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Ruminants, Resilience and Poverty:

Assessing the Socioeconomic Role of Small Ruminants in the Pastoral Areas of Northeastern Uganda

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Abstract

Small ruminants (goats and sheep) are of great importance for the livelihoods of pastoralists, agro-pastoralists, and the small holder poor in rural Uganda. However, their socioeconomic role is often overlooked in the general statistics on rural and household economies. As a result, the global community and the national government of Uganda underinvest in the treatment and control of contagious small ruminants' diseases, like Peste des petits ruminant (PPR), leading to economic loss and impoverishment for pastoralists and the rural poor. This research assesses the role of goats and sheep in the household livelihoods of pastoralists in the Karamoja region, and the coping strategies of pastoralists in times of disaster, which can be brought on by livestock disease outbreaks, prolonged drought, and floods, among other things.

The research data was collected using unstructured and structured in-depth interviews with rural household members and with key development partners. Focus group discussions in the villages, participatory observation, and questionnaires were also used during data collection. The assessment was done using sustainable livelihood framework, coping, and resilience as lenses through which the role of small ruminants and coping strategies are understood.

The findings conclude that goats and sheep play significant roles in food security and household income generation. On top of the environmental role they play, small ruminants raise the social status of households in the community who are fighting against marginalization. Contagious diseases like PPR affect the reproduction and productivity of small ruminants and negatively affect the extremely poor households, keeping them in a cycle of poverty.

Keywords: Livelihoods, Pastoralists, Small Ruminants

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Abbreviations

CAHW - Community Animal Health Worker

CBPP – Contagious Bovine Pleuropneumonia

CCPP – Contagious Caprine Pleuropneumonia

FAO – Food and Agriculture Organization of the United Nations

FMD – Foot and Mouth Disease

FSI – Food Security Index

GHG – Growth Health and Governance

KIDDP – Karamoja Integrated Disarmament and Development Programme

MAAIF – Ministry of Agriculture, Animal Industry and Fisheries

MUK – Makerere University Kampala

OCHA – United Nations Office for the Coordination of Humanitarian Affairs

ODI – Oversea Development Institute

PPR – Peste des Petits Ruminant

SLU – Sveriges lantbruksuniversitet

SPSS – Statistical Package for the Social Sciences

TAD – Transboundary Animal Diseases

UBOS – Uganda Bureau of Statistics

WFP – World Food Programme

1 Introduction

Poverty, the world's greatest development barrier, has persisted in Uganda, especially the Karamoja region, as reflected in a Uganda Bureau of Statistics (UBOS) report (2016). Despite interventions launched by international non-governmental organizations (NGOs) and the government of Uganda, Karamoja, a region in the northeastern part of the country, still faces absolute poverty (UBOS, 2016). It is the only region in Uganda where the answer to the greeting, "How are you?" is *Akoru!*, which means "hunger". Generally, the infrastructure in the Karamoja region has improved within town areas, and many economic development activities are taking place. The social standards of living have improved. However, the improvement is limited to town areas among working groups from other ethnicities. The common Karamojong people are still very poor, especially those residing in villages.

The Karamoja region is occupied mainly by pastoralists who belong to the Karamojong ethnic group and speak the Nya'karimojong language. Karamojong pastoralists, though belonging to one ethnic group, comprise different clans sparsely distributed within the seven districts of Karamoja. Some of these clans are the Bakora, Matheniko, and Pian, inhabiting the Napak, Nakapiripirit, and Moroto districts (Mamdani, 1982). The Jie, Pokot, Tepeth, Dodoth, Ik, and Ethur clan occupy the districts of Kotido, Amudat, Kaabong, and Abim.

A report by the UBOS (2016) asserts that Karamoja is the country's poorest region, with 82% of its population living in poverty. The Karamoja region experiences frequent drought and unreliable rainfall, and has poorly nourished rocky soils that favour pastoralism and agro-pastoralism (Powell, 2010). The Karamojong, therefore, adapted to the livelihood options suitable for their habitat.

According to a recent study by Makerere University Kampala (MUK) and World Food Programme (WFP), the Food Security Index (FSI) of the people in Karamoja is estimated at 13.8% food secure, 40.8% marginally food secure, 31.8% moderately food insecure, and 14.1% severely food insecure (MUK & WFP, 2016). This means that nearly half of the population eats less than the required minimum level for a healthy diet and has limited or no access to sufficient, nutritious food.

The erratic climatic conditions, prolonged droughts, and livestock diseases are some of the challenges maintaining the cycle of poverty in Karamoja (MUK & WFP, 2016). According to the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and UBOS (2008), goats and sheep are adaptable to the arid and semi-arid climatic conditions in Karamoja, with the result that their numbers now exceed the number of cattle in the region. Peacock (2005) argues that the adaptive capacities of goats and sheep to arid and semi-arid conditions make them one of the best assets for subsistence, food security, and livelihood for small holder farmers. They provide significant means through which landless, small land owners, pastoralists, and agro-pastoralists can escape the poverty trap (Peacock, 2005). Although small ruminants are known to provide significant socioeconomic contributions, their role is often overlooked in the general statistics about rural household economies. As a result, the government of Uganda underinvests in the treatment and control of contagious small ruminants' diseases, leading to economic losses that devastate the livelihood of pastoralists and the rural poor.

This study therefore assesses the role of goats and sheep in the household livelihoods of pastoralists in the Karamoja region and the coping strategies of pastoralists in times of disaster, such as livestock disease outbreaks, prolonged drought, and floods. The study uses unstructured and structured in-depth interviews, focus group discussions, and participatory observation as means of understanding the role of small ruminants. The analysis is conducted using a sustainable livelihood framework, and the concepts of coping and resilience. Understanding the roles that goats and sheep play in the livelihood and food security of pastoralists significantly enables investment in the treatment and control of small ruminant diseases (De Haan, Kimani, Rushton, & Lubroth, 2015; Food and Agriculture Organization of the United Nations [FAO], 2013).

1.1 Research Problem and Relevance

The role played by small ruminants (goats and sheep) in the livelihood of pastoralists and small holder farmers is all but ignored in formal statistics of rural and household economies (FAO, 2013). Small ruminants are exchanged for crops in many pastoralist communities, and used for ceremonial purposes and for paying traditional doctors (De Haan et al., 2015). In the case of disease outbreaks in small ruminants, the global community underinvests in the treatment and control of such outbreaks since their socioeconomic role is often neglected (FAO, 2013).

Between 2007 and 2008, Peste des petits ruminants (PPR), a *Morbillivirus* disease in the family of *Paramyxovirodae* that affects goats and sheep was diagnosed in the Karamoja region (FAO, 2010; Mulindwa, Ruhweza, Ayebazibwe, Mwiine, Muhanguzi & Mukani, 2011). The disease causes fever, sudden depression, nasal and ocular discharge, diarrhea, and occasional death for small ruminants (Mulindwa et al., 2011; Muse, Karimuribo, Gitao, Misinzo, Mellau, Msoffe, Swai & Albano, 2012). PPR is acute and highly contagious and has significant economic, food security, and livelihood impacts (De Haan et al., 2015). The percentage mortality rate of PPR is estimated between 10 and 100 percent and the morbidity rate is between 50 and 100 percent (FAO, 2013). Severe weight loss, reduced milk production, and reduced reproductive capacity are the morbidity losses resulting from PPR disease (FAO, 2013).

The disease was first diagnosed in the 1940s in the Ivory Coast, although the first recognition dates to 1987 in India and subsequently in other regions in Africa, Asia, and the Middle East (Dhar Dhar, Sreenivasa, Barrett, Corteyn, Singh & Bandyopadhyay, 2002). The World Bank (2011) ranks PPR as the fourth most important disease of small ruminants based on the losses of livestock units. It was estimated that up to 40% of all goats in Karamoja had succumbed to PPR in 2007, leading to an estimated loss of 500,000 goats and sheep (MAAIF & UBOS, 2008). PPR disease cases were confirmed in the Turkana region of Kenya bordering Karamoja in 2015 (Misinzo et al., 2015), in Tanzania, Democratic Republic of Congo, and northern Angola (FAO, 2013; Misinzo et al., 2012). A serological survey done in the Karamoja sub-region in 2011 confirmed the presence of active infection and the

suspected spread of the disease to districts surrounding Karamoja (Mulindwa et al., 2011).

Considering the high virulence of PPR and transboundary movements of animals between Uganda and Kenya, the Karamoja region stands a very high chance of suffering another outbreak of PPR. The government of Uganda has not shown concern or investment in the control of PPR since the socioeconomic role of small ruminants in the livelihoods of pastoralists is often overlooked. It is therefore important to explore this phenomenon so that the government and other international institutions pay attention to the control of the fourth most important disease causing economic losses and food insecurity among pastoralists and the rural poor.

1.2 Research Purpose and Guiding Questions

This study assesses the multiple roles of small ruminants in the livelihood of pastoralist households in the Karamoja region of northeastern Uganda. The guiding questions are:

- What roles do goats and sheep play in the livelihood and food security of pastoralists?
- What coping strategies are employed by pastoralists in times of disaster (severe stresses to the small ruminant population)?
- How are coping strategies applied by pastoralists in times of disaster?

Considering that household assets other than livestock also play roles in livelihood enhancement, the above questions enhance the understanding of the role of small ruminants in comparison to other household assets. Pastoralists are known to keep cattle, goats, and sheep as well as other household assets, like land, that make up their livelihoods (Peacock, 2005).

1.3 Limitations and Research Gaps

As discussed in De Haan et al. (2015) and FAO (2013), the products from small ruminants are mainly used at the household level and are not

recorded in national statistics. Goat and sheep products follow informal marketing chains, and thus, are never reflected in the national data for rural and household economies.

Some of the reasons for the unrealized contributions of small ruminants are related to the lack of management and production skills of poor households, which could improve productivity. The pastoralists use a traditional free-range system of small ruminants' production which is generally less productive due to poor pastures and easy disease transmission (Peacock, 2005). There is also inadequate investment both by households and the national government in goat farming and production, especially in terms of disease control. Peacock (2005) remarks that the national government invests more on cattle, poultry, and pigs in terms of research, infrastructure, marketing inputs, and information. It is therefore important to assess the role of small ruminants in the households of pastoralists as one of the assets that contribute greatly to their livelihoods and food security.

1.4 Study Scope and Limitations

This study is limited to livelihood asset analysis with consideration that small ruminants are only a part of the many assets and activities that are employed by pastoralists to earn their living. The research is also limited by past records that could be used to explicitly validate the current role of small ruminants in the livelihoods of pastoralists. However, the actual statistical information given in this thesis is an estimate derived from the various interviews during this study.

The research context and review of literature is discussed in part two of this thesis. The conceptual framework is discussed in part three and the methodology and research data collection procedures are explained in part four. Part five outlines the empirical findings and analysis. Discussions and concluding remarks are presented in part six of this thesis.

2 Research Context and Literature Review

In order to understand the roles and contributions of small ruminants in the livelihood of households in Karamoja, this research employs sustainable livelihood framework (SLF). The framework enables an understanding of the different roles played by small ruminants as one of the assets for livelihood improvement. Pastoralists face external challenges like droughts, floods, pests, and diseases that affect their livelihood and call for coping strategies to manage these challenges locally. SLF recognises the influence of such challenges as external shocks that affect the livelihood options of the rural poor. SLF, therefore, presents a useful lens through which analysis of this phenomenon can be conducted.

2.1 Pastoralism as a Way of Life

Pastoralism is a way of life of people living in semi-arid climates that do not favour crop farming, but rather, engage in different livelihood activities like livestock keeping (Ginut & Khazanor, 1998). In Uganda, there exist agro-pastoralists who combine livestock and crop production and pastoralists who depend on livestock alone with seasonal movement from place to place in order to have access to water and pastures (United Nations Office for the Coordination of Humaniatarian Affairs [OCHA], 2008).

Historically, ethnic groups in Uganda are classified into the Bantu-speaking group (Baganda, Banyoro, Banyankole, Nkore, Batoro, and Busoga), who occupy the central, southern, and western parts of the country, and the non-Bantu speakers (Karamojong, Iteso, Lango, Acholi, Alur, Madi, and Lugbara), occupying eastern, northern. and

northwestern Uganda (Kagan, Pedersen, Ollech, & Knaute, 2008). The Banyankole and Banyoro are mainly cattle-keepers believed to be descendants of pastoralists who migrated from northeastern Uganda (Kagan et al., 2008). The pastoralists' community in Uganda, therefore, forms what is called a "cattle corridor".

The cattle corridor extends from the Karamoja sub-region in the Northeast through central Uganda to the southwestern regions of Mubende, Masaka Rakai, and Mbarara (MAAIF & UBOS, 2008). The FAO (2010), however, divided the Karamoja region into two agro-ecological livelihood zones: the Southern Karamoja Pastoral Livelihood Zone and the Northern Agro-pastoral Livelihood Zone. The first pastoral zone is a semi-arid zone that experiences prolonged dry spells and one rainy season from April to September (FAO, 2010). Parts of the zone, particularly the northern and southern, areas are covered by scanty shrubs, thorns, and other hardy plants. This zone covers the Moroto, Nakapiripirit, Amudat, and Napak districts. The main economic activity in this pastoral zone is livestock production (cattle, goats, sheep, poultry, and camels) (FAO, 2010). A free-range production system on communal grazing areas constitutes the mode of livestock production in this zone. The second zone, the Northern Agro-pastoral Livelihood Zone, is comprised of Abim, Kotido, and Kaabong, and produces sorghum, bulrush, and millet together with livestock (FAO, 2010). This zone is covered with scattered shrubs and acacia trees, and the most common type of soil is sandy loams and black clay soils (FAO, 2010). It has seasonal rivers, such as the Nabilatuk, Lolachat, Omaniman, and Lopei. The main economic activities are livestock and rain-fed crop production, especially sorghum, maize, millet, groundnuts, sunflower, cowpeas, and beans (FAO, 2010). Table 1 presents a seasonal activity calendar for pastoralists in Karamoja.

Table 1

Seasonal Activity Calendar of Pastoralists in Pastoral Livelihood Zone of Karamoja

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Activity												
Season (wet or dry)	*Dry*			*Wet*						*Dry*		
Livestock												
Livestock sales												
Birth (varies in small ruminants)												
Conception												
Milk production				*Peak*				*Low*				
Livestock migration	*Away*		*Home*		*Grazing around home areas*						*Away*	
Livestock disease incidence	*Low*			*High*					*Low*			
Crops												
Planting												
Weeding												
Harvest												
Income from harvest							*Green*					
Other activities												
Charcoal/firewood	*Peak*				*Low*							
Honey production			*High*						*Low*			
Labour migration												
Wild food consumption	*Fruits/nuts/hunting*			*Wild vegetables and white ants*								
Food purchase												
Hunger season												

Note. Adapted from author's interview field notes and participatory group discussions

2.1.1 System of Goat Production in Arid and Semi-Arid Climatic Conditions

Karamoja pastoralists mainly keep goats under the pastoral (arid and semi-arid) and agro-pastoral system, where the animals graze freely on communal pastoral land. Pastoralists sometimes practice mixed production with other species like cattle, sheep, and poultry. Children normally herd goats and sheep. Women carry out routine management and care of kids and lambs while men herd cattle.

Considering the increased frequency of droughts, households are constantly recovering from previous losses and ought to re-establish the previous status-quo of larger stock. Goats and sheep are more adaptable to drought than cattle; therefore, they are a better option for the pastoralists. Goats' and sheep's ability to graze, utilize poor quality forages, and walk long distances, and their high reproductive rates and ability to withstand drought, make them viable options for pastoralists (Lebbie, 2004). Research in Ethiopia and Sudan on livestock losses as a result of drought in the early 1980s puts cattle losses at 80%, while small ruminant losses were less than 50% (Lebbie, 2004), proving that small ruminants are more resistant to drought.

Goats are complementary to cattle with regards to utilization of a variety of plant species; thus, they are not in competition with cattle for feed (Peacock, 2005). In addition, physical and physiological characteristics of some goat species favour their survival in arid and semi-arid conditions. For example, the indigenous breeds of goats in Karamoja and the slim trunk and slender limbs of Sahelian goats provide proportional surface area, which facilitates heat dissipation through non-evaporative cooling (Lebbie, 2004).

Karamoja pastoralists engage in diverse herd management strategies like herd splitting, herd diversification, and herd maximization in order to control and guard against livestock loss due to drought, disease, and theft (Zziwa E., Kironchi G., Gachene C., & Mugerwa S., 2012). When there is a good harvest, food is normally available for households but when there is a low harvest, households look for options like wild food.

2.1.2 Status of Small Ruminant Production in Uganda

Pastoralists are known for their high reliance on livestock for their economic and social wellbeing. It is estimated that goats account for approximately 30% of Africa's ruminant livestock, and also produce

17% of the meat and 12% of the milk (Lebbie, 2004). Sub-Saharan Africa is estimated to have a goat population of 147 million, which accounts for over 60% of the total goat population in Africa (Lebbie, 2004). About 64% of goats in sub-Saharan Africa are found in arid and semi-arid zones (Peacock, 2005). Small ruminants' ability to adapt and survive under a wide range of environmental conditions is the primary reason for the above statistic. The FAO (2013) also explains that goats play a critical role in the livelihoods of rural households, where they are often the property of poor women and children. However, goats remain marginalized at both national and household levels (De Haan et al., 2015; FAO, 2013).

According to Bourdin (1983), as cited in FAO (2013), Uganda had 15.9 million goats and sheep in 1980s, with households typically owning between six and 36 goats and sheep. MAAIF & UBOS (2008) estimate the total number of goats in Uganda to be 12,449,656, with four out of 10 households owning 10 goats on average. Sheep were estimated at 3,413,340 with an average of eight sheep per household.

The general cattle statistic in Karamoja region was estimated to be 2.3 million in 2008 (MAAIF & UBOS, 2008), but a recent estimate suggests 1.8 million heads of cattle, showing a 78% reduction between 2008 and 2014 (FAO, 2014). Goats and sheep in the Karamoja region were estimated to be 2,025,293 and 1,685,500 respectively in 2008 (MAAIF & UBOS, 2008). However, a 4.3% growth rate of goats and 2.5% growth rate of sheep was recorded between 2011 and 2013 by natural means, putting the number of goats at 14,614,000 and sheep at 3,937,000 in 2014 (UBOS, 2014).

2.2 Security Status of Karamoja Region

The Karamoja region is also known for its prevalence of insecurity as a result of many factors, including access to illegal small arms, the breakdown of traditional leadership structures, an increase in commercially motivated cattle-raiding, and criminal acts due to the absence of the rule of law (OCHA, 2008). Traditionally, raiding was done among different tribes and clans using small handheld weapons like sticks and spears; reasons were mostly socioeconomic, relating to asset accumulation, dowry, and expressions of manhood, among others (Powell, 2010). The conflicts related to cattle-raiding later escalated to a

use of guns to raid livestock from different ethnic groups located in the neighbouring regions of Lango and Teso, and to border-raiding of cattle in Sudan and Kenya in the Turkana region (Powell, 2010).

Since a peace-building policy was not in existence in Uganda's constitution, in 2008 the government of Uganda formally launched a programme called the Karamoja Integrated Disarmament and Development Programme (KIDDP) to restore peace and rule of law in the region, as well as drive development (OCHA, 2008). The program was able to restore peace in the region and pastoralists now live in small villages. Animals especially cattle live in community cattle kraals (cattle kraals are small enclosures where animals are kept during night hours – a kraal is normally constructed with thorns or tree branches).

KIDDP, however, is noted by some informants to have compromised their pastoral system by restricting their seasonal movement and in turn affecting livestock production and productivity. Pastoralists are known for seasonal movement from one place to another in search of pastures and water for their livestock. With the introduction of KIDDP, their movement has been restricted, limiting access to good pastures and water for livestock, and thus, reduced production and productivity.

The Karamoja region is prone to cross-border conflicts between Karamojong pastoralists and Pokot pastoralists of Kenya (OCHA, 2008). Animal raiding among the Karamojong and Pokot creates conflict that could eventually lead to insecurity. The struggle for greener pastures and water as Pokot pastoralists out-migrate to Uganda also creates conflict and insecurity, which will affect the quality of pastures and water for livestock and, in turn, livestock production and productivity. Moreover, outmigration of Pokot pastoralists and their livestock often leads to the spread of contagious cross-boundary livestock diseases like PPR, that present alarming threats to pastoralists' livelihood (Kihu et al., 2015).

2.3 Pastoralist Households and Livelihood Patterns

The main economic activity that also forms the main source of livelihood for people in Karamoja is livestock production. Livestock provides income, creates employment opportunities, and provides food and nutrition security across different production systems and along different value chains (FAO, 2014). However, the situation is more complex because Karamoja experiences arid and semi-arid climatic

conditions, characterized by fragile, infertile soil. Small ruminants provide a safety net, helping pastoralists cope with the adverse climatic conditions of Karamoja. It should also be noted that they are easily sold when families have emergencies or health needs. Other activities that enable Karamojong pastoralists to cope are charcoal burning, firewood selling, honey production, mining, and crop farming, especially during the rainy season. The livestock production system is mainly free-range and grazing is done in communal grazing areas.

Pastoralists in the Karamoja region live in enclosures called *manyatas.* Within the *manyatas* are small grass-thatched houses where each family lives. Animal kraals are also located besides the houses. A *manyata* does not have a definite size, but can harbour more than 30 households. More than two *manyatas* may be located in a given village that is led by a local council and one chairperson. The local council and its chairperson are responsible for administrative roles as part of the structure of Uganda's Local Government Administration.

According to the villages I visited, a household is a group of people who reside in the same place, share the same meals, and make joint decisions. It is not easy to understand a household in the context of Karamojong pastoralists, where men sometimes have more than one wife. Not all the wives sit together and make decisions, but each wife makes decisions for her household. In a situation where their husband sells an animal, the income is shared among all the wives in consideration of the number of children each wife has. The responsibility to look for food lies in the hands of each wife and food is not shared with any other wife except in cases of sickness. For this purpose, I considered one wife with her children as a household although the man (husband) is shared by other women as well. Ellis (2000) argues that the household is an infinitely variable social arena difficult to define in many cultural settings, and may not even exist with respect to its key attributes in some instances.

However, household is considered as the unit of analysis in this research. Many authors support the above view, and Ellis (2000) and Jacobson (2013) argue that SLF as an analytical concept is best understood when one takes the household as the unit of analysis. The upcoming chapter describes in detail the conceptual framework under which the research questions are analysed, and these are: SLF, the concepts of coping and resilience.

3 Conceptual Framework

The life of Karamojong pastoralists revolves around livestock that provide wealth and sustenance. The Karamojong are known for their resilience in the face of scarce resources, seasonal droughts, and the harsh living conditions of northeastern Uganda. Pastoralism is only one of the several livelihood activities employed by pastoralists. It is therefore fundamental to place pastoralism in a wider livelihood context in order to understand the role played by small ruminants in improving the livelihood and food security of pastoralists (Jacobson, 2013). This study, therefore, adopts a livelihood approach to understand the role of small ruminants in the livelihoods of pastoralists. Scoones (2009) argues that the strength of livelihood research is that it examines local practices and analyses how local people cope with external and internal shocks. This chapter describes the sustainable livelihood conceptual and analytical framework upon which the research problem and guiding questions are based. The cornerstones of the framework are the concepts of: (a) livelihood, (b) coping, (c) resilience, and (d) power relationships.

3.1 Guiding Concepts

3.1.1 Livelihood

The livelihood concept enables a clear understanding and analysis of how different assets and activities play parts in livelihood improvements. Chambers & Conway (1992) explain the livelihood concept in terms of capabilities, assets (stores, resources, claims, and access), and activities that play interconnected roles in the wellbeing of households. This definition, however, does not answer the question of

why households with assets sometimes fail to convert them into activities that generate income (De Haan & Zoomers, 2005). Considering the cultural and social beliefs of Karamojong pastoralists, in which it is prestigious to own cattle, such assets do not necessarily link to activities that generate a higher level of income for better quality of life.

Ellis (2000) notes that assets are divided into natural capital, human capital, financial capital, physical capital, and social capital. The sustainable livelihood concept is comprised of assets, access to activities mediated by institutions, social relations, and organizations, and external shocks like droughts, disease, floods, and pests. Although Karamojong pastoralists have livestock as a major asset for their livelihoods, prolonged droughts and outbreaks of livestock diseases affect production and productivity, which calls for coping strategies to overcome them. The arid and semi-arid harsh conditions affect cattle more than goats and sheep: Lebbie (2004) argues that the ability of goats and sheep (small ruminants) to graze, utilize poor quality forages, walk long distances, and withstand drought makes them better assets to sustain the livelihoods of pastoralists. The household role distribution and asset ownership mediate the extent to which these assets can be converted into activities that generate income. For example, men own major household assets. In order for women to access and utilise such assets, they need to bargain for them with their husbands. For most men, prestigious assets like cattle may not be allowed to be utilised for household livelihoods. Social relations, especially among Karamojong pastoralists in Uganda, are very much honoured because they create a smooth fall-back position for households in case of calamities or problems (Powell, 2010). When a household is faced with a calamity, the neighbouring households join together to support it, based on their social relations and trust.

3.1.2 Coping

As mentioned previously, the Karamojong are faced with shocks and stresses that affect their livelihood, so they must develop strategies to cope with the challenges. The term coping is generally defined as an effort to prevent or diminish distress associated with threats, shocks, harm, or loss (Carver & Conner-Smith, 2010). Karamojong pastoralists are faced with seasonal droughts that affect pastures and water for their animals. Drought is therefore a stress factor in livestock production that

in turn affects the livelihood of pastoralists and calls for coping strategies. In order to cope with seasonal drought, the pastoralists move from place to place in search of water and pastures for their animals. They also raise high numbers of small ruminants that are more resistant to drought and disease. Pest and diseases, conflict, cattle-raiding, floods, and hunger are other sources of stress that affect the livelihoods of pastoralists. Livelihood diversification is one of the coping strategies that Karamojong pastoralists apply in order to manage, prevent, and reduce the above stresses.

According to my informants, the most common methods of livelihood diversification as a coping strategy are: eating one meal a day, gathering wild food, burning charcoal, extracting rocks, and working in other districts and remitting money back home. In Karamoja, however, coping strategies are geared towards food accessibility and livestock maintenance, and are therefore directly linked to household role distribution. That is, coping strategies targeting food accessibility are mostly employed by women. Coping strategies targeting security and livestock protection are mainly employed by men. In this way, coping is a strategy for achieving one's goal, which may have been confronted by an obstacle. This view is shared by Carver & Conner-Smith (2010) in their argument that coping as a concept is determined by one's interest, roles, personality, and the kind of stress one has confronted.

Coping is linked to SLF because how pastoralists enact, resist, or negotiate their world determines their livelihoods. As pastoralists negotiate their world, there exists the possibility of successful convertion of assets into income as well as failure to convert assets into income. Social norms and institutions within the pastoralists' community control this. This study therefore argues that the coping strategies of pastoralists should not be taken in isolation but in consideration of social norms and institutions.

3.1.3 Resilience

The rural poor in Karamoja region in northeastern Uganda are faced with unpredictable external factors on top of an unstable source of income (Ellis & Freeman, 2004). For example, droughts and floods because of climate change, pests and diseases of both crops and animals, policies and market changes that affect their livelihoods. Without external support to confront these challenges, they have to be solved

using local methods and resources by pastoralists themselves (Robbins, 2004). This is categorized under the concept of resilience, which considers the ability of pastoralists to recover quickly from unpredictable difficulties. Walker, Holling, Carpenter, & Kinzig (2004) describe resilience as a set of interacting and mutually reinforcing processes that keep pastoralists in the cycle of interaction or stability. To Walker et al., the world is interconnected and dynamic. Karamojong pastoralists, too, are resilient to disasters like disease outbreaks and climate change.

The resilience concept enhances the understanding of how pastoralists respond to both small- and large-scale dynamics that sometimes pose threats to their livelihoods. For example, large-scale dynamics like unfavourable market policies may pose threats to pastoralists who have to develop other means of managing their problems locally. The key part of resilient thinking is the diversification of activities and use of different resources to increase household income when uncertainties present themselves. The concept considers ways in which pastoralists adapt to live normally in times of contagious small ruminants' disease outbreaks, prolonged drought, and hunger, among other unexpected difficulties. Diversification and flexibility are both important strategies looked at in this research to understand how pastoralists respond after outbreak of calamities.

3.1.4 Power

In order to understand the pastoralists' livelihood, it is fundamental to understand the household as a central point of livelihood analysis. Jacobson (2013) argues that the central point in livelihood research is the household, where members draw on multiple activities to earn a living. The significance of focusing on households is that they are places of consumption, production, and investment within which both labour and resource allocation decisions are made (Agarwal, 1997). Power is a key concept in understanding how resource allocation and decisions are made at household levels.

We also need to know how a decision is made within the budgetary constraints of a household in order to understand how pastoralists' economy works. This is because the dynamics of household decision-making and resource allocation play a central role in mediating the impact of many projects and policies (Doss, 2013). However, in

Karamoja, such decisions vary depending on the ownership of assets within a household.

According to the role distribution of pastoralists' households, men look after cattle, while children, especially boys, look after small ruminants (goats and sheep), and women and young girls look for food for the household members (OCHA, 2008). Most assets in the households are owned by men; however, in rare cases, women own small ruminants and poultry. Women are sometimes powerless even to bargain for the sale of assets in order to obtain food for the household. They gather and sell firewood and charcoal to meet household food needs. Sometimes it seems that households have a joint social welfare function and there is a symbiotic relationship among all household members. In other cases, a household resembles a dictatorship led by a male who heads the household, showing deep gender inequalities.

3.2 Sustainable Livelihood Framework

Research using sustainable livelihood framework (SLF) provides a well-established alternative for evaluating the local value of assets (Ellis, 2000), such as goat and sheep in the wider livelihood situation of the pastoralists and rural poor in Uganda. Evaluating livelihood assets conveys a pathway to estimate the degree of vulnerability of the population in question (see Figure 1).

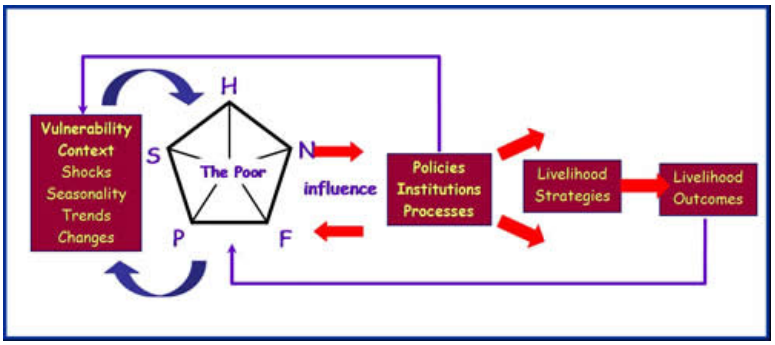

Figure 1. Sustainable Livelihood Framework. Adapted from Ellis (2000) H = Human capital, N = Natural capital, F = Financial capital, P = Physical capital, and S = Social Capital.

SLF helps understand the pastoralists' household livelihood dynamics, with the arid and semi-arid weather conditions of Karamoja and the

transboundary animal diseases as seasonal shocks. The assets include natural capital (land, water, and trees), physical capital (tools, machines, or infrastructure), human capital (education level and health of individuals), financial capital (stock of cash, livestock), and social capital (social networks). The government policies on livestock health and marketing as well as social and cultural institutions influence access to assets and activities that can generate income required for survival.

The central point in livelihood research is that multiple activities and assets are drawn upon by households to provide a living for their members (Jacobson, 2013). SLF acknowledges that the rural poor draw on diverse activities for their livelihood, and that viewing them as a homogeneous community is misleading (Scoones, 1998; Ellis, 2000). The focus here, therefore, is on the range of assets, access, and activities drawn on by pastoral households and the links between them. Realizing the overlapping nature of "capability" and different forms of assets, this research acknowledges that small ruminants are only a part of household livelihood and will not be taken as the only asset during analysis. When we understand the above, then we shall be able to determine under what circumstances small ruminants become major players in the livelihoods of the households.

Research on the role of goats and sheep in the wider livelihood situation provides important insights that go beyond traditional economic analysis. It yields information that clearly spells out contribution of goats and sheep in household livelihoods in comparison to other assets. While the importance of livelihood analysis has been acknowledged within livestock research (De Haan et al., 2015; FAO, 2013), in general, livelihood as a research approach has been criticized by many authors as an analysis that often becomes a political instrument. That it helps researchers or policy-makers claim that they have taken into account smallholders' perspectives and situations, rather than contributing with actual and in-depth understandings of small holders' situations (Jacobson, 2013). Ellis (2000) argues that activities are mediated by institutions, social relations, and organizations as well as exogenous trends and shocks (drought, disease, floods, pests). This research takes into account power relations, shocks, and the fact that households are embedded into structural, institutional, and social contexts; in other words, the household is not seen as a unit in isolation. De Haan & Zoomers (2005) argue that considering power relations is

useful to integrate attitudinal and structural aspects into livelihood analyses.

SLF, as described in Ellis (2000) and Chambers & Conway (1992), does not take into consideration civil wars and armed conflict among the shocks that affect the livelihoods of the rural poor. In the case of Karamoja, which is prone to civil war, conflict, cattle-raiding, and gender-based violence, SLF may seem inappropriate for understanding the livelihoods of pastoralists. The household as a unit of measurement in livelihood analysis is hardly understood among the pastoralists. This makes it more difficult to understand pastoralists' livelihood at household levels, as livelihood strategies vary between households. Assets also vary between households and individuals. In Karamoja, for example, ownership of assets and power relations determine the kind of livelihoods a given household can access. Considering the above critics, sustainable livelihood framework (SLF) still provides a well-established means for evaluating the local value of assets that in turn enables estimation of the degree of vulnerability of a given population. It therefore justifies the reasons why SLF is used to analyse the Karamojong pastoralists' community.

From the general statistical data by the WFP, Moroto district has the second highest number of female-headed households, comprising 31% of the overall households in the Karamoja region (MUK & WFP, 2016). Research demonstrates that female-headed households in Karamoja are significantly more exposed to food insecurity and malnutrition, especially those with children, than their counterparts in male-headed households. This supports the argument that female-headed households are the poorest of the poor (Chant, 2007).

This situation relates to the fact that female-headed households have very little livestock. Moreover, there is a social and cultural belief that men should own all assets in the household. When women lose their husbands or when they divorce, they are left without livestock; and yet, livestock forms the basis of livelihood in this region. Traditionally, livestock raids have been the basis for restocking household animals, and men conduct the raids (OCHA, 2008). Thus, women fear owning livestock because they might easily lose their livestock to raiders. Presently, a woman who owns animals would not want to publicize this, because her animals would be especially vulnerable to thieves and raiders.

By living in a *manyata*, such women join peer groups and beer work parties in order to build trust with the men within the *manyata*. It is through trust that a woman gives her livestock to a man to look after on her behalf. Opira (2013) supports the argument that the rural poor build trust and identity through communal work, rotational labour, and beer work parties. Culturally, Karamojong women are not allowed to enter livestock market premises, something one of my interlocutors mentioned during an interview (HH15-NAVMP-1, personal communication, 15th March 2016). While this is changing, women still do not sell livestock in the market; rather, they wait for middlemen buyers who buy from homes or along village trading centres. The middlemen pay less money in order to make a profit at the major cattle markets. Gender, therefore, is an important factor in terms of Karamojong pastoralists' livelihood, and the relationship between men and women is marked by inequality. However, the question is whether it is the cultural notions of Karamojong pastoralists leading to the inequality, or poverty that is leading to gender inequality. This is questionable because the rate of gender inequality at extreme poor households differs that of better off households and calls for more research.

The next chapter presents the methodological considerations of the research, detailing how data was collected during the fieldwork, and how it was analysed.

4 Methodology and Empirical Study

This research study was conducted in two villages located in Moroto district from the first of March to the twelfth of April, 2016 (six weeks of data collection). The study operated at two different levels. One was the *community level*, where group discussions were held in the two villages and in-depth interviews were conducted among 30 households in the villages of Nabukat and Napaka-Kimul. The other operating area was the *agency level*, where interviews were conducted with key agencies implementing livelihood improvement programmes related to livestock in the study area. These agencies are: the Food and Agricultural Organization (FAO), Mercy Corps, Welthunger, the Moroto District Veterinary Department (MDVD), and the Nadunget Sub-county Local Government. Focus group discussions, structured and unstructured interviews, and questionnaires were the tools used for data collection.

Some of the ethical considerations for this research included my assurance to participants that they would be discussed anonymously, but that the names of the villages would be mentioned. The naming of the villages can enable the potential support of development agencies that may want to implement interventions based on the recommendations of this study; or, they may want to conduct further research. I also assured the interviewees that sensitive topics, such as income status and the number of livestock that they own, would be treated as confidential.

The analysis of the data is based mainly on the research questions and is done at two levels. The first was a quantitative analysis, using Statistical Package for the Social Sciences (SPSS) computer software. This enables an estimation of values and enhances statistical data presentation. Second, data analysis was conducted qualitatively by understanding and interpreting the interview transcripts in reference to

the research questions and analysing them in relation to SLF, as well as the concept of resilience and coping.

4.1 Study area

The research was conducted in the Nabukat village, located in the Nadunget sub-county, and the Napaka-Kimul village, located in the Tapac sub-county, all in the Moroto district in Southern Karamoja. The choice of these villages was because they suffered a PPR disease outbreak in 2007–2008, and that they coped very well after the outbreak (personal communication, MDVD, 13th March 2016). Nabukat also experienced related signs and symptoms of PPR among goats and sheep in 2015, according to the MDVD, but all goats in the village had been vaccinated. Since this research focuses on the role of small ruminants in household livelihood and the coping strategies of pastoralists, Nabukat and Napaka-Kimul were the best-suited sites for this study.

Fences made up of tree branches and thorns enclose Nabukat, a small village with only one manyata. The *manyata* has over 30 households, each fenced tightly with small tree branches for the purpose of privacy and demarcation. People reside in small grass-thatched houses and livestock kraals are located beside the houses and are shared by all households in the *manyata*.

The Moroto district is categorized as a pastoral livelihood zone of Karamoja. It's a semi-arid zone characterised by erratic rainfall from April to September and a prolonged dry season from October to March. The district is covered with shrubs, thorns, and other hardy plants, and is dominated by flat plains. Savannah grassland partly covers its border with Kenya, while the central parts are mountainous and covered with thick vegetation as well as seasonal rivers running across the zone. In the northern part of Moroto is Rupa sub-county, which has gold deposits at the base of the mountain. Marble, too, is mined along the same area and in Katikekile sub-county. Figure 2 shows a map of the region.

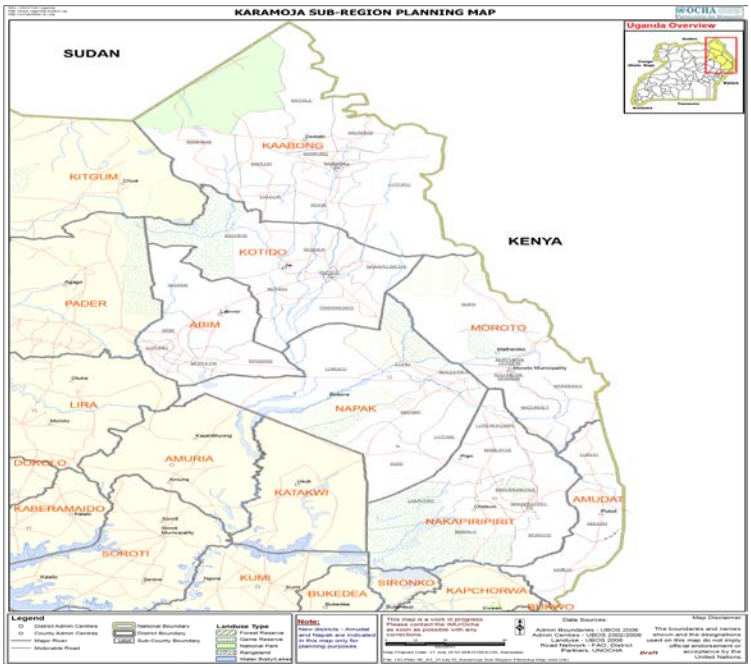

Figure 2. Map showing the research areas in Moroto district, Karamoja region, 2016. Adapted from OIA & FAO, 2015.

4.2 Data Collection and Methods

Drawing from the purpose of this research, the analysis of livelihood of pastoralists' households requires a mixed-method approach in order to obtain a rich understanding of rural livelihoods (Gillham, 2000). Ellis (2000) also notes that employing mixed methods in livelihood research provides a more thorough understanding of rural livelihoods and poverty. Gillham (2000) argues that combining many methods in studying the same phenomenon ensures validity of the results. The main themes studied were the role of small ruminants in livelihood and food security, the relationship between small ruminants and other household livelihood assets, and an assessment of the coping strategies of pastoralists in times of shocks and misfortune.

The data collection mainly depended on interpreters since I do not know the local language (Nya'karamojong). I worked with two interpreters; both had some prior knowledge in research as they were involved in several research projects with Mercy Corps Uganda.

However, some methods, like participatory wealth ranking and enterprise ranking, were new to them, and I had to train them before using their services. Sometimes the interpreter does not explain well and to further understand their explanations, I wrote down whatever I did not understand when I come back to the office; then, I would often seek further explanations from Mercy Corps staff members.

4.2.1 Participatory Wealth Ranking (PWR)

The participatory method, also referred to as participatory rural appraisal and introduced by Robert Chambers (1994), enables a deeper understanding of the perceptions of the local community and how they understand poverty and wealth. This method has previously been used in policy-making processes in the 1990s in order to engage the local community more in the process (Chambers, 1994). Jacobson has blamed the participatory method for a failure to acknowledge the effects of local power relations between the researcher and the local people (Jacobson, 2013). He finds that researchers do not reflect upon the process and its implications, thereby reinforcing the existing power relations rather than leading bottom-up change. In all my analyses, therefore, I had to reflect on the process and consider how power relations between me (the researcher) and the local community impacted the process.

In both Nabukat and Napaka-Kimul, participatory wealth ranking (PWR) meetings with the village residents were scheduled together with the Chairperson of the Local Council, who heads the village, my interpreter, and a Community Animal Health Worker (CAHW). These meetings were meant to categorise the poverty status of households, which can enhance the understanding of whether the role of small ruminants differs with different poverty groups. The meeting was also designed to rank the main enterprises that play a major role in household livelihoods.

During the PWR activities, I introduced myself, the interpreters, and the CAHW, explaining in detail why we the meeting was taking place. I also explained about wealth ranking activity and enterprise ranking, and discussed why it was necessary for us to do enterprise and wealth ranking. With the help of the Chairperson of Local Council One and the CAHW, who are well-versed in the social structures of the village, we divided the participants into smaller groups (focus groups) for the purpose of local analysis. Discussions were also held within each group

with a focus on local perceptions of poverty, the different kinds of poverty that exist, and what characterizes the poverty groups. Each group identified some individuals to talk about their perceptions of wealth ranking, the criteria of wealth ranking, and the actual wealth ranking. Within the same focus groups, the enterprises that play major roles in household livelihood and food security were also ranked (enterprise ranking).

The participants ranked their households into three poverty levels. First, the extremely poor household: these are households without livestock or that own less than five and depend mainly on selling firewood and charcoal, mining, domestic work in other households, and food aid. According to participants, this category is characterised primarily by older people and female-headed households. In most cases, extremely poor households have large or extended families and are uneducated. Second, the poor household: this category is characterised by male-headed and female-headed households, large or extended families, and uneducated people who are unable to meet their children's needs. They have livestock (cattle, goats, and sheep), at least five but less than ten. Third, the better-off household: these are people regarded as rich within the community; they have cattle, goats, sheep, poultry, camels, and own more than ten animals. Some better-off households have up to 40 cattle and 100 goats, and are characterised by educated parents and children, usually are male-headed, and are respected in the community, taking up many leadership positions.

The discussion between participants noted that the number of cattle has been reduced in their community due to a lack of pastures, drought, and livestock diseases. This finding relates to Peacock (2005), that small ruminants are regarded as assets for the poor. Pastoralists also consider goats and sheep as assets for the poor, although households with small ruminants have often been able to climb the ladder from poor to better-off. During the wealth ranking discussion, participants rejected the idea that land should be considered as a parameter to determine wealth, with a claim that even people with land still live under extreme poverty because of the arid and semi-arid weather conditions of their area. One participant stated, "Most of us have land but we are still poor. Too much drought and floods that clear our crops reduce us to nothing".

Both men and women attended the Nabukat and Napak-kimul wealth-ranking meeting though women outnumbered men. A total of 42

participants attended Nabukat meeting and 38 participants attended Napaka-Kimul meeting. Even with more women, power relations were evident in the way that men dominated the discussion during the wealth ranking part. On the other hand, women dominated the discussion during the enterprise ranking part. Also, participants mentioned the factors of history and social networks as relating to household condition: they claimed that some better-off households were at one time poor or extremely poor and depended on social networks and relatives for help.

The focus groups used a simple ranking method to rank the enterprises that play a major role in household livelihood and food security. That is, they used pair-wise ranking to rank different assets based on one criterion: contributions to household livelihood and food security (Deng, 1999). Deng argues that this analytical hierarchy process is best for solving multicriteria problems involving qualitative data. He criticizes the method for its inability to take into account uncertainty and unbalanced judgement (Deng, 1999). However, when conducting research with a community like the one in the present research, the method is simple and straightforward in comparing the different assets according to their contributions to household livelihood.

The participants agreed by concensus that livestock of various species form the main source of income of the pastoralists in the region, however, they also noted that crops like sorghum and maize form their staple food. This information was validated during in-depth household interviews. This enabled interpretation and understanding of the main sources of income for households and a determination of the role played by small ruminants as one of the assets. In this way, the researcher came to understand how participants categorized poverty and how they valued assets in their livelihood settings. Chambers (1994) argues that group activities such as wealth ranking, with a main focus on asset categorization, provides a clear view of what poverty means to the people and an analysis of the roles of different assets to household livelihood.

As mentioned above, women dominated the discussions during enterprise ranking since the questions that guided the discussions were mainly about sources of food for the household and household livelihood dynamics. Perhaps this shows that women play a larger role in household livelihood and know more about its dynamics. Figure 3

shows an example of the enterprise ranking activity and a photo of one of the focus groups.

Figure 3. Enterprise ranking according to contribution to household livelihood. Photo by Bruno Sserunkuma Akejo and Sseyonjo Ronald.

4.2.2 In-depth Interview

In each village, 15 households were selected for in-depth interviews through snowball sampling, starting with the chairperson of Local Council One, who was my guide for each of the 30 households that participated in the study. The method of sampling was adopted because my research subject was directly linked to households rearing livestock and needed to be guided through snowball (Marshall, 1996).

In-depth unstructured and semi-structured interviews enabled interpretation and understanding of activities embedded in the real world of pastoralists, their way of life, and the coping strategies they employ in times of calamity. Silverman & Marvasti (2014) argue that qualitative data is best suited to understanding real-world situations that people face. Individuals might specialize in a multitude of activities and own different assets at the household level; qualitative data, collected through in-depth interviews, therefore presents a good avenue of analysis.

Quantitative data on household income, household composition, and assets were collected using a questionnaire concurrently during household in-depth interviews. This was specifically to verify and validate the data/information gathered during participatory wealth

ranking and focus group discussions in order to have a concrete view of pastoralists' household livelihood dynamics. Creswell (2013) supports this point with his argument that quantitative data enables estimation of the values of items. In this case, I was able to rank the most important and least important asset contributing to household food security and livelihood. However, questions about income status and income earned each month proved to be very sensitive topics.

Unstructured interviews were also conducted with different institutions and development partners that implement projects/programs related to livestock, livelihood, and food security improvement. These agencies were the FAO, the MDVD, Welthunger, Mercy Corps, and staff from Nadunget sub-county. Through these interviews I was able to understand the general livelihood dynamics, and they also helped me decide on the villages to cover as my research area. Historical data on Peste des petits ruminants (PPR) was revealed to me through these interviews, as well as activities being done to control and prevent PPR.

Participatory observation and informal interviews were conducted during my stay in Moroto. Questions related to the life-styles of pastoralists, livelihood dynamics, and their perceptions on poverty. These interviews enabled me to gain knowledge about the contemporary situation of pastoralists and their way of life. The 6 weeks period of data collection was short but I lived in Moroto for more four weeks to enhanced crosschecking of verbal information and identifying important issues in the lives of pastoralists.

The data collected and analysis of empirical findings are presented in the following chapter and are based on the research questions.

5 Empirical Findings and Analysis

This chapter discusses the data gathered from informants during fieldwork. They are structured according to the research guiding questions; however, first, I present a few highlights regarding household composition, sex, headship, and assets.

1. What role do goats and sheep play in the livelihood and food security of pastoralists?
2. What coping strategies are employed by pastoralists in times of shock?
3. How are coping strategies employed by pastoralists in times of shock?

5.1 Household Composition, Headship, and Poverty Categories

The composition of the informants interviewed was 70% female and 30% male. The reason for this variation is linked to female headship, men leaving home very early in the morning to graze animals, and the fact that some men had moved to other regions in search of pastures and water for the animals. However, 46.7% of the households interviewed were female-headed and 53.3% were male-headed. As mentioned earlier, the poverty status of a household is determined by the number of livestock owned. According to the results from the participatory wealth ranking exercise, 50% are extremely poor, 26.7% are poor, and 23.3% are better-off households.

5.1.1 Livelihood Patterns of Pastoralists in the Research Area

The livelihood patterns in the villages of Nabukat and Napaka-Kimul in the Moroto district revolve around livestock that makes up their precious resources. Wealth and sustenance is provided by cattle, goats, sheep, poultry, and some food crops. The main staple food crops include sorghum, maize flour, beans, millet, and vegetables. Another common food item for these pastoralists is livestock blood mixed with milk. The neck of cattle is pierced and blood is collected from the artery, mixed with milk, and churned for food. Milk is also churned to make cheese and butter for children and women.

Whenever there is a good crop harvest, food is normally available for households, but when there is a low harvest, households look for other options like wild food (wild meat and vegetables). Many people drink local brews (like *kutokuto*) that are believed to relieve hunger. During periods of hunger, people buy food items like maize flour, sorghum flour, and beans from the market and also depend on relief food provided by development agencies like the WFP. Sources of income include selling small ruminants, burning charcoal, selling firewood, quarrying rock, working as a domestic in better-off households, and brewing and selling the local *kutokuto* drink.

Food items such as maize flour, beans, and sorghum flour are sometimes exchanged for goats and sheep in dire times, and then later when there is a good harvest, some crop produce is sold and the money is invested in restocking the livestock population, mainly goats and sheep. However, the value of money is lost during this exchange compared to when the livestock is sold for cash and food items are bought. Extremely poor households depend on wild foods, fruits, and vegetables. It is during the dry period that this region suffers from extreme hunger, when households can only have one meal a day, and sometimes go for days without food. During in-depth interviews, I asked my informants about the number of meals their households have in a day. One of them answered, “We are not like you rich people who keep track of the number of times you eat in a day. We sometimes eat four meals in a week” (HH3-NLAMP-1, personal communication, 10th March 2016). This statement shows how food-insecure the extremely poor households in the research area are.

Cattle are the most prominent asset at the household level. However, goats and sheep are key sources of income that solve food security and

the livelihood needs of the household in most cases. Results from the enterprise ranking exercise show that goats and sheep are commonly sold to meet household needs. The results from the ranking put goats and sheep as the leading enterprise, with 33.3% and 23.3% respectively. Cattle was ranked number three, scoring 20%, and poultry was ranked number four, scoring 16.7%.

However, pastoralists love and recognize the contribution of every single asset they own to their household livelihood, including crop production. As one respondent noted, "When hunger strikes, my household depends on livestock for food and other household needs. When there is good harvest, I sell some sorghum and restock goats" (HH13NKMP-2, personal communication, 20th March 2016). "Goats to Sorghum and Sorghum to Goats" is now a common song played by a local musician to teach the community to build resilience around climate change, hunger, and other calamities.

Apart from livestock, activities that are employed by these pastoralists to meet their livelihood and food security demands are stone quarrying, mining, working in better-off households, and brewing local beer, among others. Most of these options are employed by women who play a major role in ensuring the food security of the household and livelihood. One participant stated,

> My responsibility is to look for food for my children and husband. I have to travel far distances every day and gather firewood to sell in order to get food for my household. I cannot withstand seeing my children go hungry, sometimes I feel like committing suicide because I cannot provide food for them. My husband does not care; never will he understand how I feel. But since I am a woman, I have no power. Sometimes I also sit and cry with my children (HH2-NKFE-1, personal communication, 23rd Macrh 2016).

This statement is an example of how women do not feel comfortable with the role distribution being practiced in their culture. They often don't own assets in the household or have control or power over assets and their use, and yet these women are over-burdened by the plight of looking for food for the household. Men don't seem to understand that they need assistance, and would benefit from greater role sharing.

5.2 Socioeconomic Role of Small Ruminants in the Livelihoods of Pastoralists

The prestigious nature of cattle denotes its lesser utilization in solving basic household needs as compared with small ruminants. Small ruminants are mostly regarded as assets for the poor due to their small size, according to one of my informants (HH14-NCAMB-1, personal communication, 13th March 2016). Owning small ruminants is much less prestigious than owning cattle. However, small ruminants are one of the most commonly used assets in solving basic household needs. Small ruminants play various roles in the livelihoods of pastoralists, providing services and filling sociocultural roles. The products that are mainly provided by small ruminants are milk, meat, skin, hair, horns, bones, and manure. All these products play critical roles in the livelihoods of pastoralists. Pastoralists in Nabukat and Napaka-Kimul derive the following services from small ruminants: cash income, gifts, loans, traditional rituals, animal draught power (animal traction), and security. According to HH14-NCAMB-1, the sneezing sound of goats is a sign of danger; they consider it as an alarm for fellow goats and owners.

5.2.1 Role of Small Ruminants as Source of Food Security and Income

As mentioned earlier, small ruminants provide food products such as meat (raw, cooked, and blood soup) and milk (fresh, sour, yoghurt, butter, and cheese). Early in the morning young boys and women milk goats and the milk is mixed with blood for food. As young boys herd small ruminants, the milk from goats and sheep is the main source of their food during grazing. According to some of my informants, there are multiple routines for milking goats. That is, not all goats are milked at once like cattle in the morning and evening. Some goats are milked in the early morning before grazing, some are milked during grazing, and some in the evening. In this way, the milk replaces daily meals during periods of hunger. Looking at productivity, the average amount of milk produced by a cow in this region is two litres per day. Goats produce half a litre in the morning and half a litre in the evening. Considering the large number of goats and the cheap cost of production, goats are preferable to cattle in arid areas like Karamoja. The sales of milk generate income for buying food and other household items such as soap, sugar, paraffin, and clothes, and for medical costs of individuals in the household.

Small ruminants multiply very quickly as they sometimes produce twins and triplets. They have shorter reproductive cycles, and sexually mature between four to six months. They have a gestation period of 150 days compared to cattle that takes 283 days. The faster rate of multiplication of small ruminants may generate enough income to facilitate buying large ruminants; this provides a pathway for investment and lifting families from poor to better-off household poverty status. Considering the number of goats and the cheap cost of production, small ruminants can be an effective coping strategy for pastoralists during hunger, drought, and floods. They represent a resilient response in times of poverty. During an in-depth interview, one informant said,

> When famine comes, I sell some goats or sheep and buy sorghum. When there is good harvest, I sell some sorghum and restock back goats and sheep. When I lost my husband, the only cow we had was slaughtered for his funeral. I was left with five goats but now I have more than 20. I exchanged seven goats for one cow and now I have three cattle. I sell firewood and charcoal to meet my household need and to give my goats and cattle time to multiply (HH1-NKMFB-1, personal communication, 23rd March 2016).

5.2.2 Environmental Role of Small ruminants

Small ruminants make the best use of degraded land that would be otherwise unusable or redundant. According to interviewees, goats are able to climb trees, stand on two legs and browse forage. They are also able to climb steep mountains and feed on shrubs along the mountain slopes. In this way, small ruminants are able to survive and adapt easily to harsh conditions, including arid and semi-arid climate conditions. Women sometimes graze small ruminants along the mountain slope as they are engaged in rock quarrying. This gives them time to do other income-generating activities at the same time. As small ruminants graze around the slopes, their feet remove small pieces of stone and rocks and roll them down the slope, where women and young boys collect the stones and rocks for selling to builders.

The arid and semi-arid condition of the Karamoja region presents harsher conditions for cattle than for goats and sheep. The high reproductive rates of small ruminants, their ability to graze and utilize poor quality forages, walk long distances, and withstand drought all make goats and sheep a better option for pastoralists (Lebbie, 2004).

These statements lend support and evidence to the claim that small ruminants enable a shift from one poverty category to a higher one (extremely poor, to poor, to better-off), supporting the findings by Peacock (2005) that goats are pathways out of poverty.

5.2.3 Socio-cultural Role of Small Ruminants

In reference to the household role distribution described earlier, women and children often have roles in the managing of small ruminants. This gives slight power, or loose ownership, to women and children in the sense that they are able to bargain with the household head (husband) whenever the need arises to sell. Women find it easier to bargain with their husbands to sell small ruminants to cover household needs than to sell cattle; at the proposition of selling cattle, men will often say no, as cattle are a source of prestige. In this way, small ruminants give women the opportunity to play a larger role in household decision-making. During an in-depth interview, one women stated,

> I don't care who owns what but I want to be free to sell it if there is a problem. I can sell firewood and buy chicken and goats but my husband claims the ownership of goats. I have to bargain with him in order to sell it (HH10-NOAFE-1, personal communication, 15th March 2016).

Ownership, access, control, and utilization of household assets form bigger issues that need addressing with regards to gender equality. None of the informants in the 30 participating households mentioned gender equality or gender as a word, but from their narratives, I heard many related words, like power difference, ownership difference, and bargaining between husband and wife. I was able to relate them to gender differences especially in terms of asset ownership, access, and utilization. Promoting small ruminant production among pastoralists opens up room for women and children to make decisions at the household level, especially regarding when to buy and sell small ruminants as well as utilization of income received from these sales.

In the vein of role distributions and gender equality, Karamojong women work very hard to feed their household members. One of them had this to say during an interview,

> Many times I wake up around 6am and trek for more than 10 kilometres to look for firewood to sell. It takes me up to 12pm to gather what is enough for the day. Getting someone to buy the firewood is a challenge too. It takes me up to 2-3pm to sell my firewood. I buy food from the market after selling firewood between 4 to 5pm. I go back home when tired and hungry, only to get my children hungry and crying too. The small money I get may sometimes be enough for food and things like soap but sometimes may not be enough to even buy food. In that case, I buy *kutokuto* for myself and my children. (HH3-NKFE-0, personal communication, 25th March 2016)

Although Karamojong women play a key role in the daily running of households, livestock, an engine of economic growth and livelihood, are mainly owned by men who make decisions single-handedly and alone utilize the income from livestock (Lebbie, 2004). The FAO (2013) confirms this argument, noting that most men spend much of their income on alcohol after the sale of livestock, leaving the household to dangle in poverty.

Small ruminants have added socio-cultural roles in paying bride price, and being utilized in religious functions and funeral rites. Sometimes small ruminants are given as gifts to friends and visitors, and are even used to pay veterinary doctors. In this way, they create strong relations, identity, and trust among pastoralists. They also raise the social status of households in the community fighting against marginalization. The poor households are marginalized and normally referred to as *imamonkel*, literally "toothless". Such households are not mandated to take up leadership positions in the community and their views are not heard in the community. The rich households, locally referred to as *iyankel*, are respected and hold most leadership positions in the community. Small ruminants, therefore, play a significant role in fighting socio-cultural marginalization of households in the pastoral community.

5.3 Pastoralists Household Livelihood Copping Strategies

Drought and floods as a result of climate change, pests and diseases of crops and livestock, policy and market changes, and other unpredictable external factors are all obstacles for Karamoja pastoralists that destabilize their sources of income. Most coping strategies are geared

towards obtaining food for the family and income for the household, which is mostly done by women. Beyond activities like selling firewood and burning charcoal, women and girls often work in other (better-off) households in exchange for food and income. In some cases, women and children go to other districts to do causal work and remit money back home. Some children move to the capital, Kampala, to work and remit money back home. The findings show that extremely poor and poor households in both villages employ a wider range of livelihood strategies than their counterparts, better-off households. That is, they exchange labour for food and income, and engage in charcoal-burning and mining, while better-off households normally depend solely on the sale of livestock and earnings from their employment.

However, each stress among pastoralists that calls for a coping strategy feeds other stresses. As children move to other towns to work for income, they forego education and often become involved in socially risky behaviour, like early sex, teenage pregnancies, and early marriages. Cases of teen girls coming back to villages pregnant or with a child have been noted, and in turn, the population of their household increases; hence, more food is required for the household.

In periods of adversity and hunger, small ruminants are sold and money is used to buy food for the household. In this way, the money remains in the household and rural economy. In times of good harvests, some crops are sold and small ruminants are restocked in the household. The two-way selling and buying keeps the household economy balanced since some part of the income from the sale of livestock is used to settle food crises and pay for school fees, clothes, and healthcare. However, it poses a threat to progress and development because this sort of livelihood cycle of losing and regaining the same level of household income or less, does not provide permanent advancement for the families involved. That is, a household with five goats sells them to meet its needs during a crisis. When the harvest is good, they sell the crops produced and restock with five new goats, balancing the household income but remaining at the same level, or even poorer in situations of adverse drought. Diversification of activities and use of different resources to increase household income when uncertainties unfold is part of resilience thinking; hence, pastoralists have developed strategies of engaging in other livelihood activities for survival. Chambers and Conway (1992) call this dynamic capabilities. Diversification and

flexibility are both important strategies that pastoralists employ during calamities and there is need to strengthen those models for more secure household livelihoods.

6 Discussions and Conclusion

Generally, the struggle for scarce resources in the Karamoja region defines the lives of Karamojong pastoralists. According to this study, the problems are not about inadequate resources and inaccessibility only, but also about intra-household gender inequality expressed in the ownership and utilization of the scarce assets. All these are mediated by cultural, political, and social institutions as well as the effects of climate change being experienced in the region.

Though I agree with Ellis (2000), that sustainable livelihood is achieved when one has access to assets, this research has found that extremely poor households and poor households with less assets have a wide range of livelihood options. They are in a better position to diversify their activities to meet their livelihood needs. Examples include exchange of labour for food and income, remittances from relatives, selling firewood and charcoal, and keeping livestock. Better-off households depend mainly on livestock and earnings from their employment. The study, however, proves Ellis (2000) right that livelihood strategies may be through necessity, not choice, and that the strategies are influenced by the few options available to the rural poor.

The study also found that personal assets contribute to and influence household asset utilization. That is, self-value, self-awareness, confidence, and trust among individuals living in a given household determine the bargaining power to utilise and share resources. Considering the results presented in the previous chapter, women play critical roles and are key to a sustainable household livelihood; however, these women do not only lack access to resources, but also lack personal assets. Their expressions (statements) do not suggest that they are at peace in their inner selves. Their expressions are linked to fears that

arise in specific cultural structures, and social beliefs that claim that they are just women and do not have any power. This affects access to other capital/assets in their households.

The cultural structure of Karamoja gives authority to a man as head of a family to own every asset in the household. However, there is a mismatch between ownership, accessibility, and utilization of these household assets. And this may answer the question of why households with assets are not able to convert them into activities that can generate some sort of income for the households. For most of the men I interacted with, ownership means total power to access and utilize every asset in the household without the consent of any other household member. Yet, women want and deserve to have access and freedom to utilize the resources too. This calls for a process of negotiation, which may not be possible when women do not have strong personal assets (confidence and strong bargaining power).

6.1 Exploration of Links between Small Ruminants, Gender, and Household Livelihood

Women make up a substantial majority of the agricultural workforce and produce most of the food that is consumed at the household level in rural areas (World Bank, 2008). The large proportion of agricultural production that is attributable to women makes them important agents of economic development. The vast majority of food production that is attributable to women makes them the principal agents of food security and household welfare in rural areas (Ashby, Hartl, Lambrou, Larson, Lubbock, Pehu & Ragasa, 2009). As discussed regarding role distribution, Karamojong women play a major role in household livelihood. However, livestock, an engine of economic growth and household livelihood, are mainly owned by men (Lebbie, 2004). Women find it easier to bargain with their husbands to sell small ruminants to cover household needs than to sell cattle. In this way, small ruminants save women from the burden of traveling long distances to look for firewood to sell in order to meet household basic needs. Ownership, access, control, and utilization of household assets form larger questions that need addressing with regards to gender equality. Even households categorized as better-off still seem poor, because women, who are the

engine of household livelihood, lack ownership, access, control, and utilization of assets.

Culturally and socially, small ruminants can be identified as assets for women and are loosely owned by women (Peacock, 2005). This opens up opportunities for women to bargain and sell small ruminants when there is a need for food and other basic household necessities. In this way, small ruminants become major drivers of household economic growth in the pastoral areas and determinants of household food security and livelihood improvement. Doss (2013) argues that livelihood activities are not neutral, but engender processes of inclusion and exclusion. This implies that there are conflicting and co-operating actors at the household level. As Ellis (2000) notes, gender is an important aspect of social relations.

There is also evidence that gender equality contributes to economic growth; however, it is not as clear that economic growth contributes to gender equality (Kabeer & Natali, 2013). This means that the promotion of gender equality may offer a win-win solution to pastoralists' household problems. Doss (2013) confirms this in his research, in which he observed that a greater proportion of surplus is realized when women are in charge of income management at the household level. It can therefore be argued that both men and women should participate equally, including the decision-making in the household, control over family resources, and market participation if Karamoja is to achieve a more stable livelihood.

6.2 Concluding Remarks

Contagious transboundary diseases of small ruminants like PPR causes devastating economic loses to pastoralists. PPR has been confirmed to be in circulation in the Turkana region of Kenya that borders Karamoja (Misinzo et al., 2015). As pastoralists lose their animals due to such diseases, the flock sizes are reduced, household livelihoods are affected, and some families may be reduced to the category of extreme poverty. Considering the significant socioeconomic role that small ruminants play in pastoralist households, the outbreak of such diseases is bound to keep pastoralists within a cycle of poverty. There are also challenges related to PPR diagnosis, since Uganda does not have fully equipped laboratories to test and confirm the presence of this disease. Control and

prevention of PPR is challenged by the lack of information on epidemiological transmission of PPR between wild animals and domestic livestock.

This research project has attempted to recognize the role of small ruminants as a strong asset in the livelihoods of pastoralists and small holder farmers. It has stipulated the key roles of sheep and goats in household food security, income security, and livelihood among pastoralists. It has also argued that small ruminants are equally important coping strategies for pastoralists in times of shocks and stress, such as extreme climate events and disease outbreaks. Therefore, more attention should be given to the control and prevention of contagious small ruminants' diseases, especially PPR. More data is also needed on the epidemiological science of PPR to enable a comprehensive contribution by all development partners.

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8 Appendices

Appendix 1: Interview Guides and Field Questions

Village name:…… Parish……
Sub-county……District……Household No:
Date of interview……Interviewee (name): ……

S/N	Interview Guiding Questions	Answer
1	Are you a pastoralist or agro-pastoralist?	
2	Sex of the person you are speaking to	
3	Are you the head of this household?	
4	Who lives in this household? (Only those who live here, not those belonging to family but living somewhere else). Adults (over 18y): Children (under 18y):	
5	Who looks after the following livestock in this household? Cattle, Goats, Sheep, Pigs, Chicken	
6	How many of these assets do you have? Cattle, Goats, Sheep, Poultry, Horses	
7	Rank them according to their importance to your household livelihood. (1-least important, 2-somewhat important, 3-important, 4-very important)	
8	Do you have a garden? List all the things you grow in the field.	
9	Do you have any other asset that forms part of your livelihood and food security in this household?	
10	How much income do you earn per month and per	

	year?	
11	Where do you rank your household? Poor, extremely poor, or better-off? Explain.	
12	Who owns goats and sheep in this household?	
13	What livestock in the households are owned by: men, women, children (female) and children (male)? Explain	
14	How is decision-making about the selling of goats and sheep done in this household?	
15	Have you experienced any disease outbreaks of goats and sheep before?	
16	How many goats and sheep did you lose?	
17	How did it affect your household food security and livelihood?	
18	What fall-back strategies did you employ during and after the outbreak?	
19	On what do you spend most money in this household? What costs most money? Second biggest cost? Third biggest cost?	
20	Does anyone in the household receive some money from any other business?	
21	Under what conditions do you use goats and sheep as a major asset for food security and livelihood?	

Appendix 2: Profile of the Households According to Wealth Differences

Key: HH1: House Hold 1. First Letter after HH1 is the village code followed by the name of the person interviewed (represented by two letters). This is followed by the sex of the household head (male or female). The last letter is the household poverty category (E-extremely poor, P-poor, and B-better-off). The last number represents the ranking of goats and sheep in the household livelihood. (4-least important, 3-somewhat important, 2-important, 1-very important, and 0-without livestock)

Household Poverty Category

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely Poor	15	50.0	50.0	50.0
	Poor	8	26.7	26.7	76.7
	Better-off	7	23.3	23.3	100.0
	Total	30	100.0	100.0	

by Bruno Sserunkuma Akejo

CODES	**Summarised Profile of 15 households out of the 30 households visited**
HH1-NNCFB-1	Female-headed, Nabukat village, better-off poverty category, ranks goats and sheep as very important in contributing to household livelihood
HH2-NLLMB-1	Male-headed, Nabukat village, better-off poverty category, ranks goats and sheep as very important
HH3-NLAMP-1	Male-headed, Nabukat village, poor poverty category, ranks goats and sheep as very important
HH4-NALMB-1	Male-headed, Nabukat village, better-off poverty category, ranks goats and sheep as very important

HH5-NNCFE-2	Female-headed, Nabukat village, extremely poor poverty category, ranks goats and sheep as important in contributing to household livelihood
HH6-NLLFE-2	Female-headed, Nabukat village, extremely poor poverty category, ranks goats and sheep as important in contributing to household livelihood
HH7-NEMB-1	Male-headed, Nabukat village, better-off poverty category, ranks goats and sheep as very important in contributing to household livelihood
HH8-NLRMB-1	Male-headed, Nabukat village, better-off poverty category, ranks goats and sheep as very important in contributing to household livelihood
HH9-NKAFE-0	Female-headed, Nabukat village, extremely poor poverty category, has no idea about the ranks of goats and sheep
HH10-NOAFE-1	Female-headed, Nabukat village, extremely poor poverty category, ranks goats and sheep as very important to household livelihood
HH11-NLMME-0	Male-headed, Nabukat village, extremely poor poverty category, has no idea about the ranks of goats and sheep
HH12-NKSME-1	Male-headed, Nabukat village, extremely poor poverty category, ranks goats and sheep as very important in contributing to household livelihood
HH13-NRAFE-1	Female-headed, Nabukat village, extremely poor poverty category, ranks goats and sheep as very important in contributing to household livelihood
HH14-NCAMB-1	Male-headed, Nabukat village, better-off poverty category, ranks goats and sheep as very important in contributing to household livelihood

Appendix 3: Key Informants

Agency	Codes of persons interviewed	Number of persons interviewed
Food and Agriculture Organization (FAO), Moroto	AF1-AT and AF2-AP	2 people interviewed
Mercy Corps Uganda, Moroto	AM1-AC AM2-TK AM4-HA and AM4-KL	4 people interviewed
Department of Veterinary, Moroto District Local Government	ADVM1-ES	1 person interviewed
Welthunger, Moroto	AW1-JL	1 person interviewed

S/N	**Guiding Questions for Key Informants**
1	What are the livelihood dynamics of the people of Moroto?
2	What major assets form the main sources of food security and livelihood in their household?
3	Talk about project(s) you are implementing that target food security and livelihood.
4	What is the current food security status of the pastoralists in this location?
5	What role do goats and sheep play in their livelihood and food security?
6	Talk about household ownership and decision-making in the households.
7	Any information about PPR outbreaks, impacts and risks of future outbreaks.
8	What fall-back strategies did people employ during and after the outbreak?

9	How would you compare small ruminants with other assets (especially large ruminants) in terms of household food security and livelihood improvement?
10	Can you briefly talk about conflict in this region, the previous and current situation?
11	How does conflict affect household food security and livelihood?

Appendix 4: Guide to Focus Group Discussions

S/N	Guiding Questions for Focus Group Discussion
1	When do you call yourself food-secure and food-insecure?
2	What forms the basis of your everyday food security and livelihood in the household?
3	From which source do you get much of your daily, weekly, monthly, and yearly income?
4	How do decisions about the selling of goats and sheep affect household livelihood and food security?
5	How do you use the income obtained from the sale of goats and sheep?
6	Who does the following roles in the household? a) Looking for food for the household b) Paying for school fees for children, for health services, and household assets.
7	What other socio-cultural roles do goats and sheep fill for you?
8	Do you have health services for your goats and sheep? Which services?