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Role of Social Risk Management Strategies in Reducing Vulnerabilities of Pastoral Nomadic Households after Subdivision of Group Ranches in Kajiado County, Kenya

By

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DECLARATION

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

_____ Date: 10 June 2022

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We confirm that the work reported in this research proposal was developed by the student and under our supervision.

_____ Date: 10 June 2022

Dr. Daniel M. Muia

Kenyatta University

DEDICATION

I dedicate this report to my family, my nearest and dearest, by blood and my sister souls.

ACKNOWLEDGEMENTS

I would like to thank all those who made the development of this report possible. From my parents, for their constant support in my education, both in academics and in the school of life. The support from my siblings and my friends cannot be over-stated. From the constant reminders and moral support in this journey, I thank you. For my field team, data input and analysis support team, who helped this report into a reality despite the unknowns and uncertainties that came with this new "normal" driven by the COVID-19 travel and social interaction restrictions. I also dedicate this work, to my spouse and children, who forgave my mental and physical absences in pursuit of finalisation of this project. Lastly, my profound thanks to the almighty God who made all this possible.

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LIST OF ABBREVIATIONS AND ACRONYMS

ASALs	Arid and Semi-Arid Lands
FAO	Food and Agriculture Organisation
FGD	Focus Group Discussion
GoK	Government of Kenya
IBRD	International Bank for Reconstruction and Development
IPs	Indigenous Peoples
IUCN	International Union for Conservation of Nature
KII	Key Informant Interview
Km	Kilometres
SRMS	Social Risk Management Strategies

ABSTRACT

The study aimed to gain an understanding of the Social Risk Management Strategies (SRMS) applied by pastoral households in sub-divided group ranches so as to support their resilience to extreme events and to support the development of these communities. The study was undertaken in Nkukuon, Sholinke and Olooloitikosh villages of Oloosirkon Division – which are areas where pastoral-nomadic households from the former Ololoitikosh Group ranch can be found. The main study objectives were to: (i) identify and analyse the SRMS that were established or adjusted to support pastoral-nomadic households in Oloosirkon Division; (ii) establish the effect of SRMS on pastoral recovery strategies and subsequent maintenance of pastoral-nomadism as a livelihood stream; and (iii) suggest measures that can be undertaken at community and policy level to facilitate sustainable SRMS in favor of pastoral-nomadism. The social exchange theory was considered to explain (i) whether pastoralists would set up new relationship based on new social systems to reduce vulnerabilities, especially after the loss of socially protected common grazing grounds under the group ranch system; (ii) whether the households would retain and build these relationships after seeing their value to reducing vulnerabilities on their livelihoods. The study used a descriptive case study research design and used household surveys, key informant interviews, focus group discussions, and field observations as data collection methodologies in pastoral nomadic households in a segment of the former Ololoitikosh Group Ranch. The Kenyatta University Graduate School, the Kenyatta University Ethical Review Committee (KUERC), and the National Commission for Science, Technology, and Innovation (NACOSTI), all gave their approvals and permits prior to the field investigations. The study used descriptive and inferential statistics to analyze the data, and the chi square test of independence was used to determine whether the null hypothesis should be accepted or rejected. The study found that the top four socio-economic challenges faced by pastoral-nomadic households are inadequate food, inadequate grazing resources, inadequate water supply and health challenges. It also found that the main mechanisms applied to manage these challenges that were driven by the community's social network / social capital were establishment of Self-Help Groups (SHGs), Community Based Organisations (CBOs) and Co-operative Societies. The findings show that the role of traditional social risk management strategies applied by pastoralists such as communal protection of dry season grazing grounds and reciprocity have evolved from maintenance of stock as the main objective, to one that (i) applies a multiple approach of ensuring the ability to meet the ongoing household's basic socio-economic needs that rely on a cash based economy; while (ii) ensuring the ability to purchase new stock and / or the ability to maintain existing stock thus ensuring the survival of livestock keeping as a livelihood stream. The results of the study Chi square test findings also led to the acceptance of the study's null hypotheses namely (i) increased vulnerability to extreme events causes pastoral-nomadic households to participate in SRMS; and (ii) households that survive extreme events after participating in co-operative social risk management strategies are more likely to maintain their membership in such groups. However, the study also found that these SRMS are not without challenges and recommendations were made on: (i) development of financial literacy and business development skills training programs; (ii) improvement of group access to financial services; (iii) formalization of SHGs, CBOs and Co-operatives (iv)land-use planning; and (v) responsive training for land-use planning professionals.

CHAPTER 1 INTRODUCTION

1.1 Background to the Study

Pastoral-nomadic communities centre their daily life around pastoralism through the tending of herds or flocks. Such communities include the Mongols and Tartar in Europe; the Bedouin, Kurds, Berbers and Sahrawi in Middle East and North Africa, the Fulani (Fube) in West Africa, and the Somali and Maasai in Sub-Saharan Africa. Pastoral nomad cultures have similar characteristics including avoidance of slaughtering of animals as well as power and prestige being symbolized by the herd size (O'Niel, 2011).

In 25% of the world's landscapes, pastoralism is the primary land use (Galaty and Johnson 1990). Two-thirds of these rangelands are found in Asia (36%) and Africa (30%), and are used for common purposes (Reid et al. 2014 in Ameso et al, 2018). Pastoral production contributes for 10% of total meat production worldwide and sustains around 200 million pastoral households (FAO, 2012).

Pastoralism is the most effective use of land in Africa, taking up 66 percent of the continent's territory for pastoral output (NRC, 2014 and Idris, 2011 in Ameso et al, 2018). Pastoralism is the most common land use in Kenya's ASALs (Veit. P, 2011). Pastoral tribes such as the Maasai pastoralists live in ASALs, which are located in the north, east, and south of the country and account for 36% of the overall population (Ameso et al, 2018). Kenyan meat supplies from pastoralists are consumed locally and have been able to reach the export markets such as Tanzania and the United Arab Emirates with new markets coming up Qatar, Oman, Kuwait, Somalia and Egypt (Ameso et al, 2018).The livestock sector of pastoralism in Kenya has been estimated to have an economic worth of US$1.13 billion (Nyariki & Amwata, 2019).

Pastoral nomadism is defined by (i) practicing animal husbandry as a means of subsistence; (ii) using natural pastures (rangelands) as the basis of forage; (iii) being forced to change the space of activity according to pasture availability and animal needs; and (iv) the husbandry tasks are divided among family members (family enterprise) (Dyson-Hudson and Dyson-Hudson, 1980; Scholz, 1994, 1995 as cited in Manderscheid, 2001). While the household is the primary source of production, co-operation between households was necessary to fend off attacks, acquire more resources or lend animals and donate food to poorer households (International Center for Livestock Africa, 1991).

Typically, traditional pastoralist production systems including those of the Maasai, covered large areas of relatively unproductive drylands as well as smaller areas that are wetter and more fertile. Through migratory land use practices and communal land ownership, these communities were able to deal with periods of climatic hardship (Shivji and Kapinga, 1998). As a result, it is seen as a forward-thinking production system and a way of life that has evolved to adapt to climatic and environmental conditions that limit agricultural expansion as well as other effects and stressors (Norwegian Refugee Council, 2014 in Ameso et al 2018).

From a community development perspective, the areas occupied by pastoral-nomadic communities in Kenya, represent some of the most marginalized parts of the country (Idris 2011 in Ameso et al 2018). While pastoralism in Sub-Saharan Africa is said to be reducing because of advancing agriculture, positive views of research on pastoralism suggests there are cases in history pastoral production seemed to collapse then somehow recover (FAO, 2012). Nonetheless, considering the seemingly unchanging ecological challenges of the areas occupied and owned by

pastoralist communities, it appears to be a production system that should still be factored in development planning in sub-saharan countries.

Over time, registration of land rights has been heralded as the solution to protecting community owned land based natural resources, in favor of pastoral nomadic communities and households. Pastoralists in Kenyan rangelands such as those in Kajiado County were organized in group ranches in the late 1970's. Since then however, the number of group ranches has greatly reduced due to major sub-divisions and the sale of land for human settlement. Indeed, in Kajiado County, where the study area is located, the number of group ranches had dropped from 56 to 10 by 2017 (GoK, 2017).These sub-divisions were followed by conversion of rangelands in group ranches into residential, commercial and agricultural land uses (Veit, 2011). There has also been an increase in the single household boma, thus reducing the size of labour available for group herding and an increase in sedentarisation within lands previously covered by group ranches (International Center for Livestock Africa, 1991). This could arguably result in reduced access to grazing resources and reduce productivity of herds with regard to milk and meat for household consumption or for sale to meet other cash dependent household basic needs like health services and education.

Social Risk Management Strategies are cooperative social practices that help pastoralists integrate socially and help pastoral communities survive by allowing pastoralists to recover their herds following disasters (Barfield, 1993; Bollig, 1998 in Moritz et al, 2011). Social Risk Management Strategies (SRMS) are considered critical as they provide a safety net in the case of drought, disease or disasters and provide resilience by enabling households to rebuild their herds (Copranzano and Mitchel, 2005).

Opportunities for improving livelihoods of pastoral families and communities even after group ranch sub-division have been identified through social and policy driven mechanisms and strategies such as joint pasture use and management strategies, re-institution of traditional restocking mechanisms, re-institution of mobility (such as those driven by reciprocity) among herders, collective welfare-enhancing ventures and land re-aggregation strategies (FAO 2012, BurnSilver and Mwangi, 2007, Ngethe, 1992). It is important to gain an understanding of the SRMS applied by pastoral households in sub-divided group ranches so as to support the development of these communities.

1.2 Statement of the problem

Studies on the effects of group ranches on pastoral-nomadism focus mainly on the impacts of sub-division and reduction of productivity in rangelands. From the search on available literature, it appears that there has been little focus on the change in land tenure and the resultant effects on the SRMS that were prevalent under both land tenure eras of group ranches and today's individualized sub-divided and smaller land parcels. As such, the review of research findings on sub-division of group ranches leaves the following question unanswered: what SRMS emerged or were sustained to facilitate maintenance of pastoral-nomadism by these Maasai households?

Despite the sub-division of group ranches, pastoral-nomadism is still practiced in some households in Kajiado County. This study seeks to document the role of social risk management strategies in reducing the vulnerability of pastoral-nomadic households under the current land tenure system.

1.3 Purpose of the study

This study aimed to identify, document and analyse the retained and emerging social structures and forms of association among households following sub-division of the Olooloitikosh Group Ranch. It also aimed to identify and analyse the role of SRMS by pastoral nomadic households in building the resilience and reducing vulnerabilities of these households against extreme events such as droughts, animal disease outbreaks, attacks by wildlife or rustlers leading to death or loss livestock holdings.

The study will also seek to understand the constraints to post-subdivision SRMS and suggest possible measures of redress.

1.4 Objectives of the study

i. To identify and analyse the SRMS that were established or adjusted to support pastoral-nomadic households in Oloosirkon Division;
ii. To establish the effect of SRMS on pastoral recovery strategies and subsequent maintenance of pastoral-nomadism as a livelihood stream;
iii. To suggest measures that can be undertaken at community and policy level to facilitate sustainable SRMS in favor of pastoral-nomadism.

1.5 Research questions and Hypothesis

1.5.1 Research questions

The study aims to address the following questions:

- What are the SRMS undertaken to support livestock keeping in Oloosirkon Division following sub-division of the group ranch?

- What proportion of households maintained pastoral nomadism as the main livelihood stream due to participation in SRMS?
- Which measures should be integrated at community and policy level to facilitate effective and mutual commitments to SRMS?

1.5.2 Research Hypothesis

The following hypothesis have been formulated to guide the study:

H_{a1} Increased vulnerability to extreme events causes pastoral-nomadic households to participate in SRMS.

H_{a2} Households that survive extreme events after participating in co-operative social risk management strategies are more likely to maintain their membership in such groups.

1.6 Significance of the study

A lot of literature is available on the failures of the group ranch concept in meeting its original objectives. They include failures in adoption of the proposed livestock quota system, low commercialization of beef production, ineffectiveness of group ranch committees, ranch boundary impacts on pastoral mobility, and sub-division of group ranches into individual farms. Considering that livestock keeping is the main economic activity in these households, vulnerabilities arising from these changes should be identified and mechanisms for reducing them promoted in policy and development programs targeting pastoral-nomadic households.

However, there has been very little focus on the efforts made by pastoral-nomadic households following the sub-divisions to adjust or develop social support or collective action through

SRMS so as to maintain the viability of pastoral-nomadism. This study aims to build on this angle and contribute to the body of knowledge on the subject.

Since the establishment of group ranches, Kenya has undergone further land reforms with the Land Policy, the Constitution and the introduction of the Community Land Act in 2016. Contributions to the body of knowledge on this income stream at this time, can contribute to informed policy and legislative framework changes that are currently ongoing. On a broader scale, the study hopes to provide findings to inform development of policy and programs for community mobilization and support in areas where pastoral-nomadism is still the main livelihood stream.

1.7 Assumptions of the Study

This study assumes that the household among the pastoral-nomadic communities is the primary production unit. It assumes that the household head (be they male or female) is the main decision maker and that they make rational decisions regarding pastoral production activities including participation in co-operative action. Their views, opinions and suggestions will therefore be assumed to represent those of the household.

The study also assumes that pastoralists have access to information on formal and informal as well as modern and traditional forms of social co-operation action and mechanisms. It assumes that they are capable of individually and rationally determining the best possible means of seeking improved livelihoods and that they consequently cultivate relationships to facilitate the achievement of this goal.

The study also assumes that the livestock keeping and related income generation is supported by access, ownership and / or control of land based resources. It therefore seeks to collect the perceptions of key informants in land and range management, in addition to livestock production and social development within county and national levels of government.

Thirdly, it has been assumed that the community elders act as custodians of maasai culture and social norms. Their voices will therefore be important in defining the systems and norms applied prior to and after establishment of group ranches, as well as those applied after sub-division of group ranches.

1.8 Scope of the Study

This study focused on the SRMS applied in pastoral-nomadism as a livelihood stream. It is therefore limited to pastoral-nomadism where land tenure was initially secured through some form of community held title. The study does not investigate pre-colonial land tenure systems and how possible long-term impacts from the pre-colonial and colonial periods may have impacted pastoral nomadism after sub-division of group ranches.

Nomadism faces several challenges including climate change and increasing unpredictability of weather patterns. However, this study focusses on the social interactions and implications of changes in pastoral production systems rather than the detailed ecological and economic implications. It also focusses on the individual actions and interactions of herders as they move their herds from one pasture or water source to another but does not try to measure the quality of the resources and their relative or direct contribution to livestock productivity and human sustenance.

Considering that the study area is in near urban areas such as Kitengela, Athi River, Isinya and Ongata Rongai towns (Nairobi National Park providing an natural buffer to Syokimau and Mlolongo area) as well as the possibility of pockets of residential, tourism/hotel and farming properties within the study area, the level of study into the inter-relationships between the pastoralists and these groups has been restricted to the potential symbiotic relationships favoring livestock keeping.

The study will use primary data (quantitative and qualitative) emerging from questionnaires and interview schedules applied / administered during the study. Primary data collection will be applied as there is no known data set with the specific parameters to be studied. The data is expected to be collected between the months of July and August 2020 with secondary information from studies undertaken during and after sub-division of group ranches, i.e. from 1990 to date.

1.9 Limitations of the study

Due to government instituted travel restrictions over the COVID-19 management strategies including closure of the Nairobi Metropolitan Area boundary (on two separate occasions), restrictions on number of travelers per car (to 50% capacity) and restrictions on public gatherings, the field study program took longer than was originally anticipated. The study team had to stagger the household surveys, KIIs and FGDs over a period of 5 months.

The study was undertaken in the area covered by Oloosirkon Division, but it is expected that some of the findings will apply to other Maasai communities in Kenya where pastoral-nomadism is still practiced even after sub-division of group ranches.

1.10 Operational definition of terms

Pastoral economy refers to a system of production as well as a way of life in which herding of domesticated animals is the major economic activity in arid and semi-arid regions where agriculture is minor (Grigg, 1974; El Hadary, 2007). Herds are moved to take advantage of seasonal pastures (rather than delivering forage to herds) and to escape insects and sickness (Dyson-Hudson, 1980).

Traditional communal tenure was most common in societies where people's livelihoods were uncertain and existence depended on access to land. The communal right of allocation, use, transfer, and so on was defined by the community's leaders based on the community's requirements (Payne, 2000).

A group ranch is a livestock production system or enterprise in which a group of people own freehold property to title and collectively herd livestock that they own individually to maintain agreed stocking levels. Furthermore, members were chosen based on kinship and traditional land rights (GoK, 1968).

Social Risk Management Strategies are cooperative social practices that help pastoralists integrate socially and help pastoral communities survive by allowing pastoralists to recover their herds following disasters (Barfield, 1993; Bollig, 1998 in Moritz et al, 2011).

Land Administration refers to the set of structures and procedures that enable land tenure rules to be implemented. It encompasses property rights management, land use legislation, and land assessment and taxation. Land management can be done formally by government entities or informally by customary authorities (FAO, 2012).

CHAPTER 2 LITERATURE REVIEW

2.1 Background

This section outlines the available literature on pastoral-nomadism as applicable to the project area through the various land tenure systems over time. It provides the background, existing studies, findings and debates relevant to the study. The section then moves to the theoretical framework on which the study will be anchored, before winding up on the conceptual framework that will guide this study namely: The role of SRMS in building resilience of pastoral-nomadic households in Oloosirkon Division of Kajiado County.

2.2 Colonial Policies on ASALs to Rise of Group Ranches

According to Warren (1994), colonial period discussions pastoral production systems were focussed on ecological sustainability and economic objectives with models on succession and ecological stability (Clement, 1916) and the tragedy of the commons argument (Hardins, 1968).

Two schools of thought were present in the 1940s through to the early 1970's. The first school of thought was in following with the tragedy of the commons argument and the "irrationality" of pastoralists in maintaining huge herd sizes that were seemingly not within the carrying capacity of ASALs (Pierce, 1971). Development programs from the African Land Development Board (ALDEV), the Swynnerton Plan of 1955 to the droughts and floods of 1961-62 led to the policies and legislation on changes in land tenure systems and approaches to use of ASALs (Veit, 2011).

The second group of thought developed after Evans-Pritchard 1940 study on the Nuer from the socio-cultural ecology angle, argues that pastoralists spatial and social behaviour was an adaptive response to specific features of the natural environment. The traditional pastoralist way of life

was therefore seen to be best suited to the climate and had been supported by communal land tenure, the age set system of community leadership and the principles of flexibility, mobility and reciprocity (Dyson-Hudson and Dyson-Hudson, 1980). The principle of reciprocity is an example of a SRMS as it is based on social and marital relationships between families or herders in different group ranches. It allowed for herders to move herds to ranches that were not affected by drought or disease thus ensuring the survival of the herd. The beneficiary community would then reciprocate when the disasters impacted their hosts' ranches (Halderman, 1973). Mobility of pastoral-nomads under unregistered community land tenure therefore allowed pastoralists to evade droughts, illness and conflict by moving to less risky zones. It also allowed to access markets that are far from the best production zones while providing access to grain markets as a source of food for pastoral households (Babiker, 1998). By mid to late 1970s, a number of studies in sub-saharan Africa were based on this paradigm (Awogbade, 1977; Carr, 1977; Hickey, 1975; Torry, 1973; Dunne, 1979). However, the sociocultural angle of study was sometimes critiqued to have used tautological assumptions without using any explicit methodology to test assumptions about adjustment and adaptation (including social adaptation) to the system (Dyson-Hudson and Dyson-Hudson, 1980). Multi-disciplinary studies in human ecology were therefore more acceptable where the economic dependability model was used to predict human-spatial behaviour in pastoral-nomadism.

The movement in the body of knowledge coincided with a subtle shift in ASAL land-use regulations in Kenya after independence, culminating in the passage of the Land (Group Representatives) Act of 1968. Pastoralists in Kenyan rangelands, such as those in Kajiado County, formed group ranches in the late 1970s to: (i) allow members to own land communally,

to improve livestock production, and to encourage socio-economic development (Boone et al, 2005 in Kariuki et al, 2018); (ii) establish a production system that would allow modernization of livestock husbandry while preserving traditional ways (IBRD, 1977; & Goldschmidt, 1981). This was accomplished through destocking programs that allocated quotas to member families in proportion to the amount of animals they held at the time of incorporation, with periodic livestock sales targeted at achieving proper carrying capacity (Ngethe, 1992, Veit, 2011).

Studies on community centred views in Kenya after the establishment of group ranches also found that the pastoral community's main objectives in accepting group ranches were (i) to get group titles for the former trust land while protecting the rights of vulnerable households within the community from the elite few; and (ii) to grow herd populations as a means of coping with and surviving harsh climatic events in the ASALs. (Halderman, 1972, IBRD, 1977, Goldschmidt, 1981, Veit, 2011, Chavangi. T et al, 2016).

Ngethe (1992) pointed out that following the establishment of group ranches, sedentarisation within the group ranch occurred with restriction of movement on individuals to their own ranch to be enforced through the group ranch management committee. This shows that the SRMS based on reciprocity did not function appropriately in the group ranch system. Academic arguments arising after formation of group ranches started raising the alarm that restriction of pastoral mobility threatened the survival of this livelihood stream (Babiker, 1998). Indeed during the 1973-76 drought, some pastoralists disregarded the group ranch movement restriction rules and adopted the traditional social safety net of reciprocity to safeguard their stock (Halderman, 1973; Veit, 2012).

By 1980, despite existing academic paradigm shift to the value and benefits of maintaining rangelands under communal tenure supported by indigenous pastoral rangeland management strategies (Warren, 1994) Group Ranch sub-division began.

2.3 Sub-Division of Group Ranches

Ntiati (2002) warned that the loss of keystone grazing areas due to sub-division of group ranches would lead to overgrazing and degradation of dry and wet season grazing regimes as enforced by customary laws and practices and render traditional land administration and management systems irrelevant. Mobility as governed by cultural and traditional structures therefore lost their authority and function after sub-division of group ranches. This occurred even as studies undertaken on pastoral-nomadism in the 2000's still considered these systems critical as they contributed to the resilience of pastoral societies by allowing pastoralists to rebuild herds after disasters (Moritz et al, 2011).

Academic focus also seemed to shift to seeking an understanding of decision-making processes driving the upward trend in subdivision of group ranches. Rational choice theory applied to explain the behavior of both winners and losers of the sub-division process. Theories of property rights and social exchange theories were also applied to seek an understanding of power dynamics and the roles of various social actors in resource allocation grievances. Pearson's Correlation was used in some of the studies to test causal relationships (Kinuthia, 2014; Kinuthia and Wahome, 2019; Mwangi, 2007; Riamit, 2013).

Following the progressive political, cultural and economic marginalization of pastoralists in subdivided group ranches (Ntiati, 2002) human and cultural ecologists' studies also undertook

vulnerability assessments using rangeland sustainability models to identify potential disaster management and recovery strategies for vulnerable pastoral households. (FAO, 2012; Kimani and Pickard, 1998).

With fragmentation of pastoral ranges and sale of land to other communities, pastoral nomads are increasingly having neighbours practicing agriculture. Social and cultural approaches to studying symbiotic relationships among nomads and sedentary communities have been undertaken at the microlevel in order to study the simple daily transactions in domestic economy or politics in order to understand nomadic-sedentary relations. Symbiotic relationships between pastoral-nomads in the study area and their sedentary neighbours may be driven by factors such as provision of labour for cash based pastoral household needs, supplementary food sources for pastoralists, leasing of land to farmers and sale of livestock and livestock products. (Lamphear, 1976 and Ahmed, 1973 in Dyson-Hudson and Dyson-Hudson 1980).

2.4 Social institutions / Systems Before and After Group Ranch Subdivisions

Among the pastoralists in Africa, there is a sense that land is not only owned by the living, it is also owned by the dead and future generations to come. This presupposes that land use is enforced in a manner that does not damage and reduce its future productive capacity (Lane, 1998). Unfortunately, based on The Food and Agriculture Organization (FAO) of the United Nations report (2002), documentation on traditional land administration is not readily available, as information may be held, unwritten, within a community through collective memory and the use of witnesses in a customary tenure system.

According to Halderman (1972), the Maasai use the reciprocity principle to determine how much an individual invests in a particular relationship with another and whether or not that investment is reciprocated. Social norms emerge within groups to solve collective action problems such as free riders i.e. situations where defectors enjoy the benefits of the cooperative behavior of the others (Teraji, 2018). The Council of Elders and other spiritual / ritual leaders such as the Laibonok, Clan Leaders, and Age Set leaders, as well as group ranch committees formed under the Land (Group Representatives) Act, are likely to have administered these rights among the Maasai. Risk exposure, livelihood diversification, wealth differentiation, market economy, and political autonomy were all factors that determined whether pastoralists invested in social risk management strategies or not in studies on social risk management strategies in different pastoral societies using qualitative cost analysis (Moritz et al, 2011). Building on available literature, this study will seek to document the survival or adjustments made on social risk management strategies and the requisite transformation on the social institutions if any, in the perspective of changes wrought by sub-division of group ranches.

BurnSilver and Mwangi in their 2007 study on maintenance of mobility in pastoral-nomadism even after subdivision of group ranches, predicted that individuals within sub-divided parcels are likely to develop collective strategies such as pasture sharing, re-aggregation of individual parcels and welfare enhancing ventures to support mobility and sustainable livelihoods in this setting. The study recognized that adaptation of such strategies would demonstrate the ability of the Maasai to adjust to changing political and economic realities. They however acknowledged a knowledge gap on how the decisions for collective strategies will be made and by whom as well as how they will be sustained by the individual and the collective.

Kinuthia (2014) also observed formation of welfare and self-help groups as well as table banking among as part of community driven social transformation supporting the well-being of households in a sub-divided group ranch that was located in both Machakos and Kajiado County.

This study will aim to identify and analyse the strategies applied by the pastoral households in the study area so as to further build on this body of knowledge.

2.5 Theoretical framework

2.5.1 Social Exchange Theory

Social exchange theory originated from an American sociologist named George Homans. Later additions to the theory were through works by John Thibaut and Harold Kelley in 1959 as well as Peter Blau in 1964. The basic ideas of reinforcement psychology and microeconomics form the foundation of social exchange theory (Emerson, 1976). It's a metric for determining an individual's effort in a one-on-one connection, but it's on a sliding scale because it's considered to change from person to person and over time with the same person (Emerson, 1976; Tulane University, 2018).

The theory outlines that before entering a relationship, people ask themselves what they stand to gain from the relationship as they seek to maximize profit and minimize cost. As human beings are social creatures, they work to bring about the best possible means to achieve their goals. The theory is also based on the principle that because humans are part of a society, the actions they undertake to achieve these goals are within social norms. When the expectations of the social interaction are met, then humans are more likely to repeat those actions. In addition, the humans are in need, the more value they ascribe to these acts. It also assumes that humans are rational

and are more likely to pursue an action that is perceived to bring about the desired reward, and that relationships evolve over time into trusting, loyal, and mutual commitments. Humans are, through rational decision making in their social interactions, actively seeking individual social gain. (Copranzano and Mitchel, 2005; Emerson, 1976).

The change from group ranches to sub-division and private ownership of land and pastures would result in in the loss of commonly held resources and consequently, the loss of social systems traditionally used to protect grazing resources in the event of drought and other extreme events-which was crucial in maintaining livestock keeping in ASAL areas. However, if pastoralists saw a value in the role of relationship based social systems in protecting their livelihoods and well-being, then they would establish new social systems despite the change in land tenure.

Economists and decision theorists take rationality as an assumption or as a normative model for "appropriate" behavior. As such, social exchange theorists are accused of tautology and reductionism. (Dyson-Hudson and Dyson-Hudson, 1980; Emerson, 1976). To meet this limitation of social exchange theory, it is recommended to take social exchange relations as the basic unit of analysis (Emerson, 1986).

2.6 Conceptual Framework

The following variables will be studied:

2.6.1 Independent Variables

a) Increased vulnerability of pastoral-nomadic households to extreme events impacting livestock holdings.

2.6.2 Dependent Variable

a) Social Risk Management Strategies.

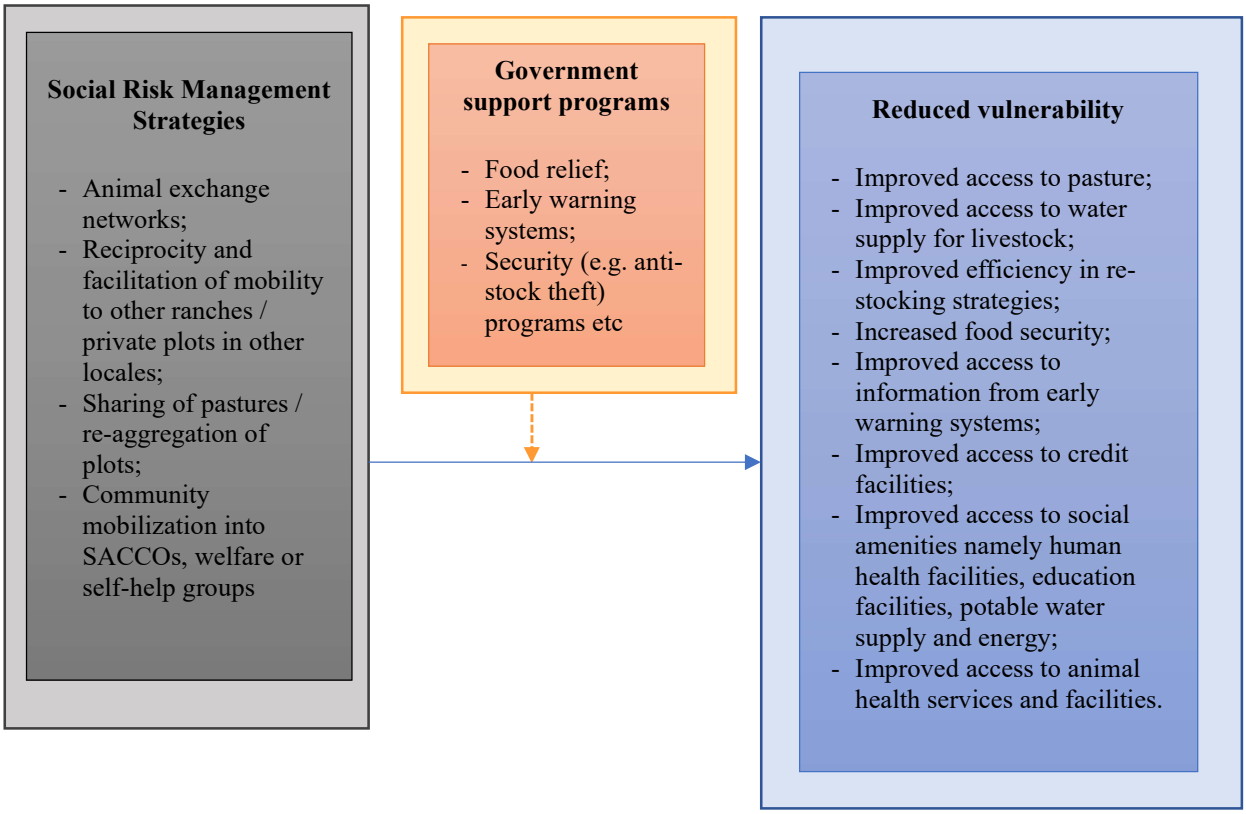
b) Resilience of pastoral-nomadic households to extreme events.

2.6.3 Intervening Variables

a) Government support programs such as food relief, early warning systems, and security such as anti-stock theft interventions among others.

Figure 1 overleaf outlines the conceptual framework that will guide the study.

Figure 1 Conceptual Framework Guiding the Study



CHAPTER 3 RESEARCH METHODOLOGY

3.1 Introduction

The methodologies and procedures that were employed to conduct the current investigation are discussed in detail in this chapter. The approaches outlined in this chapter were designed to address the study's three main objectives. The following topics are covered in detail in this chapter: research design, target population, sampling technique, data collection devices and procedures, as well as data analysis and presentation.

3.2 Research design

The research design is a blueprint that lays out the methods and procedures for gathering and interpreting the data (Zikmund et al., 2010). It is a framework for planning the research project's actions as well as a guide for problem-solving.

The purpose of study design, according to Kothari (2004), is to allow for the collecting of relevant evidence with the least amount of effort, time, and money. Kothari goes on to say that if the goal is to accurately describe a scenario or a relationship between variables, the best design is one that minimizes bias and increases the dependability of the data collected and processed.

The research was conducted using a descriptive case study research approach. The goal of descriptive research design is to address the research problem's who, what, where, which, when, and how. The goal of descriptive research is to collect data that describes the features of people, circumstances, or occurrences (Zikmund et al., 2010). The most appropriate research strategy for the study was a descriptive research design because it would describe the function of SRMS in developing resilience of households in Olooloitikosh Ranch who rely on livelihood streams from pastoral-nomadism. In addition, descriptive design involves both qualitative and quantitative data

that were used in the study. Considering that some of the information on emerging social structures and forms of association was in qualitative form, a mix of both qualitative and quantitative data allowed for a combination of measurement and identification of patterns as well as an in-depth discussion with key informants on critical findings (McCombes, 2019). The study also applied triangulation of analyzed data from information from household survey, key informant interviews and FGDs to identify points of convergence, divergence, contradictions or relationships (Creswell and Plano Clark, 2011).

All the questionnaires used were physically administered to the respective respondents. Besides, in face-to-face distribution of the questionnaire the researcher was able to guide and clarify to respondents, hence removing any ambiguous questions (Zikmund *et al.,* 2010).

The methods for data collection consisted of household survey, key informant interviews (KIIs), Focus Group Discussions (FGD) and desk review of secondary data.

3.3 Study Area

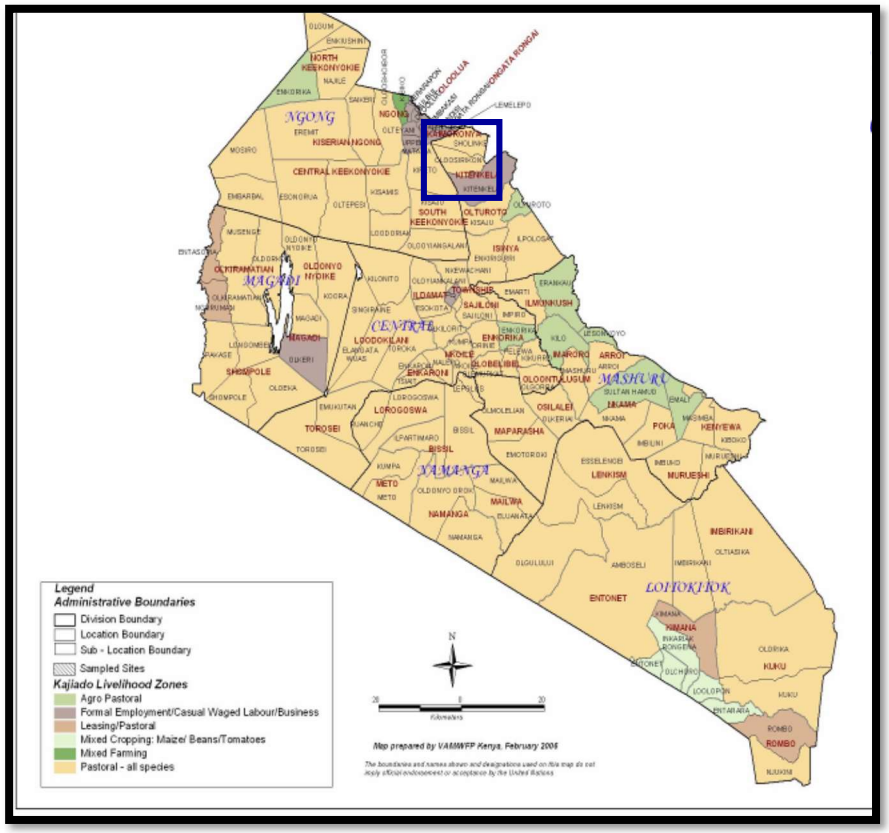
From the national co-ordination perspective, Oloosirkon Division is located in the northern areas of Isinya Sub-county of Kajiado County. The study area is bordered by Nairobi National Park (NNP) and Ongata Rongai to the north, Mavoko Sub-County (Machakos County) to the east, Isinya Division to the south and South Keekonyokie Division of Kajiado West Sub-County to the west. From the electoral boundaries' perspective however, it is located in the northern area of Kajiado East Sub-County (See Figure 2).

The main economic activities in the study area today are pastoralism, agro-pastoralism and employment (GoK, 2008). However, this study will focus on communities / villages with pastoral-nomadism as the predominant livelihood stream.

Oloosirkon Division was initially part of Olooloitikosh ranch which was in turn located in the larger Kaputiei plains. During the establishment of group ranches, 664,000 acres were set aside in the Kaputiei plains to establish 14 group ranches. Within each ranch of about 47,500 acres, 100 families were to organize and elect 3 to 10 representatives and adopt a constitution prior to registration. They would then be legally recognized as a corporate body that could hold property, sue and be sued. A Committee was also to be established to manage the day to day operations of the ranch with control over water, grazing and tillage (Halderman, 1970). However, by 2002, most of these ranches, including Olooloitikosh Ranch had undergone sub-division with land holding changing from group individual ownership. (BurnSilver S. and Mwangi E., 2007).

Figure 2 depicts the research area's position within Kajiado County:

Figure 2: Location of the Study Area



Source: GOK, 2008

3.4 Sampling and Sample Size Determination

3.4.1 Target Population for Household Survey and Focus Group Discussions

Kothari (2007) defines population as the sum of all the elements about which the researcher intends to make assumptions. A researcher specifies the unit being sampled, the geographical location, and the temporal bounds to determine the target population.

The Target population for this study was the pastoral households living in Oloosirkon Division of Isinya Sub-County. Pastoral settlements in Oloosirkon division are located in Nkukuon (Sholinke), Enkutoto (Oloosirkon) and Birika Chini (Ololoitikosh) and do not exceed 450 households (Kajiado Deputy County Commissioners Office, 2020).

3.4.2 Target Key Informants

Key informants were drawn from representatives from relevant national ministry and county ministries covering livestock keeping and social development. These included officers at County level representing the Ministry of Lands and Physical Planning, Ministry of Agriculture, Livestock and Fisheries as well as the Ministry of Public Service, Youth and Gender.

At County Government level, key informants were drawn from appropriate officers in the following departments: Agriculture, Livestock, Veterinary Services and Fisheries; Gender Social Services, Co-operatives and Enterprise Development; and Education.

Apart from the initially identified key informants, the key informants who understand (i) Gender roles and responsibilities in livestock keeping and management; (ii) herder behaviors in traditional / indigenous knowledge on pastoral production and adjustments after formation of group ranches

and subsequent subdivisions (iii) traditional and modern mechanisms for dealing with unreliable weather patterns and climate variability; were sought out to participate in the study. These included Maasai elders as well as female opinion leaders.

3.4.3 Sample size and sample design for Household Survey

The number (n) of observations gathered from a population from which statistical conclusions for the entire population are made is referred to as sample size (Cooper, 2013). The sampling frame enumerates all of the population units from which the sample will be drawn (Schindler, 2007).

This study employed stratified sampling procedures, to avoid bias and ensure that every subject had an equal chance to participate. The target population is divided into different homogeneous groups with similar features using a stratified sampling technique (Zikmund et al., 2010). Stratified sampling technique is used to ensure representatives from each subgroup within the population were represented in the sample. The target population was therefore stratified/categorized based on the Villages as identified to still practicing pastoral-nomadism within Oloosirkon Division as provided by the office of the Kajiado County Commissioner.

The sample size for the study is calculated using Slovin's formulae as follows:

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

Where: n = sample size

N = Total population

e = Error tolerance of 0.05

$n = 450 / (1 + 450*(0.05^2))$

= 212 households

The respective sample size in each village were obtained using proportional allocation method, i.e.

$$ni = \frac{n}{N} * Ni$$

Where: n = sample size

n_i = sample size for each strata (i=1, 2,……..)

N = total population

N_i = total population per strata.

Thus, the target sample distribution within the target 3 Villages in Oloosirkon Division is as presented in Table 1 below:

Table 1 Target Number of Sample Households per Village

Village	**Calculation of population per Village**	**No of target Households per Village**
Nkukuon	=212/450*87	41
Sholinke	=212/450*250	118
Olooloitikosh	=212/450*112	53

To eliminate bias and offer every family an equal chance to participate in the study, stratified random sampling was adopted. To determine the households to be interviewed within each strata, the enumerators started off from the most central point of the village and depending on the settlement pattern and walked outward in a radial manner, or linear manner, interviewing every 2nd household until the sample target was reached.

3.4.3 Research Instruments

3.4.3.1 Interview Schedule for Households

For primary data collection at the household level, a semi-structured interview schedule was used. A questionnaire is a structured written series of questions to which respondents record their own responses using a limited set of options (Sekaran & Bougie, 2010). To allow respondents to express themselves fully, the interview schedule included both closed and open-ended questions. The interview schedule was broken into two sections: section A focussed on the demographics of the respondents, while section B focused on the study's aims.

3.4.3.2 Key Informant Interview Guide

The description of social systems and extent of grazing lands that were in place prior to establishment of group ranches were reconstructed through key informant interviews (KIIs) with representatives of traditional institutions such as elders recognized in the community. Alternative or supporting information on these systems was also collected from national and county level administrators and officers in the lands, livestock, agriculture, drought management and social protection departments / agencies. A KII interview guide was used for this purpose (See copies of Key Informant Interview Guide as provided in *Appendix 1: Research Instruments*, of this proposal).

3.4.3.3 Checklist Questions for FGDs

A checklist was used to structure the discussions to suite the research purpose. A copy of the checklist is provided in *Appendix 1: Research Instruments*, of this proposal. The questions were structured to stimulate discussions on the research questions. The opening statements provided the background, objectives and scope of the discussion followed by introductory questions and

consequently probing questions as guided by the responses given. Follow-up questions were categorized into thematic areas with further categorization of opinion from fact. During the discussion, the facilitator was keen to ensure full participation especially from shy participants and representatives of minority or marginalized groups. The ending questions guided the facilitator to orally present a summary of feedback given by thematic area and request for confirmation that the record of discussions was comprehensive and correct.

3.4.4 Approach to field survey schedule management

The length of the questionnaire for the household survey was tailored to ensure that administration did not take more than 40 minutes and that each enumerator does not undertake more than six (6 No) households in a day. Distribution / spread of enumerators in the study area was also be managed to ensure that enumerators do not have to walk far to access subsequent households. A mix of local (Isinya residents) and external enumerators was the preferred to balance between easy access to households and reduction of bias. The entire study team was introduced to the area chief. The area chief was also requested to identify village elders or *nyumba kumi* representatives to assist the study team in accessing target households.

A total of 18 key informants were interviewed. These informants included representatives from ministries of in charge of land, livestock, social development, internal co-ordination, education, youth and internal gender at national and county levels of government as well as opinion leaders and elders in the community were consulted. Open ended questions were applied in the interview guides used. Respondents were given the chance to pick telephone conversations, emails or in-person conversations to respond to the interviews, in consideration of those who were reluctant / uncomfortable / unable to have in-person meetings in response to management of the spread of

COVID-19. In-person interviews were undertaken at the most appropriate location for both the interviewer and interviewee.

Three (3 No.) focus group discussion (FGD) were organized at sub-county level to allow for in-depth probing of critical findings from the questionnaire responses. Each FGD consisted of a maximum of 9 attendees with representation from elders, unmarried youth (male and female) and female household heads. The distribution of the FGDs was be based on the predominant land uses today. Identification of participants was done with the assistance of village elders under the office of the Kajiado County Commissioner. Prior to the FGD, a discussion with community leaders was held to ensure cultural appropriateness in furthering discussion on opinions voiced at the FGD.

Discussions were held at the most centrally located location for the convenience of the participants within the study area.

3.4.5 Research instrument validation

The study employed content validity to analyze the correctness, meaningfulness, appeal, and appearance of the data collection instruments in order to assure their validity. The subjective agreement among professionals that a scale logically appears to represent accuracy in what it purports to measure is referred to as content validity (Kothari, 2007). The researcher used the supervisor's experience to determine the content validity of the instrument items, ensuring that the instrument was relevant to the defined objectives and content area under investigation. The supervisor's ideas and criticisms were used to tweak the research items and make them more study-friendly.

Cronbach's Alpha was used to assess the data collection instrument's reliability. Cronbach's alpha is used to determine the level of internal consistency for all of the variables under investigation. Items with a reliability coefficient of 0.70 or higher, according to Fraenkel and Wallen (2000), are considered dependable. Variables with a reliability coefficient of 0.70 or above were considered

dependable based on the foregoing. Those with lower reliability coefficients were either removed or rewritten.

3.5 Secondary Data

Books, journals, periodicals, and the KNBS were used to gather secondary data. Data obtained from a source that has already been published in some way is referred to as secondary data (Zikmund et al., 2010).

3.6 Management and analysis of data

3.6.1 General data management and analysis

In order to analyze the data, the study used descriptive and inferential statistics. For mistakes, completeness, and consistency, the data was cross-checked and validated. Tables, graphs, and pie charts were used to portray the analyzed data in a descriptive manner. The responses to the open-ended questions were analyzed and coded.

3.6.2 Hypothesis testing

The chi square test of independence was used to check whether to accept or reject the null hypothesis. The degree of confidence applied was 0.05.

3.7 Ethical considerations

The proposal was submitted to the Kenyatta University Graduate School for approval and clearance for further submission to the Kenyatta University Ethical Review Committee (KUERC). The approvals by Graduate School and KUERC are presented in Annex 1 of this Report. Upon clearance by KUERC, the proposal was submitted to the National Commission for Science,

Technology and Innovation for application of a research permit. The Research Permit as issued in February 2021 is presented in Annex 2 of this report. After receipt of the research permit, field data collection was undertaken.

The information gathered throughout the study was only utilized for research reasons. Participants were informed about the study's goals as well as how the findings would be used. Participation barriers such as language barrier and low literacy rates were tackled through use of well-trained translators (using Maasai and Swahili as appropriate) and agreement on the oral versions of the introduction information respectively, so as to facilitate participants to give informed consent. No children were interviewed during the study and any personal information collected was protected.

Data and information from secondary sources was duly cited and in accordance with industry standards.

CHAPTER 4 RESEARCH FINDINGS

4.1 Introduction

This chapter is divided into four parts. The first part presents the socio-demographic characteristics of the household heads and how these characteristics influence coping strategies by households in building the resilience and reducing vulnerabilities against extreme events such as droughts, animal disease outbreaks, attacks by wildlife or rustlers leading to death or loss livestock holdings. The second part analysed the SRMS established or adjusted to support pastoral-nomadic households in Oloosirkon Division; while the third part analysed the effect of SRMS on pastoral recovery strategies and subsequent maintenance of pastoral-nomadism as a livelihood stream and lastly, the fourth part analysed measures that can be undertaken at community and policy level to facilitate sustainable SRMS in favor of pastoral-nomadism. The findings are presented using graphs, tables, bar charts, and pie charts.

4.2 Response Rate

This section presents the number of respondents who successfully answered all the questions in the questionnaire from the study area. Out of the 212 households sampled to take an interest in this study, all were accessible and 212 questionnaires were administered physically. 168 questionnaires were completed effectively and were usable for analysis. When there is a distinction between returned vs usable surveys, researchers should utilize the number of usable replies as the numerator in calculating completion or response rate, according to Luke and Goodrich (2019). The response rate for this study was 79.2 percent.

According to Mugenda & Mugenda (2003), a response rate of 50% is appropriate for data analysis and reporting; 60% is good; and 70% and above is excellent; thus, the 168 (79.2%) response rate for this study was great for data analysis.

4.3 Demographic Characteristics of the Respondents

This section presents some of the demographic aspects of the respondents from the study area. The main demographic features of the respondents in this section include: gender, age, marital status, nature of marriage, level of education, size of land, and size of household. The demographic data of the respondents are affected differently by social risks, and therefore vulnerability to social risk of pastoral-nomadic households under the current land tenure system is directly linked with demographic characteristic of an individual.

4.3.1 Gender of the Respondents

This subsection sought to analyse the gender of the respondents who participated in the study. The findings show that out of 168 participants, majority (62.9%) of respondents in the study area were Female, while Male made up 37.1% (Figure 4.1). This goes to mean that during household data collection, majority of those found at homes were females. The data was collected in the months of May and June when part of Kajiado normally experience dry season, and this could mean that majority of men had started moving to better grazing grounds with their livestock in search for pasture or water or both.

The findings reveal that gender is key factor in community resilience against extreme events and decision-making process on social risk management strategies. Women are particularly important

in the raising of the children. This goes to mean that when men in the study area migrate with the animals, women are left at home with children suffering from impacts of the extreme event.

The findings are supported by a study done by World Bank Group (2016) in sub-saharan Africa which reported that vulnerability to extreme events such as drought varies based on gender, whereby women are more exposed to effects of social risk due to their social role at household such as taking care of children, provide food for the family, fetch water and collecting firewood.

Figure 4.1 shows distribution of respondents by gender:

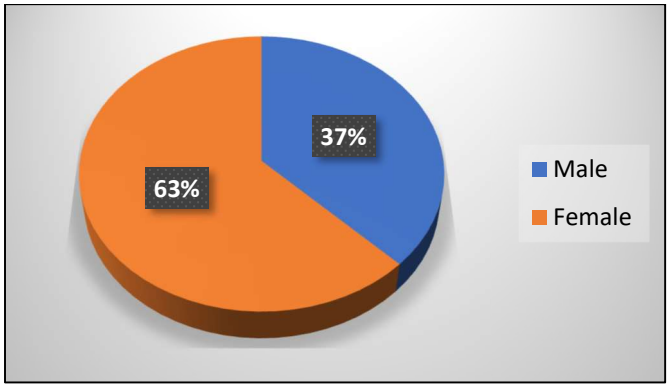


Figure 4.1 Distribution of Respondents by Gender

4.3.2 Distribution of Respondents by Age

This subsection sought to discuss the age of the respondents in the study area. The findings indicate that out of 168 participants, majority of the respondents (40%) were within the age bracket of 41-50 years, followed by 32.7% within the age group of 31- 40 years. While 20.2% of the respondents were over 50 years and only 7.1% were within the age bracket of 20-30 years.

These data imply that the majority of respondents in the research area are in their 30s, 40s and 50s, an age group with key responsibilities in the livelihoods of the households and the community. This results therefore validates the credibility of this information since majority of the respondents are mature.

Those of age of 50 years and above have enough information due to long experience and interaction with extreme events such as droughts, human wildlife conflict, livestock attacks by wild animals, cattle raids among other social risks in the study area.

Based on the gender statistics of this study as indicated in Figure 4.1, the findings could further imply that majority of the respondents within the age bracket (41-50 years) are women who mostly are burdened with many responsibilities in the household like taking care of children by providing food, fetching water and health related needs among others. Figure 4.2 shows distribution of respondents by age:

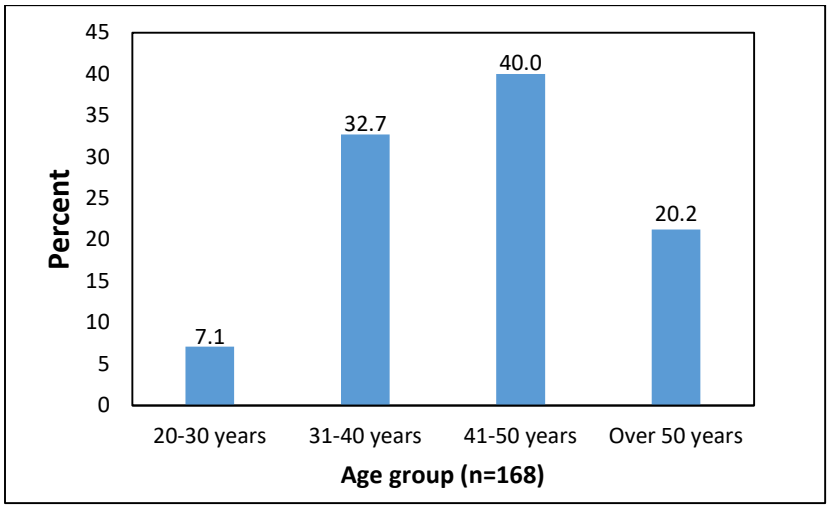


Figure 4.2: Distribution of Respondents by Age

4.3.3 Marital Status of the Respondents

This subsection analysed marital status of the respondents. The findings show that of the 168 participants interviewed, the highest percentage (54.5%) were married, 22.1% were widowed, and 18.6% were divorced/separated, while 4.8% were single. The finding suggest that marital status of the respondents is linked to the strategy or decisions a household undertakes in building resilience against extreme events. The findings suggest that married couples can be more resilient because they can assist each other during extreme events such as drought or disease outbreak and make informed strategies compared to divorced and single.

The findings could also imply that households with a widowed or divorced/separated head are more prone to social dangers. The findings of this study are consistent with the findings of another study conducted by Gebre and Kifle (2018), which found that married couples can share responsibility for searching food for the household during drought, giving them greater resilience than single and divorced/separated individuals who struggle for themselves.

The findings of the study are also consistent with a national survey conducted by the Kenya National Bureau of Statistics (KNBS, 2018), which found that in Kajiado County, 54.4 percent of the adult population is married, 27 percent is never married, 6.9 percent is widowed, and 5% of the population is separated and divorced. Figure 4.3 depicts the respondents' marital status:

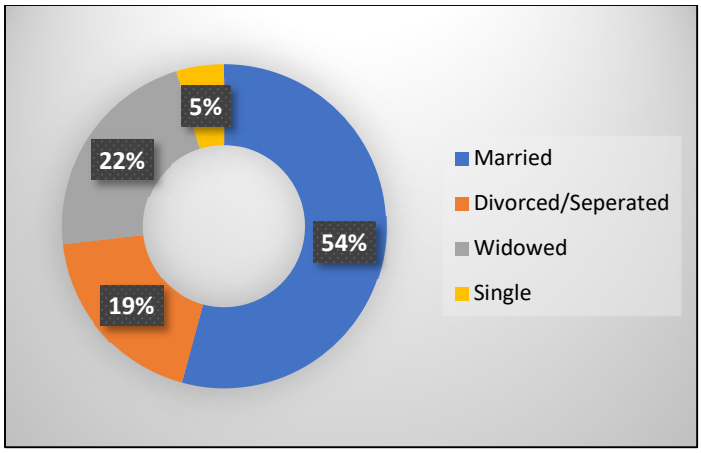


Figure 4.3: Marital Status of the Respondents

4.3.4 Distribution of Respondents by Nature of Marriage

This subsection discussed the nature of marriage of the respondents in the study area. The results show that more than half (61.3%) of the respondents interviewed were in a polygamous marriage while 38.7% were in a monogamous marriage (Figure 4.4). This goes to mean that most households of Oloosirkon area have many members of the family who can share labor and home activities such as grazing the livestock, fetching domestic water, collecting firewood, and growing among other activities.

This could also mean that the polygamous household can be resilient to extreme events such as drought, floods or cattle raiding whereby the household can have options for livelihood diversification such as making bangles, belts, wage labour or crop growing and so on; or household members could be located at different areas with a portion of the livestock and this can make sense when there is cattle rustling/raiding in the area.

According to a survey performed by the Kenya National Bureau of Statistics (2018), pastoral communities are the most polygamous in Kenya, with Mandera registering the greatest number of polygamous unions (35%) followed by West Pokot (25%) Turkana (20.3%), and Kajiado (20.3%). (19.3 percent). Figure 4.4 depicts the distribution of respondents by marriage type:

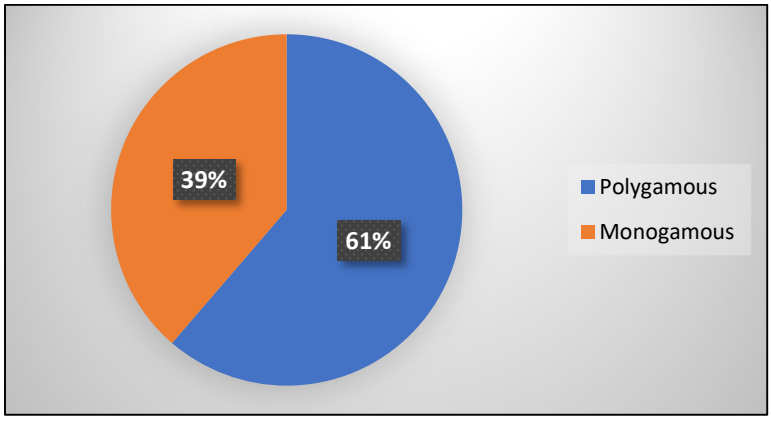


Figure 4.4: Distribution of Respondents by Nature of Marriage.

4.3.5 Distribution of Respondents by Level of Education

This section presents education levels of the respondents interviewed. Education levels were divided into five categories such: no education at all, adult education (Ngumbaru), primary certificate, secondary certificate and tertiary. The findings reveal that the highest number of respondents (39%) had attained a primary certificate followed by Ngumbaru (29%).

The results also show that a relatively sizeable number (20%) of respondents in the study area had no form of education at all (none). It was also noted that few residents had secondary education at 10% and tertiary (university/polytechnic) at 2% (Figure 4.5).

It is clear from the results that the study area has high illiteracy level with majority of the respondents being people with either a primary certificate or attended Ngumbaru or never went to school. This also shows that the high level of illiteracy among the households in the study could hinders access to early warning information about extreme events such as floods and also constrains options for livelihood diversification. The results could also mean high migration levels by the household members which limits the capacity of teachers or education officers to reach them.

The findings are supported by the Kenya Population and Housing Census report (2019), which reported that 111, 547 people went to school but did not complete their studies, while 182, 329 never stepped into a classroom to learn, resulting in 30 percent of the Kajiado county population having low literacy levels.

The level of education was key to this study in light of the fact that informed respondents have higher ability in handling information and can settle on substantive strategies/decisions to cope with extreme events. Figure 4.5 shows distribution of respondents by level of education:

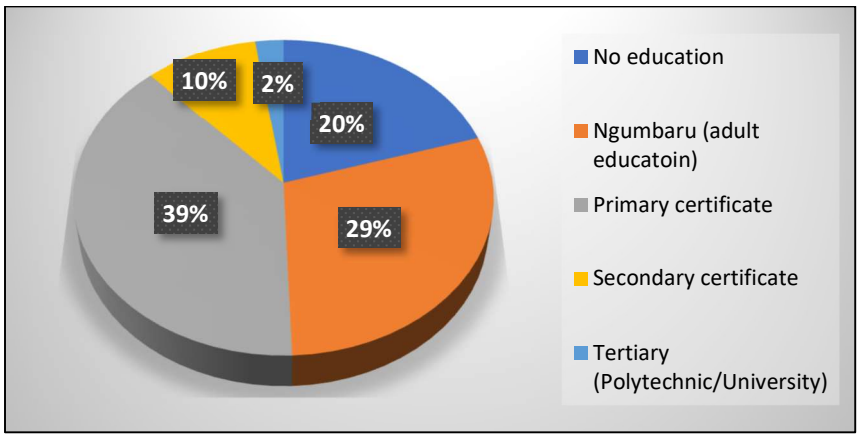


Figure 4.5: Distribution of Respondents by Level of Education

Findings also show that majority of the school going children in the study area have to travel between 3-5 kilometres (mean=0.91) to the nearest public school while a fairly sizeable (mean=0.73) number of respondents have to travel between 6-8 kilometres to find the nearest public school. This goes to mean that respondents school going children have to travel more than 5 kilometres to access education facilities. This also explains why a relatively high number of adult respondents in the study area have no education at all or have Ngumbaru (adult education) education. Given the safety and security risks that small children face when walking these distances to school, these results are consistent with United Nations Education Scientific and Cultural Organization (UNESCO, 2015) findings that pastoralist communities worldwide have some of the lowest school enrolment rates.

Table 4.1: Distance to Nearest School- Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Nearest Public School					
1-2 Kms	168	0	1	0.28	0.451
3-5 Kms	168	0	1	0.91	0.286
6-8 Kms	168	0	1	0.73	0.495
More than 8 Kms	168	0	1	0.58	0.444
Valid N (listwise)	168				

4.3.6 Distribution of Respondents by Size of Land

This subsection presents the average size of land in hectares for the households visited during the interviews. The findings show that majority of the households in the study area (37.4%) own between 21-50 hectares of land, 21.6 percent of households own over 50 hectares of land while 26.4% own between 10-20 hectares of land.

The results also show that 14.6% of the households in the study area own less than 10 hectares of land during the time of this study (figure 4.6). From these findings, it is clear that average plot sizes continue to decrease after subdivision of the traditional group ranches. The reason could be that majority of the households in the study area have continued with fragmentation of land for sale, in many cases to non-Maasai and hence the differences in average sizes of land between households in the same area.

The findings could also mean that further land fragmentation for sale could endanger nomadic livestock production by reducing mobility and carrying capacity of grazing land, increasing the risk of land degradation and crop failures, and interfering with traditional wildlife migration patterns – the latter potentially exacerbating human-wildlife conflict in the area. The herders' initial response when they hear of lions in the grazing regions, according to key informant interviews, is to self-mobilize and chase down and kill the lions before they harm livestock.

The findings show that 14.6% of the households own less than 10 hectares of land and this could possibly mean that widows might have received small parcels of land during subdivision as they were unable to defend their claims.

The results of this study are supported by the findings of another study conducted by Mwangi (2011) which reported that the average parcel size after subdivision of group ranches in Kajiado

East was 50 hectares. However, only 9% of the original members own 35% of the former group ranch land; and 60% of those original members have less than average parcel size.

From the focus group discussions, group ranches were characterized by the absence of fences, land could not be sold, common pastures and water points, large hosts of livestock and a small human population. One respondent stated that "*I never supported the idea of group ranches because like many of my friends and neighbours in the 1970s did not understand the grazing quotas and boundary maintenance but looking backwards, I can say it (group ranches) served us better than today. Today, we have lost so much land to the government and land grabbers*".

Another respondent stated that "*we have lost 60% of our pre-colonial land after subdivision of the group ranches and our livestock have reduced dramatically due to limited grazing areas"*.

The findings are consistent with those of Moiko, Abuya, and Said (2019), who found that Kajiado County is undergoing rapid land transformation due to fragmentation and sales, population growth, and land privatization, which has shifted livestock investment patterns from resource extensive to resource intensive systems. This effectively excludes many poor pastoralists whose skills and knowledge are linked with large-scale mobile pastoral systems. Figure 4.6 depicts the average size of land parcels per household:

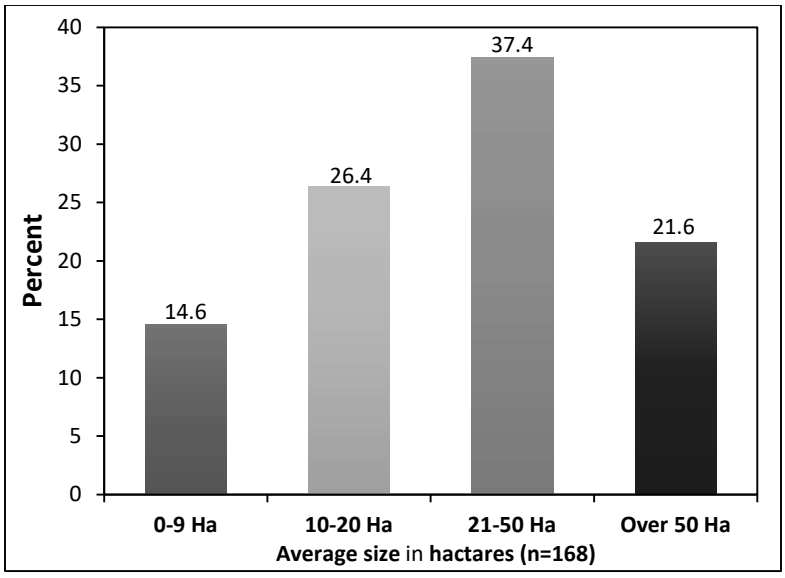


Figure 4.6: Distribution of Respondents by Size of Land

4.3.7 Distribution of Respondents by Number of Household Members

This subsection presents the average size of households visited during the interviews. The findings show that 36.3% of the households in the study area have between 11-15 members followed closely by households with 6-10 members (35.7%) while 16.7% of the households reported 15 members and above. 11.3% of the respondents reported 2-5 members (Figure 4.7).

This goes to mean that more than half of the households in the study area have an average of 10 members. These results are supported by the earlier findings indicating more than half (61.3%) of the respondents in the study area were in a polygamous marriage (Figure 4.4). The findings suggest that the households in the study area could be resilient to extreme events such as drought and floods among others because a big household is itself a source of labour as the members can take part in production activities. The findings are backed up by a research conducted in the same area by Nyangenya (2010), who found that household size influences labor force, which in turn

influences household capacity to engage in various vocations. Larger families have greater labor that can be used for a variety of income-generating activities.

These findings, however, are not in tandem with the findings of the Kenya Population and Housing Census report (2019) specifically on the average size of persons per household in Kajiado County which according to the study is 3.5 persons per household. However, the difference could be explained by mobility of the household members in search for pasture or water for the livestock during the census exercise, as well as the inclusion of households from urban and peri-urban areas within the County such as Kitengela and Ngong Towns in the analysed population. Average number of members per household are shown in Figure 4.7:

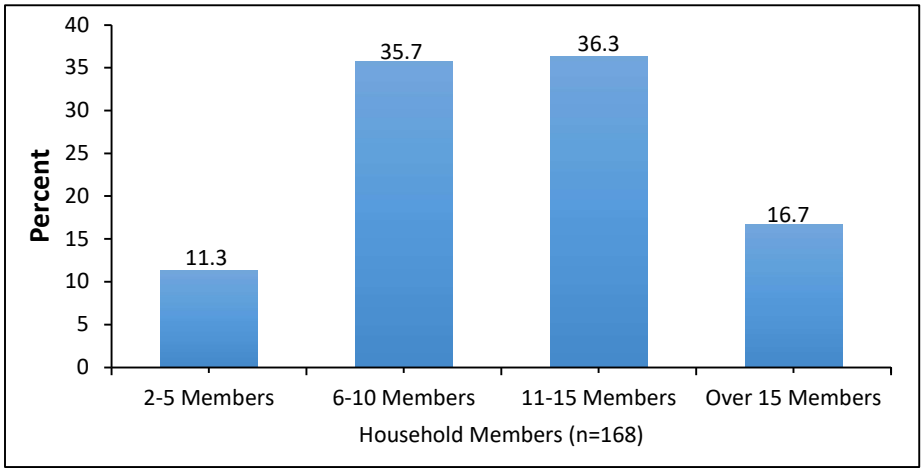


Figure 4.7: Distribution of Respondents by Household Members

4.4 Descriptive Statistics: Livestock Keeping and Pastoral Nomadism in Oloosirkon Division.

In order to identify the SRMS established/adjusted to support the households in the study area, this section sought to identify and analyse the nature of livestock keeping and pastoral nomadism as a livelihood stream among the households in the study group.

Firstly, this section analysed the land tenure system to understand how the households in the study area have acquired their parcels of land. This would ideally show the presence of first, second or even third generation pastoral nomadic households who have been in the area since the days of the group ranch.

Secondly, the main household livelihood streams and source of labour for the households is discussed. The section also analysed the parameters that enable and support pastoral nomadism such as the available labour force, sources of water and livestock pasture under typical conditions and when extreme events such as drought, flood and disease outbreak occur in the study area. With regard to livelihoods, this section analyses the household income and wealth status based on livelihood streams, cash-based incomes, wealth perception from a cultural perspective and household assets including housing.

Through-out the discussions, the study aimed to identify specific challenges faced by the study group in undertaking pastoral-nomadism while pointing out the coping mechanisms that were maintained from traditional pastoral-nomadism practices while identifying new mechanisms applied today. Coping mechanisms that rely on social capital are highlighted and where possible, relevant supporting qualitative information gathered from key informants or through FGDs is highlighted alongside these discussions.

Next, the section specifically analysed the participation of households in social groups such as self-help groups, funeral welfare and merry-go round (Chama) and the linkages to improvement of household resilience to challenges facing pastoral-nomadism as a livelihood stream.

4.4.1 Land Tenure System in Oloosirkon Division.

The respondents were asked to indicate how they acquired the parcels of their land. Four conditions were considered: acquired the parcel after sub-division of the group ranch (original member); acquired the land from an original member of the group ranch; Inherited from parents who was an original member of the group ranch; and Inherited from parents who acquired the land from an original member of the group ranch.

To analyse this, the data was first coded using binary concept in which the conditions take only two values (1 and 0) and each case was evaluated according to its presence (1) or absence (0) of the condition and the information was run on SPSS version 25 to extract descriptive statistics (Table 4.1).

The findings show that the highest number of households (mean= 0.89) inherited land from parents who were original members. This was followed by original owners (members of group ranch) (mean= 0.85). It is also important to note that a fairly sizeable number (mean=0.48) of households in the study area acquired land from original member which in most cases was through a sale agreement. The findings show that the least number of households (mean=0.29) in the area inherited from a parent who acquired from original member.

The results have revealed that the main source of ownership of land in the study area is actually through inheritance from parents who were original members. This could mean that a large portion of the original group ranch land in the study area are second generation members who own land that has been fragmented or subdivided further among household members. Considering the high proportion of households (41%) owning 20ha or less (as depicted in figure 4.6), these findings further support the argument that population increase among the original ranch owners is a

significant driver of land fragmentation and reduced land holding per household within the study area. Table 4.2 shows descriptive statistics of land tenure system of the households:

Table 4.2: Land Tenure System-Descriptive Statistics

Condition	N	Minimum	Maximum	Mean	Std. Deviation
I am Original member.	168	0	1	0.85	0.357
I Acquired from original member.	168	0	1	0.48	0.501
I Inherited from original member.	168	0	1	0.89	0.310
I Inherited from parent who acquired from original member.	168	0	1	0.29	0.453
Valid N (listwise)	168				

4.4.2 Source of Livelihood for the Respondents

This section looked at the main source of income for the households in the research region. The respondents were asked to list the things they do for a living. The data suggest that among the five sources of income, livestock rearing was the most common (mean = 1.00) among the study area's families. Mixed farming was next (mean = 0.92), with the business of producing and selling beads being the least common source of income among the households in the research region (0.57). It's also worth noting that small-scale farming was used as a source of income by a sizable proportion of households (mean = 0.79). The findings also show that a few households depend on casual labor (mean = 0.60) for a livelihood (Table 4.3).

The results indicate that most of the households in the study area are pastoralists because they depend on livestock keeping as the main source of livelihood. This could mean that livestock wealth accumulation in the study area is regarded as a rational household level risk management strategy. Unfortunately, this also highlights the vulnerability of the households' resilience to challenges facing pastoral-nomadism. A household could face severe hunger if all the animals are swept by drought or floods or when there is an outbreak of diseases (livestock/human). During an interview with area chief who was one of the key informants in the study, stated that "*Our livelihood is reliant on livestock, we sell these animals to get money to buy food and other family needs, but now we can't because of the Corona pandemic. Sometimes when I need money, I call one of the livestock buyers but it's hard for them to come now because of movement restrictions, we are the most disadvantaged as a community."*

The findings also show that a significant proportion of households engage in small-scale farming, which could indicate that pastoralists in the study area are turning to crop farming to augment or replace their livestock income. Herrero et al (2016) found that pastoral households are responding to climate change related shocks and stresses through alternative economic activities to supplement livestock related incomes.

Table 4.3 shows descriptive statistics of main sources of livelihood for the households:

Table 4.3: Source of Livelihood for the Households - Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Mixed Farming	168	0	1	0.92	0.268
Casual Labour	168	0	1	0.60	0.492

Make & Sell Beads	168	0	1	0.57	0.496
Livestock keeping only	168	1	1	1.00	0.000
Small scale farming	168	0	1	0.79	0.412
Valid N (listwise)	168				

4.4.3 Source of Labour to Cater for Livestock by the Households

Respondents in the study area were asked to state their main source of labour to cater for the livestock. The findings show that the highest number of households (mean = 0.94) in the study area rely on household members to cater for their livestock, followed by those who rely on support from relatives and friends (mean=0.90). A fairly sizeable number of households rely on rotational herding among neighbours (mean=0.83), while the least number of households (mean= 0.80) in the study area hire labour to cater for their livestock.

This suggests that there is a shift from traditional system of pooling of herders from the extended family, friends and neighbours to a model that is more reliant on the household members themselves herding their own livestock. According to a key informant consulted during survey, this shift could be attributed to the change in lifestyle where people pretty much keep to their internal labour force that exists within the fences of their compounds. According to the key informant, the differences in household incomes also seem to form a divide among the labour systems that was not necessarily there during traditional time, for example, a higher income household can afford to hire herders while a low-income household is forced to rely on their household members or their social network: hence the reliance on friends and neighbours. Table

4.4 shows descriptive statistics of the main sources of labour to cater for the livestock in the study area:

Table 4.4: Source of Labour to Cater for Livestock -Descriptive Statistics

Sources of labour	N	Minimum	Maximum	Mean	Std. Deviation
Household members.	168	0	1	0.94	0.237
Hire.	168	0	1	0.80	0.403
Rotate herding among neighbours.	168	0	1	0.83	0.374
Support from relatives and friends.	168	0	1	0.90	0.302
Valid N (listwise)	168				

4.4.4 Estimated Average Income of the Respondents per Year

The subsection analysed the average income of the households per year in perspective of the main sources of livelihood for the households, where respondents were asked to give an estimate of their income per year. The findings show that most of the respondents (mean= 0.85) earn less than 200,000 per year, followed by those who earn between 700,000-900,000 per year (mean=0.78). The results also show that a fairly small number of households earn over 1million per year (mean=0.25) (Table 4.5).

This low average annual income could be explained by the over-reliance on one source of livelihood (livestock keeping) by the households as reported earlier in Table 4.2 which denies them the opportunity to diversify their livelihoods to supplement livestock income. The findings also show that majority of the households in the study area live below the international poverty line (US$1.90 per day). The findings are supported by KNBS report (2016) which places poverty rate

in Kajiado east Sub County at 40 percent, and the proportion of individuals living below the poverty line in the entire Kajiado County at 53.5 percent. Average income per household per year is shown in Table 4.5.

Table 4.5: Average Income of the Households per Year -Descriptive Statistics

Income Estimate	N	Minimum	Maximum	Mean	Std. Deviation
Less than 200,000	168	0	1	0.85	0.357
300,000-600,000	168	0	1	0.37	0.486
700,000-900,000	168	0	1	0.78	0.416
Over 1 Million	168	0	1	0.25	0.434
Valid N (listwise)	168				

4.4.5 Livestock Sizes and Numbers as a Cultural Indicator of Wealth

The findings reveal that sheep and goats (shoats) are the most common (mean=0.91) livestock among the households in the study area followed by cattle (mean=0.72). The prioritization of shoats over cattle can be considered as a strategy to increase income from sale of livestock as they move faster than cattle and as a deterrent against cattle raiders.

The FGD findings also support these arguments as it emerged that the community considers donkeys and goats as more resilient to drought while cows and sheep are considered more vulnerable to drought due to their reliance on green pastures. These findings show that pastoralists in the study area, prefer more resilient animals.

The study findings also suggest that in order to limit livestock losses during extreme events, pastoralists in Oloosirkon Division are opting to sell drought-threatened cattle to buy goats, sheep which can better withstand erratic events such as drought. During one of the focus group discussions, one participant stated that, *"I have already bought more than 200 goats and sheep, and I hope to have more than a thousand by the end of the year, because if I sell them all during the festive period, I will have enough money to buy a small piece of land to build rental homes for those working in Nairobi", about 60 km from Isinya".* The Olooloitikosh area chief who was one of the key informants in this study also stated that "*in many cases raiders/bandits are not interested in small animals such as sheep and goats, but they prefer stealing cattle as they are seen as more prestigious*". Furthermore, cattle numbers in semi-arid portions of Kenya have declined by 26% in the last 40 years, according to a study produced by the Kenya Markets Trust (2020), a business organisation that encourages market expansion.

The survey findings show that the highest annual income (mean=0.92) from the animal products is between KES 300,000-600,000. In addition, the findings show that food (mean=0.91) and livestock feed (mean=0.76) consume the largest chunk of the proceeds from annual incomes. It is also important to note that clothing consumes the least from the proceeds of annual incomes (mean=0.21).

Table 4.6 shows descriptive statistics of type of livestock, annual income and the use of income by the households in Oloosirkon division:

Table 4.6: Types of Livestock/Income/Use of Income- Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Livestock					

Cattle	168	0	1	0.72	0.450
Shoats	168	0	1	0.91	0.286
Donkeys	168	0	1	0.21	0.412
Chicken	168	0	1	0.38	0.486
Income Estimate (Annually)					
Less than 200,000	168	0	1	0.77	0.423
300,000-600,000	168	0	1	0.91	0.286
700,000-900,000	168	0	1	0.29	0.456
Over 1 Million	168	0	1	0.24	0.427
Less than 200,000	168	0	1	0.77	0.423
Use of Income (Kshs)					
Food	168	0	1	0.91	0.286
Livestock Feed	168	0	1	0.76	0.431
Education	168	0	1	0.38	0.486
Clothing	168	0	1	0.21	0.412
Health	168	0	1	0.38	0.486
Valid N (listwise)	168				

From a cultural perspective, FGD findings show that wealth in the group ranch time period was classified as about 100 livestock for low income households, 200-500 livestock for middle income households and over 500 livestock for high income households.

In comparison, today's definitions of wealth as based on number of livestock was as follows:

Table 4.7: Definitions of Wealth Based on Number of Livestock

Number of livestock in:	Ololoitikosh	Nkukuon	Sholinke
Low Income Household	20-50	8-20	20-50
Middle Income Household	50-100	20-40	50-100
High Income Household	Above 100	Over 50	Over 50

Over time, the classification of wealth by number of cattle has become significantly lower, to the point where the wealthiest households today are expected to have about the same number of livestock as the low-income households prior to sub-division. These qualitative findings are in tandem with the discussions above as it is clear that there is a definite shift from keeping large numbers of livestock as an indicator of wealth, to the perspective of the value of livestock as a source of cash when the need arises, to meet household and related lifestyle needs.

4.4.6 Assets Owned by the Households in Oloosirkon Division

In order to identify the assets owned by the households in the study area, respondents were asked to list the assets owned in the household. The findings show that mobile phone without internet is common in the study area (mean=0.99) followed by bicycle (mean=0.83). It is also important to note that mobile phone with internet is fairly common among sizeable number of households in the area (mean=0.43).

The findings could mean that the extent and efficiency of information sharing has gained momentum in the study area and that households whom majority are herders are able to share information easily, quickly and over great distances about any uncertainties such as forage, water or wildlife invasion among others. Since women are the majority respondents in this study, the

findings could further mean that majority of the women own a mobile phone and because of information accessibility, they are able to take an active role in the economic and social spheres of the community.

A study conducted in Kajiado County by Sankale (2017) reported that phone use among Maasai herders is widespread but people largely communicate within their existing social networks. However, access to telecommunications in rural livestock communities would transform or revolutionize how different social groups interact as they deal with social-economic obstacles to their livelihood choices, according to the study. Future studies targeting this community would do well to determine whether mobile phones with internet connections could be used to improve access to information on early warning systems in a form and manner that is understandable to the pastoral-nomadic households (considering the low literacy rates identified in various studies).

It is also important to note that radio (mean=0.68) and Electricity connection (mean=0.68) are also fairly common among the households in the study area. Findings show that the least common assets in the study area are power generator (mean=0.15) and vehicle (mean=0.14). Table 4.8 shows descriptive statistics of the common assets owned by the households in Oloosirkon division:

Table 4.8: Assets Owned by the Households- Descriptive Statistics

Asset	N	Minimum	Maximum	Mean	Std. Deviation
Radio	168	0	1	0.68	0.466
Television	168	0	1	0.15	0.363
Mobile phone without internet	168	0	1	0.99	0.109
Mobile phone with internet	168	0	1	0.43	0.351
Bicycle	168	0	1	0.83	0.379
Vehicle	168	0	1	0.14	0.501
Motorbike	168	0	1	0.51	0.496
Electricity connection	168	0	1	0.68	0.468
Power generator	168	0	1	0.15	0.363
Valid N (listwise)	168				

4.4.7 Type of Housing in Oloosirkon Division

In this subsection, three items were considered; roofing construction materials, floor materials and wall construction materials. The researcher used observation method to gather the data.

The findings show that the common roofing material in the study area is the iron sheets (mean=0.91) followed closely by mud/cow dung (mean-0.83). Grass reeds are also common roofing material in the area (mean=0.51). The findings shows that the least used roofing material in the area is Makuti (mean=0.21) and tiles (mean=0.32).

The results also show that earth is the most common floor in the study area (mean =0.98) followed by cow dung (mean=0.78). While the least common floor construction material in the area is cement (mean=0.21).

For the wall construction materials, the findings show that iron sheet is the most common (mean=0.96) followed by mud/cow dung (mean=0.91). While the least common material for wall construction in the study area is timber (mean=0.19).

The findings goes to mean that most houses in the study area are easy to disassemble and that the households use the readily available indigenous materials such as cow dung, grass reeds and earth for construction.

In one of the focus group discussions, it emerged that use of cow dung and grass reeds is in adaptation to the semi-arid nature of this region. For instance, use of cow dung for roofing/walls or grass reeds ensures the house is cool in the summer and warm in the winter due to the thickness of the walls. It also suggests that the households do not put much value in use of the already restricted amount of cash available at household level, to construct modern homes that would provide the same insulation. Table 4.9 shows descriptive statistics of the type of housing in Oloosirkon division:

Table 4.9: Type of Housing in Oloosirkon Division- Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Roofing					
Iron sheet	168	0	1	0.91	0.286
Grass reeds	168	0	1	0.51	0.501
Tiles	168	0	1	0.32	0.468
Makuti	168	0	1	0.21	0.412
Mud/Dung	168	0	1	0.83	0.379
Floor					
Cement	168	0	1	0.21	0.412
Earth	168	0	1	0.98	0.133
Wood	168	0	1	0.42	0.495
Cow dung	168	0	1	0.78	0.416
Wall					
Timber	168	0	1	0.19	0.394
Mud/Cow dung	168	0	1	0.91	0.286
Blocks	168	0	1	0.15	0.357
Bricks	168	0	1	0.21	0.412
Grass reeds	168	0	1	0.44	0.498
Iron sheet	168	0	1	0.96	0.186
Valid N (listwise)	168				

4.4.8 Water and Grazing Resources

4.4.8.1 General Information on Typical Water Resources in General

From the household survey findings, most of the households travel between 3-5 kilometres to the nearest water source. The findings depict that majority of the respondents in Oloosirkon division travel more than 5 kilometres to find social amenities or water source for both domestic and livestock. Access to water is a major problem with many women travelling a 10-20km round trip to fetch water.

Table 4.10: Distance to Nearest Water Source - Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Nearest Water source					
1-2 Kms	168	0	1	0.33	0.473
3-5 Kms	168	0	1	0.91	0.286
6-8 Kms	168	0	1	0.81	0.394
More than 8 Kms	168	0	1	0.61	0.488
Valid N (listwise)	168				

4.4.8.2 Water Resources During Extreme Events

This section assessed the grazing as well as water resources for the livestock during extreme events. The participants were asked to identify the water resources for livestock when there is drought, floods, or disease outbreaks. The findings show that boreholes are the main sources of

water during drought (mean=0.99), while during floods, surface runoff is the main source of water (mean=1.00) followed by water pans (mean=0.63). This could mean than the herders in the study area walk long distances in search of the rare commodity during dry seasons.

During disease outbreak, the findings show that water pans (mean =0.96) and dams (mean =0.60) are most preferred by the households in the study area (Table 4.11). During the focus group discussions, it emerged that the study area used to have two rain seasons 5 years ago (long rains in March-May) and short rains in October-December, but of late the area has been experiencing heavy rains between the months of June - August that was never used to be the case before.

One of the village elder who was one of the key informant stated that *"We call upon the ministry of water to solve the issue of water shortage in this village because it is now becoming a culture and no one is thinking about it. Our mothers and children are having sleepless nights due to scarcity of water."* This suggests that the most affected group are women and children who walk long distance to fetch for water during dry seasons.

The findings are backed up by a World Bank Group assessment in the area, which classified Kajiado as a water-scarce county. There were few permanent rivers, shallow wells, protected springs, dams, water pans, boreholes, and unprotected springs discovered during the investigation. The majority of rivers are seasonal, making them unreliable, while ground water is available but includes high salt levels, making it dangerous to drink (World Bank, 2018). Table 4.11 shows descriptive statistics of main water resources for the livestock during extreme events:

Table 4.11: Water Resources during Extreme Events- Descriptive Statistics

Event	N	Minimum	Maximum	Mean	Std. Deviation
Drought					
Dams	168	0	1	0.33	0.471
Water pans	168	0	1	0.70	0.459
Boreholes	168	0	1	0.99	0.109
surface runoff	168	0	1	0.17	0.379
Floods					
Water pans	168	0	1	0.63	0.486
Dams	168	0	1	0.38	0.486
Boreholes	168	0	1	0.07	0.258
surface runoff	168	1	1	1.00	0.000
Disease Outbreak					
Dams	168	0	1	0.60	0.482
Water pans	168	0	1	0.96	0.200
Boreholes	168	0	1	0.36	0.492
surface runoff	168	0	1	0.11	0.310
Valid N (listwise)	168				

4.4.8.3 General Information on Typical Grazing Resources

From the survey findings, the study population typically still move around with their animals, but all the mobility is within the confines of the original Ololoitikosh ranch. For both cattle and shoats, movement outside one's land is restricted within November and December which is typically the

short rain season; and within the long rain season which is typically between March and May, as outlined in figures 4.8 and 4.9 below:

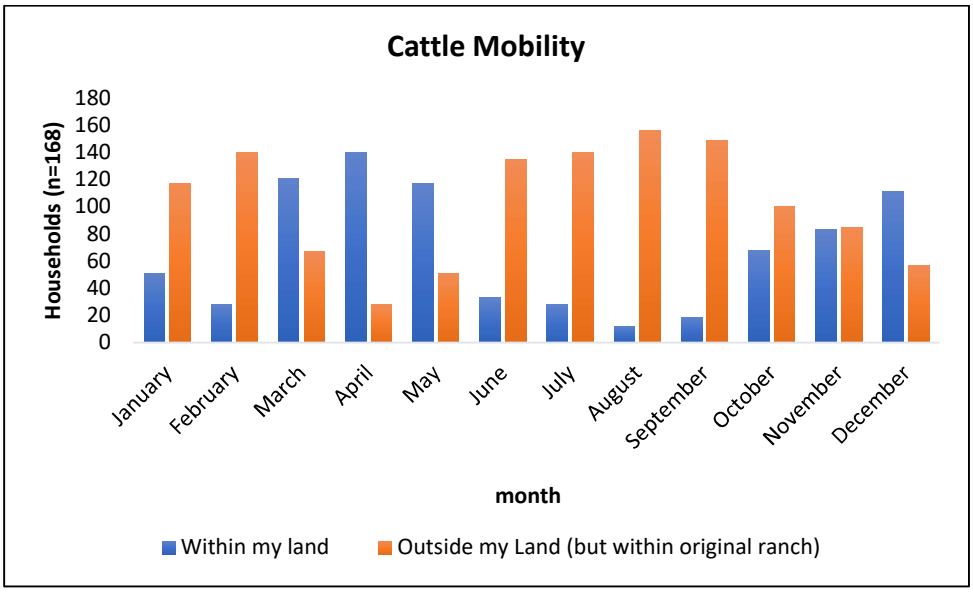


Figure 4.8: Distribution of Respondents by Mobility of Cattle

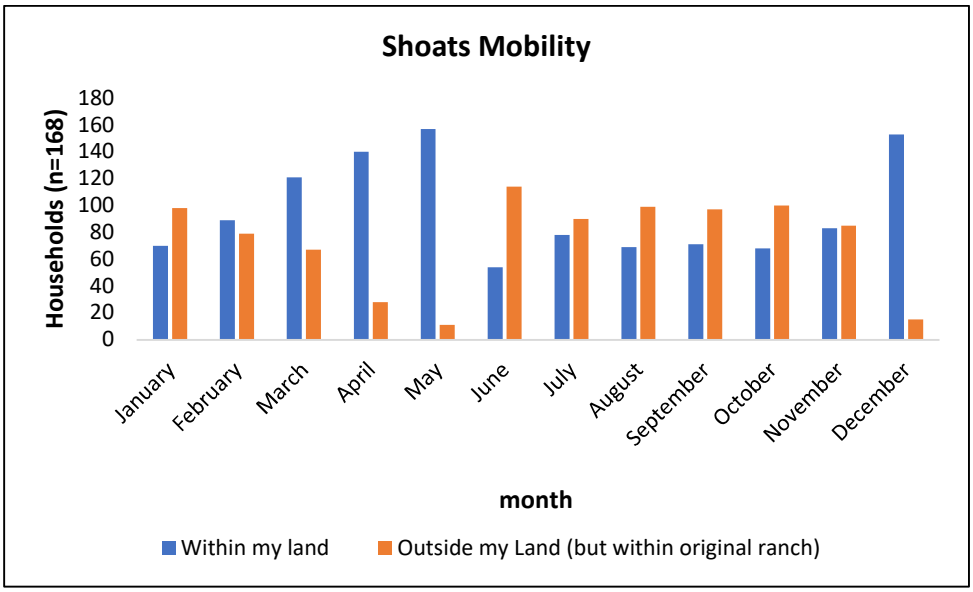


Figure 4.9: Distribution of Respondents by Mobility of Shoats

From the focus group discussions, group ranches were characterized by the absence of fences, land could not be sold, common pastures and water points, large hosts of livestock and a small human population.

One respondent stated that "*I never supported the idea of group ranches because like many of my friends and neighbours in the 1970s did not understand the grazing quotas and boundary maintenance but looking backwards, I can say it (group ranches) served us better than today. Today, we have lost so much land to the government and land grabbers*".

Another respondent stated that "*we have lost 60% of our pre-colonial land after subdivision of the group ranches and our livestock have reduced dramatically due to limited grazing areas"*.

Moiko et al (2019) observed in a similar study in Kajiado County that many people have moved onto traditionally pastoral terrain and fenced off grazing areas in the Athi-Kaputiei Plains, obstructing migratory patterns for both animals and livestock. Changing policy and regulation on land use, access, and tenure arrangements were largely to blame for these shifts. Land fragmentation and sales, population increase, and land privatisation have all contributed to a shift in cattle investment patterns from resource-intensive to resource-intensive systems, according to the report. This effectively excludes many poor pastoralists whose skills and knowledge are linked with large-scale mobile pastoral systems.

4.4.8.4 Grazing Resources During Extreme Events

Participants were also asked to identify the grazing resources for livestock when there is drought, floods, or disease outbreaks.

The findings show that majority of the households (mean=0.98) hire/lease grazing land during drought. The findings also show that a fairly low number of households (mean=0.11) use commercial feeds. Further findings show that most of the households in the study area do pasture swapping/sharing during floods (mean=0.99). A relatively sizeable number of households, hire/lease (mean=0.64) grazing land during floods. However, it is important to note that relatively small number of households use commercial feed during floods (mean=0.11). Moreover, during disease outbreak, the results show that majority of the households hire grazing land (mean=0.98) or buy fodder (mean=0.98). Fairly sizeable number of households in the study area (mean=0.90) use crop residue during disease outbreak. Very few (mean=0.37) of the households interviewed use commercial feeds during disease outbreak (Table 4.12).

The results reveal that most of the households hire/lease grounds during these three extreme events (drought, floods, and disease outbreaks), and this could be attributed to the fact that majority of the households in the area have fragmented or sold their parcels of land to other people for development or agricultural purposes which has resulted in shrinking communal pasture grounds and water points. It also shows that there has been a shift from traditional strategies for conservation of communal grazing lands, through restricted use of protected dry-season grazing areas that were not used unless there was low rainfall or drought and even then, only by the express permission of community elders (Moiko et al., 2019).

From key informant interviews, one of the SACCOs registered in the project area by some of the local pastoral-nomadic community members generates income through production and sale of hay during the dry season. However, this study findings reveal that most of the households in the study area cannot afford commercial feed during the three extreme events and this can be explained by

the low incomes of the households as reported earlier in Table 4.12. Table 4.12 shows descriptive statistics of main grazing resources for the livestock during extreme events:

Table 4.12: Grazing Resources During Extreme Events- Descriptive Statistics

Event	N	Minimum	Maximum	Mean	Std. Deviation
Drought					
Hire/lease grazing grounds	168	0	1	0.98	0.153
Pasture swapping/sharing	168	0	1	0.14	0.351
Buy fodder	168	0	1	0.61	0.488
commercial feeds	168	0	1	0.11	0.310
crop residue	168	0	1	0.86	0.351
Floods					
Hire/lease grazing grounds	168	0	1	0.64	0.482
Pasture swapping/sharing	168	0	1	0.99	0.109
Buy fodder	168	0	1	0.37	0.486
commercial feeds	168	0	1	0.11	0.310
crop residue	168	0	1	0.53	0.501
Disease Outbreak					
Hire/lease grazing grounds	168	0	1	0.98	0.153
Pasture swapping/sharing	168	0	1	0.14	0.351
Buy fodder	168	0	1	0.98	0.153
commercial feeds	168	0	1	0.37	0.484
crop residue	168	0	1	0.90	0.294
Valid N (listwise)	168				

4.4.9 Respondents Main Socio-Economic Challenges

This subsection sought to analyse the dominant social-economic challenges faced by the pastoralists of Oloosirkon division of Isinya Sub County. Respondents were asked to identify the main social-economic challenges they face and how they deal with them. The findings reveal that inadequate grazing resources was the main social-economic challenge in the study area (mean=4.97). This could be attributed to the fact that majority of the households in the study area depend on livestock keeping as the main source of livelihood.

In addition, the findings show that inadequate food (mean=4.09) was a dominant social-economic challenge in the study area. This could be attributed to the lack of diversification of livelihood and the over-reliance on livestock alone which could exacerbate the risks and uncertainties during extreme events such as droughts, floods, livestock or human disease outbreak among others.

During the focus group discussions, respondents were asked to comment on access to food and one respondent stated that, "*Our main food is milk, meat and ugali sometimes, during drought we go without food and children survive on 'olerai' (boiled roots from trees). After the 2007 severe drought, my child couldn't walk by herself and since all the animals died then, I was left with nothing to take her to hospital,"*

According to the findings, inadequate water supply (mean =3.57) as well as health challenges (mean=3.51) seem to also be major social-economic challenges faced by the households in the study area.

Furthermore, the challenge of inadequate money for school fees, can arguably be linked to and as shown in the findings (see Table 4.5) on the low cash-based incomes with majority of the households living on less that USD 1.90 per day. This suggests that the third generation among the households in the study community, upon inheritance of the further fragmented land holdings, also run the risk of having no other alternative means to earn a livelihood, apart from livestock keeping and arguably, severely restricted forms of pastoral nomadism. This suggests the continued value of interventions on livestock keeping and pastoral-nomadism in the immediate future of this community. Table 4.13 shows descriptive statistics of the main socio-economic challenges in Oloosirkon division:

Table 4.13: Main Socio-Economic Challenges in Oloosirkon Division- Descriptive Statistics

Challenges	N	Minimum	Maximum	Mean	Std. Deviation
Inadequate food.	168	1	5	4.09	0.286
Health challenges.	168	1	5	3.51	1.840
Inadequate money for school fees.	168	1	5	2.93	1.100
Inadequate water supply.	168	1	5	3.57	0.819
Inadequate grazing resources.	168	1	5	4.97	0.457
Wildlife attacks on livestock	168	1	5	2.01	1.120
Insecurity of the homestead	168	1	5	2.19	1.178
Stock theft.	168	1	5	2.45	1.176

Inadequate extension services.	168	1	5	1.10	0.294
Valid N (listwise)	168				

The other study findings namely on the hardships faced by the households including inadequate income, poor nutrition and food insecurity, low household incomes and low literacy levels in the study area could also result in a significant burden on the health and well-being of the community members. Table 4.14, show that majority of the respondents have to travel between 3-5 kilometres (mean= 0.84) or between 6-8 kilometres (mean= 0.69) to find the nearest public hospital. In one of the focus group discussions, it emerged that patients travel long distances and lack adequate transport facilities to reach health centres. Additional studies on the linkages between these challenges and the health of the community should shed more light on appropriate interventions in pastoral-nomadism that could manage the health burden on the population.

Table 4.14: Distance to Nearest Public Hospitals- Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Nearest Public Hospital					
1-2 Kms	168	0	1	0.33	0.473
3-5 Kms	168	0	1	0.84	0.368
6-8 Kms	168	0	1	0.69	0.464
More than 8 Kms	168	0	1	0.61	0.488
Valid N (listwise)	168				

4.4.10: Summary of Findings on the Status of Pastoral-Nomadism as a Livelihood Stream and Requisite SRMS applied in the Study Area

The findings show that income from livestock keeping and mobility as a means of surviving in the ASAL environment are still important factors in the livelihoods of the study group. In the assessment of the socio-economic profile of the study group, it is also clear that the community is vulnerable from a socio-economic perspective with key focus on education, food security, health and to a degree, the ability to survive extreme events, particularly drought. The findings also show that while there is some degree of diversification in sources of household incomes, the older generation that was present during the days of the group ranch, and the second generation that inherited land after sub-division of group ranches, are still reliant on livestock keeping in the form of pastoral-nomadism as the key household livelihood stream.

The findings in this section however, suggest that the role of traditional social risk management strategies applied by pastoralists such as communal protection of dry season grazing grounds and reciprocity (as discussed in the literature review section); may have evolved from maintenance of stock as the main objective, to one that (i) applies a multiple approach of ensuring the ability to meet the ongoing household's basic socio-economic needs that rely on a cash based economy; while (ii) ensuring the ability to purchase new stock and / or the ability to maintain existing stock thus ensuring the survival of livestock keeping as a livelihood stream. These themes are further discussed in the analysis of the study objectives.

4.5 Effect of Social Risk Management Strategies on Pastoral Recovery Strategies and Subsequent Maintenance of Pastoral-Nomadism as a Livelihood Stream.

In order to establish the effect of social risk management strategies on pastoral recovery strategies, this section sought to identify and analyse the social based mechanisms applied in increasing access to resources to overcome socio-economic challenges. From the study findings, the top four socio-economic challenges faced by pastoral-nomadic households are inadequate food, inadequate grazing resources, inadequate water supply and health challenges.

4.5.1 Community Driven Strategies to increase access to Resources

4.5.5.1 Perceptions on Support Provided by Social Groups

Respondents were required to rate the support provided by family members, neighbours, and the religious community, officially registered self-help groups/ savings and co-operative societies, unregistered groups such as Chama's, self-help groups or funeral welfare groups for a period of ten years. The findings show that support from unregistered self-help groups, Chamas and funeral welfare groups were highly rated by the households in the study area (mean=9.00). This could be attributed to the fact that most of the respondents in the area are members of either Chama, SHG or a welfare group. This is followed by support from extended family (mean=7.33) which can be attributed to the fact that most of the households in the study area depend on family members as the main source of labour to cater for livestock which could be done through splitting of animals, temporary migration or transfer of animals within social networks (Table 4.15).

It is also important to note that officially registered self-help groups/Saccos were fairly rated (mean=5.0) by the households in the area. Support from neighbours (mean=2.67) was the least rated by the households in the study area. This could be explained by the fact that neighbours are living within the same environment as the respondents and therefore they might not have resources to share especially in extreme events such as drought, floods or livestock disease outbreak.

Table 4.15: Extent of Support for the Households- Descriptive Statistics

		Support from extended family	Support from neighbours	Support from religious community	Support from officially registered self-help groups/ Saccos	Support from Government	Support from unregistered self-help group, Chama, welfare group
N	Valid	3	3	3	3	3	3
	Missing	0	0	0	0	0	0
Mean		7.33	2.67	3.00	5.00	3.67	9.00
Median		7.00	3.00	3.00	5.00	4.00	9.00
Mode		7	3	2[a]	4[a]	4	9
Std. Deviation		0.577	0.577	1.000	1.000	0.577	0.000

a. Multiple modes exist. The smallest value is shown

4.5.5.2 Self-Help Groups, Community Based Organisations and Co-operative Societies

This subsection sought to analyse participation of households in organised groups such as SHGs, merry-go-rounds (Chama) and funeral welfare as a means to support their main livelihood streams. The study found that the main mechanisms driven by the community's social network / social capital is establishment of Self-Help Groups (SHGs), Community Based Organisations (CBOs) and Co-operative Societies.

The findings suggest that the majority of respondents in the research area (mean=0.97) are members of a SHG, with merry-go-round (mean=0.89) and funeral welfare (mean=0.73) following closely behind. The majority of the respondents (mean=0.92) had been members of the group for more than 12 years, according to the findings. It's also worth noting that a sizable percentage of respondents (mean=0.89) had been members of the organization for between 6 and 8 years. Only a minority of the respondents stated that they had been a member of a group for less than two years (Table 4.16).

The findings show that most respondents in the study area are either members of a SHG, Chama, or funeral welfare for the last 10 years. These findings could mean that, since women are the majority in the study area, they might be playing a crucial role in the production of milk and dairy products for income generation as they need money to contribute to the organised groups. This further indicates that those women who had joined either a Chama, self-help groups or funeral welfare were by far socially and economically developed than their counterparts who had not joined any of the groups.

One of the officials from '*Ana kwa Ana*' self-help group who was a key informant during the interviews stated that, "*we cannot receive loans from microfinance institutions or banks because we do not have the necessary collateral for the loans we want to take and therefore we use our Chama for the purpose of saving and borrowing from one another".* Table 4.16 shows the participation of respondents in organised groups:

Table 4.16: Participation of Respondents in Organised Groups - Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Membership					
Self Help Group	168	0	1	0.97	0.170
Funeral Welfare	168	0	1	0.73	0.444
Merry-Go-Round (chama)	168	0	1	0.89	0.310
Membership Duration (yrs)					
Less than 2 Yrs	168	0	1	0.39	0.488
Between 3-5 Yrs	168	0	1	0.51	0.501
Between 6-8 Yrs	168	0	1	0.89	0.310
Between 9-11 Yrs	168	0	1	0.70	0.459
Over 12 Yrs	168	0	1	0.92	0.277
Valid N (listwise)	168				

The household survey findings are supported by findings from the KIIs. From key informants at the Sub-County Office, the main registered SHGs, CBOs and SACCOs that are aimed at cash generation from livestock keeping among the pastoral nomadic communities in the study area are

involved in sale of hay bundles and sale of milk. In the past five years, only one of the registered CBOs, made up of women and youth, was known to have established a milk cooling plant to increase the shelf life of milk sold. Other registered CBOs and Self-Help groups among pastoral communities focused on supplementary income generation through sale of beaded artefacts and jewellery.

Previous studies in Kajiado County by Mbithi (2014) show that self-help groups by women initiate and manage community-wide projects such as cattle dips, water pans, vegetable growing, making beads and leather sandals.

The KIIs also indicated that while the co-operative societies are governed by the Co-operative's Act, SHGs and CBOs are more informal. In terms of membership, SHGs are formed with a maximum of 15 members while groups with more than 15 members are required to register a CBO. Co-operatives are expected to meet the requisite legal requirements as well as a minimum membership of 10 persons.

In order to access government training and capacity building programs, all these groups have to register with the Kajiado East Sub-County SHG, CBO and Co-operative offices located in Isinya Town. Government support to SHGs, CBOs and co-operatives among pastoral communities in the sub-county in the past 3 years included training on formation of groups, record keeping and funding through grants for development initiatives for the group's business objectives.

Key informants at sub-county level indicated that from their records, men are more likely to form co-operative societies while women and youth are more likely to form SHGs and CBOs. This

suggests that interventions in such groups needs to be nuanced along gender perspectives in consideration of both sex and ages of the targeted groups.

4.6: Measures that can be undertaken to facilitate sustainable SRMS in favor of pastoral-nomadism

This section sought to analyse the perceptions of the study group toward retaining membership in informal and formal SHGs, CBOs and SACCOs, the challenges facing such groups and then to identify measures that can be undertaken to facilitate sustainability of such groups in favor of pastoral nomadic households' ability to survive extreme events.

4.6.1 Membership Retention

Respondents were asked to comment on how likely they were to remain in or join formal and informal self-help groups. Findings show that the highest number of members interviewed were definitely (mean=4.07) going to retain their membership in the informal SHG, Chama or join the groups as new members (those who have not). Only a few members where definitely not (mean=1.07) going to retain their membership or even joining the groups. The findings further show that majority of the respondents were definitely going to retain their membership in the formal Saccos as well. This goes to mean that the respondents in the study area will continue working together to uplift their social-economic status.

Table 4.17 shows descriptive statistics on likelihood of households in Oloosirkon division remaining in formal and informal SHGs, CBOs and Co-operatives.

Table 4.17: Membership Status on Informal/Formal Groups - Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Informal SHG,					
Chama					
Definitely	30	2	5	4.07	1.081
Probably	30	2	5	3.30	1.149
Possibly	30	1	4	2.60	1.003
Probably not	30	1	2	1.27	0.450
Definitely not	30	1	2	1.20	0.407
Formal (Sacco)					
Definitely	30	2	5	3.47	0.937
Probably	30	2	4	2.73	0.521
Possibly	30	1	4	1.93	0.907
Probably not	30	1	2	1.10	0.305
Definitely not	30	1	2	1.07	0.254
Valid N (listwise)	30				

4.6.2 Challenges Facing CBOs, SHGs and Co-operatives

Respondents were asked to comment on the challenges faced by the registered/unregistered organised groups in the area. Findings show that inability to repay borrowed money (mean=0.97) was the main challenge facing the organized groups in the study area, followed by lack of commitment by members (mean=0.76). It is also important to note that lack of trust by members (mean=0.38) in the study area was fairly a major challenge faced by organised groups.

From the KIIs, the identified challenges included lack of knowledge on the government facilities and benefits extended to formal groups, lack of business continuity plans among income generating groups, poor financial management and accountability mechanisms and lack of knowledge facilitate development of responsive by-laws for group sustainability.

Table 4.18: Challenges Facing Registered/Unregistered SHG - Descriptive Statistics

Challenges	N	Minimum	Maximum	Mean	Std. Deviation
Inability to repay borrowed money	168	0	1	0.97	0.170
Lack of commitment by members	168	0	1	0.76	0.431
Lack of trust by members	168	0	1	0.38	0.486
Poor leadership	168	0	1	0.21	0.412
Poor financial management by officials	168	0	1	0.38	0.486
Valid N (listwise)	168				

4.7 Testing Research Hypothesis

The chi square test of independence was done to check whether to accept or reject the null hypothesis.

Hypothesis 1:

H_{a1}: Increased vulnerability to extreme events causes pastoral-nomadic households to participate in SRMS.

Table 4.19: Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Extreme Event * SRMS	9	100.0%	0	0.0%	9	100.0%

Table 4.20: Extreme Event * SRMS Cross tabulation

			SRMS		Total
			No SRMS	SRMS	
Extreme Event	Health challenges	Count	0	1	1
		Expected Count	0.3	0.7	1.0
	Inadequate grazing resources	Count	0	1	1
		Expected Count	0.3	0.7	1.0
	Inadequate extension services	Count	1	0	1
		Expected Count	0.3	0.7	1.0
	Inadequate food	Count	0	1	1
		Expected Count	0.3	0.7	1.0
	Inadequate money for school fees	Count	1	0	1
		Expected Count	0.3	0.7	1.0
	Inadequate water supply	Count	0	1	1
		Expected Count	0.3	0.7	1.0
	Insecurity of the homestead	Count	1	0	1
		Expected Count	0.3	0.7	1.0
	Stock theft	Count	0	1	1
		Expected Count	0.3	0.7	1.0
	Wildlife attacks on livestock	Count	0	1	1
		Expected Count	0.3	0.7	1.0
Total		Count	3	6	9
		Expected Count	3.0	6.0	9.0

The results of the Chi square (Table 4.21) show that the p-value (0.342) is bigger than the standard alpha value (0.05), so we accept the null hypothesis that asserts that increased vulnerability to extreme events causes pastoral-nomadic households to participate in SRMS. Table 4.21 shows Chi square results:

Table 4.21: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.000[a]	8	0.342
Likelihood Ratio	11.457	8	0.177
N of Valid Cases	9		

a. 18 cells (100.0%) have expected count less than 5. The minimum expected count is .33.

Hypothesis 2:

H_{a2}: Households that survive extreme events after participating in co-operative social risk management strategies are more likely to maintain their membership in such groups.

Table 4.22: Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Extreme Event * Retain Membership	9	100.0%	0	0.0%	9	100.0%

Table 4.23: Extreme Event * Retain Membership Cross tabulation

			Retain Membership			Total
			no	yes	Yes	
Extreme Event	Health challenges	Count	0	1	0	1
		Expected Count	0.3	0.1	0.6	1.0
	Inadequate grazing resources	Count	0	0	1	1
		Expected Count	0.3	0.1	0.6	1.0
	Inadequate extension services	Count	1	0	0	1
		Expected Count	0.3	0.1	0.6	1.0
	Inadequate food	Count	0	0	1	1
		Expected Count	0.3	0.1	0.6	1.0
	Inadequate money for school fees	Count	0	0	1	1
		Expected Count	0.3	0.1	0.6	1.0
	Inadequate water supply	Count	0	0	1	1
		Expected Count	0.3	0.1	0.6	1.0
	Insecurity of the homestead	Count	1	0	0	1
		Expected Count	0.3	0.1	0.6	1.0
	Stock theft	Count	1	0	0	1
		Expected Count	0.3	0.1	0.6	1.0
	Wildlife attacks on livestock	Count	0	0	1	1
		Expected Count	0.3	0.1	0.6	1.0
Total		Count	3	1	5	9
		Expected Count	3.0	1.0	5.0	9.0

The results of the Chi square (Table 4.24) shows that the p-value (0.324) is bigger than the standard alpha value (0.05), so we accept the null hypothesis that asserts that households that survive extreme events after participating in co-operative social risk management strategies are more likely to maintain their membership in such groups. Table 4.24 shows Chi square results:

Table 4.24: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.000[a]	16	0.324
Likelihood Ratio	16.864	16	0.394
N of Valid Cases	9		

a. 27 cells (100.0%) have expected count less than 5. The minimum expected count is .11.

CHAPTER 5 SUMMARY, CONCLUSIONS &RECOMMENDATIONS

5.0 Introduction

This section outlines the measures that can be undertaken at community and policy level to facilitate sustainable SRMS in favor of pastoral-nomadism.

5.1. Measures that can be undertaken at community level to facilitate sustainable SRMS in favor of pastoral-nomadism.

5.1.1 Development of Financial Literacy and Business Development Skills training Programs.

With increased access to credit provided by SGHs and Co-operatives, community members would benefit from training on the value of use of financial facilities and skills in financial management including simple bookkeeping. Such groups can also benefit from training on development of simple business plans to facilitate establishment of income streams from produce from livestock keeping.

The project area already has examples of SHGs, CBOs and Co-operatives that generate income from livestock produce such as milk and livestock inputs such as hay. From a community needs perspective, the adoption of business plans that contribute directly to inputs on the livestock value chain such as collaboration in production of hay or cold storage and pasteurisation of milk and milk products would contribute directly to the livelihood of members and improvements on the livelihood stream they have practiced for generations.

Considering the low literacy rate in the community, training programs can integrate innovative ways for knowledge and skill transfer by leveraging on success cases in the area through integration of exhibitions or study tours to visit SHGs, CBOs and Co-operatives who have successfully implemented good practices, as well as twinning programs between established/thriving and newly formed groups.

With time, business continuity and expansion skills can be integrated into the training programs to enhance sustainability and growth of the groups.

5.1.2 Improving Group Access to Financial Services

Despite the low literacy rates, the community members have adopted the use of mobile phones. Capacity building in use of mobile phone based financial facilities and services such as mobile money applications from mobile service providers and mobile banking facilities by banks can help increase access to financial services for informal groups.

Use of easily accessible financial services can also improve transparency within the group membership and leadership and eventually contributing towards accountability and trust towards saving and lending within the groups.

5.1.3 Formalisation of SHGs, CBOs and Co-operatives

From KIIs, it emerged that most of the members of informal groups in the study areas who have interacted with county government officials, are not formalised because they do not know that they can, the procedures they would have to follow nor the benefits they can get from county and national government by registering with the relevant authorities. At the very least, leaders from

such groups can participate in training of trainers' programs and pass on the knowledge to their members for the benefit of the group.

Community sensitisation on how to formalise their mobilised groups can be done through the existing national and county government collaborations or through civil society and religious groups with mandates in community development in the area.

5.2 Measures that can be undertaken at policy level to facilitate sustainable SRMS in favor of pastoral-nomadism

5.2.1 Land-Use Planning

The FGDs discussed the challenges related to loss of community water level facilities such as water pans and dams. Even though establishment of community water pans was identified as a key coping mechanism applied today, there is a challenge of lack of land to establish such facilities. For communities where land is still held in communal tenure, government policies should provide legally backed mechanisms for establishment of quotas for land that must be set aside for water pans and dry-season grass-land banks. Communities should be empowered to seek professional expertise with experience in participatory land-use planning for communities in ASAL areas that still practice pastoral-nomadism.

5.2.2 Responsive Training for Land-Use Planning Professionals

In preparation for the roll-out of the community land act, higher education institutions should integrate participatory land-use planning training programs in the curricula of existing land-use planning education programs. To enhance such curricula and programs, the relevant line ministries with mandates in land management and physical planning should partner with such academic

institutions to establish mechanisms for application of lessons learnt from the field and on the other end, platforms for testing of academic based solutions towards responsive land-use planning for the benefit of pastoral-nomadic communities.

Registered professional groups in community development, community mobilisation and land-use planning can also establish partnership programs to support exchange of knowledge among professionals in these fields and in turn, develop skills for land-use planning that are responsive to community managed land-uses among pastoral-nomadic families in areas with potential for sub-division of communally held lands.

CHAPTER 6 CONCLUSIONS AND AREAS FOR FURTHER STUDY

6.1 Conclusions

The study found that average land sizes in the area continue to decrease after subdivision of the traditional group ranches due to further subdivision to allow for inheritance and sale of land to in-migrant peoples. Some households in the area have sold their land to raise money for education, health facilities and other expenses. It is also clear that grazing grounds in the areas have been depleted due to fencing-off of private land and change of land use to residential, commercial and agricultural uses. Indeed, inadequate grazing and water resources are the main social-economic challenges that directly impact livestock keeping. Other challenges that are exacerbating the vulnerability of this community for current and future generations to deal with extreme events include low cash-based incomes, lack of access to education, and lack of access to health facilities.

While the community has adopted some measures at household level including, shift of livestock composition from cows to sheep and goats, reliance on direct and extended family members to graze livestock within and around the original confines of the ranch, findings under objective one show that increased vulnerability to extreme events such as drought, floods and livestock diseases causes pastoral-nomadic households to participate in SRMS. The study findings also suggest that the role of traditional SRMS applied by pastoralists such as communal protection of dry season grazing grounds and reciprocity, have evolved to more modern forms under collective action through SHGs, CBOs and Co-operatives. The objectives of collective action have also changed from maintenance of stock as the main objective, to one that (i) applies a multiple approach of ensuring the ability to meet the ongoing household's basic socio-economic needs that rely on a cash-based economy; while (ii) ensuring the ability to purchase new stock and / or the ability to

maintain existing stock thus ensuring the survival of livestock keeping as a livelihood stream. Based on the findings of objective two, the conclusion is that households that survive extreme events after participating in co-operative social risk management strategies are more likely to maintain their membership in such groups.

However, the study also found that these SRMS are not without challenges and recommendations were made on: (i) development of financial literacy and business development skills training programs; (ii) improvement of group access to financial services; (iii) formalisation of SHGs, CBOs and Co-operatives (iv)land-use planning; and (v) responsive training for land-use planning professionals.

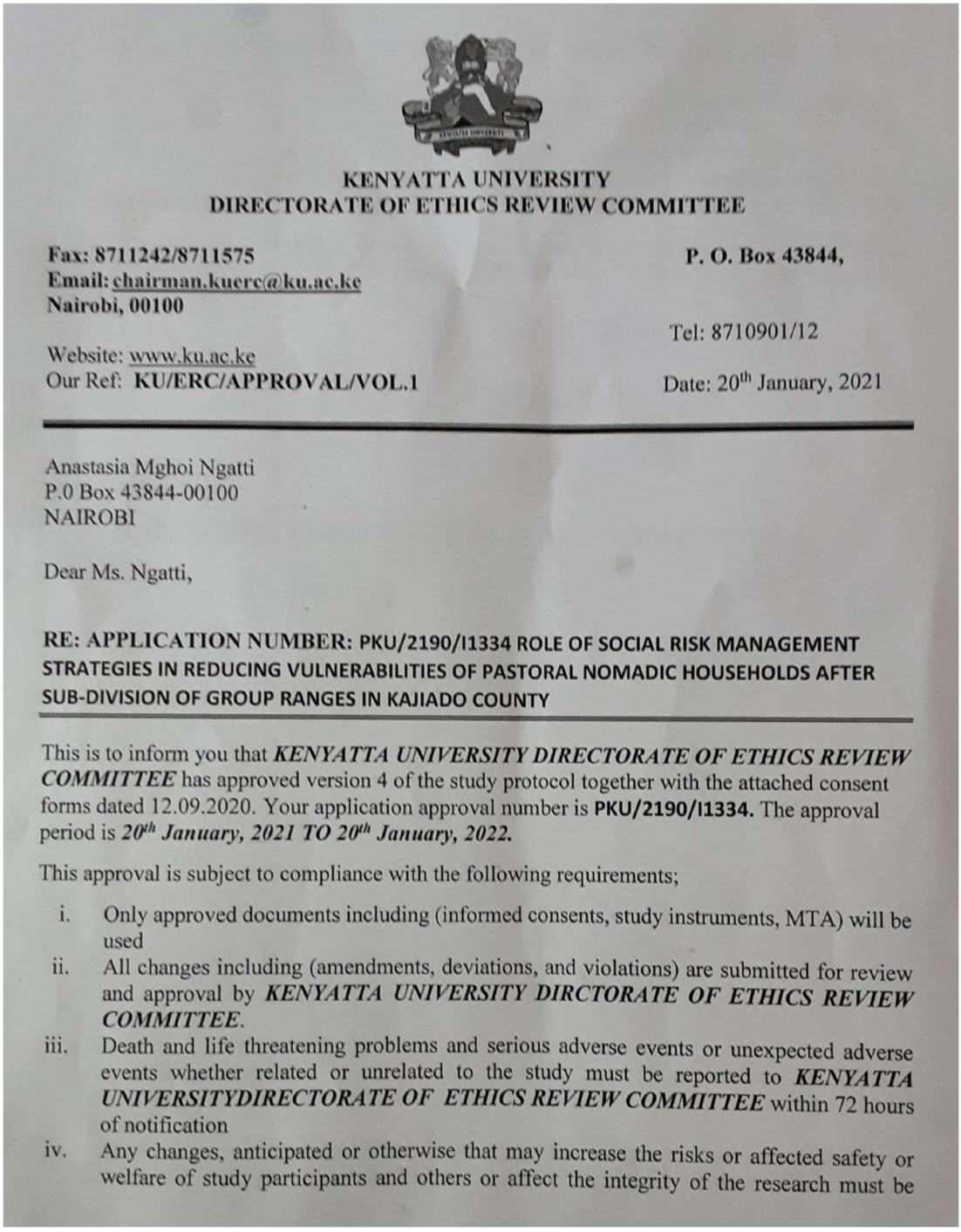
6.2 Areas for Further Study

The present study focused on Oloosirkon division in Kajiado East particularly the villages of Nkukuon, Sholinke and Olooloitikosh which makes it difficult to generalize the findings onto other pastoral areas in Kenya such as North eastern parts.

Furthermore, although this research has conducted empirical review on social risk management strategies applied by pastoral-nomadic households in the study area today, the study did not look the particular measures that should be put in place to support particular vulnerabilities faced by households headed by vulnerable community members such as women, persons with disability or low-income youth, all of whom face additional vulnerabilities in pastoral-nomadic communities.

ANNEXES

Annex 1 Approvals by Graduate School and KUERC



KENYATTA UNIVERSITY
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Our Ref: KU/ERC/APPROVAL/VOL.1

Date: 20th January, 2021

Anastasia Mghoi Ngatti
P.0 Box 43844-00100
NAIROBI

Dear Ms. Ngatti,

RE: APPLICATION NUMBER: PKU/2190/I1334 ROLE OF SOCIAL RISK MANAGEMENT STRATEGIES IN REDUCING VULNERABILITIES OF PASTORAL NOMADIC HOUSEHOLDS AFTER SUB-DIVISION OF GROUP RANGES IN KAJIADO COUNTY

This is to inform you that ***KENYATTA UNIVERSITY DIRECTORATE OF ETHICS REVIEW COMMITTEE*** has approved version 4 of the study protocol together with the attached consent forms dated 12.09.2020. Your application approval number is **PKU/2190/I1334.** The approval period is ***20th January, 2021 TO 20th January, 2022.***

This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments, MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***KENYATTA UNIVERSITY DIRCTORATE OF ETHICS REVIEW COMMITTEE.***
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ***KENYATTA UNIVERSITYDIRECTORATE OF ETHICS REVIEW COMMITTEE*** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be

reported to ***KENYATTA UNIVERSITY DIRECTORATE OF ETHICS REVIEW COMMITTEE*** within 72 hours

v. Clearance for export of biological specimens must be obtained from relevant institutions.

vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.

vii. Submission of an executive summary report within 90 days upon completion of the study to ***KENYATTA UNIVERSITY DIRECTORATE OF ETHICS REVIEW COMMITTEE***.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://oris.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely

KENYATTA UNIVERSITY
OFFICE OF THE CHAIRMAN
20 JAN 2021
ETHICS REVIEW COMMITTEE
P.O. BOX 43844 - 00100 NAIROBI

Prof. Judith Kimiywe

DIRECTOR- KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE.

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Internal Memo

FROM: Dean, Graduate School

DATE: 13th October, 2020

TO: Anastacia Mghoi Ngatti
C/o Sociology, Gender & Development Studies Dept.

REF: C50/24343/2011

SUBJECT: APPROVAL OF RESEARCH PROJECT PROPOSAL

We acknowledge receipt of your revised Project Proposal as per our recommendations raised by the Graduate School Board at its meeting of 11th September, 2020, Entitled, "Role of Social Risk Management Strategies in Reducing Vulnerabilities of Pastoral Nomadic Households after Subdivision of Group Ranches in Kajiado County, Kenya".

You may now proceed with your Data Collection, Subject to Clearance with Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking Forms per semester. The form has been developed to replace the Progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School webpage downloads.

Thank you.

KENYATTA UNIVERSITY OFFICE OF DEAN 03 NOV 2020 GRADUATE SCHOOL P.O. BOX 43844

ELIJAH MUTUA
FOR: DEAN, GRADUATE SCHOOL

C.c. Chairman, Department of Sociology, Gender & Development Studies

Supervisors:

1. Dr. Daniel Muia
   C/o Sociology, Gender & Development Studies Dept.
   Kenyatta University

Annex 2 Copy of NACOSTI Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 637887

Date of Issue: 19/February/2021

RESEARCH LICENSE

This is to Certify that Ms.. ANASTASIA NGATTI of Kenyatta University, has been licensed to conduct research in Kajiado, Nairobi on the topic: The Role of Social Risk Management Strategies in Reducing Vulnerabilities of Pastoral Nomadic Households after Subdivision of Group Ranches in Kajiado County, Kenya for the period ending : 19/February/2022.

License No: NACOSTI/P/21/8955

637887

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is Guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014

CONDITIONS

1. The License is valid for the proposed research, location and specified period
2. The License any rights thereunder are non-transferable
3. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research
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Website: www.nacosti.go.ke

Annex 3 Consent to Participate in the Research Project

KENYATTA UNIVERSITY

OFFICE OF THE CHAIRMAN ETHICS REVIEW COMMITTEE

Background

My name is Anastasia Mghoi Ngatti. I am a Master student from Kenyatta University.

I am conducting a study titled "*The Role of Social Risk Management Strategies in Reducing Vulnerabilities of Pastoral Nomadic Households after Subdivision of Group Ranches in Kajiado County, Kenya*."

The information will be used for academic purposes, to understand the social risk management strategies that have been retained from traditional and indigenous knowledge by the Maasai community with regard to pastoral-nomadism. It also seeks to understand the role of any new strategies that have emerged after formation and subdivision of group ranches.

Procedures to be followed

Participation in this study will require that I ask you some questions and I will record the information you provide in a questionnaire.

Voluntarism

You have the right to refuse participation in this study. Please remember the participation in this study is voluntarily. You may ask questions related to the study at any time.

You may refuse to respond to any questions and you may stop an interview at any time. You may also stop being in the study at any time without any consequences.

Discomforts and Risks

Some of the questions you will be asked are based on private information and may make you uncomfortable. If this happens, you may refuse to answer these questions if you so choose. You may also stop the interview at any time.

Benefits

If you participate in this study you will help us to learn how to improve social risk management strategies from the community and policy level. It may also provide findings that are of use to future scholars on the subject. Other than that, the study will have no direct benefit to you.

Reward

There are no rewards or any payment to you if you participate.

Confidentiality

The interviews and examinations will be conducted in the privacy of your home. Recording of your name is optional. The questionnaires will be kept in a locked cabinet for safe keeping at Kenyatta University. Everything will be kept private and only shared with the study team.

Contact Information

If you have questions about the study call Anastasia Ngatti on 0728203970 or the Supervisor Dr. Muia on Tel No: 0721237458.

However, if you have questions about your rights as a study participant: You may contact Kenyatta University Ethical Review Committee Secretariat on chairman.kuerc@ku.ac.ke,

Participant's statement

The above information regarding my participation in the study is clear to me. The study has been explained to me and I have been given a chance to ask questions and my questions have been answered to my satisfaction. My participation in this study is entirely voluntary. I understand that my records will be kept private and that I can leave the study at any time.

Name of Participant: _____

_____ _____

Signature or Thumbprint Date

_____ _____

Name of Representative/Witness (where necessary) Relationship to Subject

Investigators statement

I, the undersigned, have explained to the volunteer in a language s/he understands, the procedures to be followed in the study and the risks and benefits involved

_____

Name of Interviewer

_____ _____

Signature Date

Annex 4 Household Survey Questionnaire

Questionnaire Code	

My name is Anastasia M. Ngatti from Kenyatta University undertaking a study on The Role of Social Risk Management Strategies in Building Resilience and Reducing Vulnerabilities of Pastoral Nomadic Households after Subdivision of Group Ranches in Oloosirkon Location of Kajiado County.

Social Risk Management Strategies have been defined in this study as *co-operative social practices that contribute to the social integration of pastoralists as well as to the survival of pastoral societies by providing a way for pastoralists to rebuild their herds after disaster.*

The answers you give will be treated with confidentiality and will not be used for any other purpose than this research. Your participation is expected to be voluntary and the time taken to participate is truly appreciated.

1 Name of Respondent (Optional)_____

2. Gender of Respondent

Male		Female		Other	

3. Age (In years) _____

4. Marital Status of Household Head

Married	Divorced / Separated	Widowed	Separated	Other

If married moved to question 5 if not skip to question 6

5. Nature of marriage

Monogamous	Polygamous	Other Household (s) located in this village	Other Household (s)located in another village

6. Level of Education of Household Head

None	Adult Education (Ngumbaru)	Primary	Secondary	Tertiery (Polytechnique)	Tertiery (University)

7. How long have you lived here (in years): _____

8. What is the size of your land (in acres or hectares)_____

9. How did you acquire this land?

Acquired my portion after sub-division of the group ranch	
Acquired it from an original member of the group ranch	
Inheritance from my parent who was an original member of the group ranch	
Inheritance from my parent who acquired it from an original member of the group ranch	

Other: _____(Please describe)_____

---

10. Please provide the following information on members of this household (*Persons who eat from the same pot*)

Relationship to HH head	Age (use key below)	Gender	Disability if any	Health conditions if any
Household Head (Self)				
Spouse (if any)				

Key for ages (in years): 1: 0-5 2: 6-14 3: 15-45
4: 45-65 5: <65

11: Description of livestock

Type	Mature	Not yet matured	Products for domestic use from the livestock	Source of labour to cater for the livestock	If paid labour (number of labourers and cost per year)
Cows					
Sheep and Goats (Shoats)					
Donkeys					
Chicken					
Other					

12: Where do you source your labour to cater for the livestock:

Type	Yes / No	Remarks	
Household members		Men's roles	
		Women's Roles	
		Boys Roles (Only those who are of school going age)	
		Girls Roles (Only those who are of school going age)	
Hired help		Number	
		Total wages per month for regular staff (KES)	
		Total estimated wages per year for irregular staff (KES)	

Type	Yes / No	Remarks	
Rotate herding among neighbours		Describe name given to the group / association and short description of membership, leader's roles and criteria for joining	
Other (Describe)		Describe:	

13: What is the estimated cash income, if any from the livestock and livestock products in KSHS per year:

(i): Cattle

Type of Product	Amount in KSHS	Location of Market	Frequency of sales	Proportion of sales converted to income (net profit)	Use of proceeds from sales

(ii) Shoats

Type of Product	Amount in KSHS	Location of Market	Frequency of sales	Proportion of sales converted to income (net profit)	Use of proceeds from sales

(iii) Donkeys

Type of Product	Amount in KSHS	Location of Market	Frequency of sales	Proportion of sales converted to income (net profit)	Use of proceeds from sales

(iv) Smaller livestock (Chicken, other)

Type of Product	Amount in KSHS	Location of Market	Frequency of sales	Proportion of sales converted to income (net profit)	Use of proceeds from sales

14: Do you undertake any other supplementary activities to earn cash? Yes_____ No_____ If yes, please fill in table below. If no please skip to question 14.

Activity	Estimated income per month (KSHS)	Estimated income per year (KSHS)	Proportion contributed to HHold	Source of seed capital as applicable	Proportion of running expenses to household expenses	Access to credit facilities for business running expenses as applicable

15: Please describe any other household expenses

Expense	Amount in KSHS per year	Source of money
Food		
Clothing		
Education (School fees, books, uniform etc)		
Health		

PS. If potential sources of money include donations, please specify whether from friends, relatives, well-wishers / charity, government allocations, religious groups or other

16 Does the household or household head own the following assets / materials

Asset	Yes / No	Asset	Yes / No
Radio		Bicycle	
Television		Vehicle (Car, pick-up etc)	
Mobile phone with internet facility		Motorbike	
Mobile phone without internet facility		Electricity connection to the national grid	
		Power Generator	

17. Please describe the type of Housing

Aspect	**Construction materials**
Roof	
Walls	
Floor	

16. What is the distance and time taken to the nearest school?

Distance in Km: _____

Time in Minutes:_____

17. What is the distance and time taken to the nearest hospital?

Distance in Km: _____

Time in Minutes:_____

18. What is the distance and time taken to the water source for domestic use?

Distance in Km: _____

Time in Minutes:_____

19. What is the distance and time taken to the nearest water source for livestock use during the dry season (Distance from the household) ?

Distance in Km: _____

Time in Minutes:_____

19. What is the distance and time taken to the nearest water source for livestock use during the wet season (Distance from the household)?

Distance in Km: _____

Time in Minutes:_____

20: Where are the following livestock grazed and watered in a normal year calendar (When there is no disease outbreak, drought or flood)

	Cattle		Shoats	
	Within my land	Outside my Land (Define)	Within my land	Outside my Land (Define)
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				

Merging of months according to season can be applied in the answer sheet

20. Please identify the grazing and water resources used by livestock when the following events occur:

	Grazing	Estimated distance in km	Water	Estimated distance in km
Drought				
Flood				
Disease outbreak in village and surrounding areas				

21. Are you a member of any of the following organized groups:

Group	Yes / No	How long have you been a member (indicate if years / months)	How did you hear of this group?
Self-help group			
Funeral welfare group			
Merry-go-round or *chama* or table banking group			
Other (Describe)			
Other (Describe)			
Other (Describe)			

21 What are the main socio-economic challenges you have faced and how do you deal with them?

Challenge	Coping strategy	Type of Support from extended family	Type of Support from neighbours	Type of Support from religious community	Type of Support from Government	Type of Support from unregistered self-help group, *chama*, welfare group etc	Type of support from officially registered self help group or sacco
Inadequate food							
Health challenges							
Inadequate money for school fees							
Inadequate water supply							

Challenge	Coping strategy	Type of Support from extended family	Type of Support from neighbours	Type of Support from religious community	Type of Support from Government	Type of Support from unregistered self-help group, *chama*, welfare group etc	Type of support from officially registered self help group or sacco
Inadequate grazing resources							
Wildlife attacks on livestock							
Insecurity of the homestead							
Stock theft							

Challenge	Coping strategy	Type of Support from extended family	Type of Support from neighbours	Type of Support from religious community	Type of Support from Government	Type of Support from unregistered self-help group, *chama*, welfare group etc	Type of support from officially registered self help group or sacco
Inadequate extension services							
Other (Define)							
Other (Define)							

Challenge	Coping strategy	Type of Support from extended family	Type of Support from neighbours	Type of Support from religious community	Type of Support from Government	Type of Support from unregistered self-help group, *chama*, welfare group etc	Type of support from officially registered self help group or sacco
Other (Define)							

22: How would you rate the support provided by the following over time

(i) 1990-1995

Source of support	Excellent	Good	Average	Poor
Support from extended family				
Support from neighbours				
Support from religious community				
Support from Government				
Support from unregistered self-help group, *chama*, welfare group etc				
Support from officially registered self help group or sacco				
Other Define				

(ii) 1996-2006

Source of support	Excellent	Good	Average	Poor
Support from extended family				
Support from neighbours				

Source of support	Excellent	Good	Average	Poor
Support from religious community				
Support from Government				
Support from unregistered self-help group, *chama*, welfare group etc				
Support from officially registered self help group or sacco				
Other Define				

(iii) 2007 to date

Source of support	Excellent	Good	Average	Poor
Support from extended family				
Support from neighbours				
Support from religious community				
Support from Government				
Support from unregistered self-help group, *chama*, welfare group etc				
Support from officially				

Source of support	Excellent	Good	Average	Poor
registered self help group or sacco				
Other Define				

22: What are some of the challenges faced by unregistered self help groups or saccos that you are a member of?

_____
_____
_____
_____
_____
_____
_____
_____

22: What are some of the challenges faced by registered self-help groups or saccos that you are a member of?

_____
_____
_____
_____
_____
_____
_____
_____

23: Going forward, how likely are you to remain in or join formal and informal self help groups?

Source of support	Definately	Probably	Possibly	Probably not	Definitely not
Unregistered self-help group, *chama*, welfare group etc					
Officially registered self help group or sacco					

Annex 5 Key Informant Interview Guide

KII Code	

My name is Anastasia M. Ngatti from Kenyatta University undertaking a study on The Role of Social Risk Management Strategies in Building Resilience and Reducing Vulnerabilities of Pastoral Nomadic Households after Subdivision of Group Ranches in Oloosirkon Location of Kajiado County.

Social Risk Management Strategies have been defined in this study as *co-operative social practices that contribute to the social integration of pastoralists as well as to the survival of pastoral societies by providing a way for pastoralists to rebuild their herds after disaster.* Government interventions supporting community recovery systems may include early disaster warning programs, relief programs, social support programs, policy and mechanisms in security in pastoral zones, support to government or market based insurance products targeting livestock related risks etc.

The answers you give will be treated with confidentiality and will not be used for any other purpose than this research. Your participation is expected to be voluntary and the time taken to participate is truly appreciated.

Name	
Designation	
Organisation	
Contact information (Optional)	

1: What is the role of your organisation / department in supporting pastoral nomadic households or the pastoral nomad production system?

_____

_____

_____

_____

2: What unique challenges did you or your organisation identify as being faced by pastoral nomadic households or the pastoral nomad production system during the era of group ranches ?

_____

_____

_____

_____

2: What unique challenges did you or your organisation identify as being faced by pastoral nomadic households or the pastoral nomad production system in the early periods after sub-division of group ranches?

_____

_____

_____

_____

3: What unique challenges from your response above have become worse today?

_____

_____

_____

_____

4. Which community support programs has your organisation / department instituted to support pastoral-nomadic communities in the study area?

_____

_____

_____

_____

5. What challenges were faced in the implementation of the above support programs?

_____

_____

_____

_____

6. What are the lessons learnt from these programs?

_____

_____

_____

_____

(Based on the answer, probe more on programs and lessons that directly or indirectly support SRMS)

Annex 6

Focus Group Discussion Guide

FGD Code	

My name is Anastasia M. Ngatti from Kenyatta University undertaking a study on The Role of Social Risk Management Strategies in Building Resilience and Reducing Vulnerabilities of Pastoral Nomadic Households after Subdivision of Group Ranches in Oloosirkon Location of Kajiado County.

Social Risk Management Strategies have been defined in this study as *co-operative social practices that contribute to the social integration of pastoralists as well as to the survival of pastoral societies by providing a way for pastoralists to rebuild their herds after disaster.*

The answers you give will be treated with confidentiality and will not be used for any other purpose than this research. Your participation is expected to be voluntary and the time taken to participate is truly appreciated.

Discussion questions

- Defining the baseline and changes on carrying capacity and wealth parameters-community perspectives:
  - What was the average size of herds for low income, middle income and high income households prior to the establishment of the ranches?
  - During the establishment of the group ranch, what were the set quotas for low income, middle income and high income households?

- How does the community define low income, middle income and high income households today?
- How do these parameters compare today?

- How does the community define vulnerable individuals and groups?
  - What special protections, if any were there for such groups with regard to access to wet season grounds, dry season grounds and grounds used during extreme events?
  - What special protections if any were established / maintained / revised for such groups during the establishment of the group ranch?
- Defining the original extent of the grazing grounds necessary for the pastoralists to adapt to shocks:
  - What was the extent of the original oloshon covered by the pastoralists within the Olooloitikosh group ranch?
  - Where were the wet and dry season grazing grounds?
  - How far beyond the oloshon did the pastoralists go during extreme events such as drought and disease?
  - Which systems were in place to facilitate migration to wet season, dry season and grounds used during extreme events?
  - How were these systems passed on from generation to generation?
  - How was migration regulated with regard to sanction for wrong doing, dispute resolution at household, extended family, clan and community levels?
  - What changes were experienced in each of the parameters above after the establishment of the group ranch? Suggested timelines:

- Immediately upon establishment of the group ranch;
- Approximately ten years after establishment of the group ranch (1980's);
- Approximately thirty years after establishment of the group ranch (early 2000's);
- In the last 10 years.

- Since the sub-division of the ranch, which major extreme events were experienced?
  - Which mechanisms did the herders put in place to survive?
  - Which of these mechanisms relied on traditional coping mechanisms?
  - Which of the traditional coping mechanisms relied on social systems?
  - Which of these mechanisms were considered innovative or adaptive to changes brought on by limitations from sub-division of group ranches?
  - Which of the adaptive / innovative mechanisms relied on social systems?
  - Which of these mechanisms were replicated in subsequent extreme events?
- Under which circumstances would a household sell their livestock?
  - What are the products sold regularly, periodically and under special circumstances;
  - Which / where are the markets for these products;
  - What changes have been observed over time with regard to the above three questions over time. Guide: Suggested timelines and special circumstances as identified under the previous questions.
- What were the direct negative economic and social benefits that were considered to be derived from the sub-division of group ranches?

- What are the direct positive economic and social benefits that were considered to have been derived from the sub-division of the group ranches?
- Considerations for both positive and negative effects:
    - Access to grazing grounds (dry season, wet season and grounds used on extreme events;
    - Access to water resources (natural and man-made);
    - Livestock diseases;
    - Access to health services (livestock);
    - Access to markets for livestock and livestock produce;
    - Household incomes and economic status;
    - Food security;
    - Access to education;
    - Access to health services (human);
    - Family and community support systems;
    - Ability to acquire assets;
    - Ability for newly youth to establish their own households;
    - Ability for unmarried youth to be economically independent (separate considerations for males and females);
    - Ability for widows and divorced women to support their families;
    - Ability for single (never married) mothers to support their families;
    - Ability of household heads with disability to support their families;
    - Ability of household heads living with HIV/AIDs to support their families;

- Ability of persons catering for orphan children to support them and their family;
- Community level support systems / institutions for vulnerable groups;
- Access to financial services (financial transactions, savings and loans);
- Crime, deviant behavior, insecurity;
- Resource based inter / intra community conflict;
- Ability to survive extreme events (livestock disease and drought).

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CURRICULUM VITAE

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DATE OF BIRTH: 9 FEBRUARY 1982
GENDER: FEMALE
MARITAL STATUS: MARRIED
PROFESSION: ENVIRONMENTAL AND SOCIAL DEVELOPMENT EXPERT
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MEMBERSHIP IN PROFESSIONAL SOCIETIES:

- LEAD ESIA EXPERT - ENVIRONMENTAL INSITUTE OF KENYA
- LEAD ESIA/SESA/EA EXPERT – NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY KENYA

SHORT BIO

Anastasia is a Social Environmentalist with an undergraduate degree in Environmental Studies (Community Development) from Kenyatta University, in Kenya.

Anastasia has experience in environmental and social safeguards in various sectors including water and sanitation, large and small scale renewable energy, roads and highways, railways, land use planning, airports and the hospitality industry.

ACADEMIC QUALIFICATIONS

Qualification: Bachelor of Environmental Studies (Community Development)
Year of Study: 2002-2006
University: Kenyatta University

Other qualifications
Kenya Certificate of Primary Education, 1996, Ndurarua Primary School
Kenya Certificate of Secondary Education, 2000, Kenya High School

Current Academic Pursuits: Ongoing, MA Sociology (Community Development), Kenyatta University

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EMPLOYMENT RECORD

2019 – To Date
International Finance Corporation
Associate Environmental and Social Development Expert

Roles: Support to the operations department and clients on management of environmental and social risks.

Anastasia has been working with IFC since 2019, as an Associate Environmental and Social Development Specialist with the CEG Unit team where she has been focusing on social aspects including community and stakeholder engagement, land acquisition and resettlement, Indigenous Peoples, working conditions and labour relations, community health and safety.

Countries of experience in this organisation so far are Kenya, Ethiopia, Rwanda, Nigeria, Mauritania, Malawi, Egypt, Lebanon, Liberia, Ghana and South Africa.

2007-2019
GIBB Africa Limited
2015-2019: Head of Department – Environmental and Social Services
2012-2016: Operations Manager – Social Services
2007-2012: Graduate Environmentalist

Roles: The latest roles in the organisation were:

- Lead Environmental and Social Impact Assessment (ESIA) Expert, Lead Resettlement Action Plan (RAP) Expert, Lead Strategic Environmental and Social Impact Assessment (SESA) Expert, Project's team Leader;
- Management of client relations;
- Development and implementation oversight of departmental strategic business plan;
- Management of departmental staff and related staff work plan forecast and oversight.

Anastasia worked in GIBB Africa Limited for a period of 13 years where she undertook environmental and social studies with a bias on social aspects, for large and small scale infrastructure development projects. This included housing, highways, airports, railways, office buildings, geothermal, solar and mini-hydro power plants, dams, irrigation projects, water supply and sanitation (solid waste and waste water) and master planning for cities and Land Use Plans.

Areas of practical experience were in stakeholder engagement plans, resettlement action plans, social impact assessments, development of environmental and social management systems (ESMS); strategic environmental and social assessments (SESA), social audits, due diligence audits, baseline socio-economic surveys and monitoring of implementation of construction phase social risk management plans in the context of environmental and social management plans from ESIA studies.

Countries of experience during this time were in Kenya, Uganda, Tanzania, Rwanda, Ethiopia, Ghana and Tunisia.

I hereby confirm that the above information is the correct representation of my curriculum vitae, submitted for the purpose of the Kenyatta University Ethics Review Committee.