIED Issue Paper No. 73.

Mkutu H.S. (2001) Studies in to Pastoral Economics. Presentation at the UNESCO Orientation Seminar, UNESCO, Nairobi.

Mosser (1998) Pastoral Livestock Production in Northern Kenya- Constraints and

the Resources of the Arid and Semi-arid Areas of Kenya”, Nairobi.

Mati G. L., Webb, P and Reardon, P. (2006). Drought impact and household response in East Africa. Quarterly Journal of International Agriculture, 31(3), 230-244. 126

Mauss P.B., 1967. The marketing of livestock on communal lands in the Eastern Cape Province: Constraints, challenges and implications for the Extension Services. South African Journal of Agricultural Extension, 34(1): 81-103.

Orodho (2005) Livestock marketing in the Northern Communal Areas of Namibia (livestock producer marketing strategies and informal trade in live animals, meat, hides and skin).

Windhoek: NOLIDEP.

Oba T. 2007 Factor affecting participation in mainstream cattle markets by small scale producers in South Africa. Bloemfontein: University of the Free State, Department of Agricultural Economics.

Opschoor (2001) Competitive Commercial Agriculture in Sub-Saharan Africa (CCAA) study: Cattle and Beef International Commodity Profile. Rome: FAO, Markets and Trade Division.

Sen, E.R. 1981. Reality in rural development aid, with emphasis on livestock. London:

Rowett Research Services Ltd.

Sandford D.S., 1976. An investigation into the implementation of the FANMEAT Scheme among the Grootberg area Communal Producers of North Western Namibia. Bloemfontein: University of the Free State.

Stanly F.K., 2009. Commercializing Small Farms: Reducing Transaction Costs. Rome: FAO.

Sutter S.S., 1982. Adoption of good agricultural practices for beef cattle farming of beef cattle-raising producers in Tambon Hindard, Dan Khunthod district, Nakhon Ratchasima Province, Thailand. KMITL Sci. Tech. Journal, 6(2): 67-73.

Spear N.B and Waller P. 1993. Livestock Coping with Drought: Namibia Case Study. Tsumeb: Northern Regions Livestock Development Project.

Scoones (1997) Namibia pasture/Forage resource profile. Rome: FAO. Tapscott, C. 1990. The Social Economy of Livestock Production in the Ovambo Region. Windhoek: Namibia Institute for Social and Economic Research.

Sommer (2008) Comparison of Livestock Marketing Alternatives. Rochester: National Farm and Ranch Business Management Education Association.

Toulmin 2006. Pro-poor livestock policies: Which poor to target. Reading: University of Reading. Wajir District Development Plan 2002-2006

Wiersma (1995) Successful adaptation to climate change across scales, in: Global Environmental Change

Vant L., and and Wekesa J.D., 2008 Climate change in the Arid and semiarid areas of Africa.

Zaal T.R., 1999 Whats climate change? Mitigation and Adaptation.

APPENDICES

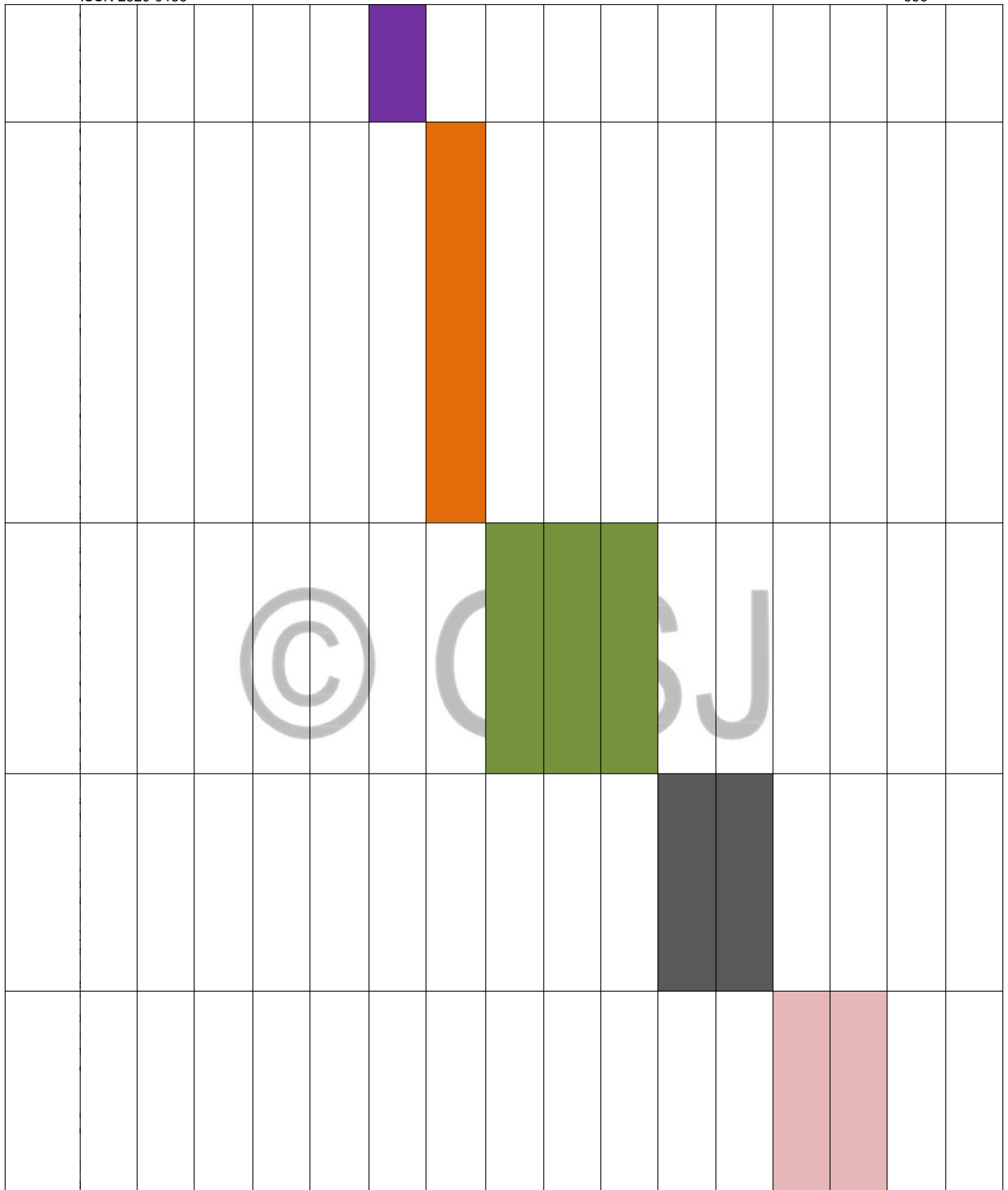
FINANCIAL BUDGET

The budget for the project is Kshs. 628,000 as broken down below

No	Item Description	Quantity	Rate KSHS	Total Amount
1.	Typing and printing of the proposal	120	50	6,000
2.	Transport	10 Trips	20,000	200,000
3.	Accommodation	11 Days	3,000	33,000
4.	Meals & snacks	30	500	15,000
5.	Training of the 10 enumerators (Accommodation, facilitators and meals)		150,000	150,000
6.	Payment of the enumerators	10	2,000	20,000
8.	Costs for the scheduled meetings in Wajir with the enumerators		50,000	50,000
9.	Airtime costs			5,000
10	Miscellaneous			50,000
	Total			528,000

© GSJ

A 15x15 grid with a yellow vertical bar in the second column and a blue horizontal bar in the first row. A large, faint watermark '© GSJ' is centered over the grid.



© GSJ

Annex 1: Questionnaire for the Household Survey

Introduction

My name is Philip Ole Kiok, an undergraduate student at Kenya Methodist University in Agriculture Department. As a feature of the study program, students are required to take part in a field exploration and produce a postulation covering their regions of intrigue.

I am, along these lines, leading a study on pastoralists' versatility to environmental change. I will ensure that the data accumulated in this activity will and shall be carefully utilized for academic purposes, and the respondents' privacy will be regarded.

I would like to request for your participation in this exercise.

Questionnaire Number			
Cluster Number			
Household			
Village			
SECTION 1	HOUSEHOLD CHARACTERISTICS		
Q 1.1	Sex of Respondent	Male	
		Female	
Q 1.2	Age in years	Respondent	
		Household head	
Q 1.3	Marital Status	Single	
		Married- monogamous	
		Married- polygamous	
		Divorced/Separated	
		Widowed	
Q 1.4	Are you the head of household (nuclear family)?	Yes	
		No	

Q 1.5	If not the head, what is your relation with the head of the household?	Spouse	
		Son	
		Daughter	

© GSJ

		Other		
Q 1.6	Level of education of household head	None		
		Primary		
		Secondary		
		Post-secondary		
Q 1.7	Household size		Male	Female
		0 – 5 Years		
		6 – 18 Years		
		19 – 55 Years		
		Over 55 Years		
Q 1.8	Number of children in school		Boys	Girls
		Primary		
		Secondary		
		Post-secondary		
Q 1.9	Number of economically active members living in household		Male	Female
		Self-employed		
		Wage employment		
		Other (specify)		
Q 1.10	Number of economically inactive members living in the household		Male	Female
		Too young		
		Too old		
		Sick		
		Disabled		
		Other (specify)		

Q 1.11	Number of members living outside the area (migrate d, working etc)		Male	Female
		Within the County		
		Within the County		

© GSJ

		Elsewhere in Kenya		
		Outside Kenya		
Q 1.12	Type of house	Semi-permanent		
		Temporary		
Q 1.13	Household assets (more than one answer allowed)	Radio		
		Television		
		Mobile phone		
		Water tank		
		Others (specify)		

SECTION 2				
Q 2.1	What is the key source of livelihood for the household? (only one answer allowed)	Pastoralism		
		Small business		
		Wage employment		
Q 2.2	What are the major constraints to your family well-being?	Drought		
		Floods		
		Human diseases		
		Livestock diseases		
		Conflicts		
		Poverty		
		Other (specify)		
Q 2.3	What types		Number	

	of livestock do you keep? On average (over the past 5 years),	Cattle – bulls	
		Cattle – cows	

© GSJ

	What is the size of your stock?	Sheep	
		Goats	
		Camels	
		Donkeys	
		Poultry	
Q 2.4	What problems do you usually encounter with regard to livestock keeping? Tick where appropriate	Livestock diseases	
		Shortage of water and pasture	
		Lack of market	
		Livestock rustling	
		Conflicts	
		Any other (specify)	
Q 2.5	What measures have you put in place to address the above mentioned problems? Tick where appropriate	Migration in search of water and pasture	
		Restocking through traditional systems	
		Use of traditional herbal treatment	
		Accessing livestock veterinary services	
		Sale of livestock during drought	
Q 2.6	What is the main source of water for the livestock? Tick where appropriate	River/spring/stream	
		Water pans or dams	
		Rock catchment	
		Piped water	
		Wells/Boreholes	

Q 2.7	Is the water source constant or seasonal?	Constant	
		Seasonal	
Q 2.8	Who manages	No management	

© GSJ

	The water source ? Tick where appropriate	Individually owned		
		community		
		Other (specify)		
Q 2.9	How do you contribute to the maintenance of the water source? Tick where appropriate	Does not contribute anything		
		Contributes set fee		
		Contributes in case of a break down		
		Contributes manual Labour when required		
		Contributes local materials when required		
Q 2.10	How many animals have you sold in the last year?		Number	
		Cattle - Bulls		
		Cattle - Cows		
		Sheep		
		Goats		
		Camel		
		Donkeys		
		Poultry		
Q 2.11	Why did you sell the animals?	Income generation		
		Sale during drought		
		Restocking		
Q 2.12	How many animals did you receive/give as		Receive	Give

	Gifts last year?			
		Cattle – bulls		
		Cattle – cows		
		Sheep		
		Goats		

© GSJ

		Camels			
		Donkeys			
		Poultry			
Q 2.13	How many animals did you lose due to disease last year? How about the last five and ten years?		1 year	5 years	10 years
		Cattle – bulls			
		Cattle – cows			
		Sheep			
		Goats			
		Camels			
		Donkeys			
		Poultry			
Q 2.14	How many animals did you lose due to Drought last year? How about the last five and ten years?		1 year	5 years	10 years
		Cattle – bulls			
		Cattle – cows			
		Sheep			
		Goats			
		Camels			
		Donkeys			
		Poultry			

SECTION 3	
--------------	--

Q 3.1	What is your understanding of drought?		
Q 3.2	What causes Droughts? Tick where appropriate	Amount of rainfall	
		Seasonality of rainfall	
		Duration of rainfall	
		Deforestation	

© GSJ

Q 3.3	What are the effects of drought? Tick where appropriate	Drying of water sources	
		Depletion of pasture	
		Famine	
		Loss of livestock	
		Poor health of humans	
		Poor health of animals	
		Increase in food prices	
		Decline in livestock prices	
		Other	
Q 3.4	How does drought impact on your livelihood?		
Q 3.5	How do you get the information on weather forecasts?	Radio/TV	
		Government agents	
		Word of mouth	
		Traditional sources	
		Other (specify)	
Q 3.6	How do you establish your own weather forecast?		
Q 3.7	How do you respond to weather forecasts?		

SECTION 4	COPING AND	AND/OR GOVERNMENT INTERVENTION AND NGOs	ADAPTATION MECHANISM,
Q 4.1	What measures do you put in place to safeguard yourself against a coming drought?	Mobility	
		livestock diversification	
		livestock management adjustments (changes in feed, water, grazing land use)	
		access to extension services for knowledge of livestock farming during droughts	
		income diversification	
		livestock insurance	
		use of savings	
		Other (specify)	
Q 4.2	Considering the source of livelihood in 2.1, do you seek additional sources of income when anticipating drought?	Yes	
		No	
	If yes, which are these additional sources of income?	Sale of assets	
		Seeking employment	
		Starting a business	
Q 4.3	Do you	Yes	

	reserve water for use during the drought?	No	
Q 4.4	Do you reserve pasture for use during the drought?	Yes	
		No	
Q 4.5	What is the main source of water and pasture of the household during the drought season? (more than one answer)	Permanent water source nearby grazing reserve nearby	
		Other grazing and water points within the County	
		Other grazing and water points outside the	

	allowed)	County		
		Other (specify)		
Q 4.6	In case of drought, which animals would you rather have?		Yes	No
		Cattle – bulls		
		Cattle – cows		
		Sheep		
		Goats		
		Camels		
		Donkeys		
		Poultry		
Q 4.7	During drought, what adjustments do you make in terms of food consumption? How do you cope with food shortages?	Depleting food and cash savings		
		Earning more wage income		
		Liquidating productive assets e.g. livestock		
		Liquidating other assets		
		Household food consumption adjustments		
		Relying on charity		
		Use of social network		
		Permanent or seasonal migration		
		Village-level institutions		
		Household expenditure adjustments		

		(clothes, education and health)	
		Shift to other livelihood options e.g. fishing etc.	
		Use of social networks	
		Relying on public relief programmes	
Q 4.8	What are the practices for using	Having drought reserve grazing	

© GSJ

	and conserving natural resources such as pasture, forests, water etc?	Protection of specific plant species or areas	
		Having individual or communal user rights for water/grazing points	
		Other (specify)	
Q 4.9	If the drought was severe, would you move your family out of the pastoral Livelihood?	Yes	
		No	
Q 4.10	What livelihood options do you have, apart from pastoralism?	None	
		Wage employment	
		Self-employment	
		Other (specify)	
Q 4.11	Did you sell any livestock during drought period?	Yes	
		No	
	If yes, what was the main reason for selling livestock?	Buying food	
		Buying clothing	
		Paying for healthcare	
		To fund cultural ceremonies e.g. marriages	
		Other (specify)	
Q 4.12	Did you borrow any money in the last one year? If so, from which source?	Family	
		Friends	
		Other (specify)	

Q 4.13	What was the major reason for borrowing money?	Buying food	
		Buying clothing	
		Paying for healthcare	
		To fund cultural ceremonies e.g. marriages	
		Other (specify)	

© GSJ

Q 4.14	What type of support do you get from the government in the event of drought?	Information	
		Emergency aid	
		Development aid	
		Financial assistance	
		Development of water sources	
		Restocking	
		Other (specify)	
Q 4.15	In your opinion, do you think government intervention, if any, has been helpful?		

Thank you very much for your cooperation.

© GSJ

Annex 2: Interview Guide for Interviews with Community Key Informants Introduction

My name is Philip Ole Kiok a graduate student at Kenya Methodist University. As part of the study programme, students are expected to engage in a field research and produce a thesis covering their areas of interest. I am, therefore, conducting a study on socioeconomic impacts of drought, coping and adaptation strategies.

I guarantee that the information gathered in this exercise will be strictly used for academic purposes, and the respondents' confidentiality will be respected. I would like to request for your participation in this exercise.

Thank you in advance.

Interview questions

1. What is your understanding of drought?
2. In your opinion, what shows that the drought has occurred?
3. How often has drought occurred in the past? Say in the last 50 years.
4. In the last ten years, how often has drought occurred in this area?
5. What are the impacts of drought on:
 - I. People's livestock?
 - II. People's health?
 - III. Food security?
 - IV. Livestock trade?
 - V. Purchasing power of people?
 - VI. Social integration at family, clan and community levels?
 - VII. Indigenous knowledge system?
 - VIII. Formal education?

6. Does drought result in conflicts between your community and neighbouring communities? What are the reasons?
7. How did the community of this area cope with drought in the past?
8. How did the community of this area cope with recent droughts?
9. What other livelihood options do people have in the event of severe drought?
10. How do you get information about an impending drought?
11. How do you prepare after getting such information?
12. What has the government done to help reduce the impacts of drought?
13. Is the government response helpful

© GSJ