Understanding the Coping Mechanisms Adopted by Pastoralists in the Context of Recurring Drought. A Case Study of Marsabit County, Kenya.

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Abstract:

With the increase and severity of drought events, there is need to identify and strengthen the capacities of the pastoralists to enable them to better deal with the adverse impacts of climate change. The purpose of this study is to build on the existing literature focussed on the coping mechanisms adopted by pastoralists that have enabled them to mitigate the negative effects of the drought over the years. This research also seeks to identify the factors that determine the choice of the coping mechanisms in the context of recurring drought events.

The dissertation begins with a review of literature within the pastoral discourse examining the pastoral system, the various coping mechanisms adopted during drought events and determinants of the decision making process for pastoralists. Primary qualitative research was conducted in Marsabit County with the aim of collecting the personal experiences of drought affected men and women through narratives with a focus on the 2017 drought. The narratives were used to illustrate the coping mechanism adopted by pastoralists during the drought with the aim of protecting their livelihoods.

The findings of the research provides new insight into the pastoral discourse by shedding light on three major elements including gender dynamics, risk perception and value of animals informed by the pastoral rationale informs the choice coping mechanisms adopted by pastoralists with the aim of protecting their livelihoods during drought events. In addition, field research acknowledges the existing capacities of pastoralists and highlights the need to adopt a culturally sensitive lens when engaging with them. This understanding enables efforts channelled towards building pastoralists' resilience to the recurring, droughts to have far greater positive impacts especially in light of future climate changes.

Statement of Originality

This thesis is the result of my own independent work/investigation, except where otherwise stated. Other sources are acknowledged by explicit references.

Signed: ……  …….. Date: …… September 2018
Wainaina Leah Wanjiru

I hereby give consent for my thesis, if accepted, to be available for photocopying and for inter-library loan, and for the title and summary to be made available to outside organisations.

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Statement of Ethics Review Approval

This dissertation involved human participants. The TDE E1 and E2 Forms for each group of participants, showing ethics review approval, have been attached to this dissertation appendices.

Acknowledgements

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Thank you to the people of Merille, Illaut, Marsabit town, Kalacha, Turbi and especially Kargi for welcoming me to your villages. I have never felt that much welcomed and appreciated in my home country. I thank you for your time, your opinions, your stories and your laughter. Like we agreed, if ever I am back in Marsabit I shall definitely pass by for that cup of tea.

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Dedication

To Caroline Muthoni Wainaina,

For your sacrifice and believing in me every step of the way.

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Acronyms:

ASALs	Arid and Semiarid Lands
EWSs	Early Warning Systems
DFID	Department for International Development
FGD	Focus Group Discussion
FH	Food for the Hungry
KII	Key Informant Interview
NDMA	National Drought management authority
NGO	Non-governmental organisation
RISC	Resilience Integration Strategy Creation
SL	Sustainable Livelihood

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Structure of the dissertation

This research is comprised of six chapters:

Chapter One introduces the topic highlighting the main aim and objectives of the research.

Chapter Two discusses the qualitative research methodology and approach used to collect data. It also as examines how the data will be analysed, ethical implications and limitations of the study.

Chapter Three starts by explaining the conceptual framework used to structure the research. It then moves on to explore the subject literature expounding on the pastoral system, the coping mechanisms adopted by pastoralists and the factors determining the type of coping mechanism adopted.

Chapter Four provides the context and brief overview of the research area; Marsabit County. It highlights the geographic location, the economy and the county's exposure to drought events.

Chapter Five presents the findings of the primary research by presenting the recurrent themes based on the research questions posed.

Chapter Six presents the discussions and conclusions drawn from the findings of the data collected as well as issues in need of further research.

Chapter 1

1. Introduction

Globally, there has been an increase in climate-related disasters including; floods, storms, droughts and heatwaves. Majority of droughts worldwide have occurred in Africa with EMDAT recording 136 events between 1995 and 2015, including 77 droughts in East Africa (CRED, 2015) leading to massive loss of livestock and increased food insecurity for the estimated 268 million pastoralists inhabiting the continent (AU, 2010; Blackwell, 2010; IFRC, 2011).

In spite of this, pastoralists have managed to adapt and cope to the harsh environment in which they inhabit, with the pastoral discourse overtime recognizing pastoralism as a rational and sustainable livelihood strategy in arid and semiarid lands (ASALs) (Jenet, et. al., 2016). This is echoed by Little and McPeak (2014), "*the fundamental resilience of pastoralism as a production system; is that it has allowed people to survive and even thrive in difficult production environments for centuries and even millennia*".

However, with the increased frequency and severity in droughts, pastoralists have become more and more exposed to the adverse impacts of climate change that have eroded their adaptive capacities making them more vulnerable to future changes (Brooks, 2006; Catley, 2013). There is therefore need to protect pastoralists livelihoods to prevent the several hundred million of households dependent on livestock (Jenet, et. al., 2016) from becoming destitute. In order to do so, there is need to identify and strengthen the capacities of the pastoralists to enable them to better deal with the adverse impacts of climate change.

1.1 Research Aim

The research aims to provide a better understanding of the pastoral system and build on the existing pastoral literature focussing on coping mechanisms adopted by pastoralists in the context of recurring drought. Qualitative primary research was conducted in Marsabit County, Kenya in 2018. Through the use of narratives, the research highlights the personal experience of pastoralist men and women who were affected by the 2017 drought within the study area.

The aim of the research was twofold: first, to identify the coping mechanisms adopted and secondly, to identify the determinants of the choice of these coping mechanisms adopted by pastoralists in response to the drought.

1.2 Research Questions

In order to meet the aim of the research, this dissertation poses the following questions:

1. What are the coping mechanism adopted by pastoralists in the context of drought?
2. What are the factors that determine the choice of coping mechanisms adopted by pastoralists in the context of drought?
3. How do indigenous/traditional and formal EWSs influence the choice of coping mechanisms adopted by pastoralists in the context of drought?
    a. What early warning messages are being *heard*?
    b. What is the perception of the EWS?
    c. What impact do EWSs have on the coping mechanisms adopted?

Chapter 2

2 Research methodology:

Qualitative research method was adopted for the study. Secondary data was used to inform the state of the art while primary data collected in the study area provided empirical evidence on the research topic.

2.1 Primary Research

Primary data was collected in Marsabit County located in Northern Kenya, which was one of the most affected counties during the 2017 drought. Research was facilitated and funded by Food for the Hungry (FH), a faith based NGO that has been working in Marsabit County for over 50 years in the development sector. Research was conducted from 9th July to 3rd August. Background of the research area was gathered through interactions with the FH team during the Risk and Resilience Integration Strategy Creation (RISC) Process Workshop conducted during the first week of the research period. Fieldwork was conducted in 6 sites including; Merille, Illaut, Kalacha, Turbi, Kargi and Marsabit town. The sites were selected because they were secure and easily accessible by road.

Figure 1: Map of the sites visited in Marsabit County, Kenya.

Qualitative tools including semi-structured interviews and Focus Group Discussions (FGDs) were administered to respondents. Men and women were identified with assistance from FH field staff Eddy Lemoile who helped with plannig the site visits, mobilization of respondents and identification of translators for the interviews when he was not able to do it himself.

Respondents were identified through the purposive sampling method with participation based on the availability and willingness of individuals to partake in the study. Semi-structured interviews and FGDs were administered to the drought affected pastoralists which allowed for the collection of individual's stories on their experience during the 2017 drought. Interviews conducted had a representative sample of men, women and community leaders from the 3 communities represented in the sites visited including; the Gabra, Rendille and Samburu. 6 male FGDs and 5 female FGDs were conducted ensuring that both men and women were comfortable enough to voice their opinions and allowed for the exploration of gender dynamics within the pastoral system. Data was collected from informal settings, which allowed rich and insightful conversations to be held with the respondents. Interviews were also conducted with NGO workers and County government officials who had extensive experience of working with pastoralists within Marsabit County. Semi-structured interviews allowed me to gain insight into the livestock markets and EWSs both geared towards mitigating the negative impacts of droughts facing the pastoralist. A total of 26 semi-structured interviews and 11 FGDs were conducted; detailed interview schedule attached as Appendix 1.

Observations were also carried out in both modern markets and bush markets. The informal nature of the markets made it easy to observe market operations. A field diary was kept to jot down the observations made which proved to be handy as the information collected acted as a starting point for the informative conversations held later on with respondents.

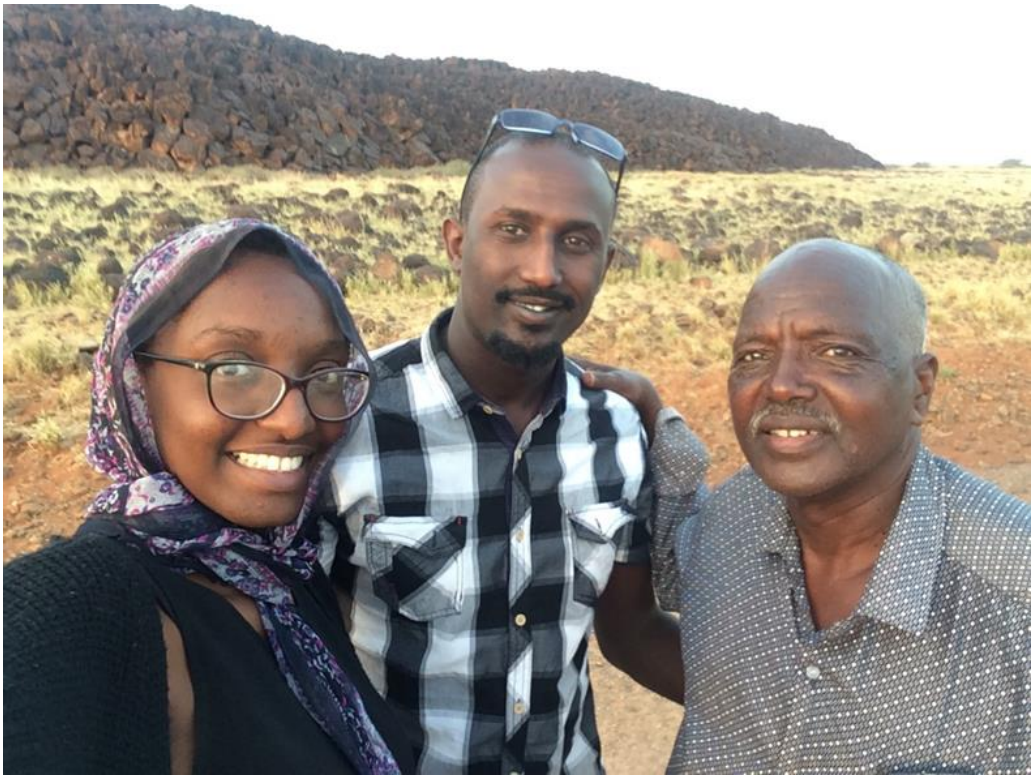

Figure 2: Fieldwork at Kalacha (Left to right; Leah W., Eddy Lemoile and Pius Harabore).

2.2 Secondary Research

Secondary data involved analysis of both academic literature and grey literature including policy documents and survey data from the Kenyan government and NGOs working with communities in Marsabit to develop the background of the study and inform the state of art. Additionally, the FH team was quite instrumental in sharing relevant literature on the research topic.

2.3 Data analysis

Interviews that were audio recorded with the consent of respondents were transcribed from the local dialects to English. In order to analyse the data and extract major themes and concepts to be discussed, I took the interactive model approach. As elaborated by Miles and Huberman (1994 p12), *'qualitative data analysis is a continuous, iterative enterprise'*. The approach taken allowed me to freely interact with the wealth of data collected and make sense of it throughout the entire process of analysis as illustrated below.

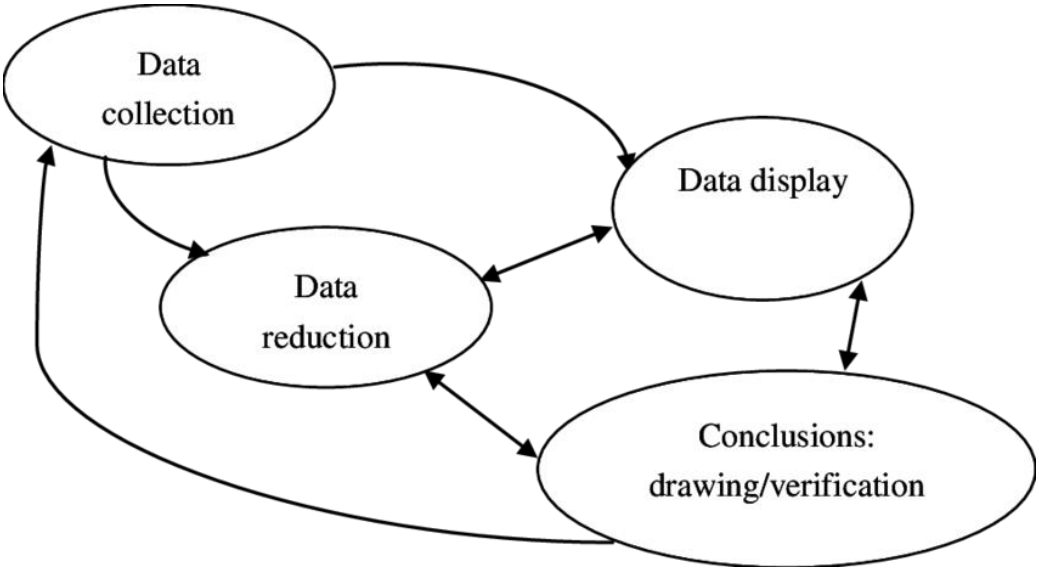

Figure 3: Components of Data Analysis: Interactive Model Source: Miles & Huberman (1994).

Data collected through both primary and secondary sources was triangulated to build a strong evidence base of the study and to draw conclusions.

2.4 Ethical considerations

Respondents were informed of the nature of the research and allowed to ask follow up questions. They were also made aware that participation was voluntary and could be terminated at any time. Respondents were also asked for consent for photos to be taken and the audios recorded. This was done so as to attain full-informed oral consent before the interviews began. Names of all the respondents were anonymized so as to maintain privacy and confidentiality.

2.5 Limitations

2.5.1 Time

The research sought to understand the nature of the pastoral system by examining the socio-cultural aspects which inform the decision-making process. This was difficult to fully comprehend in a month unless one fully immersed themselves in the lives of pastoralists through an ethnographic study. Despite the time limitation, in-depth interviews were conducted to gain better understanding of the system.

2.5.2 Language barrier

Respondents from the various sites spoke different dialects and although the presence of translators helped, at times information got lost in translation as long discussions were often summarized in single statements and occasionally translators would answer questions on behalf of respondents. This was addressed by elaborating what was expected of the translators before the interviews.

2.5.3 Sampling

Participants and sites visited were identified with the assistance of FH staff member. Additionally, the sampling method used was purposive with interviews being administered to participants who were available and willing to participate in the research. This might have influenced the sampling of participants and affected the representativeness of respondents which in turn might have affected the quality of findings. However, the purpose and nature of the research was explained to participants before-hand. They were also informed that participation was voluntary and that there would be neither negative consequences nor rewards or projects funded in exchange for information. Moreover, the sample size recruited for the research was representative as it included men, women and community leaders from different backgrounds across the 3 communities interviewed from all the sites visited.

Chapter 3

3 Literature review

3.1 Sustainable Livelihood Framework

The Sustainable Livelihood (SL) approach is people-centred and offers a holistic and dynamic approach to analysing livelihoods by highlighting factors that affect people's livelihoods and how they interact with each other (Twigg, 2001; Carney, 2003; DfID, 1999). According to DFID (1999) "*A livelihood comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base"*. These elements are illustrated below.

Elements	Definition
Vulnerability context	*"The Vulnerability Context frames the external environment in which people exist. People's livelihoods and the wider availability of assets are fundamentally affected by critical trends as well as by shocks and seasonality – over which they have limited or no control".*
Livelihood assets	*"The people centred approach seeks to understand people's strengths/capacities in the form of assets that are used to achieve positive livelihood outcomes. These include; human capital, social capital, natural capital, physical capital and financial capital".*
Transforming structures and processes	*"These are institutions, organisations, policies and legislations that shape livelihoods. They operate at all levels, from the household to the international arena, and in all spheres, from the most private to the most public. They effectively determine; access (to various types of capital, to livelihood strategies and to decision-making bodies and source of influence), terms of exchange between different types of capitals and returns to any given livelihood strategy".*
Livelihood strategies	*"Livelihood strategies comprise the range and combination of activities and choices that people undertake in order to achieve their livelihood goals. Livelihood strategies adopted are dependent on the vulnerability context, assets available and the influence of transforming structures and processes. They are complex and may vary from household to household".*
Livelihood outcomes	*"Livelihood outcomes are the achievements or outputs of livelihood strategies, such as more income, increased well-being, reduce vulnerability, improved food security and a more sustainable use of natural resources".*

Figure 4: Key elements of DFID's Sustainable Livelihood Framework adapted from (Twigg, 2001 p9-12).

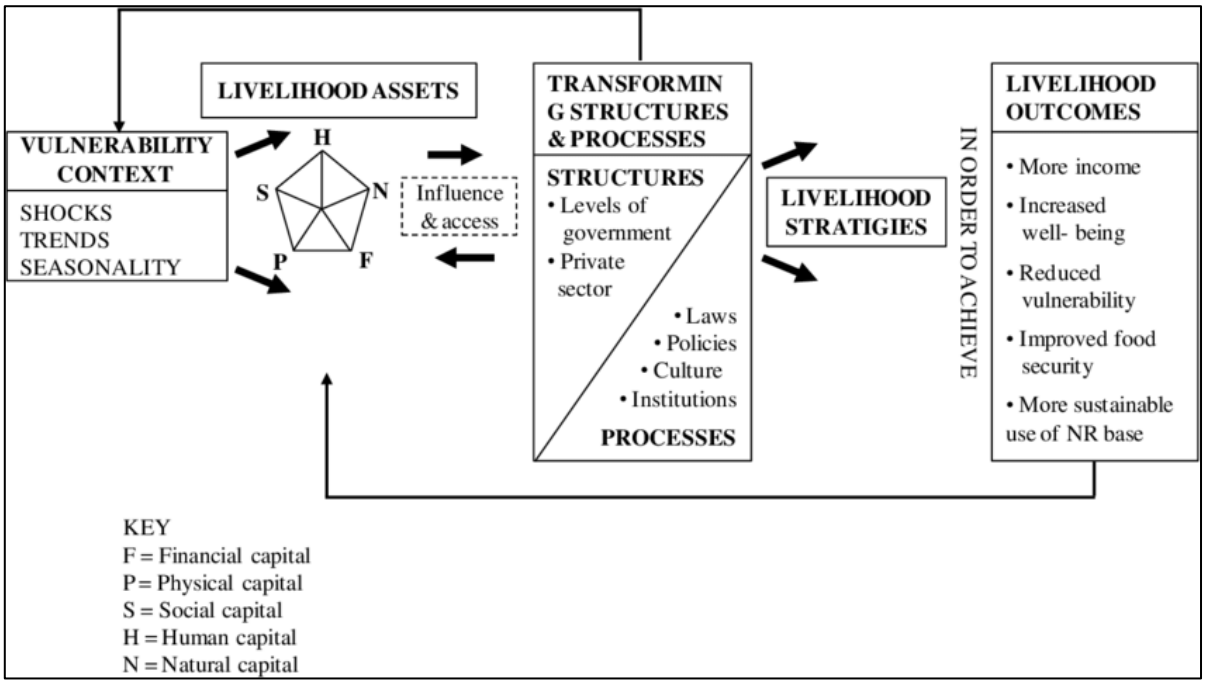

Figure 5: DFID sustainable livelihoods framework (Adapted from: Carney et al., 1999: 9)

SL emphasizes the need for people to have access to assets in order to develop their livelihoods so as to reduce their vulnerability with regards to exposure and susceptibility to hazards and to increase their capacity to resist or recover from shocks (Watson and Catley, 2009). The framework acknowledges the pastoral rationale towards protecting and strengthening their livelihoods during droughts.

The framework therefore fits well within the structure of the research by providing a holistic and people-centred approach to the study. Firstly, the vulnerability context frames the external environment in which pastoralists inhabit with a focus on the recurring droughts that are beyond their control and have negative effects on their livelihoods assets. Secondly, it highlights livestock as the main assets at the disposal of pastoralists. Thirdly, it underlines the structures and processes that determine access to assets and coping mechanisms adopted in response to droughts as determined by availability of assets. The framework shall be revisited in Chapter 6 where it shall be adapted further to analyse the findings of the research.

3.2 Understanding the pastoral system

"*Extensive pastoralism occurs in more than 100 countries on about 25% of earth's land area whereby nearly a billion animals, including camels, cattle, and smaller livestock that contribute to about 10 % of the world's meat production are reared*" (Dong, 2016 p2). Pastoralism is practised in various regions including the drylands of Africa, the Arabian Peninsula and the highlands of Asia and Latin America and the Arctic parts of Fennoscandia and Russia (Nori, et. al., 2005). These areas are not conducive for crop production therefore making pastoralism uniquely suited for such climatic conditions (Blench, R., 2001; Dong, 2016; Rota and Sperandini, 2009).

Pastoralism is a livestock based economy with pastoralists deriving more than 50% of their incomes from livestock and livestock products (Rota and Sperandini, 2009). Globally, pastoralism supports several hundred million households (Jenet, et. al., 2016). Neely et. al. (2009) estimates that 1 billion people depend on livestock and 70% of the 880 million rural poor living on less than USD 1.00 per day are at least partially dependent on livestock for their livelihoods. As the principal asset for pastoralists livestock serves numerous functions. As financial assets they act as a source of income through the sale of livestock and livestock products and as a medium of exchange. Livestock also ensure food security as the blood, milk and meat products are consumed. Furthermore, livestock provides transport, hides for shelter, fibre for clothing, fertilizer and fuel (Jost, 2002; Watson and Catley, 2009).

Pastoralism is also way of life, culture and identity based on complex relationships between people, animals and land (Dong, 2016; Jenet, et. al., 2016). Livestock are vital social assets. They are a source of wealth and symbolize a powerful status enabling wealthier individuals to gain wider access to community benefits, social networks and capacity to influence decision making processes in their communities (Tache and Sjaastad, 2010; Nyariki et. al., 2005). Livestock are also a sign of human welfare as wealth is redistributed to the whole community through traditional systems to assists recipients in meeting immediate needs or rebuilding their herds in post- disaster (Jost, 2002; Borgerhoff Mulder et. al., 2010). Furthermore, livestock play a major role in establishing identity, meeting social and religious obligations such as bride price and strengthening social ties (Tapson, 1991; Tache and Sjaastad, 2010; Jost, 2002).

3.3 Coping mechanisms

Drought has far-reaching consequences to the pastoral system. The scarce availability of pasture and water results in emaciated and less productive livestock which affects pastoralists' source of income and food (Rota et. al, 2009). Persistent drought leads to the death of livestock resulting to the loss of livelihood assets for the present as well as the future generation of pastoralists (LEGS, 2014). This exposes pastoralists to the negative impacts of the drought and makes them more vulnerable to future droughts (Adesugba, 2014; Brooks, 2006). This is exacerbated by the fact that pastoralists live in poorly developed areas and have been historically marginalized. Research shows that pastoralists have adopted numerous coping mechanisms to mitigate against the negative effects of drought. These include: mobility, redistribution of wealth, herd diversity, herd accumulation and sale of animals (Rota and Sperandini, 2009; Hazard et. al., 2012; Blench, 2001; Jost, 2002; Little and McPeak, 2014). These shall be discussed below.

3.3.1 Mobility

Pastoralists have been able to manage uncertainty and risks in ASAL regions through livestock mobility (Niamir-Fuller, 1999). While pastoral systems differ worldwide, classified as nomadic[1], transhumant[2] or agro-pastoral[3]; one of the qualifying features is mobility (Blench, 2001). Mobility allows pastoralists to maximize the widely-dispersed natural resources within the ASALs and has been used over time to cope with climate change and variability such as drought (Turner et. al., 2014; Nkedianye, et. al., 2011; Brooks, 2006). Increased flexibility and mobility is directly linked to decreased herd loss as it allows access to grazing resources that guarantee livestock productivity and ensure reproduction is maintained (Wario et. al., 2015; Little et. al., 2014; Niamir-Fuller, 1999; McPeak and Little, 2014).

To fully exploit limited resources in the environment, pastoralists tap into their knowledge of the ecosystem including; the availability of water and pasture, rainfall patterns and develop relationships with neighbours that ensure access to resources and services (Blench, 2001;

[1] Nomadic pastoralism describes mobility characterised by highly irregular patterns (Dong, 2016).
[2] Transhumant pastoralism describes regular back-and- forth movements between relatively fixed locations (Dong, 2016).
[3] Agro pastoralists are settled; rely on livestock and partake in crop production (Blench, 2001).

Nori et. al., 2005). Migration routes are therefore not random or irrational, but instead are well thought out and premeditated movements guided by pre-existing traditional systems and rules within pastoral communities that ensure the sustainable use of natural resources through rangeland access and management (AU, 2010; Jost 2002). Within the Gabra community, for example, community elders are charged with the responsibility of determining migration routes, rangeland management and resolving disputes arising from the competition of limited resources (Hazard et. al., 2012).

3.3.2 Redistribution of wealth

Pastoralists rely on mutually supportive relationships to insure themselves against shocks such as drought. These interpersonal relationships are based on the principles of reciprocity and sharing and are established on kinship ties, marriage ties, friendship ties, age-set ties and clannism (Hazard et. al., 2012; Davies and Bennett, 2007; Blench 2001).

The egalitarian nature of pastoral communities ensures that livestock is redistributed among the community members through the traditional gifting and loaning system (Davies and Bennett, 2007), this enables individuals to meet their immediate needs and reconstruct their herd post-drought (Jost; 2002). Animals are also exchanged through bride price thereby creating strong bonds beyond families (Jost, 2002; Blackwell, 2010). The exchange of animals between households allows for the spreading and pooling of risks. Animals donated from the giver's herd reduces the risk of loss during drought by spreading it out to other households while animals received from others contribute towards reducing the recipient's exposure to risk (Hazard et. al., 2012; Jost, 2002).

Pastoralists also rely on these relationships to restock their animals. If a pastoralist has suffered great loss after a drought, they can either choose to either recall the animals they loaned out to friends or family members during the 'normal period[4]' or get loans from friends and family with the animals they get forming a basis for the new herd. Additionally, smaller

[4] Normal periods or normal years also known as good years refer to non-drought years whereby the two wet/rainy seasons are successful and the animals are healthy and strong due to the availability of pasture and water (Tiki, 2012).

stock such as goats and sheep can be exchanged for larger stock such as camels and vice versa to help rebuild herds (Blench, 2001; Davies and Bennett, 2007).

3.3.3 Herd diversity

The diversity of herd composition and species allows pastoralists to maximize the widely-dispersed natural resources and minimize risks while maximizing productivity (Nori et. al., 2005). Livestock bred by pastoralists is dependent on a combination of factors including; climate, natural resources, socio-cultural values, market opportunities, drought resistance and milk production (Rota and Sperandini, 2009; AU, 2010).

In Africa, herds majorly consist of cattle, camels, sheep and goats. Camels are considered hardy animals as they are most suited to the ASALs because they can withstand high temperatures, stay for days without drinking and feed on browse which is predominantly found in ASAL regions and produce higher quantities of milk than the other animals. This is unlike cattle, which are vulnerable to the drought because they drink water every 2 to 3 days and are grazers meaning they perform best on grass although they can also consume leaves from woody plants (Jost, 2002). Goats and sheep are also considered to be hardy animals (Little and McPeak, 2014). These biological differences determine the composition of the herds kept. While some pastoralists prefer to diversify their herds to minimize the risk of losing all the species in the event of disease or drought; other pastoralists such as the Tuaregs prefer to keep single specie herds composed of camels as they are well suited to the ASALs (Jost, 2002). During the drought, herds are split into browsers and grazers to ensure that the grazing resources available are maximized. Animals that produce milk remain at the household with the rest of the herd migrating (Blench 2001).

Preference might also be given to breeds that are more marketable such as camels as prices drop reasonably during the drought unlike other animals. Research conducted in 2013 indicates that camels prices in northern Kenya decline an average of 4–12%; cattle prices drop by 60% +; sheep prices drop by 40% + and goats prices decline by 20% during dry seasons (Little and McPeak, 2014).

Herd diversity is also vital during the recovery process post-drought. While camels are resilient to the drought they take longer to reproduce with preference given to sheep and goats because they reproduce faster making the herd rebuilding process quicker compared to camels (Blench, 2001). The high reproduction rate allows for sheep and goats to be exchanged for larger animals (Ibid).

3.3.4 Herd accumulation

Herd accumulation allows pastoralists to mitigate against the negative impacts of the increasing droughts (Jost 2002; Rota and Sperandini, 2009). Pastoralists maximize natural reproduction to increase their herd size with the expectation that drought will lead to the loss of animals (Catley, 2013). While herd accumulation was largely seen to stem from socio-cultural reasons whereby pastoralists kept large herds of emaciated cattle even during drought periods instead of destocking; this perception was replaced with the view that herd accumulation was a rational and logical response to the uncertain environmental and climatic conditions (Næss and Bårdsen, 2010; Blench and Marriage, 1999).

`If a man loses half of his 100 cattle he is still better off than if he had lost half of his two cow herd' Tapson (1991). As a risk management strategy, accumulation of livestock stems from the understanding that the number of livestock owned prior to the drought will determine the success of herd-growth post-drought thereby ensuring livestock survival (Næss and Bårdsen, 2010; Little et. al., 2014; Little and McPeak, 2014). This can be further explained through the 'boom' and 'bust' cycle whereby periods of livestock accumulation through reproduction during the good years is followed by livestock deaths during the drought periods which are then followed by rebuilding of herd sizes post-drought (Catley, 2013). Herd accumulation ensures that even in the event of a drought, some animals will survive and pastoralists will still have enough animals meet their subsistence needs and socio-cultural obligations (Nyariki et. al., 2005; Jost, 2002).

3.3.5 Sale of animals

With the increase in frequency and severity of drought, pastoralism has evolved with the sale of animals shifting from subsistence to commercial economy whereby animals are sold for

the purpose of generating cash as opposed to the sole purpose of meeting basic needs; leading to increased livestock trade (Nyariki et. al., 2005). This has been enabled through the existence of local market structures that allow pastoralists to commercially offtake of animals in both drought and normal periods (PACIDA and FH, 2017). Furthermore, there are emergency destocking programmes implemented by organisations; both accelerated off-take and slaughter destocking whereby weak animals that are no longer viable for commercial sale are bought directly from pastoralists' to minimize losses before they die (Ibid). This provides a cheap source of protein and generates incomes for families which may be used to support surviving livestock, buy food and meet domestic needs (PACIDA and FH, 2017; Nyariki et. al, 2005; Gebresenbet and Kefale, 2012; Catley, 2013).

Despite this, pastoralists are reluctant to sell their animals often resulting to emergency destocking as opposed to commercial offtake with research highlighting examples such as the Borana in Ethiopia who only sell animals to satisfy their immediate cash needs and the Maasai in Kenya who often delay sale for as long as they can leading to emaciated livestock that fetch a lower price (Nyariki et. al, 2005).

As pointed out by Tapson (1991), the decision of cattle owners to keep their livestock as opposed to sale, exchange or consumption despite the risk of eventual death is not a random event but a deliberate choice action. Pastoralists limit off-take to ensure that they are able to maintain or even increase their herd size to minimize risk, meet socio-cultural obligations and meet subsistence needs more so in times of drought (Little et. al., 2014; Nyariki et. al, 2005; Belle, et. al., 2017). Moreover, sale of animals is seen as a reduction of capital assets accumulated by pastoralists. The pastoral system is based on its reproductive capacity of livestock, meaning that the livestock itself is a productive asset that has the ability to reproduce for the gain of the owner (Kerven, 1992) thereby offering the best rate of return of assets available for the pastoral economy (Barrett et. al., 2004). Pastoralists therefore view livestock as a form of capital or an assets such as land that can be invested and used to generate future income and should therefore not be readily disposed unless there are pressing needs (Nyariki et. al., 2005; Little et. al., 2014; Barrett et. al., 2004). Furthermore, pastoralists limit the sale of animals during drought due to constraints in marketing activities

such as the deteriorated body condition of animals, presence of few traders in the market, financial limitation, market inaccessibility and price fluctuations (Tiki, 2012; Little et. al., 2014).

3.4 Determinants of pastoralist decision-making

The choice of drought coping mechanisms adopted by pastoral communities is determined by a variety of factors including; gender, income, education status and access to EW information (Mengitsu and Haji 2015; Deressa et. al 2010; Akwango et. al, 2016, Belle et. al., 2017; Bahta, 2016). These shall be discussed below.

3.4.1 Household characteristics

Pastoral communities exhibit complex relationships between men and women that define their highly gendered roles, rights and responsibilities (Rota and Sperandini, 2009). Traditionally, women are involved in; processing and marketing of milk products and milking, caring for animals at the homestead and for young and sick livestock and domestic responsibilities. Men are involved in the migration, planning and conflict resolution with neighbouring groups. Within these societies ownership, management and control of productive assets such as animals, land and income needed to secure a sustainable livelihood are the man's responsibility (Eneyew and Mengistu, 2013; Livingstone and Ruhindi, 2011; Rota et. al, 2009). These rights determine who has control over the decision-making process within a household. Men therefore dominate the process and make all decisions regarding livestock and coping mechanisms adopted in the household be it migration, sale or slaughter while women's participation is often limited or totally absent (McPeak et. al., 2006; Bahta et. al., 2016; Deressa et al., 2010).

Besides gender, household income levels also determine the choice of coping mechanisms adopted. Having increased livestock holdings significantly increases the sale of animals as well as the exchange of animals between relatives during droughts (Deressa et al., 2010). Little et. al. (2014) suggests that sale of animals assumes more importance for better-off households than poorer households as they earn much more income from sales due to the access to better markets, well-timed favourable market conditions and enhanced breed and quality of livestock. While in effect poorer households may sell off more livestock to meet their basic

needs (Little et. al, 2014), Barret et. al. (2004) argues that richer households engage more in the livestock markets as they have large enough herd sizes allowing them a margin to comfortably liquidate animals through the market. Furthermore, rich households sell a lot of livestock because they have a larger household therefore more expenditure needs to meet. Tache and Sjaastad, (2010) also suggest that wealthier individuals have access to wider social security networks which assist them to respond and cope with the drought.

3.4.2 Level of Education

Deressa et. al (2010) and Belle et. al., (2017) propose that the level of education of the household head has a correlation with the coping mechanisms adopted in the wake of drought. For example, relatively educated household heads were more likely to use one or a combination of mechanisms that allowed for better coping with droughts as opposed those with minimal or no level of formal education, with increase in education increasing the probability of sale of animals as a coping mechanism. Bahta et. al., (2016) suggests that lack of education may increase an individual's vulnerability to drought as it limits their access to information and technology needed to prepare and respond to drought. Furthermore, individuals who are literate are more receptive to new information and knowledge that enables them to interpret scientific weather information needed for early action (Belle et. al., 2017) and better manage their environment and natural resources (Mengitsu and Haji, 2015). However, in contrast to the above findings research conducted in Uganda reports that there was no evidence that education has significant influence to the coping mechanisms adopted in response to the EW information however this might be attributed to the fact that majority of respondents were illiterate because of their nomadic way of life (Akwango et. al., 2016).

3.4.3 Access to early warning information and risk perception

EW information is valuable in helping people cope with uncertainty (Luseno, et. al., 2003). EWSs are a series of organized surveillance mechanisms that collect information and monitor potential hazards in a region in order to give advance warning to enable mitigation, preventative and response measures (OCHA and FAO, 2014). There exist both scientific/formal EWSs and traditional EWSs. Formal EWSs are based on environmental, economic, human welfare and livelihood indicators; incorporating stages of drought warning

including; normal, alert, alarm and emergency phases which indicate the level of risk and degree of vulnerability (LEGS, 2014). These have evolved to become more people-centered through the blend of technology and local knowledge and experience thereby having greater impact.

Traditional EWSs are based on indigenous knowledge developed by communities living in hazard prone areas to mitigate against the effects of natural disasters including observing stars, clouds and animal intestines (Kaya and Koitsiwe, 2016; Luseno, et. al., 2003). This knowledge has been passed down generations through words of mouth and transference of skills, technologies, practices and beliefs on the natural environment.

According to Mengitsu and Haji (2015), people-centred EWSs enable communities to make viable and informed decisions about the coping mechanisms they choose to adopt which enables them to mitigate the negative impacts of droughts. However in order for the warnings to be effective information has to be accessible and disseminated in a timely manner to allow early action (Luseno, et. al., 2003).

The choice to act on the information is influenced by both subjective and objective perceptions of risk which underline the individual's understanding of the risk they face as well as the capacity they have to cope with it (Doss et. al., 2008). This, coupled with belief systems and experience with EWSs determines how individuals perceive the information they receive with pastoralists having more confidence in traditional than scientific EWSs as them perceive them to be inaccurate and unreliable (Belle et. al., 2017; Luseno, et. al., 2003). However, despite this Hazard et. al., (2012) suggest that pastoralists undertake minimal planning with regards to coping mechanisms adopted due to the belief that risks such as drought originate from God with humans having no control over their occurrence or consequences.

Chapter 4

4 Background of Marsabit County

Marsabit County is located in the upper eastern region of the Republic of Kenya. It is part of approximately 80% of the country's landmass classified as ASALs and occupies the driest region of the country where the Somalia-Chalbi desert belt transcends (Marsabit County, 2014). Due to this, the county experiences climatic conditions characterised by highly erratic and variable rainfall and extreme temperatures with high evaporation rates exceeding rainfall more than 10 times (Ibid). The main livelihood activity in Marsabit is livestock keeping with about 80% of the population engaging in either pastoralism or agro-pastoralism and dependent on the income they derive from the sale of livestock and livestock products (MoALF, 2017). Other livelihood activities include; crop farming, fishing, forestry, trade, mining and tourism.

Due to the climatic conditions, Marsabit is highly susceptible to extreme climate-related events i.e. drought and floods. In Kenya major droughts used to occur approximately every 7 to 10 years with moderate droughts occurring every 3 to 4 years in the ASALs, however the intensity and frequency has increased with droughts now occurring annually due to climate change and variability (Blackwell, 2010; Hailey and Balfour, 2018). Examples of major droughts were reported in 1992-93, 1995-96, 1999-2000, 2004-06, 2011 and 2014 (Huho and Mugalavai, 2010; Nyaoro et al., 2016). Droughts have resulted in massive economic losses and loss of livelihoods. The 2011 drought affected 4.5 million people, 3.8 million of whom reside in the ASALs and 700,000 in non-ASAL regions. Furthermore, the total drought related damages and losses incurred by the Kenyan economy between 2008 and 2011 was estimated at US$12.1 billion; with the livestock sector accounting for 72% of the losses (RoK, 2012).

On February 10th 2017, yet another drought was declared affecting an estimated 2.7 million people (NDMA, 2017a). At the time, Marsabit County was reported in the alarm phase of the EW Phase Classification by the National Drought Management Authority (NDMA) (NDMA, 2017b). FEWS NET (Famine Early Warning Systems Network) also classified parts of Marsabit as Phase 3 on the Integrated Food Security Phase Classification (IPC) scale; a tool used for analysing food security with Phase 3 representing food insecurity and high levels of

malnutrition (FEWS NET, 2017). The drought was due to the poor rainfall received leading to livestock deaths which had negative effects on the livestock dependent pastoralists (Hailey and Balfour, 2018). This was worsened by the frequency of droughts in the region which had over time, stripped away the limited assets of the pastoralists and reduced the recovery period between droughts therefore leaving them more vulnerable to the next crisis (Ibid). Additionally, Marsabit is one of the historically marginalized counties in Kenya with a poverty index of 83.2% and HDI (Human Development Index) of 0.438 compared to the national statistic of 47.2% and 0.502 respectively (GoK, 2016).

There are numerous actors implementing drought interventions in Marsabit including NGOs, CBOs and government institutions; most notably NDMA. Kenya is one of the few countries in the world that have designed and implemented EWS targeted on drought in the pastoral livestock sector (Nyariki et. al., 2005). Additionally, it has policy frameworks and budgets for drought interventions. Formed by an act of parliament in 2011, NDMA deals with climate change risks and has the mandate to coordinate multi-stakeholder assessments and responses to drought and provide EW information to households and stakeholders (MoALF, 2017; NDMA, 2013). While the drought management system has been in place since 1985 in Turkana and replicated to other counties through the Arid Lands Resource Management Project (ALRMP) that preceded NDMA, tackling drought in Kenya has been a challenge due to constraints including; institutional capacity, funding and ineffective planning (RoK, 2014). Nonetheless, there has been increasing commitment towards tackling drought with implementation of initiatives such as the Ending Drought Emergencies (EDE) aimed at ending drought emergencies by 2022 through focusing on drought risk and vulnerability reduction, drought EW and response and institutional capacity for drought and climate resilience (Ibid).

It is within this context that the research was conducted, a year after the 2017 drought. This allowed me to gather data on the pastoralists' experiences of the drought as it was still fresh in their memories.

Chapter 5

5 Findings

The findings are based on primary data collected through interviews, FGDs, observations and the RISC process workshop attended in Marsabit County as discussed in the Methodology chapter. The chapter is divided into 2 main parts describing the coping mechanisms adopted by pastoralists and determinants of the decision-making process.

5.1 Coping mechanisms:

5.1.1 Migration

> *"I am a pastoralist, this is all I know and this is all I do for a living – I believe that as long as I am the one tending to my animals, no matter how severe the drought is they will survive. I will ensure that my animals get all the pasture and water they need to remain alive. I will go as far as I have to for this to happen. I can go all the way to Nanyuki[5] County with my livestock and keep on moving if need be, I know of people who even go as far as to the border of Ethiopia and Somalia to ensure their animals get pasture even if some of them die in the process."*

Respondent reported the decision to migrate in search of grazing resources i.e. pasture and water, as one of the immediate actions taken in response to the drought. Migration in 2017 drought, as always was a communal decision. Respondents' migration routes and patterns were dependent on the availability of pasture. These areas were identified through communication with individuals who either lived or visited the areas of interest; information was spread through telephone or via word of mouth whenever people congregated at social points such as the market. Areas were also identified through the assistance of community elders who are in-charge of the communal lands and have knowledge of the layout of the land and availability of resources. Once identified, community elders in consultation with male heads of households would then send out young men to survey the area and return with reports regarding the availability of pasture before the decision to migrate was made.

[5] Nanyuki is 331km from the where the interviewee resides.

Information was then shared among community members and individuals would then migrate with their animals to identified areas known as fora[6] where they would stay with their animals until pasture was depleted then move on to another identified location.

Data revealed that migration was the main coping mechanism for all the respondents interviewed. Respondents explained that they were aware that the drought would be a real threat to their livestock but were certain that if they dedicated themselves to caring for their animals, moving from place to place searching for grazing resources their animals would survive the drought; even if some died during the migration process, others would most certainly survive.

5.1.2 Social networks

Support received through social networks proved to be a vital coping mechanism for all the respondents. There was heavy reliance on social networks based on kinship ties, clannism and friendship during and after the 2017 drought. Support provided enabled respondents to meet basic needs during the drought and to restock animals after the drought.

Respondents stated that they either received assistance or assisted a community member during the drought. Assistance was in cash or kind whereby people would share food, milk and water, borrow money or take foodstuffs on credit from local shops. Additionally, community members borrowed animals from each other; these animals would then be given out as gifts or loans to the recipient. This was a common practise that had been passed on from generation to generation across the 3 communities interviewed. Such assistance was offered equally to all be it friends or family. Goats and sheep were given out as gifts while camels were mainly given out as loans.

These animals would be used for various purposes depending on the needs of the recipient and the agreement made during the exchange. Recipients were free to make any decisions regarding animals that had been gifted including sale of the animals. However, animals that had been given on a loan basis could not be sold as they were to be returned to the owner

[6] Fora refers to the area where herds migrate to due to the availability of pasture and water.

after a certain period, these animals were used for milk products during the drought and for restocking purposes after the drought.

In fact, after the 2017 drought, all the respondents reportedly managed to restock their animals through the gifting and loaning system. Findings revealed the existence of a well-structured gifting and loaning systems across the 3 communities based on verbal 'laws' and 'consent' which allow community members to acquire animals to meet their basic needs and grow their herds. The system is based on relationship ties that enhance trust between the giver and recipient. This ensures that both parties adhere to the agreement made during the exchange. Furthermore, it ensures that the animal shall be well treated by the recipient, failure to which the giver can repossess it. However, there was no mention of penalties incurred if the recipient lost the animals they received on loan basis as a result of the drought. The system was elaborated during one of the FGDs;

> *"Giving of animals is part of the Rendille culture. We have a loaning system for camels, but as for the rest of them the animals we often give them off as gifts. What happens is that for camels - the original animal is given on a loan basis to the recipient and every female it births belongs to the giver while the males born belong to the recipient, despite this all the animals live in the recipient's homestead and he takes care of them and consumes the animal products. The recipient can care for the animals for a very long time, depending on whatever was agreed on when he got the animal. However, he can never sell the female camels because in essence they do not belong to him. Also, it isn't easy for the former owner of the camel to come take all the female camels from the new owner, he would just take one or two when the need arises and he can also send friends/family to get one of the camels if they lose all their animals. In that way you might find a pastoralist with a large herd of camels but not all the camels he is tending to belong to him. We give out animals to anyone in need be it friends or family, we even give out to those in the Samburu community that we know. It's very easy to give out goats but not camels, before giving out a camel, I have to know where you and your family live because in our community, we value camels very much."*

Data revealed that part of the reasons that respondents were not afraid of losing their animals to the drought was because of the system that acted as a mechanism for restocking their animals post- drought. Respondents stated that although animals belonged to an individual, camels were 'communally' owned due to the gifting and loaning system. This prevented individuals from selling camels as they were loaned; thereby explaining why respondents were reluctant to sell animals during the drought; which shall be discussed in the next section.

> *"Camels do not belong to an individual, they belong to a community and are passed down from parents to children and from generation to generation this is because camels can endure droughts. They also have many functions; they are our source of income, dowry, cultural symbols, means of transport and source of meat and milk. It is not easy to sell a camel, before selling it you have to consult many people including your family and relatives. People only sell camels if they having pressing needs, otherwise they would prefer to keep them."*

The system also works on the belief that there will always be animals to be 'circulated' among community members. Repeatedly, respondents referred to the 2011 and 2005 droughts; explaining that no matter how severe those droughts were, not all the animals died as people who used various coping mechanisms were affected differently. Therefore, those who had lost all their animals could depend on social networks to restock their herds through the gifting and loaning system from those whose animals had survived. Additionally, in cases where individuals had lost all their animals, community members and kin even in other villages would come together and contribute animals to them.

> *"We are used to the drought and depending on the severity, we know that sometimes animals die and sometimes they don't. With any given drought, there must be animals that survive and these are the ones that are used to regrow the herd. Also, you can always borrow from friends or family whose animals survived. We are all affected differently; it depends on your luck - in my case majority of my animals died but as for my relative only two of his animals died, at that time I went and borrowed some from him. After the drought, the animals reproduced and the herd grew to be bigger than it was before the drought. You can always get animals from your people no matter where*

they are, you know that everyone has family so you can always trust that you will get animals from your family if you lose them all."

Respondents also shared that the system allowed them to manage the effects of drought by spreading risk. By giving out the animals to various people, they were able to minimize the risk of losing all their animals because drought affected various households differently. This also enabled them to restock after the drought as some of them repossessed the animals they had loaned out prior to the drought.

"At one point, I had given out animals to my family and friends, so after the drought when I had lost all 550 of my goats, I went round 'collecting' animals from them. I got 30 goats in total. I also gave out 6 goats; 2 to my friends and 4 to my family members. I did not have to buy goats from the market, the goats I got from family and friends are the ones I used to regrow my herd – they just reproduced. It's been a few months but I now have 50 goats."

5.1.3 Sale of animals

All the respondents sold their animals during the 2017 drought. Sale of animals was solely on need basis. Income from sale was used to meet needs such as food, medical bills, clothing and school fees. Income was also used to sustain animals in the fora and homestead and other income generating activities (IGAs) including petty trade and livestock trade. Majority of the animals sold were old and weak animals that would not survive the drought. There were also high sales of sheep and goats of the male species because they reproduce at a high rate. Small stock such as goats and sheep were sold to meet basic household needs such as food and clothing while large stock such as cows and camels were sold when there were more expensive and immediate needs such as school fees and hospital bills.

While sale of animals was a coping mechanism adopted to the drought by all the respondents, there was still massive loss of animals in the sites visited. Increase in sales volume at the time was attributed to the increased need to purchase food due to food shortages caused by the drought. Respondents reported that if there were no needs to be met, there was no need to sell animals. Therefore, the increase in sales was not in any way attributed to destocking or

reducing herd size to minimize loss of animals during the drought. Research revealed that respondents were reluctant to commercially offtake animals from their herds even after receiving EW information in 2017 as they were solely dependent on livestock keeping as their source of income. Respondents believed that if they sold all their animals they would not have any other means of sustaining themselves during the drought. Other reasons included the socio-cultural value of animals, perception of the EW information, herd accumulation as a risk management strategy and their perception of risk. These shall be further discussed in the subsequent sections.

Data also revealed that market functionality and accessibility affected the sale of animals during the drought. Formal markets existed in 4 of the sites visited including; Merille, Illaut, Marsabit and Turbi. These markets are considered functional as they attract numerous pastoralists, traders and even local business vendors during market days. In the other 2 sites visited, pastoralists sold animals locally, in the bush markets or had to trek all the way to Merille or Marsabit market, because the market in Kalacha was not functional whereas Kargi had no market. This presented a challenge for the pastoralists.

> *"We sell our animals in Merille market as there is no market here. It takes us 5 days to get there. We leave on a Thursday so that we can get there on Tuesday morning on the market day. It is very tiring to walk all the way to the market. Just the other day I could not make it to the market, I got to a place called Loglogo and I could no longer feel my feet. I told my neighbor to carry on walking with my animals and I took a bus and met them at the market the following day. I had to rest, the journey had become too much for me to handle. If I happen to get to the market past the market day, I would rather stay there with my animals and wait till the following week on Tuesday so I can sell my animals as opposed to walking all the way back with them to Kargi because of the distance."*

The distance from the market not only made it difficult for the pastoralists but by the time the animals got to the market they were weak and emaciated and would fetch a low price as prices were dependent on the weight and body condition of the animals. During the drought, the prices of animals also decreased due to the increased supply in the market.

NGOs and county government trainings and sensitizations have led to an increase in market utilization. Despite the dominant trend in respondents' reluctance to sell as elaborated above, there appears to be a change in attitude and behaviour towards sale of animals. In Merille, respondents attributed this change in attitude to the presence of a vibrant market and trainings conducted that emphasized the importance of destocking animals and reducing herd sizes to minimize loss during droughts. Sale of animals in Merille market was also rising due to the increase in number of pastoralists partaking in livestock trade[7] as an IGA. 100% of the female respondents from Merille revealed that more women were now taking part in livestock trade as opposed to in the past when only men engaged in the business. The presence of women in the market was also observed during the market day. The discussions also revealed the gender dynamics within the pastoral system which shall be further discussed in the next section. This was reported during the female FGD;

> *"Through the trainings and seminars we are empowered and we take the responsibility of livestock trade and save the money we get. We share this information with other women who also get involved in the sale of animals. Before, men were the only ones who were making these decisions - when and which animals to sell now however now the wife and husband often make a 'joint' decision regarding such matters".*

5.1.4 Herd management practises

Herd management strategies were used to minimize the risk of losing animals to the drought. During the 2017 drought, respondents reportedly split their herds into 3 groups. These comprised of animals that migrated to the fora, those that were sold in the market and those that stayed in the household to produce milk or were slaughtered for meat.

Another strategy adopted was the sale of both the weak and strong animals. While respondents were aware that healthier animals would fetch a higher price in the market, they

[7] Livestock trade involves the sale of animals (Little et. al, 2014). However respondents viewed livestock trade as different from commercial offtake of animals with regards to the animals that were sold. Respondents kept two 'separate' herds of animals; one that was considered as household livestock holding which they highly valued and was only sold to meet basic needs and another that formed the holding for the livestock traded; these were the animals that were bought and sold freely in the market.

reported that it would be unwise of them to sell all their healthy animals, as they would only be left with the weak ones that would not be able to survive the drought or trek long distances when they migrated. This strategy ensured that their animals survived the drought. Furthermore, income attained from the sale of animals was used to buy pasture and water for the animals that remained in the homestead and those in the fora.

The herd composition also changed during the drought period. Hardy animals such as goats and camels were preferred as they could better survive the drought. Some respondents mentioned that they sold off their male cows during the drought because cows cannot survive without eating or drinking water every other day, a feeding pattern that was hard to maintain during the drought. Preference was also given to sheep and goats as they are easy tend to and reproduce at a high rate. Older animals were also sold in the market and younger ones bought, as they would better survive the harsh climatic conditions to come and could manage to trek to the fora.

5.1.5 Herd accumulation

Research revealed that respondents managed their risk through herd accumulation whereby they worked towards growing their herd sizes during the normal period, prior to the drought to ensure that whenever the drought occurred, some of their animals survived. These are the animals that they would then use to grow the new herd. Herd size was increased by limiting the sale of animals and through the loaning system whereby respondents borrowed animals for the purpose of reproduction. This strategy proved to be vital because 100% of respondent stated that they rebuilt their herds from the animals that remained after the drought. Even though a large number of animals died from their herds, there were still some that were left and these formed the base for the new herd to grow. Respondents emphasized the importance of having a large herd size to curb against losing all their animals to the drought. Even though they knew that their animals would die because of the drought, they believed that the drought would not destroy their entire herd.

5.1.6 Reliance on God

Majority of the respondents reported that they prayed to God for rains to begin thus ending the drought. They also prayed for God to protect their animals which were their main source of livelihood. During a FGD in Kargi, the participants explained that in the past they would carry out cultural rituals such as slaughtering camels whenever the year of the drought was expected according to the Rendille calendar to keep the drought at bay. They expressed that at times the sacrifice would work while at other times it would fail as droughts were beyond their control. Though such rituals had decreased over the years, the importance of prayers was echoed by majority of the respondents.

5.1.7 Other coping mechanisms

Other coping mechanisms employed included partaking in IGAs such as petty trade and small businesses, reliance of food aid and borrowing of loans from women's Self Help Groups (SHGs). At the household level, the frequency and quantity of meals consumed in a day reduced with some families only eating once a day. Animals were also slaughtered and the fat and meat was stored to be consumed on a later date. Women and children also went out in search of pasture for feeding the animals that remained at the household, in some instances when pasture was not available animals fed on the fruits from acacia trees and grass from bird's nests. When the situation got dire, the animals ate the food that the household consumed such as cabbages mixed with animal salt licks and animal feeds that had been distributed by the county. All this was done to ensure that both the human beings and animals survived the food shortage caused by the drought.

5.2 Factors that determine the decision-making process of pastoralists:

The research revealed 5 key themes in understanding the decision-making process of the pastoralists which were predominantly based on the socio-cultural aspects of the pastoral system. These factors influenced the choice of the coping mechanism adopted by the respondents during the 2017 drought with the important ones being migration, reliance on social networks and sale of animals.

5.2.1 Gender dynamics

In order to understand the decision-making process within the pastoral system, one has to consider the gender dynamics. This is because all decisions regarding production activities are predominated by the males in society. Research revealed that there was a clear-cut division of gendered roles for men, women, boys and girls within the pastoral system.

The male head of the household owns all the animals. He is the one who makes all decisions regarding the animals including herd management practices, sale of livestock and migration. As explained earlier on, migration routes and patterns are determined by the community elders in the village with consultation of the males. In a situation whereby the husband has passed away, decision regarding livestock are made by the first-born male son who inherits all the father's belongings. The mother of the first-born son acts as the custodian of his property and can make certain decision about the animals while the child is young but stops when the child is 18 years as he can make his own decisions.

The woman is involved in managing the milk products. This process involves milking the animals to managing the household consumption to cleaning and preparing the containers milk is stored in before it is sold. Decisions regarding the management of the milk are left to the wife because the money got from those sales is used for household needs which is within the woman's domain. The woman also care for small stock including kids, lambs and calves and any other animals left in the household while the man has migrated to the fora. They can either search for pasture for the animals or take them to 'feed' nearby the homestead. However, despite this, they cannot make any decision directly regarding these animals more specifically with reference to selling them. Female participants spoke of how they would approach their husband with requests for money to buy food, clothing or school fees and they would discuss about it. During the discussions women would try to convince their husbands to sell the animals to get the money needed but claimed that though it was hard, it was all they could do because the final decision on sale always rests with the husband. This is what one of the women reported regarding the sale of animals:

"Given the chance, I would have sold majority of our animals in 2017. I would have reduced the herd size to avoid losing them to the drought. I would have saved up the money and used it later on to restock after the drought. However, this was not the case as the final decision to sell rests solely with my husband who equates the sale of animals to the loss of his property. My husband would not accept this by any means. In my opinion, I think this is because men are too proud to listen to the advice given by their wives. Moreover, livestock is a sign of wealth and respect in the Gabra community and my husband would rather keep his animals and lose them to the drought than sell them in the market and be seen as a 'poor man' by the community. He did not even listen when his elder sons who are educated told him to sell his animals. So, we did not sell our animals and in the end we lost 15 cows and 150 goats to the drought; such a waste I wish we would have sold them!"

Interestingly, women do not own any livestock at all, this includes the camel that they are given by their father as a gift during the wedding festivals that is part of a widely practised culture. Female participants claimed that once they were married the animal seized to belong to them and 'officially' belonged to the husband therefore they could not make any decisions regarding that specific camel. During a FGD, one of the women said:

"During wedding ceremonies, women are gifted a camel by their father, even though I own that particular animal, I have no say whatsoever on what happens to it after I step into my new household. At that point, it belongs to my husband and he can do as he pleases, he can even sell it without consulting me. Whatever belongings you go with to the new household cease to be yours and belong to the husband; you also become part of the property they own – and they will all be inherited by the first-born son when the husband dies. This is part of our culture."

Boys and girls assist their parents to take care of the animals. The pastoral system is a labour-intensive production system and therefore children assist in tending to the livestock especially during the drought.

Such gender dynamics affected the decision-making process during and after the 2017 drought. The patriarchal nature of the communities interviewed means that all females were 'automatically' locked out of the decision-making process. This meant that more than 50% of the population that was directly affected by the drought could not make decisions concerning their livelihoods and had to depend on their male counterparts to do so.

5.2.2 Risk perception

Data collected enabled me to understand how pastoralist in Marsabit County perceive risks, especially with the recurrent droughts. Respondents perceived drought as a risk due to the adverse effects it had in the sites visited including; death of livestock, lack of water and food scarcity. To cope with the drought, the mechanisms discussed above were adopted. Data revealed that the perception of the risk by respondents greatly informed and influenced the decision-making process. These risk perceptions were based on the experience of previous droughts and reliance on God.

5.2.2.1 Normalization of droughts

> *"Drought has been the norm since the time of our ancestors. Drought is part of life for pastoralists. I do not fear the drought, that's part of God's doing."*

As noted above, the research takes place in the context of the recurring droughts. Findings revealed that respondents had come to a point whereby they had normalized the droughts. As it is, the pastoral system is 'structured' to respond to the harsh conditions in the ASALs therefore pastoralists have adopted to living in such climatic conditions. Respondents reported that this was made possible through the EWSs that enabled them to predict seasonal weather patterns and coping mechanisms such as migration that helped them to cope with the droughts. Having experienced many droughts, the respondents expressed that they were 'used' to the disruption of life and the loss resulting from the droughts and the 2017 drought was no different.

"We are used to droughts; they come and go – some animals die and some survive as usual. In fact, let me tell you, the drought before this one in 2011 was much more severe. We were very scared and thought that not only would all the animals die but human beings would also die but as you can see we survived the drought and were able to grow our herds back to their 'original' size before we got hit by the next drought."

5.2.2.2 Reliance on God

Data revealed that God plays a vital role in how pastoral community perceive risks. All the respondents referred to God when discussing their experiences during the 2017 drought. This determined how they perceived the EW information as well as the coping mechanisms they adopted in response to the drought.

Even though respondents had received the EW information before the drought, from either the traditional or formal EWSs, they reportedly found it hard to believe because it was predicted by human beings and as far as they were concerned, only God who possess the true knowledge of what is going to happen in the future and controls all events. This was compounded by the fact that the information given from both sources was not always reliable. While respondents expressed varied levels of trust in the EWSs, interestingly when asked which information they considered more reliable, majority of them led with the response:

"I only believe in God and hope that it will rain."

Furthermore, as discussed in the previous section, prayer was amongst the coping mechanisms adopted by the respondents. Respondents' believe in God was echoed as they discussed God would protect their animals even in the event of a drought.

"Drought is a phenomenon from God, we have no control over it and we therefore can't stop it. God created all the animals, there is no way God would let the drought kill all the animals at one go no matter how severe it is. And even if it did, I am not worried because it is the same God who gives, who takes away so God will provide."

5.2.3 Value of livestock

Throughout the research period, the value of livestock to pastoralists could not have come across more clearly. Livestock is vital to pastoralists as it has both economic and socio-cultural value. The value of livestock was articulated during the interviews in light of the decision to sell animals during the drought. As mentioned in section 1, respondents were reluctant to commercially offtake animals from their herds in 2017. Research revealed that the value of animals was far greater to the respondents that they reportedly chose to keep their animals and risk losing them to the drought as opposed to selling them in the market and minimize their losses. Especially because there was the option of restocking their herds from the market after the drought.

5.2.3.1 Economic value:

All the respondents were pastoralists, meaning that their main source of income was derived from sale of livestock and livestock products. The sale of livestock is solely based on needs and not for maximizing profit. All other forms of IGAs including livestock trade and petty trade were conducted to supplement their main source of livelihood. Livestock acted as a form of capital. Respondents reported that the capital used to start the IGAs came from the sale of animals. Income got from the sale of animals would also be used to sustain those businesses. Animals are also considered as 'cash at hand'. Some respondents mentioned how on occasion they would use animals for trading. Though this was more widespread in the past, they pointed out that this occasionally happened when they were in the fora and lacked cash at hand. Animals would be used for barter trade. On several occasions, the respondents also referred to their animals as 'banks', as the animals acted as their savings account especially because access to banking services was limited in the area.

5.2.3.2 Socio-cultural value:

> *"These animals are my life. I cannot imagine a life without my livestock, since I was born all I have ever known is livestock."*

Research revealed the strong connection that the pastoralist have with their animals. The respondents repeatedly mentioned that livestock was their life. To them, livestock keeping was more than just a means of livelihood; it was a lifestyle that had been passed down from their ancestors. Respondents could not fathom the idea of selling off all their animals no matter how severe the drought was as this would mean losing part of their identity and sense of belonging within the pastoral community.

Animals are also considered important as they strengthen the social ties within the community through the gifting and loaning process. By assisting each other in times of need such as the drought, the social cohesion of the communities is increased. Furthermore, livestock is required for social obligations. There is no cultural ceremony that can take place without the slaughter of animals. During ceremonies and rituals such as weddings, funerals and births; the community celebrates and contribute animals to be slaughtered with the meat being shared out to all community members. Of more importance was the camel. During weddings camels are given off as a form of dowry which helps to strengthen social ties between the two families united by marriage.

Livestock is also considered a sign of wealth and prestige, which commands respect in the community. The more livestock an individual owns the more respects he commands from the community. Respondents shared that wealth was dependent not only on the size of one's herd but also the species and gender of animals owned. Interestingly, respondents emphasized the physical manifestation of wealth as the measure of wealth. According to pastoralists individuals were perceived to be wealthy if their wealth was visible i.e. the livestock; meaning that even if one had money or savings in the bank, he was not considered to be wealthy.

> *"If I sell all my animals and save the money in the bank I will lose my 'dignity' and respect from the community because I will be viewed as a poor man, as I have no animals/wealth. No one can see the money that I own in the bank. Animals are a sign of wealth and I would not sell all my animals no matter how severe the drought is; furthermore, the community would disapprove of this – it is against our culture to sell off all our animals."*

Livestock is also invaluable as it is the main source of food. The meat, milk and blood of an animal are consumed and form part of a nutritious diet. During the drought, respondents reported that the quality and quantity of meat and milk consumed reduced due to the death of livestock.

5.2.4 Perception of banking systems

Respondents reported that they did not sell their animals during the drought as they were not aware of how to manage their money. They pointed out that if they made sales they would end up spending all their money and misusing it within a short period with some respondents claiming that they did not save their money in the bank as they had no trust in the banking systems. Furthermore, access to banking services was limited in the sites visited. Some respondents stated that even if they decided to sell their animals and save the money, they did not have the right knowledge or skills to identify investment opportunities they could engage in. Moreover, they stated that living in highly marginalized areas meant that they would only get minimal returns on the investments made for example if they decided to build a hotel. This meant that they could only rely on their livestock for their livelihoods hence their reluctance to sell during the 2017 drought.

5.2.5 EWSs

At first, almost all most respondents claimed to not have known that there would be a drought in 2017 however after further prodding, they started to talk about the signs they witnessed including; the failure of seasonal rains, drying of shallow wells, livestock deaths and decrease in pasture. Furthermore, research revealed that the pastoralists were aware that there was an impending drought due to the existence of both the traditional and formal EWSs.

In 2017, 100% of the respondents mentioned having got the EW information from traditional EWSs. While these systems slightly differ within the 3 communities interviewed, they are based on the existence of local experts who can predict events including conflicts and weather patterns. The experts possess knowledge that has been passed down from generation to generation and get their information through various ways such as observing constellations,

reading intestines of slaughtered animals, looking at a pair of shoes and having visions and dreams. The predictions were then shared with community elders who passed the message onto the community members through public barazas or to the males during the daily informal evening meetings held in the villages who then shared the information at the household level. Furthermore, all respondents stated that they spread the information to other community members once they received it ensuring that everyone had access to the information and prepared for the drought.

Respondent reported that the information they received from local experts was often detailed with regards to the time drought would occur, time span of the event and severity of the drought in terms of livestock deaths. However, majority of respondents could not pin point the exact time which they first received the EW information prior to the drought because some of them could not remember when they heard the information. Additionally, respondents explained that local experts would share the information at any time which they 'got' the predictions, therefore there would be no 'predetermined' time for sharing the information. Responses on when information was received from traditional EWSs ranged from one year all the way to one month, with more respondents estimating to have heard the information 3 to 6 month ahead of the drought.

Additionally, respondents also mentioned getting early warnings from observing their local calendars. Communities such as the Gabra and Rendille have calendars that have been used to predict the weather patterns since time immemorial. Respondents explained that they were able to predict the drought as certain years in their calendar were known to be drought years.

As for the formal EWSs, respondents mentioned that the main source of information was the radio. EW information was received from radio programmes and weather forecasts that were transmitted in Swahili or the local dialects through radio stations such as Radio Jangwani, Sifa and Star FM. This ensured that the message had more reach as more individuals could understand the information. However, access to this information was limited to those who owned radio devices. While most of the respondents did not know who hosted the radio programmes, there was mention of NDMA, the county government and FH as some of the

organisation that disseminated EW information. Information received included the weather forecast and drought warnings with pastoralists being advised to reduce their herd sizes to minimize losses during the drought. Similarly, majority of the respondents could not recall when they first heard the EW information from the radio.

Furthermore, there was mention of also getting such information through seminars and workshops conducted by NGOs, the county government and NDMA, though few respondents mentioned this. According to the respondents, such programs were available to individuals who lived in the sites that were easily accessible by road and that those who resided in the 'remote' areas were rarely reached by this information including those who were in the fora at the time. KIIs with NDMA officials revealed that the agency worked through community committees however none of the participants in the sample size were members of the committees or had been involved in the data collection and dissemination of EW information within their villages.

Research revealed that the perception of the EW information differed depending on the reliability of the information received. Information received from both the traditional and formal EWSs was perceived to be inaccurate and unreliable on certain occasions because the predictions made did not happen. Equally, risk perceptions influenced by normalization of droughts and reliance in God played a role in how the information was perceived as explained above. Despite this, more than three quarters of the respondents expressed their trust in the traditional EWSs stating that it was more reliable compared to the formal EWSs. The rest of the respondents expressed their trust in the formal EWSs while only a handful of respondents claimed to trust neither the formal nor the traditional EWSs as both of them were not reliable based on their experience with the systems. One of the respondents shared her thoughts on this:

"About 10 years ago my brother called me from the US warning me that the meteorological department had predicted that there would be El-nino; the same was being broadcasted on the radio. My brother advised me to sell my livestock and prepare myself however, these predictions were wrong and instead of rain, there was a drought and I lost my livestock to the drought. Personally, I do not believe any of the information I get from either the traditional or formal EWSs, as it is not reliable. I only believe in God".

While the EW information was used differently by everyone, respondents claimed to have taken action and made decisions which helped them prepare for the drought on receiving the information either through the formal or traditional EWSs. Whereas the respondents adopted the various coping mechanisms discussed in section 1, it was difficult for respondents to determine the point at which these mechanisms were adopted. With the pastoralists adapting to the frequency and intensity of droughts in the ASALs, respondents stated that some of the coping mechanism were not only adopted during the drought but generally at all times. For example migration, herd accumulation and herd management practices which were carried out even during normal period. The sale of livestock was also continuous process because reasons for sale were driven by needs and not by the fear of the drought. Moreover as mentioned above, majority of respondents could not recall when they first received the EW information and hence did not know at what point of the drought they took the actions mentioned above. Given that the effectiveness of EWSs is based on its timeliness and reliability, data collected was unable to clearly establish the impact of the EWSs to the decision making process of pastoralists.

The research findings in this chapter shall be discussed in the subsequent chapter.

Chapter 6

6 Overview

"The fundamental resilience of pastoralism as a production system; is that it has allowed people to survive and even thrive in difficult production environments for centuries and even millennia" (Little and McPeak, 2014). To better understand the resilience of the pastoral system, the research set out to; (I) shed light on the coping mechanisms adopted by pastoralists (II) identify factors that determine the choice of the coping mechanism adopted and (III) identify how indigenous/traditional and formal EWSs influence the choice of coping mechanisms adopted by pastoralists in the context of recurring drought. To meet these research objectives, research was conducted in Marsabit County with the aim of collecting personal experiences of drought affected men and women through narratives focussing on the 2017 drought. This chapter reflects on findings of the field research in the light of the available literature. The SL conceptual framework will be adapted and used to understand the coping mechanisms and their determinants. Discussions will focus on areas where field research findings agree with the current literature and areas where new contributions to the literature will be made.

6.1 Discussion

DFID's SL Framework discussed in chapter 3, was adapted to analyse the findings. The framework allowed me to focus on livestock as financial, physical and social assets within the pastoral system and shed light on the factors affecting the decision making process of the pastoralists within the context of recurring drought. These factors in turn influence access to livestock and determine the coping mechanisms adopted in response to the droughts as illustrated below.

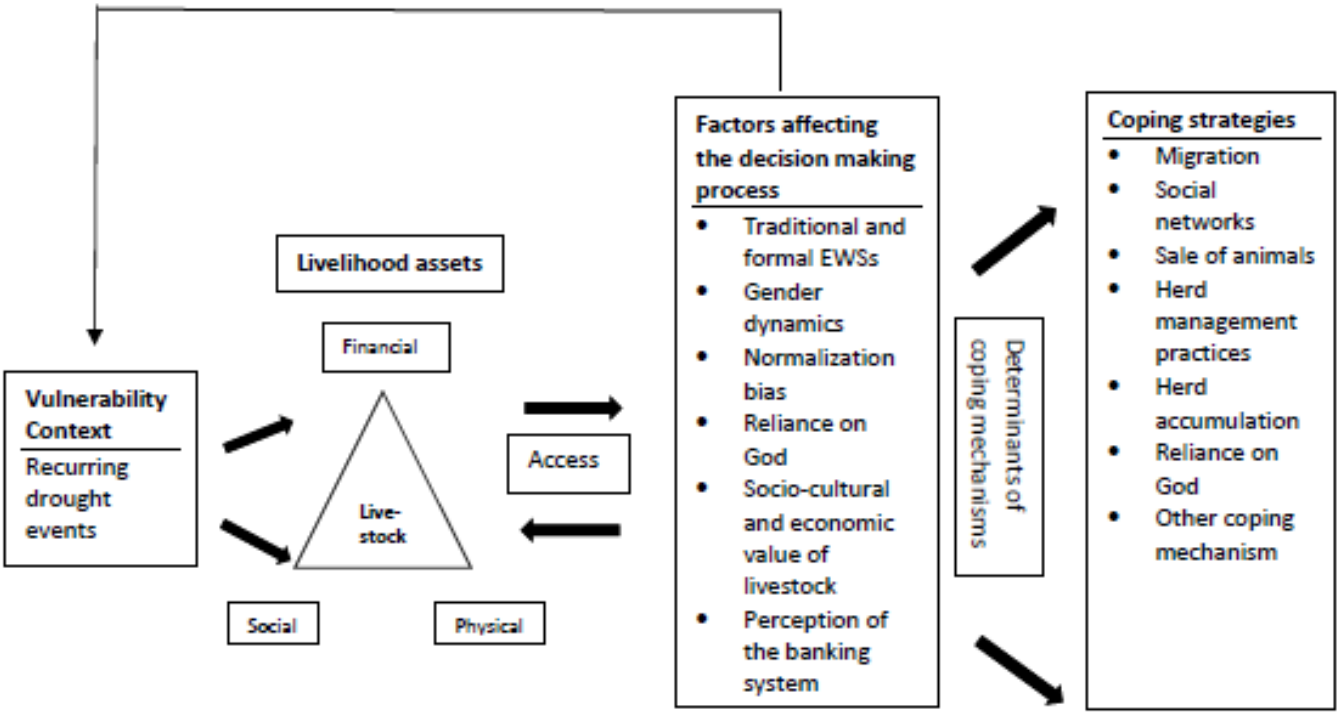

Figure 6: The adapted form of DFID's sustainable livelihoods framework (Carney et al., 1999 p9).

With regards to the SL Framework, findings revealed 3 major factors including; gender dynamics, risk perception and value of livestock that had a direct impact on access to assets and the decision-making process for pastoralists during the 2017 drought. These 3 elements shed light on the pastoral rationale and provide new insight aimed at building on the existing pastoral literature.

6.1.1 Gender dynamics

A key element of the pastoral system is gender dynamics. Pastoral communities exhibit complex relationships between men and women that define their highly gendered roles, rights and responsibilities; with livestock assets predominantly owned by males in society who control the decision-making process (Bahta et. al., 2016; Deressa et al., 2010; Eneyew and Mengistu, 2013; Rota et. al, 2009). Data collected confirmed the findings of the literature. Within the 3 communities interviewed i.e. the Gabra, Rendille and Samburu; livestock assets were predominantly owned and controlled by the males in society. This meant that essentially all decisions made regarding the coping mechanisms were made by the men with women

being ‘locked out’ of the decision-making process because they did not own any livestock. This was with the exception of female-headed households where the woman acted as a custodian for the property the first-born son inherited from the father till he was 18 years old.

While this was the dominating trend field research revealed new insight. In Merille, one of the sites visited, the pastoralists shared that there had been increase in women partaking in livestock trade. Several women traders were also observed during the market day. The women and men attributed these notable changes to increased sensitizations and trainings by organisations that had a two-fold effect on the society; by empowering the women to be more involved in livestock trade and promoting market utilization and sale of animals to minimize losses during the drought. According to the women in Merille, this meant that the sale of animals was now based on a ‘joint’ decision making process between the husband and wife, with the wife’s opinion being taken into consideration unlike in the near past when it was disregarded. The emergence of this trend though only observed in one of the research sites provide evidence of the positive impact of capacity building initiatives targeted on building the resilience of pastoralists through attitude and behaviour change interventions carried by organisations.

6.1.2 Risk perception

Through the field research, I was able to identify 2 new themes contributing towards the existing literature on perception of risks by pastoralists in the context of recurring drought. The themes discussed below did not emerge from the literature reviewed but were evident from the field research.

1. Data collected revealed that the normalisation bias influenced the decision-making process of the pastoralists in response to the droughts. According to pastoralists, the normalization bias was as a result of the increased frequency and severity of drought events in Marsabit that had led them to normalize the drought events. With this understanding, drought had become an inherent part of the pastoral system with coping mechanisms being embedded within the system and adopted at both normal times and drought periods to ensure its survival. Coping mechanisms such as migration, reliance on

social networks, herd management practices and herd accumulation were adopted before, during and after the 2017 drought. Additionally, they were not adopted in isolation but as a combination of strategies. According to pastoral rationale, the adoption of these mechanisms would not only ensure that the herd size increased so as to meet subsistence needs and socio-cultural obligations during normal times; but also absorb the shock in the event of a drought in a manner that would ensure that some of the livestock survived post-disaster. Pastoralists also revealed that they were able to deal with the uncertain climatic conditions of the regions they inhabited due to the EWSs that enabled them to predict seasonal weather patterns.

2. Reliance on God influenced the pastoralists' decision making process as it informed their perception of risks and the EW information. Data collected indicates that pastoralists were well aware that droughts were a real threat however, they were not afraid of the drought because it was a phenomenon from God and they trusted that God would protect their livestock; this in turn informed their decision to pray. Prayer was adopted as a coping mechanism during the 2017 drought with pastoralists praying for the rainy season to start and for God to protect their livestock. Reliance on God impacted how pastoralists perceived the EW information they received from both the traditional and formal EWSs. Data collected revealed that pastoralists perceived both sources of EW information to be unreliable as it was predicted by human beings who have no control over drought events. Pastoralists emphasized that only God has control over natural events and that he would protect them during drought. This in turn had implications for my third research objective that sought to look into EWSs thereby informing the section on further research discussed below.

6.1.3 Value of animals

As discussed in the previous paragraphs, the combination of coping strategies adopted before, during and after drought ensured survival of herds after the 2017 drought. Field research revealed that while pastoralists sold their animals, this was not for the purpose of reducing herd size or destocking to minimize loss of livestock. Sale was solely based on needs such as food, clothing, medical bills and school fees; with increase in sales volume attributed to the increased need to purchase food for both animals and humans due to food shortages caused

by the drought. Field research confirmed findings in the literature that indicates the reluctance of pastoralists to off-take animals from their herds during the drought (Little et. al., 2014; Nyariki et. al, 2005; Belle, et. al., 2017). However, while the existing research studies have identified the reluctance of pastoralists to destock, they have not done an in-depth analysis of their reluctance. Field research conducted delved into the reluctance of pastoralists to destock thereby providing new insight into the matter. In the light of the coping mechanisms identified, findings revealed the pastoral rationality towards choosing the mechanisms adopted during the drought, including sale of animals contrary to the assumptions made by the humanitarian organisations and government. Taking this into account, field research identified the following reasons for reluctance of sale from the pastoralist' perspective;

1. The existence of social networks. These networks provided pastoralists with access to a well-established gifting and loaning system that acted as a safety net and provided a mechanism that assisted them to restock their animals post- drought. Pastoralists also minimized loss of assets by spreading their risks to other households by loaning out their animals so they did not have to rely on markets to do so. Furthermore, animals such as camels were communally owned as a result of the gifting and loaning system. This prohibited recipients from selling the animals they received on loan as they were to be returned after a certain period of time.
2. Normalisation bias and reliance on God. As explained in the previous section, pastoralists do not fear the drought. They are used to the loss that comes as a result of the drought events and pray to God to protect their livelihoods therefore do not see the need to sell their animals to minimize loss.
3. Pastoralists consider the sale of animals as the loss of valuable assets. On several occasions the pastoralists revealed that the due to the socio-cultural and economic value they attached to their animals, they preferred to keep their animals and risk losing them to the drought as opposed to selling them in the market and minimize their losses. Selling their animals would mean a reduction in the herd size which goes against the pastoral rationale of keeping a viable herd size to cater to needs during normal times and ensure survival post-drought.

4. Lack of trust in the banking systems as well as limited access to banks in the areas where pastoralists resided meant that they had no means of saving their money after making sales.
5. Lack of functional markets and distance proved to be limiting factors towards sale of animals as this was the case for 2 of the sites visited with pastoralists having to trek long distances to access markets.

Further research:

While the increase in household income and level of education have a positive correlation with the decision to sell animals (Deressa et al., 2010; Belle et. al., 2017; Little et. al, 2014; Barret et. al., 2004), field research was not able to establish the impact of both education and wealth on pastoralists' decision making process. This was as a result of the sample size not being representative enough to draw tangible conclusions. Further research would have to be conducted with regards to the impact that education and wealth dynamics have on the coping mechanisms adopted by pastoralists in the context of drought.

My third research question sought to see how indigenous/traditional and formal EWSs influenced the choice of coping mechanisms adopted by pastoralists during droughts. Data collected revealed that pastoralists used the EW information they received from both the traditional and formal EWSs to prepare for the 2017 drought by adopting the coping mechanism discussed in the findings chapter. This corroborates with the findings of Akwango et. al. (2016) and Mengitsu and Haji (2015) that pastoralists use EW information to make viable and informed decisions about the coping mechanisms they choose to adopt in order to prepare for and mitigate the negative impacts associated with droughts.

Though the data collected was reflective of findings in the literature, it was not able to establish exactly how the EWSs influenced the choice of coping mechanisms adopted. This was attributed to three major factors; firstly, the respondents could not recall when they first heard the EWS information and hence did not know at what point before or during the drought they adopted the various coping mechanisms. Secondly, the normalisation bias as discussed in the earlier section, that saw pastoralist engage in various coping mechanisms during drought and normal periods. And thirdly the perception of the EW information as

informed by the reliance on God that had a direct influence on how the information was used with majority of the pastoralists perceiving the information from sources to be unreliable. Given that the effectiveness of EWSs is based on its timeliness and reliability, further research into the topic is needed to ascertain whether the existing EWSs are beneficial to the pastoralists in prompting early response and early action.

6.2 Conclusion

Research conducted in Marsabit County sought to explore the coping mechanism adopted by pastoralists and identify the factors that determine the choice of coping mechanisms adopted in response the 2017 drought. The aim of the study was to contribute towards existing literature on the pastoral discourse by shedding light on the pastoral rationale within the context of recurring drought.

Findings revealed that the choice of coping mechanisms adopted by pastoralists was directly influenced by factors including; gender, risk perceptions, value of livestock, perception of the banking system and EWSs. Further investigation of these elements revealed new insight into the pastoral rationale that informed the choice coping mechanisms adopted by pastoralists in response to the drought. Underpinned in cultural practices, this rationale has been perpetuated over generations within the pastoral system. It demonstrates the rationality behind the action and decisions taken by the pastoralists to cope with the harsh environments they inhabit to protect their livelihoods.

From the findings, field research was able to provide new insight into the pastoral discourse focussed on coping mechanism informed by the pastoral rationale. Additionally, field research acknowledges the existing capacities of pastoralists and highlights the need to adopt a culturally sensitive lens when engaging with them. This understanding enables efforts channelled towards building pastoralists' resilience to the recurring droughts to have far greater positive impacts especially in light of future climate changes.

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Appendices

Appendix 1

Field-work schedule

Site	Date	Data collection
Marsabit	9th to 12th July 2018	Attended Risk & Resilience Integrated Strategy Creation (RISC) Process: FH-Kenya Workshop
Merille	16th July 2018	Semi-structured interviews with pastoralists (2F, 1M) 1 KII with LMA Chairman
	17th July 2018	Semi-structured interviews with pastoralists (1F) Male FGD (6 participants) Female FGD (10 participants) 1 KII with Merille Assistant Chief
Illaut	18th July 2018	Semi-structured interviews with pastoralists (1M) Male FGD (9 participants) Female FGD (8 participants)
Marsabit: Karare	19th July 2018	Semi-structured interviews with pastoralists (3M)
Marsabit	20th July 2018	Male FGD (6 participants)
Kalacha	24th July 2018	Semi-structured interviews with pastoralists (1M, 1F) Male FGD (6 participants) Female FGD (7 participants)
	25th July 2018	Semi-structured interviews with pastoralists (2M, 2F)
Turbi	27th July 2018	Semi-structured interviews with pastoralists (3M, 1F) Male FGD (10 participants) Female FGD (6 participants) 1 KII with Sub-county Livestock Production Officer
Kargi	1st August 2018	Male FGD (7 participants) Female FGD (6 participants)
Marsabit	2nd August 2018	Attended NDMA Marsabit County Early Warning Mapping Workshop 2 KIIs with NDMA Officials
Marsabit	3rd August 2018	1 KII with FH Field staff
Phone Interviews	10th August 2018	1 KII with Sub-county Livestock Production Officer 1 KII with NGO Market and Business Officer

Appendix 2
Pictures

Risk & Resilience Integrated Strategy Creation (RISC) Process: FH-Kenya Workshop

NDMA Marsabit County Early Warning Mapping Workshop

NDMA Drought status flags that are hoisted in selected schools and public offices within Marsabit County.

Female FGD in Merille

Female FGD in Turbi

Female FGD in Illaut

Kalacha Women's SHG pasture reserve

Male FGD in Illaut

Participants of Male FGD in Kargi

Participants of Male FGD in Merille

Male FGD in Turbi

Merille Market Day (Tuesday) – Cattle yard

Women collecting animal feeds distributed by the Marsabit County government on market day

Female vendors and livestock traders on Merille market day.

Women livestock traders selling on the roadside as the markets had been shut down due to the Rift Valley Fever (RVF) outbreak.

Jirime market structure

Open air market in Karare (Marsabit)

Bush market at the watering point in Kalacha

Appendix 4
TDE E1 Form

OXFORD BROOKES UNIVERSITY

Faculty of Technology, Design and Environment - Ethics Review Form E1

- This form should be completed jointly by the **Supervisor and Student** who is undertaking a research/major project which involves human participants.
- It is the **Supervisor** who is responsible for exercising appropriate professional judgement in this review.
- Before completing this form, please refer to the University **Code of Practice for the Ethical Standards for Research involving Human Participants**, available at http://www.brookes.ac.uk/Research/Research-ethics/ and to any guidelines provided by relevant academic or professional associations.
- Note that the ethics review process needs to fully completed and signed **before fieldwork commences**.

(i) **Project Title:** How the pastoral livelihood systems and Early Warning Systems (EWS) determine the decision making process to respond to livestock marketing opportunities in the context of recurring drought.

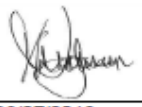
(ii) **Name of Supervisor and School in which located:** Supriya Akerkar; CENDEP

(iii) **Name of Student and Student Number:** Leah Wainaina; 17034035

(iv) **Brief description of project outlining where human participants will be involved (30-50 words):**
The project seeks to understand the factors that determine the decision-making process of pastoralists to off-take livestock in the markets. The project will therefore seek to gain this information through qualitative interviews administered to pastoralists so as to understand their views and opinions with regards to livestock marketing opportunities.

		Yes	No
1.	Does the study involve participants who are unable to give informed consent (e.g. children, people with learning disabilities)?	☐	☒
2.	If the study will involve participants who are unable to give informed consent (e.g. children under the age of 18, people with learning disabilities), will you be unable to obtain permission from their parents or guardians (as appropriate)?	☐	☒
3.	Will the study require the cooperation of a gatekeeper for initial access to groups or individuals to be recruited (e.g. students, members of a self-help group, employees of a company)?	☐	☒
4.	Are there any problems with the participants' right to remain anonymous, or to have the information they give not identifiable as theirs?	☒	☐
5.	Will it be necessary for the participants to take part in the study without their knowledge/consent at the time? (e.g. covert observation of people in non-	☐	☒

	public places?)		
6.	Will the study involve discussion of or responses to questions the participants might find sensitive? (e.g. own traumatic experiences)	☐	☒
7.	Are drugs, placebos or other substances (e.g. food substances, vitamins) to be administered to the study participants?	☐	☒
8.	Will blood or tissue samples be obtained from participants?	☐	☒
9.	Is pain or more than mild discomfort likely to result from the study?	☐	☒
10.	Could the study induce psychological stress or anxiety?	☐	☒
11.	Will the study involve prolonged or repetitive testing of participants?	☐	☒
12.	Will financial inducements (other than reasonable expenses and compensation for time) be offered to participants?	☐	☒
13.	Will deception of participants be necessary during the study?	☐	☒
14.	Will the study involve NHS patients, staff, carers or premises?	☐	☒

Signed:		**Supervisor**
Signed:		**Student**
Date:	06/07/2018	

What to do now:

1. If you have answered **'no'** to all the above questions:
   (a) The student must **send** the completed and fully signed E1 form to their **Dissertation Module Leader.**
   (b) The student must keep a copy of the E1 form which must be bound into their dissertation as an appendix.
   (c) The supervisor must keep a copy of the E1 form as they are responsible for monitoring compliance during the fieldwork.

2. If you have answered **'yes'** to **any** of the above questions:
   (a) The supervisor and student must complete the TDE E2 form available at http://www.brookes.ac.uk/Research/Research-ethics/Ethics-review-forms/
   (b) Note that the information in the E2 must be in **sufficient detail** for the ethical implications to be clearly identified.
   (c) The signed E2 and signed E1 Form must be emailed to Bridget Durning (bdurning@brookes.ac.uk) who is the Faculty Research Ethics Officer (FREO) for review. Please allow **at least two weeks** for this review process.
   (d) If/when approved the FREO will issue an E3 Ethics Approval Notice.
   (e) The student must send the E1, E2 and E3 Notice **to the Dissertation Module Leader.**
   (f) The student must also keep copies which must be bound into their dissertation as an appendix.
   (g) The supervisor must keep a copy of documentation to monitor compliance during field work.

3. If you answered 'yes' to any of questions 1-13 and 'yes' to question 14, an application must be submitted to the appropriate NHS research ethics committee. This is an onerous and time consuming process so the supervisor should liaise early with the FREO if the student is considering this.

TDE E2 Form

OXFORD BROOKES UNIVERSITY

TDE Form E2

Faculty of Technology, Design and Environment

Ethics Review Form E2

This form is only for graduate (MSc) and undergraduate students on taught programmes. Before completing this form, Form E1 should have been completed to establish whether a Form E2 is required.

The E2 Form should be completed by the Principal Investigator / Student undertaking the research. Reference should be made to the University **Code of Practice for the Ethical Standards for Research involving Human Participants**, available at http://www.brookes.ac.uk/Research/Research-ethics/, and to any guidelines provided by relevant academic or professional associations.

Please complete the form and email it and the E1 form to the TDE Faculty Ethics Officer (Bridget Durning – bdurning@brookes.ac.uk). Please ensure this is done well in advance of fieldwork as ethics approval is needed before data collection can commence.

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1. Name of Principal Investigator / Supervisor: . . . . . .Supriya Akerkar . . . . . .

2. Name of Student: . . . . . Leah Wainaina . . . . . .

3. Department/School. . . . . CENDEP. . . . . .

4. Dissertation Module Number. . . . . P30399. . . . . ..

1. Project Title: . . How the pastoral livelihood systems and Early Warning Systems (EWS) determine the decision making process to respond to livestock marketing opportunities in the context of recurring drought.

   . . . . . .

   . . . . . .

2. Project Type:

MPhil	☐
Master's	√
Diploma	☐
Undergraduate	☐
Other (please specify)	. . . . .

7. Project funded by (if applicable): Food for the Hungry (FH)

5th January 2016

8. Summary of proposed research:

i) Pastoralists are often adversely affected by drought due to the nature of their livelihoods. When droughts occur, livestock is affected due to the scarce availability of pasture and water leading to low productivity, reduction in value of livestock and death. According to research carried out by FAO (2017), drought had the highest impact on livestock between 2005 to 2014 causing 86% of the total damages and losses in the sector with the largest impact attributed to the dry spells leading up to the 2011 drought in Kenya (USD 8.9 billion). Despite the existence of local markets and a well-functioning devolved Early Warning Systems (EWS) information availed to the pastoral communities in Kenya, pastoralists are quite reluctant to commercially offtake animals from their herds. Sale is often limited when income is needed to satisfy food and immediate needs regardless of the numerous benefits associated with livestock marketing for pastoralists. The purpose of the research is to understand how the pastoral livelihood systems and EWS determine the decision making process to respond to livestock marketing opportunities in the context of recurring drought.

ii) The aim of the dissertation is to understand the factors that determine the decision-making process of pastoralists to off-take livestock in the markets in the context of recurring drought. In order to meet the aim of the study, the following research questions shall be addressed:
   1. What is the role of livestock within the pastoral livelihood system?
   2. What are the social practices and norms held by pastoralists within the pastoral livelihood system?
   3. How are pastoralist practices affected by drought and what coping mechanism are adopted to ensure the survival of livestock?
   4. To what extent are the decisions of the pastoralists affected by the access to information with regards to available interventions, the market and indigenous/traditional and formal EWS.

iii) The research will adopt a qualitative methodology with the use of both primary and secondary sources of data. The secondary data will involve the analysis of both academic literature and grey literature including policy documents and survey data from the Kenyan government and NGOs working with the community in the area so as to develop the background of the study, inform the state of art and provide empirical evidence on the research topic. Primary data will be collected through field based research in Marsabit County in Northern Kenya from 9th July to 3rd August. Semi structured interviews with both open ended and closed ended questions will be administered to individuals so as to allow for the collection of the relevant information while leaving room to also capture individual's stories and testimonies on their experience with the pastoral livelihood system and marketing opportunities during the recent drought periods. Observation will also be used. The pastoralist will be observed with regards to how they interact with each other as well as their animals and traders in the market place. No video footage will be taken during this time. The general observations that will take place in public areas such as the market will allow me to understand the context of the research area and how the pastoralists socialize.

The interview schedule has not been completely confirmed however I have been in constant communication with FH, the NGO facilitating the field based research and we are working towards solidifying the schedule. The questionnaire to be used has been attached.

9. Participants involved in the research:

i) The main participants of the research will be pastoralists within the communities living in Marsabit County. Access to the area and participants will be facilitated by Food for the Hungry (FH). Although participants will be identified by FH, the participants themselves will be not primarily be the beneficiaries of the programmes implemented by FH but contacts of the NGO. Informed consent will be attained from all the participants so as to ensure that they are voluntarily participating in the research. While the interview schedule is yet to be confirmed, plans are to have a total of 15 face-to-face interviews and 10 focus group discussions (FGDs) which will have a representative sample of men, women and community leaders of various ages.

ii) Access to the research area and participants will be facilitated by FH.

10. Estimate of the risks and benefits of the proposed research:

5th January 2016

i) The nature of the research as well as the questions to be asked during the interview will not in any way have any adverse effects to participants including psychological stress and anxiety or cause any harm or negative consequences to those involved.

ii) As a humanitarian aid worker, I have undertaken the Advanced Field Training and Emergency Foundation Training courses which are designed to equip individuals with the right skills and knowledge to operate safely and effectively in challenging situations. I have also gone through the pre-departure safety and security briefing and have suitable travel insurance all of which were facilitated by FH. The research will be conducted in my home country Kenya. While there is small risk of diseases, road traffic incidents and security related incidents such as petty crimes and terrorism in the country, the research will be carried out in Marsabit County which is a safe place away from the capital city. Despite this, safety and vigilance will be adhered to at all times. The vaccinations received and good hygiene practices around care and preparation of food will minimise risk of diseases. Travel and accommodation will be provided by FH therefore ensuring safety and security while in the field. All activities undertaken will not be dangerous nor will they draw any attention to my presence in the area.

iii) The study will hopefully shed light on the decision making process of the pastoralists that limit them from taking advantage of the existing functional livestock markets in times of dire drought. The dissertation will hopefully add relevant knowledge onto the existing pastoral discourse and potentially be taken into consideration by organisations when designing policies and interventions that seek to promote the livelihoods of pastoralists who are the most affected by the recurring droughts.

11. Plan for obtaining informed consent:

i) Informed consent will be sought from all the participants who will take part in the research. Attached is consent form that will be used during the research. This shall be explained to all the participants, to ensure that it is well understood. As there will be a translator facilitated by FH, the information will also be relayed in the local language to ensure that participants understand what they are consenting to. Due to the nature of the research and the area where it will be carried out, written consent will not be used as the communities in the region are very wary of appending their signatures on formal documents. In order to put the participants at ease and not draw attention to what I shall be doing, only verbal consent will be used.

The Brookes consent form and participant information sheet to be used has been attached.

12. Steps to be taken to ensure confidentiality of data:

i) All the information collected including written material, audio files and transcriptions will be kept strictly confidential. Information will be uploaded and stored in the google drive to ensure that it is kept safely and securely. All the participant's names will be anonymised in the publications by assigning codes to each participant so that no one can tell who said what. Data generated in the course of the academic research will be kept securely in paper or electronic form for a period of ten years after the completion of a research project, according to law.

At a later stage, data collected including transcripts will be shared with FH, all the names and personal information of the respondents will be anonymised before the data is shared with FH. However, the data will only be shared with FH if the respondents consented to it at the time of the interviews.

ii) The results of the research will be published into a written dissertation that will be available in the Brookes' website and Library. Findings will also be shared with FH as they are the organisation that have facilitated and commissioned the research.

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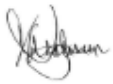
13. Signed: . . . . .  . . . . . Principal Investigator / Supervisor

Signed: . . . . .  . . . . . Student

Date: . . . . 06/07/2018. . . . . .

5th January 2016

TDE E3 Form

OXFORD BROOKES UNIVERSITY

Faculty Ethics form E3

Faculty of Technology, Design and Environment

Decision on application for research ethics approval

The Faculty Research Ethics Officer has considered the application for research ethics approval for the following research:

Project title:	How the pastoral livelihood systems and Early Warning Systems (EWS) determine the decision making process to respond to livestock marketing opportunities in the context of recurring drought.
Name & Department of Principal Investigator:	Leah Wainaina (School of Architecture)
Name of supervisor (if student):	Supriya Akerkar; CENDEP

Please check the appropriate box:

1. The Faculty Research Ethics Officer gives ethics approval for the research project. ***Please note that research protocol laid down in the application and hereby approved must not be changed without the approval of the Faculty Research Ethics Officer.*** [x]
2. The Faculty Research Ethics Officer gives ethical approval for the research project subject to the following: [ ]
3. The Faculty Research Ethics Officer cannot give ethics approval for the research project. The reasons for this and the action required are as follows: [ ]
4. The research will also require approval from:

   [ ] Another external Research Ethics Committee

Signed: S. Durmaj

Date: 9th July 2018