Examing Spatial and Socioeconomic Differentiation of Drought Coping Strategies
among the Border Communities of Njukini, Taveta, Kenya

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the faculty of
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of the requirements for the degree
Master of Arts

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This thesis titled

Examining Spatial and Socioeconomic Differentiation of Drought Coping Strategies among the Border Communities of Njukini, Taveta, Kenya

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ABSTRACT

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Examining Spatial and Socioeconomic Differentiation of Drought Coping Strategies among the Border Communities of Njukini, Taveta, Kenya

Director of Thesis: Thomas Smucker

This study examines the spatial and socioeconomic variations of drought coping strategies among border communities in Njukini, Taveta, Kenya. Through the use of mixed methods, the study utilizes a political ecology approach to demonstrate the nature of spatial and socioeconomic differentiation in livelihoods and drought coping strategies in a dryland community in southern Kenya. The study results suggest that livelihoods are dynamic and change with broader shifts in livelihood. These changes reflect social processes and greater climatic uncertainty. It shows that access to certain types of livelihood capital such as natural capital is an important determinant of coping capacities. The study also provides evidence of the role of local and national institutions to show how these institutions mediate differential access to different forms of capital on which coping is based. Such institutions may include both formal and informal arrangements that have a substantial influence on resource access and conflict mediation. The results of the study support the notion that approaches to disaster risk reduction (DRR) and climate change adaptation must take into account the diversity of local patterns of livelihood if they are to address the root causes of peoples’ vulnerability.
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Thomas Smucker

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CHAPTER 1: INTRODUCTION

Introduction of the Study

This study of drought coping strategies among the border communities of Njukini, Taveta District in Kenya attempts to create an understanding on how individuals, households and communities cope with drought and famine in the light of broader shifts in livelihood activities, assets and capabilities. Drought coping strategies and food insecurity can be studied at multiple scales (Maxwell, 2009; Wisner & Smucker, 2008; Watts & Bohle, 1993). A study at the local scale is particularly important because understanding how local people cope with drought and food insecurity provides an opportunity to understand more clearly the interactions between communities, governments, and the environment in managing drought risk. The results suggest that people’s coping strategies are as dynamic and diverse as the livelihoods on which they are based and that coping strategies do not necessarily involve a radical shift from ‘normal’ livelihood strategies.

This study examines the livelihoods and drought coping strategies communities wedged between a conservation border (Tsavo West) and the Kenya/Tanzania border. The study attempts to bring out how place matters in determining the types of capital and diversification options available to help people cope with drought. It also examines histories of settlement, land tenure, and livelihood change and how they have affected local people’s drought coping capabilities over time. It shows that current coping strategies in Njukini are a reflection of the diversity of livelihoods and change through time. This study also tries to show how the socioeconomic status of individuals affects
their coping strategies while bringing out the problematic issue of determining the socioeconomic status of individuals in a community whose livelihoods are very integrated and where the people face serious land ownership issues.

**Human-Environment Traditions in Geography**

A central concern of Geography has been the study of societal interaction with the environment and and its spatial expressions (Pickles, 1985). In essence therefore, geographic study is about studying human interactions with the nature and the world in different places. According to Peet (1998), place and space derive from a fundamental spatiality which should be understood through a certain interpretation of the world. Relph (1976) emphasizes that there is a powerful relationship between community and place and both the community and place reinforce the identity of each other. Place is therefore a critical component of people’s experience of society and nature, wherever they find themselves. Places thus play a major role in structuring social life.

Geographic research has evolved over the years along with other social, political and economic changes in the world and so has its theory and methodology (Peet, R 1998; Henderson, G & Waterstone, M, 2009). Nature-society research has also changed over time from a quantitative methodological approach that focused on neo-Malthusian population growth-resource problems to include other aspects of the relationship that put into consideration the aspects of human experiences with their environment (Boserup, E. 1965; Harvey, D 1974). This has resulted in a wide range of scholarship on nature-society relations on a diversity of methodologies and theoretical backgrounds. Among these multiple approaches to nature-society research, the multifarious field of political ecology
has developed analyses of nature-society relationships at multiple scales. Political ecology also examines the linkages and effects of the capitalist political economy to the relationship between nature and society in different contexts (Peet, R 1998; Watts, M 2000; Robbins, P 2004).

Political ecology developed in the 1970s from the anthropological cultural ecology approach that documented people’s accounts on the interactions between nature and society (Harvey, D. 1974; Wisner, et al. 1976; Robbins, P 2004). Political ecology marked a major shift from earlier human ecology approaches that saw natural hazards as problems of mistaken perception or imperfect knowledge in the adjustment to natural events and which could thus be solved through environmental policies to a approaches that focused on political economy factors that influenced human-environment relations and resource access (Watts, M 1983; O’Keefe, P 1976; Peet, R. 1998). Cultural ecology therefore focused on local interactions between people and their environment but ignored the larger processes, institutions, and forces of the capitalist political economy that had a direct effect on these local interactions (Rocheleau, et al. 1996; Paulson and Gezon, 2005; Zommerer, 2007).

In light of this deficiency in cultural ecology, geographers interested in nature-society relationships began to explore ways in which the local is integrated into the global political economy (Peet, R 1998; Zimmerer, 2007; Walker, 2007). These geographers investigated how integration of the local to the national and global capitalist system had weakened the “adaptive flexibility” (Watts, M. 1983) of the local livelihoods especially local peasant/smallholder livelihoods and exposed them to vulnerability to natural
hazards such as drought, floods, and other disasters (Watts, M 1983; Blaikie, P 1985; Peet, R 1998).

This was therefore a convergence of development geography and cultural ecology through a Marxist approach that tried to examine how surplus is extracted from the local people through interaction with larger national and global forces. This lead the local people to extract surplus from the environment which may in turn lead to degradation of the environment (Blaikie, P 1985; Watts, 1983). For example, loss of biodiversity in East Africa may be linked to the lifestyles of Western urban lifestyles through consumption of certain goods and services produced in these areas. Growing local and global markets and a reduction of the price of Kenyan coffee or tea may result in farmers in coffee growing areas in Kenya clearing more land to boost production and increase earnings. This may cause a reduction in the numbers of wild animals due to migration and death. On the other hand, the reduction in wildlife numbers may have a negative impact on tourism and hence a reduction of the national tourism earnings.

**Political ecology: Basic Contentions**

From its origins in cultural ecology, development geography, and hazard geography, political ecology has evolved and has been influenced greatly by both changes in geographic theories of development and hazard vulnerability (Walker, 2007; Zimmerer, 2007). In the 1980s, political ecology was greatly influenced by the environmental movements and neoliberalism which was a major transition in the global capitalist political economy (Peet, 1998; Escobar, 1999). Issues of environmental resource management and how they affected local livelihoods came under intense
scrutiny. Political ecology scholarship therefore focused on the linkages between social vulnerability and environmental resource access and management (Watts, 2001; Robbins, 2004).

Political ecologists tried to explain how national and global economic and political processes had an impact on the local environmental practices (Bryant, 2001). The major goal was to offer an analysis of ‘non-place-based’ forces over ‘place-based’ (Bryant, 2001) activities (Robbins, 2004; Adger et al 2001). The impacts of the non-place-based forces, for example multinational corporations and the international environmental regulations was generally missing in the analysis of environmental practices in the developing world and therefore local people and processes were often blamed for environmental degradation without the consideration of the role of how political economy structures affected people’s relationship with their environments (Peet, 1998).

“Conditions of social and economic inequality, political and cultural oppression, economic exploitation, and natural resource depletion were linked to the ‘laws’ of capitalism…Drawing from the work of ‘dependency theorists’ like Andre Gunder Frank, political ecologists related notions of underdevelopment to questions of resource extraction and environmental degradation.” (Bryant, 2001)

For example, when a drought strikes a community in East Africa within a particular time, it occurs within a complex interaction between natural and political economy factors (Wisner et al, 2004). Among pastoral communities, a drought may be caused by prolonged dry spells that result to lack of pasture and water for animals. However, this lack of pasture and water may also have to do with diminishing grazing areas caused by the national government changing land policies that favor crop intensive
agriculture. In addition, government interest in intensive crop agriculture may be orchestrated by a growing demand for the crops in both the national and the global market in the ever increasingly globalizing food economy.

The main issue in political ecology has remained that of analyzing of interactions among actors and between the actors and the processes both social and environmental that are involved (Robbins, 2004; Castree & Braun, 2001; Scott & Sullivan, 2000). Political ecology therefore has moved away from a structuralist-Marxist approach (Peet, 1998) of analysis involving ‘chains of exploitation’ between the exploited local poor in a certain locality and the usually distant exploiters to an analysis of the interaction of processes, institutions, and actors at different scales (Blaikie & Brookfield, 1987). There is therefore the acknowledgement that relationships marked by the global political and economic power structure influence local human-environment relations as much as they influence global-local interfaces.

Political ecology puts people, places, and practices in broader processes of political and economic transformation at multiple scales (Watts, 2001). These scales are however intertwined as the processes cut across the scales and their impacts are felt at all levels (Bryant, 2001). Nature and society debates cannot therefore be analyzed without considering the larger processes in which they interact (Watts and Peet, 2004). A nuanced approach to studies of poverty, vulnerability, and drought coping therefore has to consider the underlying structures. The underlying structure of vulnerability to droughts, for example, may include market exploitation, social power relations, political marginalization, and conflict among other factors.
A political ecology approach towards understanding vulnerability therefore has to consider different spatial, socioeconomic, and resource access factors through time (Walker, 2007; Bryceson, 2000; Paulson and Gezon, 2005). It should investigate the local context of resource access and how historical, structural, and institutional changes and experiences have resulted or shaped current resource access patterns. Lower level conflicts like land grabbing, migration and settlement patterns, land use and land tenure change among others are important in understanding current livelihood dynamics (Campbell, 1999; Smucker and Wisner, 2008). A political ecology approach must therefore seek to explain how current local practices have been shaped through time in addition to an analysis of the external political economy factors that affect resource access dynamics. In order for research to inform development, political ecologists have to be able to understand place-based historical rigidities (Bryant, 2001; Walker, 2007).

A Political Ecology of Drought Coping

Robbins (2004) identifies four theses of political ecology and what they seek to elucidate. These include: degradation and marginalization, environmental conflict, conservation and control, and environmental identity and social movement. This study concerns itself with the issues of environmental resource access and conflict and conservation failures. A political ecology approach to drought coping and adaptation studies has to consider the political and the economic factors that precipitate people’s vulnerability to climatic and environmental changes. These have to analyze the losers and winners and how power relations play a part in the negotiation of resources involved as reflected in the livelihoods approach.
A challenge for research investigating the social dynamics of drought coping has therefore been considering the local adjustments to an interacting set of meteorological, and social, political, economic, and historical factors. The local people may however not be in a position to manipulate or control some of the social, political, economic, and historical forces because they are extended to different scales (Bryant, 2001; Watts, 2001). Some of these forces that have shaped vulnerability to drought and drought coping strategies in developing countries may include market liberalization, governance issues, conflict, and privatization of land ownership among others. A critical investigation of how individuals deal with political, socioeconomic, and historical stresses even when there is no drought is crucial in bringing out peoples drought coping capabilities. This is because drought coping capabilities are often latent and do not occur separately from coping with what is perceived to be normal (Eriksen & Lind, 2009).

A political ecology approach to drought coping strategies therefore incorporates external political economy factors that affect the composition of livelihoods in different geographical spaces while at the same time bringing out the linkages at different scales and their interfaces (Bryant, 2001). This is in the recognition that the composition of livelihoods is affected by larger demand and supply chains and returns for products or labor (profit) is usually guided by forces and processes that extend beyond the local scale (Blaikie, 1985). A political ecology of drought coping is also concerned with resource access patterns as central to maintaining livelihoods. These resource access patterns are determined by power relations among the individuals and groups involved.
Political ecology approaches to drought coping are also concerned with periods of stress and how people cope with drought amidst other risks of loss of access to political, economic, and environmental resources (Watts, 2000; Watts & Bohle, 1993). Place and political geography factors are also crucial because they influence resource access patterns for different groups (Massey, 1994). This has to do with territorial boundaries and how they are seen to map out resources while including and excluding certain groups. For example, political boundaries such as ethnic territories, national, and protected areas, may have an influence on resource access and livelihood options.

Vulnerability and Livelihoods

Vulnerability can be defined in terms of the exposure to shocks and stresses and difficulty in coping with them such that these shocks and stresses threaten the livelihood system and sometimes life (Watts and Bohle; 1993). According to Eriksen and Lind (2009), vulnerability is the context of political, institutional, economic and social structures and processes that create a present inability to cope with changing climate and environmental conditions. Vulnerability therefore may exist before a natural disaster strikes or it may be precipitated by failure to fully recover from a past disaster. The vulnerability level largely determines the extent to which individuals, households, or communities can endure the impacts of a disaster. Vulnerability to drought is therefore lack of strong livelihood strategies that can enable individuals or groups to endure and recover with the effects of drought.

According to Scoones (2009), livelihoods are comprised of inputs (capitals/assets) which are utilized to produce outputs in terms of livelihood strategies. In addition, this
utilization of different types of capital to produce livelihood strategies happens within a context. This context is defined in terms of policy, politics, agroecology, history, socioeconomic conditions, etc. In essence, therefore, context and available types of capital determine the ability of local people to follow certain livelihood strategies and hence producing particular livelihood strategies and outcomes (Scoones, 1998).

The ability to undertake different livelihood strategies is determined by the availability of basic material and social endowments that people have in their possession (Sen, 1981; Scoones, 1998). These endowments are the different types of capital (assets) which may include social capital, economic/financial capital, natural capital, human capital, and physical capital (Scoones, 1998; Bebbington, 1999). Social capital comprises of the social resources such as networks, social claims, social relations, affiliations, and associations upon which people draw when pursuing different livelihood strategies requiring coordinated actions. Economic/financial capital on the other hand includes the capital assets like cash money, credit/debt, savings, and other economic assets, including infrastructure and production equipment and technologies which are essential for the pursuit of any livelihood strategy (Scoones, 1998).

Natural capital includes the natural resource stocks such as soil, water, air, wildlife, genetic resources among others and environmental services like hydrological cycle, etc. from which resource flows and services useful for livelihoods are obtained. Lastly, human capital includes the skills, knowledge, ability to labor, good health, and physical capability important for the successful pursuit of different livelihood strategies (Scoones, 1998). These capitals give people the capability to be and to act (Bebbington,
1999) and their possession not only means that people produce more and more efficiently but also the capability to engage more productively with the world (Sen, 1997; Bebbington, 1999).

![Sustainable livelihoods framework](Image)

**Figure 1.** Sustainable livelihoods framework
Source: Scoones (1998)

This diagram shows the basic sustainable livelihoods framework (Scoones, 1998; Bebbington, 1999; DFID, 1999) and shows how different forces, processes, and institutions interact in context to allow certain livelihood strategies. Place (context) is
here marked as a very crucial factor as it comprises the histories, politics, economic conditions, social differentiation, climate, agroecology, demography, etc. that determine livelihood trends. This framework thus suggests that studies must understand the context, conditions and trends that determine people’s choices or pursuance of certain livelihood strategies rather than others.

Institutional processes and organizational structures also play a key role in influencing livelihood strategies and outcomes (Solesbury, 2003). Livelihood strategies and outcomes are dependent on the nature of institutional policies and organizational structures and processes. Structures comprise the public and private sector organizations that formulate and implement policy and laws that have a direct impact on the livelihoods of people in particular places (Scoones, 1998; Solesbury, 2003). Processes on the other hand comprise the formal and informal rules, regulations, societal norms and beliefs, agreements, arrangements, conditions, etc. that determine the way livelihood resources (capitals) are negotiated within certain contexts.

The institutional policies and organizational structures interact with the contextual characteristics in particular places to define how livelihood resources are negotiated. According to Watts and Bohle (1993) The rights by which livelihood resources are distributed, contested, fought over and won or lost and the structural properties of the political economy, at different scales and their interfaces, which precipitates entitlement crisis is key to understanding the adaptive mechanisms embraced by a community. This therefore calls for an investigation of livelihood priority indicators, conflicts, and choices (Scoones, 1998).
A livelihood strategy involves production activities, consumption activities, exchange and income generating activities. Successful livelihood strategies should lead to more income, increased well-being, reduced vulnerability and a more sustainable use of the natural resource base (Chambers and Conway, 1992; Scoones, 1998; Bebbington, 1999; Solesbury, 2003). For livelihood strategies to lead to sustainable outcomes, they have to be produced out of a stable and sustainable convergence of the different types of capital and institutional framework. According to the DFID (1999), a sustainable livelihood is:

“…the capabilities, assets (including both material and social resources) for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base” (DFID, 1999).

The major characteristics of a sustainable livelihood according to this definition is therefore the ability to cope, recover, and either maintain or enhance its capabilities (Scoones, 1998; DFID, 1999; Solesbury, 2003). However, coping with shocks and stresses comes with trade-offs and communities, households and individuals are regularly faced with a choice between securing short-term needs against long term livelihood security. These trade-offs come with a choice between securing certain assets which are viewed to be important for the longer term survival like land, cattle, business investments, etc. and utilizing them to secure a livelihood during shocks and stresses. Level of access to livelihood assets is also an important because access to certain forms of capital may have positive or negative effects to the sustainability of a livelihood.
There are three major livelihood strategies presented in the sustainable livelihood model. These include: agricultural intensification/extensification, migration, and livelihood diversification. Apart from agricultural intensification/extensification, the other two livelihood strategies present major questions on whether non-farm forms of capital may be a crucial part of sustainable livelihoods and if so to what extent. Bryceson et al (2000) argue that livelihoods are changing and studies on livelihoods should be interpreted taking cognizance of the major shifts. These shifts are therefore important in understanding the types of capital that are most important in reducing vulnerability.

The importance of livelihood diversification to non-farm livelihood activities shows the importance of alternative assets such as remittance, access to labor and employment, and trade among others (Bryceson et al 2000). There is general agreement among scholars that resource access is crucial in strengthening livelihoods (Chambers and Conway, 1992; Watts and Bohle, 1993; Bebbington, 1999; Scoones, 1998, 2009; Bryceson et al 2000). However, major questions arise on what kind of resource access is most important for rural livelihoods. What are the implications for drought coping of these two different livelihood orientations? The ability of these non-farm livelihood activities have led some scholars (Bryceson et al 2000) to question whether rural peasantry is disappearing.

Livelihoods are constantly shifting to adjust to both socioeconomic and environmental changes at different scales (Bryceson, 2000). In most cases, livelihoods have tended to diversify as certain coping options and assets diminish. This is because people are actively looking for new coping strategies and diversification offers a way out
of the traditional ways of coping while opening up new ones. It is however important to note that environmental and socioeconomic changes have also undermined availability of diversification options (Campbell, 1999; Campbell et al 2005; Smucker and Wisner, 2008; Homewood et al 2009). The availability of livelihood diversification options also largely depends on the existence or access to other forms of capital.

Diversification however largely depends on the socio-economic status of the individuals or households because of issues of availability and access of capital and resources (Homewood et al, 2009). This is because in most cases, socioeconomic status will determine access to certain types of capital and therefore the flexibility to explore different coping strategies. For example, a person of a higher socioeconomic status is more likely to diversify from crop production to investment than go into charcoal burning. However, this can be problematic too because of the different local definitions of socioeconomic status.

All in all, livelihood assets and practices are very synergistic (Scoones, 2009) and it is important to understand the linkages among the practices and assets. Some livelihoods are made up of a combination of many livelihood strategies and possession of certain livelihood assets in particular places guarantees access to other types of capital. Achievement of certain livelihood strategies thus requires access to a combination of different types of capital. According to Scoones (1998), identifying what kind of livelihood resources are required for different livelihood strategy combinations is a key step to analyzing the sustainability and strength of livelihood strategies and outcomes.
Drought Coping and Coping Capacity

Societies are not static and have been adjusting themselves to the different forces that continue to impact on them (Bryceson et al 2000; Campbell, 1999). Some of these forces may include: government structural and policy changes, evolving cultural practices and power relations, conflicts, environmental changes among others. In many cases, individuals and households continue to resist the narrowing of coping options and have sometimes completely transformed their livelihoods to lessen their vulnerability (Homewood et al 2009). The analysis of coping and adaptation to food insecurity should therefore consider the underlying conditions affecting drought coping capabilities in relation to the livelihood histories, changes in use of drought coping strategies and the evolution of the coping capabilities.

Drought coping strategies are responses that seek to enhance the capability of people to deal with the effects of drought related food emergencies while strengthening the ability to recover, mitigating destructive consequences, and maintaining or enhancing the resource base (Chambers and Conway, 1992; Scoones, 1998). The success of drought coping strategies may depend on the level of people’s vulnerability before the onset of the drought. A good assessment of the ability of a community to deal with a drought lies in the study of the availability and access to different kinds of capital (entitlements) and endowments available to individuals, households, or communities (Sen, 1981) within a geographical space.

In addition to an assessment of available entitlements and endowments, it is important to understand how they are accessed. Power relations based on gender, class,
race, ethnicity and other factors determine to a large access which individuals or households gain access to drought coping options (Watts and Bohle, 1993; Appendini & Liverman, 1994). The most resilient individuals or households are those that command substantial power to help them negotiate entitlements that help cope with shocks. According to Watts (2001), focusing on food production and availability or food output per head may be overly misleading. This could be because the food situation may often appear comfortable even when there have been good economic grounds for expecting terrible troubles for particular occupational groups especially those groups that are depended on exchange entitlements (Devereux and Maxwell, 2001). Widespread hunger at a lower scale could, and often co-exists with adequate food supply at the national and international levels (Maxwell, 2000). This begs the question: at what scale should drought coping strategies be assessed? Could there be logistical droughts as a result of government failure to ensure access to food for people living in drought affected regions?

According to Eriksen et al (2005), although the capacity to cope is often assumed to be under adaptability, coping and adapting are different processes. Eriksen et al (2005) argue that the coping capacity in terms of days, months and years which shapes present vulnerability complements the factors that make up adaptation over longer timescales. However, the two processes are closely linked and it is difficult to establish when coping transitions to adaptation. One could also argue that although adaptation is said to involve a change in framework within which coping takes place, Eriksen et al (2005), systems do not necessarily undergo a complete change but rather adjust depending on their current state. Sometimes, frameworks of coping are known to adjust backwards. For example,
due the increase in drought frequency in the last three decades in parts of East Africa, some farmers are going back to planting traditional indigenous crops like sorghum, millet and cassava because these crops are more drought resistant.

Government and NGO social protection programs have proved to be helpful during periods of shocks and stresses especially drought (IFPRI, 2009). Government and NGO protection programs include any attempts by the government or NGOs to cushion the affected people either through availing food supplies or providing initiatives for pastoralists to sell their very weak cattle. In some cases, NGOs and governments have provided food for asset programs in East Africa whereby the people affected by drought perform some tasks and are paid in different amounts of food. In dire cases however, organizations and governments just provide relief food to affected people either in a targeted or untargeted process.

Scholars (Eriksen et al 2005; Eriksen and Lind, 2009) generally agree that strengthening resilience levels is a significant step towards adaptation. The hierarchy assumes that successful coping leads to adaptation which in turn may result to a complete transformation of the system. Adaptation should therefore work to reduce sensitivity to stresses such as climate perturbations, market fluctuations among others. Sensitivity is basically a high exposure to risk. Eliminating sensitivity (exposure) should therefore waive the need for coping. For adaptation to be achieved there should be constant effort to reduce sensitivity. However, Eriksen et al (2005) point out that there are debates on whether adaptation measures can build on coping strategies because of the close synergies between vulnerability and coping.
“The sensitivity of the African dryland, the variability of its climate and the marginalization of much of its people define a context that brings into stark relief the factors that determine vulnerability” (Eriksen et al, 2005)

Drought coping may sometimes involve choosing to starve so as to save entitlements from depletion. This coping involves a choice between short term food security and long term entitlement protection. Smucker & Wisner (2008) however claim that in some cases, activities geared towards meeting short-term drought coping needs may become permanent livelihood systems. This makes the line between activities adapted as coping strategies and normal livelihood activities. This happens in the wake of dwindling coping options and reduced resources to fall back to in case of a drought.

Drought and Food Security

Drought is a complex phenomenon because it occurs within a convergence of different unrelated social and physical forces that weakens people’s livelihoods and interrupts day to day livelihood activities. Drought may refer to a period of prolonged below expected precipitation with negative impacts on the environment and human systems. Different authors however agree that there is no universal definition of drought due to the difference in variables involved in different droughts and also disciplinary considerations (McKee et al, 1993; Wilhite, 2000; Smucker; 2011). However, most perspectives tend to agree that drought is a condition of insufficient moisture caused by a deficit in precipitation over a period of time which has a negative impact on both physical and socioeconomic systems in a particular place.

In a bid to establish a working definition of drought, governments, NGOs, and other agencies concerned try to combine different variables. According to Smucker
meteorological, hydrological, agricultural, or socioeconomic variables may be used to identify the onset of a drought and the severity of its impacts. In addition, McKee et al (1993) argue that the frequency, duration, and intensity of drought are dependent on the established time scales. The impacts of these physical aspects of drought on socioeconomic systems and how local people adjust themselves to deal with them are crucial to this study. For example, low rainfall may disrupt agricultural production leading to low agricultural yields. This may in turn lead to less availability of food in the market which may lead to an increase in food prices reducing purchasing power for those who depend on other exchange entitlements ultimately leading to food availability and access crisis for certain groups.

The time period from the arrival of precipitation until the water is available in a useful form differs greatly. According to Mckee et al (1993), “the time scale over which precipitation deficits accumulate is extremely important and functionally separates different types of drought”. This suggests that soil moisture droughts (agricultural) droughts may have a shorter time scale than hydrologic droughts. Frequency, duration, and intensity of drought are thus all functions that depend on time scales Mckee et al (1993).

Within the same location, drought impacts may be felt at very different periods depending on the composition of livelihoods and patterns of resource access. For both farmers and herders, for example, the hardest times in the drought will coincide with the periods of maximum labor demand (Swift & Hamilton, 2000). They suggest that in times of drought, farmers have less income due to the increase in food purchases and traders are
mostly not willing to buy animals in poor conditions which may not be able to survive until the end of the drought. This negatively affects pastoralists and mixed farmers because as animal prices decline due to decreased demand, grain prices go up because the shortage caused by the drought and therefore as the grain farmers earn more income out of their grain, the pastoralists may be in a major crisis because they earn less or nothing from animal sales (Swift & Hamilton, 2000).

In areas where there are prolonged periods of reduction in precipitation, the consequences are even direr for livelihoods (Smucker, 2011). For example, in East Africa, droughts are associated with long periods of reduced precipitation and the impacts it has on agricultural production since majority of the population is dependent on agriculture. Prolonged droughts in certain regions have caused people to abandon agriculture for alternative sources of income especially in the cities hence putting pressure on both the job market in their destinations and creating food production problems where they come from due to reduction in agricultural labor. It is therefore important to note that physical aspects of drought have a great impact on entire livelihoods. In many regions especially in East Africa, drought is therefore defined according to the impacts it has on agricultural production, the environment, and human life.

Studies on drought coping should look at drought from the perspective of the impacts of meteorological, hydrological, and agricultural droughts on socioeconomic activities. They should also consider aspects of conflict and power relations and how these interact with the physical variables to shape social vulnerability in certain
geographical spaces. They should investigate how individuals, households, and societies affected by drought re-adjust themselves to face the impacts and possibly recover.

As aforementioned, drought has a significant effect on food security especially in regions whose economies are dependent primarily on agriculture. According to Swift & Hamilton (2000), drought is the main form of environmental risk in most areas in Africa although livestock diseases, market risks, and conflict also create food insecurity and can cause food insecurity in almost any places considered to be food secure although their impacts are most intense in areas already facing environmental perturbations like drought. Drought studies must therefore consider physical as well as socioeconomic factors i.e. people face production risks (including environmental hazard-related risks) and market risks.

The missing link in most drought studies has been however the determination of drought time scales. This is because although the physical factors may suggest a current agricultural, hydrological, or meteorological drought, the onset might not be determined until the impacts on livelihoods and the environment are felt. Drought onset therefore tends to be to be more associated with the onset of impacts on the environment and human life rather than the onset of the physical deficiencies in water or precipitation. It is therefore difficult to establish the actual onset of a drought especially in cases where there are slight physical changes in precipitation affecting a community that has not yet recovered from a previous drought. Different people within the same locality may therefore define drought periods differently especially given that they might not know the physical factors that constitute a physical drought.
The definition of food security has evolved as studies of food security became more and more localized. In the 1960s and the 1970s, food security was mainly defined in terms of its availability but since the 1980s, the focus has shifted to availability, access, cultural acceptance, and nutritional value. Therefore, this study will adopt the Food and Agriculture Organization (FAO) definition that states that, “Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. The four pillars of food security are availability, access, utilization and stability. The nutritional dimension is integral to the concept of food security” (FAO, 2009). This is because the FAO definition includes the fundamental elements of food security in the most recent studies.

Local Knowledge

Drought coping studies at the local scale are also important in understanding the role of vulnerable people and their place in coping and adaptation. This happens within considerable environmental, climatic, and socioeconomic shifts that affect livelihoods and coping strategies significantly over time (Bryceson, 2000). Understanding how livelihoods have been transformed over long periods of time therefore helps researchers understand why local people choose certain coping and adaptive mechanisms over others. Their experiences with past perturbations like drought, conflict, floods and other disasters are also crucial in determining their coping capabilities and chances of recovery (Eriksen and Lind, 2009). This is important in determining resilience levels among individuals and
communities. It also helps identify important resources that enhance drought coping capabilities within certain geographical spaces.

The study of livelihoods at the local scale has been boosted by the increased interest in local knowledge in development research that seeks to empower local people to use their knowledge and experiences in finding solutions to local problems. This has been achieved through participatory research whose purpose is to create interactive forms of learning between development researchers, practitioners, and the local people so as to enable historically marginalized communities to participate in assessing, analyzing and tackling development problems within their localities (Park, 1993; Chambers, 1997; Solesbury, 2003). According to Smucker et al (2007), the exclusion and marginalization of local people from decision making and in setting the agendas for their own development was one of the main reasons for the failure of many poverty alleviation initiatives. It is the realization that participatory research could empower local people to participate in their own development utilizing their knowledge that led to the inclusion of participatory methods in livelihood research (Chambers, 1997).

The role of vulnerable local people in adaptation and coping cannot be ignored in disaster studies (Wisner, 2003). Of a major importance is the role of local people’s knowledge and experiences in adaptation to drought and other environmental and socioeconomic perturbations. Local people are active agents in coping and adaptation thus their knowledge and experiences should form a crucial part of the ideas and policies on coping, adaptation and the general understanding of vulnerability. It is through collective learning among the local people, development practitioners and researchers
that solutions to the dilemma of sustainable livelihoods can be achieved. However, major questions arise on whether sustainability can be achieved in light of the predicted future inconsistencies in climate and the environment.

Borders and Coping

In this age of globalization, borders have become more porous as economies and political systems become more and more integrated. National claims to sovereignty have weakened in the wake of a global economy that is characterized by non-place-based multinational companies and organizations. The influence of these multinationals continues to grow by day and they have changed the way states view the transfer of money and the movement of people. However, borders have not completely lost their place and they continue to contribute significantly in determining access to important goods and services. There are many types of borders that affect people’s access to resources including: national borders, game reserve borders, ethnic borders, and other local administrative borders. All these have an impact in resource availability, distribution, and access. Other borders may be among people of different livelihood types, for example herders and crop farmers, and may have significant effects on local interactions.

While a lot of research has been done on mapping spaces of vulnerability to drought and drought coping strategies (Watts, 1983; Blaikie, 1985; Smucker and Wisner, 2008; Maxwell, 2009), few have explicitly assessed the role of political boundaries in structuring geographical relationships among communities. It is important to note that the border might sometimes have no significant effect on the livelihood system. However, in
some cases it may be the key to securing a livelihood or in other cases a cause of the
decline in the livelihood options depending on the relationships among the communities
and the level of interaction in times of drought. It is possible that the border constitutes a
crucial part of the coordinates that we use to map out the particular space of vulnerability.
It is also a peculiar characteristic distinguishing the different spaces of vulnerability to
drought within the same local or national scale.

This study will therefore attempt to show what borders provide in terms of
opportunities and possible obstacles. In some instances, the border can be a source of
livelihood diversification. This can happen through economic and social interactions of
people from both sides through trade, intermarriage, and sharing of resources like grazing
fields in the case of an ecological gradient. In other cases it can be a hindrance to the
development of the livelihood system. A good example is where cross-border cattle
rustling occurs, for example the Pokot areas in the Kenya/Uganda border, where many
herds of cattle are stolen and taken to the other side of the border through violence that
often involves loss of life. Another example would be the human-wildlife conflict
witnessed by people living next to game reserve borders.

The levels of interaction and reciprocal arrangements are also important for
policy. National borders also mark different levels of infrastructure development, land
use and tenure policies, political stability, and markets. All these have an impact on
people’s livelihoods and hence determine to some extent entitlement availability and
access. This research aims to shed light into the livelihood strategies of border
communities and how the border affects drought coping strategies.
Significance

This research intends to inform Drought Risk Reduction (DRR), climate change adaptation and tenure in Kenya. There is a major recognition by stakeholders that Kenya has faced several major disasters in the last few years (DDR report, 2008; EM-DAT, 2011). The most recent disasters (from the last decade) include droughts, floods, landslides, and fires. The DDR report (2008) estimates that in the year 2000 drought, 4.4 million people required food assistance while in the 2006 drought 3.5 million people required food relief. Relief agencies such as the Red Cross and OCHA estimated that 9.9 million people were in need of food relief during the 2008/2009 which was accompanied by major floods in different parts of Kenya. The DDR report of 2008 argues that the concept of Drought Risk Reduction has not been given the necessary priority. They suggest that key elements such as drought preparedness, resilience enhancement, sustainable food security, and livelihood diversification have not been taken seriously by stakeholders although there are draft policies on disaster management.

In addition to the poor policy framework on drought risk reduction, climate change poses a serious and continuing threat to development (Scholes and Biggs, 2004) especially on agricultural productivity. Crop production may fall by 10-20% by the year 2050 due to climate change but there are places where yield losses may be more severe as well as others where yields are expected to increase (Jones and Thornton, 2003; IPCC, 2007; Thornton et al 2008). The impacts of climate change affect resources that are critical to development in Kenya. A recent study showed that it is estimated that the direct costs of the impacts of climate change in Kenya may potentially amount to
between one and two billion US dollars by the year 2030 and may be higher if indirect costs are included (GoK, 2010).

The complexity of studying drought in the advent of climate change thus arises the relationship between coping with ‘normal’ climatic variability and coping with climate change are not independent of each other but are rather synergistic. Several studies agree with the proposition that adjustment to climate change does not take place in isolation from the ways that people deal with many other pressures, stresses, trends, perturbations, and other seasonal changes that are perceived to be ‘normal’ (Ericksen & Lind, 2009; Mortimore, 1998; Davies, 1993).

To understand coping capacities and capabilities therefore, researchers need to first understand how people cope or have adapted to what they perceive as ‘normal’ and evaluate the success or failure of such coping and adaptation strategies. However, even when a drought is viewed as ‘not normal’ and related to climate change, there is nonetheless a problem of studying adaptation to something that unfolds over decades. Therefore, the dis-connect between coping and adaptation is over the inability to study adaptation over a short period of fieldwork.

Another major problem affecting vulnerability and drought coping Kenya has been the national land tenure policies. In Kenya, the privatization of land ownership started in the colonial period and continues to date. In the 1950s, Kenya began one of the most ambitious land tenure reforms in Africa which continues today and has affected people’s livelihoods across the country (Mackenzie, 1996). The privatization of land and the increase in population has seen dwindling livelihood strategies especially for
communities whose livelihood systems were based communal ownership of land especially pastoralists and arid and semi-arid mixed farmers (Mackenzie, 1996; Wangui et al 2005). The commodification of land ownership has seen wealthier landlords buy out communities from their communal livelihood resources.

Historically, systems of land use and ownership within a particular region largely depended on the peoples cultural believes, core economic activities, and other socio-political factors (Mackenzie, 1996; Okoth-Ogendo, 1989). This suggests that privatization of land has caused increased vulnerability of the people living in these areas because of the decrease in communal resource availability and access as wealthy land lords buy and take over former communally owned land. People in positions of power are also known to trade previously communal land for personal profit, to the detriment of other members of the community (Mwangi, 2007, in Homewood et al 2009). During droughts, these communities are faced with limited options and sometimes have been forced to abandon their old livelihood mechanisms because of the scarcity of land.

“Other government policies like government expropriation of land without compensation have affected access to resources and disrupted spatial patterns of livestock movement and other aspects of resource management” (Wisner & Smucker, 2008).

These practices have sometimes placed the ASAL farmers and pastoralists in originally wildlife movement routes leading to human-wildlife conflicts with farmers losing their animals and farm produce to wildlife. This happens through attacks on cattle and other animals by wildlife such as lions, leopards, and hyenas among others. Crops are also destroyed especially by big animals such as elephants and buffaloes. This situation is
very common in the research sites in Njukini which borders the Tsavo West game reserve. There are also instances where people have attacked and killed by wild animals.

The priorities of wildlife conservation to safeguard the gains from the tourism sector in Kenya have also affected rural livelihoods and coping capacities especially the people living around game reserves. The Kenyan government has demarcated large tracks of land which were historically accessible to pastoral communities into national parks leaving these communities with little land for pastoral activity. This has seen pastoralism which was traditionally at the core of Maasai cultural identity decline in the twentieth century due to the limitation in movement occasioned by lack of space (Waller, 1999 in Homewood et al, 2009). The Maasai have had to diversify their livelihoods to include crop farming. This practice is taking place alongside drastic changes in land tenure, with rapidly diminishing access to land due to privatization, subdivision, and conservation set-aside (Homewood et al, 2009). Frequent clashes between wildlife and people are not uncommon.

Research Questions

While much of research has been conducted on drought coping strategies among different livelihood groups in Kenya, few of them have focused on drought coping in spaces separated by political borders and little research has been done that examines coping through time. It is important to note that the border might sometimes have no significant effect on the livelihood system. However, in some cases it may be the key to securing a livelihood or in other cases a cause of the decline in the livelihood options depending on the nature of the relationships among the communities and the level of
interaction in times of drought. It is possible that the border constitutes a crucial part of the coordinates that should be used to map out the particular space of vulnerability (Watts & Bohle, 1993). It is also a peculiar characteristic distinguishing the different spaces of vulnerability to drought within the same local scale.

This study therefore investigates how coping varies spatially and socioeconomicly among border communities. It also seeks to explore how people have adapted to changing social, political, economic and climatic factors and the possible benefits from the ecological gradient in the slopes of Mt Kilimanjaro. The possible opportunities and obstacles provided by the proximity to national, provincial, and game reserve borders are also important in this study. The study is guided by the following questions:

1. (a) How does place matter? How do drought coping strategies vary geographically in Njukini?
   (b) How does spatial interdependence matter? What is the role of cross-border interactions in drought coping?

2. How does resource access matter? How does coping vary socioeconomicly or as a function of resource access?

This research proposes that studies about coping should be interpreted in light of the larger shifts in livelihoods. This is because livelihoods are becoming more diversified in line with socioeconomic, geographic, and natural processes (Bryceson et al 2000). This diversification however depends on individual capacities in terms of entitlements and endowments and may include moving away from the usual livelihood activities like
farming and pastoralism to other livelihood activities like charcoal sales, investment in business, and trading. Diversification can also involve taking up cash crop farming or planting more drought resistant crops. As diversification options run out, individuals or households may be forced to migrate to other places perceived to be richer in options. This diversification however largely depends on the socio-economic status of the individuals or households because of issues of availability and access of capital and resources. This suggests that the rich and the poor may have access to very different livelihood diversification options.

In the subsequent chapters of this study, I present the results of research conducted in Njukini Taveta Kenya. In chapter 2, I detail the epistemological underpinnings of the study, the methods used, the limitations of methods used and the analysis. Chapter 3 examines the study area, establishes the local history of settlement and land ownership and how they shape resource access. The study also provides a description of the physical characteristics, agro-ecology, and rainfall patterns, livelihood practices and their timelines and local interactions. In chapter 4, I examine the important coping resources and practices in Njukini and show how they vary geographically and socioeconomically. The study also shows the role of the national and conservation borders in drought coping. In chapter 5, I draw conclusions from the results and address their significance to drought risk reduction, climate change adaptation and land tenure policy.
CHAPTER 2: METHODOLOGY

Drought coping studies are complex and they call for the use of several methods of data collection and analysis in order to answer research questions. The study of drought coping and livelihoods research in general calls for an approach that that takes into consideration as many aspects of livelihoods as possible. This is meant to bring out as many components of livelihoods as possible in order to make more informed comparisons and generalizations. In order to do this, the researcher has to employ mixed methods so as to be able to fill the gaps that are exposed by the use of a single approach. Several scholars agree that an integration of different research methods in any study is important as different methods are seen to complement each other (Caracelli and Greene, 1997; Greene, 2007; Tashakkori and Teddlie, 2003).

This section will detail all the methods used and their role in answering the key questions in the research. It will also expound on the theoretical framework that justified the use of these methods and why the methods are adequate in answering the main research questions. The use of mixed methods in this research is guided by the principle that mixed methods provide stronger inferences while also employing a greater diversity of views (Tashakkori & Teddlie, 2003). The use of several methods within the same research will test relationships among variables while at the same time giving a voice the local people’s knowledge and perceptions which enables the researcher to get a bigger picture of the study while also improving the quality of research results.

A mixed method approach to research according to Greene (1989) has five main purposes which include: triangulation, complementarity, development, initiation, and
expansion. Triangulation usually involves testing results using different apparatus so as that the researcher can get the multiple variables influencing the results while complementarity has to do with illustration of results from one method using the other. Development in mixed methods explains how results from one method may shape the subsequent research methods. On the other hand, initiation serves the purpose of challenging results from a certain method and generating new research questions based on gaps in the methodology while expansion is about the richness that mixed methods give to a particular study. These components of mixed methods in research give the researcher a more thorough knowledge and understanding of the study.

Multiple data sources are used in this study to capture information and to triangulate observations in order to get a detailed picture on the dynamics of coping and vulnerability across households in the research site. Crucial data on livelihoods, drought coping strategies, available forms of capital, socioeconomic status, land use, climate variability and reliability, rainfall availability and reliability, cross-border interactions, and demographics among others was therefore collected. The analysis is based on both primary and secondary data sources. The primary data sources include: a household survey, focus group discussions, key informant interviews, and participant observations. In addition to the primary data sources, secondary data sources such as government documents and grey literature are used to give important study area characteristics and other contextual information.
Primary Data

Several primary data collection methods were employed between June and August 2010 in Njukini Location, Taveta District, Kenya. This was done with help from the district commissioner and other local leaders and was mainly facilitated by the National Council for Science and Technology in Kenya. Because the National Council for Science and Technology (NCST) requires researchers conducting research in Kenya to be affiliated to local institutions, the research was done in collaboration with the Department of Environmental Education in Kenyatta University.

This research was also part of the Local Knowledge and Climate Change Adaptation Project (LKCCAP) in East Africa. The LKCCAP is a National Science Foundation (NSF) funded research project on climate change adaptation in Northern Tanzania (Mt Kilimanjaro region) and parts of southern Kenya. It is run by the Department of Geography in Ohio University. The researcher was therefore part of a team that conducted workshops on research methods, project goals, and objectives in Moshi, Tanzania. The researcher also took part in drought history workshops in other project sites in Tanzania in the same period. The involvement in the larger research facilitated the researcher’s understanding on livelihood mechanisms in the Tanzania side of the border and therefore an avenue for making comparisons among the sites while also learning critical data collection methods.

All the primary data was collected in accordance with the Ohio University Internal Review Board’s (IRB) regulations on research involving human subjects. All research participants were informed beforehand what the research was about, the nature
of information required, issues of confidentiality, the amount of time, how the information collected would be used, and that their participation was voluntary so they were free to leave at any point during the research process. All the household surveys were conducted with assistance from a Kenyan research assistant hired for this research but the rest of the data was collected by the researcher himself with help from local government administration officials.

The Household Survey

The household questionnaire used for the household surveys in Njukini, Taveta, Kenya was the same questionnaire used by the LKCCAP in Tanzania although there were minor linguistic, research objectives, and contextual changes. This questionnaire was administered so as to collect household level data on household demographics and livelihood, agricultural and livestock activities, access to water and fuel resources, major livelihood shifts, the role of local institutions, climate change, and coping with drought and floods. The research assistant was trained on household survey data collection techniques and was also informed about the guidelines of the IRB. However, the researcher accompanied the research assistant to all the households to ensure the right information was collected.

Although I did not conduct a pilot study, the first four questionnaires administered were learning opportunities on how to ask the questions so that the right information was given. Due to the presence of the researcher in all the interviews and the ability to speak some of the local dialects, it was easy to put the interview back on track whenever the research assistant strayed away from the intended research questions. After the first day
of interviews, the research assistant was retrained on administering the questionnaire based on the experiences of the day.

The interviews were conducted in either Kiswahili or Kikamba depending on the native language of the household. The researcher and the research assistant could speak both of these languages fluently and therefore there were no linguistic misunderstandings. Any adult available in the households was interviewed although household heads were preferred. In cases, the male household head would ask the wife to respond while he listened and contributed to the debates in cases where both husband and wife were available. In some cases, we interviewed adult children especially when the household head and the wife were not available. When there was nobody at home or the adults were not present, an appointment was scheduled for later. However, if the place was very far from the research base, the researcher would stand in the main door of the main house and then go to the household on the left because of transportation problems. In the borders, the researcher would toss a pen until we the team could find a random household that had not been interviewed.

There were no instances in the research where respondents refused to take part in the surveys. However, many of the respondents questioned the purpose of the study and wondered whether it would lead to any major change in policy or government action in the area. Even after having been informed that this was an academic study that would be used to fulfill a requirement for graduation and that the researcher was only required by the National Council for Science and Technology to avail a copy to their (NCST) office upon completion of the research, the respondents insisted that the researcher should
inform the government that the local people needed title deeds. However, this can be explained by the fact that this as a newly settled area and majority of the people do not have title for the land they occupy or are landless.

The sample size for Njukini location was 50 households out of the estimated 2,105 households according to the District Development Office (DDO). Only five sub-units were surveyed. The researcher first observed the study area and classified the villages into different agro-ecological and livelihood zones. Out these classes, one village was chosen randomly from each agro-ecological zone. This was done so as to have a sample that was representative as possible given the large size of the location. At least 10 questionnaires were then administered on each of the locations therefore having a total of 50 survey questionnaires. Out of the 50 survey questionnaires, four of them were spoiled and the researcher had to discard six other questionnaires so as to have eight questionnaires for every sub-unit. This was done to maintain a balance in the number of questionnaires per sub-unit as shown in Table 1.

<table>
<thead>
<tr>
<th>Village</th>
<th>Frequency</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Irrigation</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>kijiji</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>Sir Ramson</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>Town</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>Uthiiani</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>
The study area was divided into six sub units to capture the different livelihood types and how they have changed over time. It is important to mention at this point that Njukini is a small area but one that is characterized by diverse livelihoods. The livelihood systems are mainly dictated by histories of resource access and settlement. The five sub-units where the surveys were conducted include Uthiiani, Kijiji, Town, Sir Ramson, and Irrigation. There is however a sixth sub unit comprising the Maasai who live in the Rombo group ranch whose interviews were mainly done qualitatively. This was because although they live within Njukini, they are secluded in the group ranch and it was difficult to include them in the survey without interfering with the general results.

In each of the five research areas sampled, the researcher got a random sample of households. The sample was chosen through going to the middle of the village and tossing a pen. The pointer of the pen would indicate the first household to be surveyed. Subsequent households would be chosen by standing in the front door of the main house and going to the household on the left until the left would be a household on the other village or a household that had been already surveyed. If that happened, the researcher would toss the pen again until it pointed to a house that had not been surveyed.

The samples represented the different areas in Njukini according to livelihood types, access to irrigation water, and proximity to national and game reserve borders. This was basically done so as to capture the different types on drought coping strategies, access to different types of capital in coping, availability of diversification options, and the levels of vulnerability for the different livelihood groups.
Key Informant Interviews

Key informant interviews were conducted with community leaders especially business people, the local administrators, officials from the Ministry of Agriculture, officials from the District Development office, and officials of nongovernmental organizations working in the field. Recruitment for the interviewees was done through guides and referrals from my first interviewees. The interviews with the business people were used to provide information on the level of cross-border trade, the role of trade in coping, and whether business operations were a diversification option. Community leaders, for example chiefs, sub-chiefs, and headmen were interviewed about access to resources and social networks at different sites along the gradient neighboring Tanzania and how these affect drought coping and livelihood diversification. The community leaders also discussed the impacts of national policies for example policies on land and access to resources in the game reserves and how that has affected drought coping over the years. Marginal farmers living along the Kenya/Tanzania border and those living near the Tsavo West game reserve were also interviewed on the benefits or obstacles to livelihoods created by the borders. A total of 20 key informants were interviewed.

The interviews with officials from the Ministry of Agriculture and the District Development office provided crucial data on demographics, poverty levels, climate, agriculture, and land use among others. The District Development Officer gave important statistics on rainfall, poverty levels, water access, and development initiatives that were being undertaken to reduce people’s vulnerability to drought and food insecurity. The Ministry of Agriculture provided data on types of crops under irrigation, types of drought
tolerant crops, soil conservation measures, types of government interventions during drought, and farming seasons among others. All the key informants were given all the information about the research and the confidentiality of the information they gave in accordance with the Ohio University IRB. Their names have been coded and each one of them assigned a pseudonym for the purposes of citation in the final research text.

However, the key informants from the ministry of agriculture and the district development office refused to be tape recorded. They all insisted that the researcher takes notes as the conversation went on. The researcher therefore had to listen and make notes on the key issues that came up. This information was later written into more coherent field notes after the research exercise.

Drought History Workshop

The researcher conducted one drought workshop with the help of the local chief. The local chief requested elders from the five villages surveyed to take part in a focus group to discuss important historical and current issues touching on drought and land tenure. The group was comprised of seven men and one woman. The focus group comprised some of the oldest known settlers of the area. Having been a government protected water catchment area, most people started settling in the area in the mid-1970s and therefore those who settled earliest knew each other and they were also known within the location. The researcher developed agendas for the focus group although most of the times he let the discussion flow guided by one of the elders. This was possible because the researcher had met one of the elders in advance and informed him on the nature of
information that was required and therefore this particular elder was instrumental in shaping the direction of the discussions.

The focus group provided important information on settlement, land rights and ownership, ethnic composition and power dynamics, and the history of drought in the region. The elders recounted all the droughts they had witnessed since they settled in the research site and the coping strategies employed. They ranked all the droughts in terms of severity and characteristics and also the interventions employed by the government and NGOs. They would sometimes disagree on the rankings and the time periods and this provided a good learning opportunity for the researcher on drought coping, duration, and intensity. The elders also provided information about how cross-border interactions have changed through time and their role in drought coping and the general livelihood of the people living along the border.

Participant Observations

Participant observation of people’s interactions in Njukini was an important learning opportunity for the researcher. All the observations were not planned and were most of the times done concurrently with other data collection methods. It was important, for example to observe that when it came to talking about land rights and ownership, most of the respondents would be uncomfortable answering these questions if there were members of a different ethnic group. When questions about land ownership were asked independently, some respondents would openly blame members of other ethnic groups for the lack of title deeds because of traditional ownership claims. These observations
provided important understanding of the ethnic tensions that surround land ownership and land rights in this area.

Limitations of Primary Data Sources

Like any other filed method of collecting primary data in social science research, this research was faced by several contextual issues relating to the dynamics of the participants’ perceptions towards the researcher and the research itself. The responses given to the research questions are usually affected by the respondents’ perceptions towards the goals of the research and other social issues. Power relations based on class, social status, age, gender, and ethnicity also come into play during the interactions among the researcher, research assistant, and other research participants. Although these issues may not affect the general quality of research results and their interpretation, it is important to point them out so that the interpreter is conscious of them. In this section, I highlight a few of the issues that came up during the research and the potential effect they may have on the interpretation of the research results.

One of the main issues had to do with the purpose of the study. Although the researcher and the research assistant in this research informed and even tried to convince respondents that this research was purely academic and may not bring about policy changes on how the governments handles drought related food crisis, the respondents, some of the responses were openly geared to showing that the locals were desperate in need of urgent help. This was characterized by under reporting of household assets and coping options. This may be attributed to the nature of the research topic and the period in which the research was conducted.
The research was conducted in a period when most households were recovering from the 2008/2009 drought. This drought had been very intense and saw many NGO and government interventions put in place. Before most interventions, both government agencies and NGOs would conduct baseline surveys to establish vulnerability and coping capacities and these would then influence the nature of interventions. Given that drought vulnerability and coping capacity were crucial to this research, it was easy for the respondents to perceive this research as forming the basis for future interventions. Some of the interventions included household food distribution and it was important for households to justify why they deserved food from the agencies and therefore lying about resources was rampant during the government and NGO surveys.

The positionality of the researcher and the research assistant also influenced some of the responses. The researcher, an educated Kenyan male with perceived access to government officials and some respect from local officials, and the research assistant, a male university student, may have affected the nature of responses we received from the respondents. Even after informing the respondents the purposes of the research, some respondents felt that the researcher should inform the government about the issues that the local people were facing because they felt that local leaders were not doing so. This was common especially when issues of land ownership and land rights came up. Some respondents openly informed the researcher that although they understood that he was a student, he should also inform the government to issue them with title deeds. These perceptions affected responses that had to do with the time of settlement and land access.
The ethnicity of both the researcher and the research assistant was also problematic for the research. Both the researcher and the research assistant came from the Kamba ethnic group which constitutes the majority of the inhabitants of Njukini. Ethnicity only became an issue when talking about land ownership especially due to the tensions between the Taveta community, who believe that the land in Njukini was traditionally theirs, and other communities especially the Kamba who are perceived to have taken it over because of their numbers. The responses of many Taveta people would therefore be very restrained when they talked about land ownership and traditional land rights although some of them used the opportunity to voice their grievances about the issue.

Other issues were that the research could not accurately quantify certain types of capital, time constraints, and also that it could not establish drought time-scales. There was a major difficulty in establishing the levels of access and availability of financial capital because it was not possible to ask how much money each member of the household earned so as to establish a household’s financial capital level. The other limitation was that the methodology could not establish drought time lines as community members disagreed on the issue. For example, while farmers with access to irrigation water said that the 2008/2009 drought was over, farmers without access to irrigation water said that the 2000-2010 decade was comprised of one long drought that was not over.
Secondary Data Sources

District development reports, publications from the Ministry of Agriculture and World Vision Kenya, and other agencies working in Taveta District were useful sources of statistics and other important food security and drought coping data. These provided district and country profiles, rainfall charts, district seasonal charts, demographic information, and coping strategies indexes among other important data. This data is important in providing a contextual basis for the study. However, Taveta district was only created in 2010 and most of the information covers the larger Taita-Taveta district from which it was curved out. It is also important to note that in August 2010, Kenya adopted a new constitution that does away with the Districts also Taita-Taveta will remain as a county.

Analyses

The study undertakes a political ecology analysis of coping strategies among communities separated by borders. It investigates the different livelihood types and the degree of vulnerability depending on the availability and access to different types of capital for individuals, households, and the whole community. The analysis is based on a political ecology approach which seeks to identify the forces that determine the capacity and capability of local people to cope and recover from drought. This analysis classifies livelihood type together with access to different resources and capital (wealth) to determine socioeconomic status and exposure to drought and coping capacities.

The data collected from the household survey was analyzed using the SPSS statistical program. A combination of survey and other qualitative data sources were
used to assess variation in coping mechanisms by livelihood type, wealth status, and location. Survey and other field data were also used to assess the relationship between coping mechanisms and indicators of livelihood assets/capabilities. For example, assessment of how households with substantial non-farm sources of income cope with drought relative to those with less diversified livelihood activities.

Key informant interviews helped provide crucial information on communal access to resources, drought history, history of drought coping and vulnerability, livelihood change, and cross-border interactions among other factors. These interviews also provide important data on the role of conflict in coping and how these conflicts are resolved or maintained. The major types of conflicts analyzed are: human/wildlife conflicts, cross-border conflicts (both national and game reserve borders), communal resource conflicts like the ones involving water and grazing areas, and political conflicts mainly involving policies on access to resources in the game reserve to the local communities.

Both the survey data and the interviews are used to provide an assessment of the extent to which peoples’ livelihood activities and assets are based on the Tanzanian side of the border. Social capital (mainly social networks) and business practices across the national border are important in assessing coping capabilities. Assessment of socioeconomic and geographical variation in coping, the role of specific livelihood assets in coping, and the role of the border in coping are supplemented by data from the survey, key informant interviews, focus groups, and participant observations.

Secondary data is important in this research in providing comparisons of statistics on rainfall and key livelihood resource prices. For example, it provides data on maize (the
staple food) price fluctuations over long periods of time which is crucial in understanding coping capacities. This data provides important statistics on rainfall, coping strategies index, and seasonal charts which are crucial in backing up the qualitative data and comparing and explaining statistics from the survey. The secondary data also provides information of the role of government and NGO social protection programs in coping and in the strengthening of local livelihoods in Njukini. Combined with the surveys, key informant interviews and the focus group discussion, the secondary sources provide a good assessment of the impacts of environmental and climate change on local livelihoods.
CHAPTER 3: HISTORICAL FOUNDATIONS OF CONTEMPORARY LIVELIHOODS IN NJUKINI

This chapter looks at the local internal characteristics of Njukini’s location, economic activities, settlement, ethnic composition, demographics, systems of land tenure, Livelihood types, agro ecology and climate, and other factors that affect drought coping capacities and capabilities of the local people in Njukini. It will provide a description of physical, geographical, and cultural factors that shape livelihood access and availability and socioeconomic relations in Njukini. Secondary data sources, the survey data, and the qualitative data will be used to identify key aspects of livelihood and local variation and statistics on important climatic, environmental, and social characteristics of this study area. This chapter is meant to provide a contextual framework of the study, discuss livelihood practices, and provide crucial basic information on vulnerability and livelihoods in Njukini.

This chapter attempts to show that the characteristics of livelihoods in this site present evidence that historical factors have a great impact on the livelihoods of any place. The change in livelihoods implies that livelihoods are dynamic and are also influenced by both internal and external factors. Another important aspect of livelihoods in Njukini particularly is that we can have an extreme diversity of livelihoods over a very small area. This is characterized by the different livelihood strategies among the people of Njukini which include irrigated agriculture, rain-fed agriculture, and pastoralism which are being diversified towards non-farm activities like trade, casual labor e.t.c. The diversity of livelihoods and their change through time also present local vulnerabilities
and the forms of capital that are most important to livelihoods and coping in case of a drought. Drought coping is thus a reflection of this diversity and change.

The Study Area

Njukini presents a microcosm of dryland areas in East Africa. It is encompasses the primary livelihood types and economic activities that are found in Kenya’s arid and semi-arid zones. Njukini also marks a transitional zone between the more pastoral areas of Loitoktok and Kajiado to the north, the sisal plantations of Taveta, and the Taita hills and Kilimanjaro gradients which rise out of the savanna and are host to intensive small holder farming systems. Its history and settlement also makes it a very ethnically diverse area compared to many other rural dryland areas. These characteristics are a result of its unique history in terms of settlement which resulted in current patterns of land ownership and resource access.

Njukini location is located in Taveta District in the Coast province of Kenya. On the West, it marks the border of Coast province and Rift Valley while in the North East it marks Taveta districts border with the Tsavo West game reserve. It is located in the leeward side of the slopes of Mt Kilimanjaro. It falls in the lower and drier lowland gradient of the mountain in the Kenyan side of the Kenya/Tanzania border. Its elevation ranges from 910M to 1055M (the highest point next to the Kenya/Tanzania border). It also lies between the Kenya/Tanzania border and the Tsavo West game reserve.

The population of Njukini location is estimated as 10,097 people (Taveta District Development Office). It is comprised of three sub-locations. These are: Njukini, Chumvini, and Lumi. It is part of the Challa division which is a larger administrative unit
above the locational level. Challa division of Taveta District is regarded as one of the major food producing divisions of the district through irrigated agriculture.

Njukini is fed by two major rivers and several underground springs that begin from the slopes of Mt Kilimanjaro. There are two important rivers that supply irrigation water to the people of Njukini and these include the Tsavo River and Lumi River although there are other seasonal streams that feed into the two permanent rivers. With these permanent water sources, some parts of Njukini are able to support agricultural production all year round despite very low and erratic rainfall patterns. Also supporting agricultural production are the rich volcanic soils a characteristic of the general Kilimanjaro area despite a tendency to alkalinity in a few poorly drained areas (Frontera, 1974). However, there are several areas within the location that have little or no access to irrigation water due to their distance from the water points and other regulations.
Figure 2. Location of study area within Taita-Taveta region
Settlement History and Implications for Patterns of Resource Access

The settlement history of Njukini represents change and diversity and this has largely shaped resource access patterns in the area. Before the early 1970s, there were very few people living in Njukini and these mainly lived along the Kenya/Tanzania border while the rest lived near the private large-scale farms. This is because Njukini was a government protected water catchment area. According to interviews with local residents, animals from the bordering Tsavo West game reserve would wander out of the game reserve and graze or hunt in the area without any conflict with local people.

However, the family of the first president of Kenya, Mzee Jomo Kenyatta, owned and still owns large tracks of the land where they practice large-scale sisal farming as a cash crop. Another former politician of Greek descent from the area also owns large tracks of the land and also practices sisal farming. This reflects the widespread abuse of presidential discretion through land grabbing and especially as pertains to trust land (Southall, 2005) by former presidents Kenyatta and Moi. It should be noted therefore that although Njukini was ideally a government protected area where settlement was prohibited; influential people in the government were still able to curve out large sections of it to practice different types of large scale agriculture. The people who worked in these farms were among the earliest inhabitants of Njukini.

“Most of us were born in the staff quarters of the large-scale sisal farms but we were not allowed to live in the quarters after we were older. So, we moved out and constructed houses in the open land” Owuor, a resident of Irrigation village in Njukini who, according to local land access arrangements, is still a squatter because the land he lives in is still part of the large scale farm owned by the Kenyatta family and thus he has no title but he has not been evicted although he has lived there all his life.
Most of the settlements therefore were by families working in the two large-scale farms owned by very prominent personalities in the Kenyan government since the independence in the 1960s. As the families of the workers grew in size, their employers did not allow mature members of the families to live with their parents in the estate. Therefore, when family members e.g. children of the workers’ families grew older, they would move out of the estate and construct temporary houses outside of the farm but still within the protected area. However, they could not get title deeds because this was a government protected catchment area. These workers comprised of people from many different ethnic groups in Kenya. The following quote by Mzee Mutwiwa explains this phenomenon.

“The village of Sir Ramson is named after a British hunter who guarded Mwafala’s (A local name for a British settler) farm. The guards were not paid money but were given powers to exploit the resources around. When both Mwafala and Sir Ramson left, Kenyatta took over the farm but the name remains to date.” Mzee Mutwiwa.

There are, however, many landless people in Njukini who have lived there since the 1960s. Most of the landless comprise the workers and their families who were born in the large scale farming estates and who moved out after losing their jobs or after they were old enough not to be allowed in the estates. This happened mainly because most of the land was informally demarcated by migrants for cultivation and put on informal private ownership after the first two major waves of settlement in the 1980s and therefore people moving from the estates were not able to find plots to build their homes and farm as it were in the 1970s and early 1980s. This happened as the large scale farms
diversified from sisal farming to maize farming which was accompanied by a significant reduction in the labor required.

Other early inhabitants of Njukini migrated from Tanzania after Kenya’s independence in 1963. These were mainly Kamba people who had been evicted from Chullu Hills in Ukambani and had moved to Rombo in Tanzania. According to Mzee Kimondo of Uthiiani village, these groups crossed back into Kenya just to be part of the newly independent nation. Their migration from Tanzania was therefore not coerced and they did not move very far into the interior but instead they decided to settle in the area very close to the border. They were some of the earliest inhabitants of Njukini and most of them live not very far from the border, in Uthiiani village, and maintain very strong ties with their neighbors and former hosts across the border in Mkuu, Rombo (Study area map).

The patterns of settlement and resettlement in the early post-colonial era were driven in part by regional political integration and conflict. Tensions between the members of the East Africa community in the early to mid-1970s also contributed to the increase in settlements in Njukini. The East Africa Community (EAC) was a treaty among Kenya, Uganda, and Tanzania that was established in 1967 to transfer tax, establish an East African Development Bank, and to decentralize various headquarters for common services (Mugomba, 1978). It came as a predecessor of the East African Common Market that had existed during British colonial rule within the colonial area that would eventually constitute the three countries (Kenya, Uganda, and Tanzania). After independence the common market became harder to implement because it was viewed as
operating in favor of Kenya which was perceived to be more developed among the members of the EAC (Mugomba, 1978; EALA, 2011).

In the early to mid-1970s, just before the disintegration of the EAC, there were great tensions among the three countries as they blamed each other for violating the treaty. As a result Kenyans who had moved into Tanzania started crossing the border back into Kenya. This movement of Kenyans from Tanzania back into Kenya was fueled by fear of reprisals. This movement of people escalated in the mid-1970s until the EAC collapsed in 1977 (EALA, 2011). After the collapse of the EAC, the Kenya/Tanzania border was closed and cross-border interactions were limited. According to accounts by early residents of Njukini, the unarmed and uncordinated hostilities between Kenyans and Tanzanians, especially those living close to the border and those who had migrated, caused most people to flee back to their countries.

“This was open land. There were just a few Taveta people who lived here. The Maasai also used to come here to graze their cattle. Most people migrated and started farming here around 1972. Most of them were Akamba people from Tanzania who came here to form settlement schemes. Otherwise, this was supposed to be a ranch and a water catchment area. It was a government protected area and people were not allowed to settle here.” Mzee Mututnga, local Chief, Njukini.

Njukini thus became a host of many Kenyans crossing the border from Rombo and even as far in the interior of Tanzania as Moshi and Arusha. The settlements in Njukini by Kenyans crossing from Tanzania were neither sanctioned by the government nor did the government openly reject them. People therefore just settled in the empty land without title deeds and started farming and other livelihood activities. People migrating from the same villages and regions in Tanzania named the villages in Njukini after the
regions in Tanzania where they migrated from and that makes it easy to trace where many people from a certain villages came from although many more people migrated from other parts of Kenya and joined these villages later.

“The people who settled in Kijiji A, B, B2, C and D came from Arusha in Tanzania. They called the place kijiji because they came from a Ujamaa village (Kijiji cha Ujamaa). They then fenced the area like an Ujamaa village to avoid mixing with other groups. These were Kamba people who had migrated to Tanzania long ago.” Mzee Musyoka.

The first major wave of settlements in the 1970s had been followed by a slower stream of migrants from the Ukambani region. Many Kamba people who settled in Njukini went back to their original homes in the neighboring Makueni, Machakos and Kitui districts in Eastern province and invited their relatives and friends to come to Njukini. There was therefore an influx of Kamba people to Njukini after the 1974 drought and this continued until the 1980s. Although Njukini is just as dry as some parts of the Ukambani region, it was attractive to the Kamba people because of access to water from the springs and rivers that flow out of Mt Kilimanjaro. Table 2 indicates that 55% of those interviewed were not born in Njukini. This is a major indication of the dynamism of the population and also a sign of population growth.

Table 2

<table>
<thead>
<tr>
<th>Respondent’s Place of Birth</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elsewhere</td>
<td>22</td>
<td>55.0</td>
</tr>
<tr>
<td>Njukini</td>
<td>18</td>
<td>45.0</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Many more settlements occurred after the first settlers from different parts of the country and therefore the area is characterized by many ethnic groups. The main ethnic groups in Njukini are the Kamba, Taveta, Taita, Mijikenda, Maasai, and Gikuyu although many other ethnic groups also live there. The table below shows the distribution of respondents by ethnicity in the household survey in Njukini according to the number of respondents interviewed. However, it should be noted that the Maasai ethnic group who are predominantly pastoralist and were not part of the sample due to their distribution but form the second largest group in Njukini after the Akamba according to local residents.

Table 3

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kamba</td>
<td>28</td>
<td>70.0</td>
</tr>
<tr>
<td>luhyo</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>luo</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>taita</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>turkana</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Land Tenure

Land is very important resource for livelihoods that are oriented towards agriculture. According to Southall (2005), there are three categories of land in Kenya which include government land, trust land, and private land. Government is further divided into two categories: alienated and unalienated. Government alienated land is land that has been leased to an individual or body corporate, or which has been reserved for
the use of a government department or corporation or institution, or which has been set
aside for another public purpose. Government unalienated land is land that has not been
leased or allocated.

Trust land on the other hand is land that is held county councils on behalf of local
communities, groups, families, and individuals in accordance with applicable African
customary law until it is registered under any land registration statutes, following which it
reverts into private land and becomes the property of the individual or group in favor of
whom it is registered (Southall, 2005). Private land is land that is registered in accordance
with the laws that provide for the registration of title and is registered in the name of an
individual or a company and may be created from either government land or trust land
through registration (Kenya Law Reports, 2011). According to the aforementioned land
tenure regimes, it is only government land that is public. However, trust land has been a
victim of land grabbing since independence mainly because of the fluidity of customary
land ownership (Southall, 2005).

Land ownership has been a source of conflict and tensions for the different ethnic
groups living in Njukini and as a result has affected the livelihood security of the people
of Njukini. Some of the major issues that affect the communities that live in Njukini
include: majority of the people of Njukini do not own title for their land, there are highly
politically connected people who owned land in Njukini when it was still a government
protected water catchment area and still own large tracks of the land where they practice
large-scale agriculture, the Taveta ethnic group still lays traditional claim to all the land
in Njukini, and this highly contested land has changed hands many times.
Most of the people who inherited, were allocated by the government, are squatters, or even those who claim to have bought their land do not have title of ownership for their land. As shown in table 4, only those who have leased the land (about 2.5%) can claim right although they lease it from insecure groups. The main reason for this is that Njukini location is still considered trust land for the Taveta ethnic group although it was never permanently settled by the Tavetas. This might explain why land ownership is the area is much contested. Without title deeds, it is hard to guess how the poor dryland farmers would access credit from banks and other lending institutions bearing in mind that title deeds provide a major source of collateral for lending institutions.

Table 4

<table>
<thead>
<tr>
<th>Acquisition method</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No land</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>Bought</td>
<td>10</td>
<td>25.0</td>
</tr>
<tr>
<td>Government allocation</td>
<td>12</td>
<td>30.0</td>
</tr>
<tr>
<td>Inheritance</td>
<td>13</td>
<td>32.5</td>
</tr>
<tr>
<td>Inheritance-squatter</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Lease</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The lack of title deeds for the people of Njukini many years after they have settled a piece of land raises many questions about the politics of the future of the area. The Taveta ethnic community through the Taveta county council went to court in the 1980s to
claim that the land in Njukini was trust land held in trust by the Taveta County council for the Taveta ethnic group. However, according to several leaders and other respondents, this case is still pending in court for political reasons. The government also allowed Kenyans to settle in any place of their choice within the country but this has also seen several ethnic land clashes in areas where land rights are seen to belong to certain communities.

“People are not being evicted any more but when anybody settles there, they are not sure how long they will be there.” Kithyaka

Key informant interviews suggest that there has actually been an unwritten political settlement between members of the Taveta community and other ethnic groups that only members of the Taveta group should run for the Taveta parliamentary seat. Several respondents said that tensions run high during election years when some communities’ field candidates and this can easily result to ethnic clashes. However, the members of the Taveta community consist only of a small minority in Njukini and do not constitute the majority in the larger Taveta district.

“During the election period, we usually have problems here. The Taveta ethnic group has claimed that if people want the farms, they can take them but they should keep away from politics. The political positions in this area belong to the Taveta people. If the other communities stay away from politics, the Tavetas have no problem with the land.” Mzee Mwasi, an ethnic Taveta.

“When Criticos was the MP, he told the Tavetas that he had no problem with them and that the problem was the squatters who had taken over land that traditionally belonged to the Taveta people.” Mzee Mwasi, an ethnic Taveta.

Basil Criticos is a large scale farmer who owns a section of the land in Njukini and practices sisal farming. His sisal farms employ a large number of people in the larger
Taveta district and have contributed to a great deal the ethnic diversity in Njukini and other parts of Taveta and Taita districts. He contested and won the Taveta parliamentary seat although he later lost it to the current Member of Parliament who is a Taveta. He is said to have very close links with the Kenyatta family.

Highly politically connected individuals own very large trucks of land in Njukini and in the larger Taita-Taveta area. They practice large-scale farming of sisal and maize which according to residents is sold to the Kenya Seed Company. As earlier alluded to, these farms contributed a lot to the settlement and ethnic composition of Njukini. They also provide a source of employment to the residents who work in the large-scale farms. However, more and more people moved out of the farms and settled in the uncultivated areas within the large-scale farms to clear and practice farming on small plots. The large scale farm owners have been trying to evict them but this has not been possible because the ownership of the land in the whole area is highly contested and the local people tend to be aware of it. The problem is that some of these people have nowhere to go because some of them were born there.

The large scale farms have therefore continued to lose part of their land to former casual laborers who have squatted on small parcels in Njukini. The main contention between the new settlers and the large-scale farm owners has been access to water access points. This has led to several conflicts some of which have ended in court. The large-scale farmers insist that the settlers’ access to irrigation water should be regulated by the government agencies while the settlers see regulation of water consumption as denying them a crucial drought coping and livelihood resource.
Table 5 summarizes the settlement and land tenure history of Njukini.

Table 5

<table>
<thead>
<tr>
<th>Period</th>
<th>Tenure status</th>
<th>Land Use/Settlement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before 1963 (colonial period)</td>
<td>Open crown land, British settler farms, Few untitled settlements</td>
<td>Seasonal pastoral use, Beekeeping for Tavetas, Large-scale British settler farming</td>
</tr>
<tr>
<td>1963 to early 1970s</td>
<td>Trust land for the Taveta, Government protected water catchment area area Largescale, Large-scale Kenyan owned farms, Few untitled settlements</td>
<td>Water catchment, Seasonal pastoral use, Large-scale farming, Small-scale subsistence farming, Beekeeping for Tavetas</td>
</tr>
<tr>
<td>Early 1970s to date</td>
<td>Large-scale Kenyan-owned farms, Maasai group ranch, Many untitled settlements, Squatters (people settled in land that the large-scale farms lay ownership claims)</td>
<td>Permanent pastoral use, Large-scale farming, Small-scale irrigated farming, Irrigation schemes,</td>
</tr>
</tbody>
</table>

The other major problem in land ownership in Njukini is that even though the migrants and squatters of the land do not have title for their land, some of the plots have changed ownership many times. Identifying legally valid ownership rights is difficult. The people of Njukini therefore live under constant fear of spontaneous violence by either the Taveta people or the Large-scale farm owners for those who are settled within the large-scale farms. This raises questions of whether the people of Njukini can make long term farming plans and drought adaptation strategies when they experience this type of insecurity in access to land, their primary livelihood resource.
The Maasai community also asserted its historical resource use rights in Njukini. Majority of the Maasai people in Njukini are pastoralists and live in the Rombo group ranch in Lumi sub-location. They trade with the local people and some also practice crop farming. The acquisition of the Rombo group ranch was very contested by many people living in Njukini and the larger Taveta district. Residents claimed that its acquisition was purely through political lobbying by powerful politicians from the Maasai pastoralist community. Key informants suggest that many non-Maasai see it as the only group ranch in the Coast province side of the border and it is too small compared to the other group ranches in the neighboring Rift Valley side of the border. The main political conflict related to this acquisition has however been attributed to failure by the Taveta ethnic group earlier to build a ranch in Njukini despite intense lobbying to the government to give consent. After the government allowed settlements in the area and the building of the Maasai group ranch, it became increasingly difficult for the Taveta to lay claim to the land which they still perceive to be traditionally theirs. The following quote by Mzee Mwasi, an ethnic Taveta summarizes the perceptions of other communities towards the Maasai group ranch.

“The Maasai were only able to register the Rombo group ranch in Coast province because the project was supported by senior politicians in the government... It was all politics; otherwise this group ranch is in Coast province. They just annexed it.” Mzee Mwasi.

However, the Maasai also claim that the area belongs to them as they grazed and watered their herds there long before there were any formal settlements.
Land ownership is therefore a problematic issue in Njukini. Although ethnicity does play a significant role in the tensions that surround land tenure issues here, it is only fronted by the Taveta people who do not constitute a considerable number of the current inhabitants of Njukini. However, legally they tend to have a right to claim ownership of their trust land. What makes the issue dicey is the fact that the Taveta people never permanently inhabited Njukini and some of the people who live there now migrated from Tanzania and other parts of Kenya and settled without any government intervention. Land ownership in Njukini is thus more of a tenure problem than it is an ethnic problem. It will however be hard for any single tenure regime to satisfy all the communities living in Njukini. This geographic community of Njukini therefore provides a complex phenomenon that is not common in other areas where ethnic land rights conflict with current circumstances. However, the different ethnic communities within Njukini also tend to live within the same areas a factor that was attributed to security.

Livelihood Types in Njukini

Most of the people in Njukini are mixed farmers. However, the number of people dependent on casual labor goes up during drought because of the increase in the number of people needing to diversify their livelihoods. This explains the importance of the irrigated areas in providing diversification options and alternative sources of capital and coping strategies to those areas which do not have access to irrigation water. The number of those who practice casual labor and mixed farming as day to day economic activities is highest in Uthiiani village and constitutes 12.5% (Table 7). Uthiiani village which is furthest from the irrigated farms does not have access to irrigation water. However, this
village is closest to the Kenya/Tanzania border and this could suggest that its inhabitants have the closest access to the benefits that come with the border.

Table 6 shows some of the prominent economic activities. Some of the prominent economic activities in Njikini include: mixed farming, crop farming, pastoralism, trade, and casual labor and people combine these activities in dynamic ways to adapt to environmental and other changes. It also has four irrigation schemes namely Njukini, Saravo, Sir Ramson, and Kithito although individual farmers also practice irrigated agriculture. According to the table 10% of the people of Njukini relies primarily on casual labor while 70% are mixed farmers i.e. crop farming and livestock keeping. Twelve percent practice crop farming (plant crops but do not keep livestock) while 2.5% practice both mixed farming and casual labor. Although the table shows that only 2.5% of the people are herders, it is important to note that the survey was not conducted among the pastoralists who are based in Rombo group ranch but who are present in Njukini and seasonally graze their livestock herds around the location.
### Table 6

**Major Economic Activities in Njukini**

<table>
<thead>
<tr>
<th>Economic activity</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No data</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Casual laborer</td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>Casual laborer, mixed Farming</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Crop farming</td>
<td>5</td>
<td>12.5</td>
</tr>
<tr>
<td>Herder</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Mixed farming</td>
<td>28</td>
<td>70.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

### Table 7

**Economic Activities by Survey Sub-unit**

<table>
<thead>
<tr>
<th>Economic activity/village</th>
<th>Irrigation</th>
<th>Kijiji</th>
<th>SR</th>
<th>Town</th>
<th>Uthiiani</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No data</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>.0%</td>
<td>.0%</td>
<td>.0%</td>
<td>.0%</td>
<td>12.5%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Casual laborer</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>37.5%</td>
<td>.0%</td>
<td>.0%</td>
<td>.0%</td>
<td>12.5%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Casual laborer, mixed farming</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>.0%</td>
<td>.0%</td>
<td>.0%</td>
<td>.0%</td>
<td>12.5%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Crop farming</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>.0%</td>
<td>25.0%</td>
<td>25.0%</td>
<td>12.5%</td>
<td>.0%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Herder</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>12.5%</td>
<td>.0%</td>
<td>.0%</td>
<td>.0%</td>
<td>.0%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Mixed farming</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>5</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>50.0%</td>
<td>75.0%</td>
<td>75.0%</td>
<td>87.5%</td>
<td>62.5%</td>
<td>70.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Thirty-seven percent of the people living in Irrigation village are casual laborers while only 50% are mixed farmers. This can be attributed to the fact that Irrigation village was staff quarters for those people working in the large scale sisal farm. The Land in Irrigation village is still owned by the large scale farm owners and the people who live there either work in the farm or are former workers. Most of the population living in this village is regarded landless although some of the people living there have farmed and live in this place for more than half a century. As the years continue to pass, it becomes harder and harder for the large scale farmers to evict the people living there.

“People do not have title deeds here. They are all squatters. This land belongs to Muiruri. Around 1997, people used to be evicted from the watered areas but around 1999 there were just too many people to be evicted. It was not easy. Sometimes the evictions were very violent.” Mzee Owuor, a resident of Irrigation village.

The people of Njukini own relatively small plots of land. According to the survey data (see table 8), the average person in Njukini owns approximately two acres of land. Thirty-five percent of those interviewed owned only one acre of land with majority of them coming from Irrigation and Kijiji villages while 32% own 2 acres. However, many of the people living in the Irrigation area are considered squatters because although they live very close to the irrigation water points, they are not allowed to use the water by the large scale farm owners in whose land they are considered to be living. During the drought in 2008/2009, the people living in Irrigation village built tunnels and irrigated their crops and they claimed to have been threatened with eviction and a court case over the use of the water from the Tsavo River. When this research was conducted in the
summer of 2010, the case was still pending in court and the farmers had not been evicted but were still irrigating their farms.

Table 8

*Land size (acres) Njukini*

<table>
<thead>
<tr>
<th>Land size</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13</td>
<td>32.5</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>30.0</td>
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<tr>
<td>3</td>
<td>6</td>
<td>15.0</td>
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<tr>
<td>4</td>
<td>2</td>
<td>5.0</td>
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<tr>
<td>5</td>
<td>3</td>
<td>7.5</td>
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<tr>
<td>6</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Total owning land</td>
<td>37</td>
<td>92.5</td>
</tr>
<tr>
<td>No land</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 9

*Land Size (acres) by Survey Sub-unit*

<table>
<thead>
<tr>
<th>Land size (acres)</th>
<th>Irrigation</th>
<th>Kijiji</th>
<th>SR</th>
<th>Town</th>
<th>Uthiiani</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>50.0%</td>
<td>62.5%</td>
<td>37.5%</td>
<td>25.0%</td>
<td>0%</td>
<td>35.1%</td>
</tr>
<tr>
<td>2</td>
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<td>3</td>
<td>2</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>50.0%</td>
<td>12.5%</td>
<td>37.5%</td>
<td>25.0%</td>
<td>42.9%</td>
<td>32.4%</td>
</tr>
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<td>3</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td>25.0%</td>
<td>12.5%</td>
<td>37.5%</td>
<td>0%</td>
<td>16.2%</td>
</tr>
<tr>
<td>4</td>
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<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
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<td>0%</td>
<td>12.5%</td>
<td>14.3%</td>
<td>5.4%</td>
</tr>
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<td>5</td>
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<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td>0%</td>
<td>12.5%</td>
<td>0%</td>
<td>28.6%</td>
<td>8.1%</td>
</tr>
<tr>
<td>6</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>14.3%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Those farmers living in areas of Njukini without access to irrigation water have also diversified their farming practices. Diversification is one of the most important resilience options that many vulnerable people will fall back to during extreme events.

For the people of Njukini, diversification has been done through planting of drought resistant crop like cassava, sorghum, pigeon peas (mtwapa8 and guzo), green grams, and cash crops such as cotton. Several herders also said they had rented plots for crop production after their herds were significantly reduced by several droughts experienced in the last decade. The ministry of Agriculture has played a key role in encouraging farmers to plant these crops and also by providing free seeds and fertilizers.
There is also a significant number of people who own to or more plots of land in different areas within Njukini. Most of these people are of relatively higher socioeconomic backgrounds or have had important socioeconomic connections with key people in the area for a long period of time. As seen in Table 10, 35% of the residents of Njukini have alternative land (an extra piece of land mostly in a neighboring village) that ranges from one to six acres. Most of these people tended to have one piece of land in the drier area and another one in the irrigated area. Out of the 35% of the people who owned alternative land, 22.5% had bought it, 5% had inherited it, and 7.5% had leased it.

Table 10

<table>
<thead>
<tr>
<th>Alternative land size (acres)</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>15.0</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Total with alternative land</td>
<td>14</td>
<td>35.0</td>
</tr>
<tr>
<td>Total without alternative land</td>
<td>26</td>
<td>65.0</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

“The lease is Ksh 8000 (approximately US$ 100) per year for an acre and most people who lease these farms are those who do not have access to irrigation water.” Mzee Mutunga, the local Chief.
Table 11

*Alternative Land Acquisition Method*

<table>
<thead>
<tr>
<th>Acquisition method</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No alternative land</td>
<td>26</td>
<td>65.0</td>
</tr>
<tr>
<td>Bought</td>
<td>9</td>
<td>22.5</td>
</tr>
<tr>
<td>Inheritance</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Lease</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

The average cattle ownership for non-pastoralists in Njukini was about three during the time of the research. However, this number may not be the average for ‘normal years’ because this research was conducted immediately after the 2008/2009 drought and many farmers complained that most of their livestock had died during the drought. Others reported that they had sold them to provide money to buy food and to cater for other needs during the drought. Farmers also keep other types of livestock which include goats, sheep, chicken, and donkeys. Most of those people who reported reduction in livestock numbers cited drought as the main reason for the reduction. However, there were other important reasons such as livestock diseases, sales, and reduction in grazing areas.

About 70% of non-pastoralists did not experience reduction in cattle numbers since 2005 (see *Table 12*). It should however be noted that this 70% includes those respondents who did not have cattle at all in the last five years. This group of farmers constitutes 65% of the sample according to *Table 13* and most of them keep other types of livestock such as sheep, goats, donkeys, and poultry. This means that only a small number of farmers who had cattle did not experience a reduction in cattle numbers.
Drought can therefore be classified as the main cause of the reduction in cattle numbers. Only 5% (2 respondents) reported an increase in the in cattle numbers over the last five years and none of the respondents reported that their cattle numbers were the same. The 5% who reported an increase in number of cattle quoted reproduction as the main cause of the increase.

Table 12

*Current Cattle Numbers for Non-Pastoralists*

<table>
<thead>
<tr>
<th>Cattle numbers</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Total owning cattle</td>
<td>14</td>
<td>35.0</td>
</tr>
<tr>
<td>Total without cattle</td>
<td>26</td>
<td>65.0</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 13

*Reasons for Reduction of Cattle (Starting with the most Important Reason)*

<table>
<thead>
<tr>
<th>Reasons for cattle reduction</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No reduction</td>
<td>28</td>
<td>70.0</td>
</tr>
<tr>
<td>Drought</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>Drought, diseases</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Drought, diseases, sales</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Drought, reduction in grazing areas, diseases</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Drought, reduction in grazing areas</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Drought, reduction of grazing areas, sales</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Drought, sales, and reduction in grazing areas</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Reduction of grazing areas, drought</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Sales</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The pastoralists in Njukini live in a small group ranch within the study area called the Rombo group ranch which is an extension of the bigger Rombo group ranch in Loitoktok. They however move around Njukini to graze their cattle in the public grazing areas (mostly open government land) and sometimes lease private land in other sub-units for grazing. Key informants suggest that the average Maasai pastoralist in Njukini has about 50 herds of cattle. The pastoralists here also buy crop remains from the crop farmers to feed their cattle. They also store these crop remains as alternative feeds during the dry season or in case of a drought. According to one key informant, “The pastoralists from Kajiado South and Loitoktok have many more livestock than the ones in Njukini and therefore they come down here during the dry season to feed their cattle with the
remains of farm produce like maize stocks, sorghum, millet, and others” that are produced by the farmers in Njukini. There is thus interdependence between the pastoralists and the crop farmers. Another respondent said that the pastoralists in Njukini also depend on the group ranches in the neighboring district for pasture as evident in the quote below.

“Sometimes they (pastoralists) migrate to group ranches in Loitoktok because they have bigger grazing areas.” Mzee Mutunga, the local Chief.

Njukini therefore presents a context of a many livelihood types that are a reflection of its history and change through time. It is difficult to classify livelihoods as per ethnic group except pastoralism and the Maasai because the livelihoods in Njukini tend to be determined by both geographical areas and settlement history. However, over the years, the livelihoods have come to be more and more integrated. The people of Njukini also tend to diversify depending on available opportunities and these do seem to favor one community from another besides the land issues.

Agro-Ecology and Climate

Njukini is a dryland region that is dependent on water from rivers and springs from Mt Kilimanjaro for irrigation. However, farmers higher on the altitudinal gradient do not have access to the irrigation water because the springs are located lower in the gradient. The location is characterized by erratic unreliable rainfall that varies greatly with mean annual rainfall ranging for 200mm to 1,000mm (Republic of Kenya, 2010). The area has two rainy seasons with the short rains (Oct-Jan) being more reliable than the long rains (March-May).
However, for farmers with access to irrigation water from springs and rivers, food production is all year round except in cases of droughts. It is estimated that 60% of the population of Njukini have some level of access to irrigation water and the irrigated plots are an average 2 acres per household (Republic of Kenya, 2010). Food poverty for Taveta District in which Njukini falls is about 48% (EWS, 2010).

Figure 3 indicates temporal patterns of anomalous rainfall for the March-May rainfall period (long rains) in Voi, a location in Taita-Taveta District that is agro-ecologically similar to Njukini. This table was chosen because Voi, which is in Taita, has a very similar climate with Taveta generally and Njukini in particular. The climate data available on the for Taita-Taveta seemed to reflect the highland areas of Wundanyi or Buria and was therefore not appropriate for this study. Figure 3 shows that 16 years between 1963-2003 were more than 20% below the long term mean and only two seasons had total rainfall of less than 40% of the long term mean. During the previous 40 years (1923-1963) 17 long rainy seasons had rainfall that was at least 20% below the long term mean and six were more than 40% lower than the long term mean. This could suggest less extreme variability in the last 40 years and thus suggesting that extreme drought is becoming less frequent. The drought history workshop suggested a trend toward reduced societal impact of drought events but attributed these to government and NGO relief.
With this great variation, agricultural productivity is affected because of the uncertainty by farmers over whether the March-May rains will be enough to sustain crop production which is caused by the seasonal anomalies. The major anomalies also represent areas when there have been great droughts in the area for example: 1984/5, 1994/5, and 2000/1. Although the inter-seasonal variability in rainfall during the long rains seems to have become less extreme in the last 40 years, key informants suggested that variability over shorter time scales (e.g., the timing of the onset of the long rains) may be at least as important as inter-seasonal variability to farmers and herders:
“We have two rainy seasons. One starts from October to December and the other one starts from March to May. However, the long rains (March to May) are not reliable. Sometimes it rains heavily for just two weeks and then when you plant and expect it to rain again it doesn’t come back so the plants just wither in the farms.” Mzee Mutunga, the local chief in Njukini.

This could suggest that total precipitation during the long rains does not tell the whole story.

Key informant interviews suggested that the period between September and December (second planting and second weeding) is usually the hardest for dryland farmers (Figure 4). This is mainly because the long rains (March-May) are usually very unreliable according to key informants. This suggests that farmers may go up to 9 months without harvesting anything and this may deplete the food reserves from the last short rains (October-December). The reserves are also needed at this time as seeds and therefore farmers have to balance between providing food for the family and using the family reserve for planting. This is also the period when casual labor is in highest demand and supply. For the pastoralists, the mating/kidding periods are usually characterized by availability of pasture as this usually happens during the rainy seasons.
Figure 4. Source: Republic of Kenya (2008)

Access to casual labor is a major source of livelihood diversification in Njukini (see Table 6). For different groups, especially those depended on rain-fed farming; casual labor provides a means of extra earning to support the unreliable rain-fed agriculture. The irrigation schemes and other irrigated farms provide this all important diversification option during the planting, weeding and harvesting periods. However, some farmers in the irrigated area are able to produce all year round. The seasonal calendar indicates that there are two weeding and two planting seasons and these are the periods when the demand for casual labor is highest. The main beneficiaries of casual labor are farmers from the non-irrigated areas and their Chagga neighbors from across the border in Tanzania.

The vegetation in Njukini is characteristic of semi-arid savanna vegetation. It consists of mainly grassy savanna bushland with patches of shrubs and open grassland. However, most of the land close to water access points has been brought to cultivation.
through irrigation. The rest of the area varies from bare shrubland to grassy savanna bushland depending on the seasons.

There are different economic activities practiced in Njukini including mixed farming, crop farming, and pastoralism. A number of the households own two or more small plots mostly with one higher in the gradient where it is dry and another in the irrigated area. Most irrigated farms produce both food and horticultural crops. The horticultural crops include: cucumbers, tomatoes, onions, karella, water melons, okra, baby corn, brenjols, chillies, and capsicum and are mainly transported to Mombasa for export. The major food crops include: maize, beans, and green grams. The crop farmers in the drier areas plant drought resistant maize, beans, pigeon peas, cowpeas, cassava, sorghum, sweet potatoes, and cotton.

Drought History in Njukini

Drought in Njukini is not a new phenomenon and this section explores how people have experienced drought in the recent past. There is general agreement among local residents and government official in the area that the frequency and the intensity of drought have increased through time. This may not be supported by meteorological data (as discussed above with respect to the Voi seasonal rainfall anomalies). However, variability over shorter time scales may have a major impact on peoples’ farming activities and meteorological data that identifies short-term variability are lacking for most of the region.

The photo in Figure 6 taken during the drought history workshop with community elders shows a pattern of drought that occurs after every ten years until 1999/2000. The
1999/2000 drought that was caused by major floods that resulted in destruction of crops, crop diseases, and even death of residents after the El Nino in 1997/1998. Key informants suggested that the 1999/2000 was not very severe because they had good harvest in the previous years and therefore they were able to use their food reserves. This meant that food prices did not necessarily go up in the market because although the amount of food was significantly lower, people still had reserves that could cushion the rest of the residents who did not have any reserves from high prices.

Figure 5. Drought history workshop in Njukini

However, it appears that there have been two other droughts between the year 2000 and 2010. The informants suggested that there was another drought around 2004/5
whose impacts were relatively lower than the 1999/2000 drought. They said that the
drought was caused by the failure of both the short and the long rains in 2003/4 and this
resulted in poor harvests. The government and NGOs however provided relief food that helped local residents deal with the impacts of the drought.

There was general consensus that the 2008/9 drought was the most severe of all the droughts the people of Njukini have experienced since they settled there. In Figure 6 it is marked as the most severe among the droughts discussed (since respondents settled in Njukini). The rankings for the severity of the drought are marked by the orange boxes that are marked black on top of the drought year. Their height in the chart represents the severity. The severity of this drought was attributed to both local circumstances, national, and even global circumstances. The informants said that the 2008/9 drought happened before they could fully recover from the previous 2004/5 drought and thus they did not have enough food reserves and there was a no food for livestock. However, the Kenya post-election violence that affected some of the most agriculturally productive regions in the country e.g. The Rift Valley also had a significant impact on local people’s coping capabilities and strategies. The post-election violence coupled with a global surge in oil prices exacerbated the vulnerability of local people because there was a sharp increase in food prices.

The major reasons for extreme severity of droughts were attributed to lack of food reserves. This could suggest a higher level of local vulnerability before the drought. The lack of food reserves was mainly a result of poor harvests in previous years. In the case of the 2008/2009 drought, key informants said that they did not have enough time to recover
from the 2005/2006 drought and therefore in addition to the prevailing national and
global pressures of the time such as the post-election violence in Kenya and the global
increase in oil prices, they had lost significant coping resources in the previous drought
hence their coping capacities and capabilities were constraint.

The major impacts of the drought caused death of livestock, drying of some water
sources, starvation, and loss of harvests. For the first time in Njukini, several permanent
streams ran dry and there was conflict between farmers and herders about access to water
points such as boreholes, springs, shallow wells, and others. The elders who attended the
drought history workshop claimed that this was the first drought in their lives that the
government had to provide food to both the local people but also their livestock. The
neighboring villages in Tanzania were also affected and it became very hard to access
important drought coping strategies such as casual labor because Kenyans and
Tanzanians were all competing for the few opportunities in the irrigated farms that still
had access to water.
Table 14

*Drought History Table*

<table>
<thead>
<tr>
<th>Drought year</th>
<th>Severity rank</th>
<th>Reasons for severity</th>
<th>Major impacts</th>
<th>Main coping strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973/4</td>
<td>5</td>
<td>Low harvest in previous years, no food reserves, floods</td>
<td>Increase in human and animal diseases, death of livestock, drowning</td>
<td>Sourcing food from Tanzania, selling livestock, seeking help from relatives, moving livestock</td>
</tr>
<tr>
<td>1984</td>
<td>2</td>
<td>Lack of food in the market, high food prices, less food reserves</td>
<td>Death of livestock, death of people, malnutrition among children, lack of harvests</td>
<td>Sourcing food from Tanzania, selling or exchanging livestock for food, utilizing remittances from family members, slaughtering starved livestock for food, moving livestock</td>
</tr>
<tr>
<td>1992</td>
<td>6</td>
<td>Destruction of crops by animals, high food prices</td>
<td>Lack of harvests, food shortage</td>
<td>Selling livestock to buy food</td>
</tr>
<tr>
<td>1999/2000</td>
<td>3</td>
<td>Destruction of food in the farms by el nino, floods</td>
<td>Lack of harvests, food shortage</td>
<td>Sourcing food from Tanzania, selling livestock, casual labor</td>
</tr>
<tr>
<td>2005/2006</td>
<td>4</td>
<td>Bad previous years, less food reserves, floods</td>
<td>Lack of harvests, malnutrition among children</td>
<td>Trading, remittances by family members, casual labor, moving livestock</td>
</tr>
<tr>
<td>2008/2009</td>
<td>1</td>
<td>High food prices, bad previous years, less food reserves</td>
<td>Food shortage, death of livestock, lack of harvests, malnutrition among children, children dropping out of school</td>
<td>Casual labor, remittances from family members, selling livestock, slaughtering starved livestock for food, moving livestock</td>
</tr>
</tbody>
</table>
The characteristics of livelihood activities are affected by the context in which they are found and Njukini seems to confirm this. The study has shown that livelihoods in Njukini are dynamic and vary within a very small area depending on the geographical characteristics of the area and the socioeconomic status of the individuals or groups involved. All these factors have a great impact on drought coping strategies because people do not necessarily abandon their ‘normal’ livelihoods during drought but mostly tend to pursue their livelihoods more intensely as they search for diversification options. The characteristics of the livelihood activities therefore affect the ability to cope and recover from droughts. Drought coping however, changes with time and the nature of the drought and some droughts seem to be more intense than others are. The intensity of a drought is determined by a myriad of factors but the state of livelihoods before the drought is in the core of the determinants of a droughts intensity.
CHAPTER 4: EXAMINING SPATIAL AND SOCIOECONOMIC DIFFERENTIATION OF DROUGHT COPING STRATEGIES IN NJUKINI

As mentioned earlier, drought coping strategies are a reflection of the context and the nature of livelihood activities in different places. During drought, certain livelihood activities depreciate while others become more important. Drought coping strategies also vary through time (during the course of a drought period and between different droughts). Drought coping studies are therefore done through an investigation of the available forms of capital and institutions that shape peoples response to the effects of drought. However, it is also important to understand why and how coping varies geographically and socioeconomically. This section presents the results of the study conducted in Njukini, Taveta, Kenya and provides an analysis of the key factors that come to play in determining the spatial and socioeconomic variation of drought coping strategies among the people of Njukini.

It is important to state from the onset of this chapter that questions from the household survey about long term coping strategies ended up being one-sided because decision-making on coping strategies is context specific and therefore household coping data was of limited utility. However, it provided important insights into local people’s long term drought coping strategies and capabilities. This is because the research participants insisted that the meteorological conditions and social context of each droughts are different and so are the coping strategies employed. In my yes/no questions on long term coping strategies, the participants said that they had used almost all those coping strategies but not in all droughts. The main answer to questions on coping
strategies therefore ended up being, “it depends on the drought”. This was important though because it informed the research on the types of capitals that are still relied on or have been relied on in different drought and which ones have been stopped. Thus through a combination of some of the survey data and qualitative methods, it was possible to establish the general orientation of coping strategies.

Droughts are different and their characteristics together with the level of people’s vulnerability levels before the drought to a large extent determine coping strategies, capacities and capabilities. The underlying circumstances of people’s livelihood activities before the drought are thus important and so is the nature of the drought. This suggests the difficulty in assessing people’s drought coping capabilities outside of a drought event. However, it is still possible to study the coping strategies employed in different drought scenarios. The overarching argument in my analysis is that drought coping strategies cannot be studied in isolation from the ‘normal’ livelihood strategies. In many cases, people do not specialize during drought coping but they tend to diversify more and pursue their ‘normal’ livelihood strategies more intensely if possible.

Spatial Differentiation of Coping Strategies

Place structures people’s daily lives and livelihoods and provides opportunities and constraints related to different contexts (Relph, 1976; Peet, 1998). Place structures opportunities and constraints that determine peoples’ coping strategies and capabilities because in most cases it defines the extent of access or lack of coping resources and other types of entitlements. It also maps out certain coordinates that determine how resources are negotiated and fought over and the forces, processes, and institutions that come to
play (Watts & Bohle, 1993) in a particular location. This makes each geographical place unique. In Njukini, the location of the household to a large extent determines which types of capital the household can access. In this section, I will examine how drought coping strategies vary spatially around the game reserve border, near water access points, and near the national border.

Coping strategies near water access points

The main agricultural resources in Njukini are land and water because the majority of inhabitants are dryland mixed farmers. Proximity to the Lumi River, Tsavo River and several springs and access to land for cultivation therefore provides access to all important livelihood resources. Those farmers who have access to irrigation water and can produce all year are most of the times the last to feel the impacts of drought. According to key informants, farmers around the villages of Sir Ramson, Town and part of Irrigation can easily cope and recover from drought through intensification although their plots are relatively small. This reduction in land sizes has however hastened people’s vulnerability by reducing the quantity of agricultural production per capita which results to high prices of food in the area during droughts.
Table 15

*Time Taken to and from Water Access Point*

<table>
<thead>
<tr>
<th>Time</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 Minutes or less</td>
<td>19</td>
<td>47.5</td>
</tr>
<tr>
<td>16 - 30 Minutes</td>
<td>18</td>
<td>45.0</td>
</tr>
<tr>
<td>31 – 45 Minutes</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>46 – 60 Minutes</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>60 – 90 Minutes</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>

Njukini is a relatively small area which has several water access points. According to *Table 15*, 92.5% of the people in Njukini take less than half an hour to and from the water access points. Almost half of the people interviewed, 47.5%, take only fifteen minutes or less to and from their water access points. However, it should be noted that the time taken recorded in the survey is for access to water for domestic use and not for irrigation. Those who have access to irrigation are those who are closest to water points especially the rivers. *Table 16* shows that 52.5% of the inhabitants of Njukini primarily get their water from modern wells while 47.5% get their water from rivers. All the respondents from both Sir Ramson and Irrigation villages get their water primarily from rivers while all the inhabitants of Kijiji and Uthiiani get their water primarily from modern wells according to *Table 17*. Only the Town sub-unit has some of its members getting their water from rivers, 37.5%, and modern wells, 62.5%.
Due to the dryland nature of Njukini, access to water for irrigation and for livestock is critical in maintaining the livelihood systems in the area. The water access points consist of rivers, boreholes, shallow wells, and springs and they are not evenly distributed in the location. The farmers in these regions have the advantage of practicing irrigated agriculture all year round unless there is a major drought. Farmers in this region mainly produce horticultural crops for both the local market and exports. Some of these crops include tomatoes, cucumbers, chillies, brenjols, and green beans among others. However, they also farm food crops such as maize, beans, potatoes, and green grams.

### Table 16

**Primary Water Access Points**

<table>
<thead>
<tr>
<th>Water access points</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modern well</td>
<td>21</td>
<td>52.5</td>
</tr>
<tr>
<td>River</td>
<td>19</td>
<td>47.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

### Table 17

**Water Source by Survey Sub-unit**

<table>
<thead>
<tr>
<th>Village</th>
<th>Irrigation</th>
<th>Kijiji</th>
<th>SR</th>
<th>Town</th>
<th>Uthiiani</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modern well</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>5</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td>100%</td>
<td>.0%</td>
<td>62.5%</td>
<td>100%</td>
<td>52.5%</td>
</tr>
<tr>
<td>River</td>
<td>8</td>
<td>0</td>
<td>8</td>
<td>3</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>0%</td>
<td>100%</td>
<td>37.5%</td>
<td>.0%</td>
<td>47.5%</td>
</tr>
</tbody>
</table>
However, the government water agency charges the farmers exorbitant prices for the use of the irrigation water as illustrated by Mzee Mutunga’s quote.

“The government’s Water Resource Management has also been charging us money for the use of the water. They charge Sh 41,000 for water access permits for the irrigation schemes and they also charge individual farms. This has been a problem because we do not earn a lot from our plots because they are small.” Mzee Mutunga.

Too much consumption of the water resource during droughts by some livelihood groups in the irrigated areas results to a significant reduction in water in other areas therefore threatening an important coping resource for these groups. For example, key informant interviews suggested that continued exploitation of streams supplying the Tsavo River by farmers upstream, in Sir Ramson and Town, leads to drying up of the streams available for the pastoralists who live lower in the gradient, around Lumi, during the droughts. This creates a problem for the pastoralists because the springs in the irrigated areas mainly Irrigation, Sir Ramson, and Town, are surrounded by small farms which are not fenced as farmers try to utilize all the available space for farming.

Most of the farmers who do not live close to the rivers do not have access to irrigation water especially from the rivers mainly practice rain-fed agriculture. These farmers are mainly found around Kijiji, Uthiiani, and parts of Town although those farmers who live closest to the boreholes or who own boreholes practice irrigated farming. The farmers in these regions mainly plant drought resistant crops such as cotton, green grams, cow peas, pigeon peas, cassava, maize, beans, sorghum, and millet among others. These crops are able to withstand the harsh climate and are useful during times of drought.
The irrigated farms provide employment for these farmers as farm laborers during drought. Eighty-seven percent of respondents said that they rely on casual labor in the neighborhood during drought as shown on Table 18. However, if the droughts are prolonged and some farms lose access to water, certain groups especially the old and the sick lose this option as competition for farm labor increases. Some people also migrate to other places such as Taveta town, Mombasa, Dar es salaam, Nairobi, and Voi to look for alternative employment.

“Those people who do not have access to irrigation water benefit from the irrigation schemes through provision of casual labor. Even the Tanzanians cross the border to work here.” Mzee Nthuku.

Table 18

<table>
<thead>
<tr>
<th>Local Casual Labor as a Long Term Coping Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

There have been several instances of conflict between crop farmers and herders. This usually happens when the rivers dry up and the herders have to drive their cattle closer to the farms for watering. Some crop farmers feel that the large numbers of animals are a threat to water availability and those herders are only entitled to the open water sources and not the ones that the farmers have contributed money to build especially boreholes. This reflects a system of inclusion and exclusion of certain livelihood types which ends up strengthening drought coping capabilities for some while
weakening others. Eriksen & Lind (2009) refer to this phenomenon as the political process of drought coping.

Herders also migrate to different regions including the game reserve and other parts of the Coast province. During the 2008/2009 drought, most herders transported their cattle to as far as Tana River, Shimba hills, Kwale, and Mariakani. The pastoralists this time did not move by foot with their animals but they used large trucks to transport their animals. This signifies a new trend in the movement of livestock away from the traditional movement by foot from one place to another in search of water and pasture for their livestock. This also suggests that options for pastoralists are dwindling as the distances travelled become longer and unbearable by foot. It is therefore expensive for them and brings about questions of long term sustainability of such drought coping strategies. This movement represents a new drought coping strategy where more and more land gets occupied and put into private use leading to a reduction in the availability of grazing areas (Homewood, 2009). This also reflects a policy bias that has favored agrarian over pastoralist agricultural systems in Kenya (Mkutu, 2007).

**Coping strategies around the game reserve border**

Proximity to the game reserve border provides local residents with highly contested opportunities for resource extraction and also constraints in terms of human/wildlife conflict and conflict with authorities. It is important to state that Njukini is a small area and almost everybody is affected by the proximity to the game reserve border although those areas along the border areas are most affected. The game reserve border provides a source of natural capital for the people of Njukini although it is highly
contested. Access to livelihood resources in the game reserve is prohibited by the Kenya Wildlife service (KWS) and therefore the resources are accessed through conflict. The respondents were therefore very guarded about how much information they provided about their access to these resources. For example, although it was mentioned by a respondent that people illegally cut down trees in the game reserve to burn charcoal during extreme droughts it was clearly a sensitive topic. The headman of that sub-location also disagreed as sholwn in the quote below. According to the survey, 27.5% of the sample relies on charcoal sales as a long term coping strategy which is highly significant as shown in the table below.

“There was a lot of water here around 1972/4 and there were not many people. All this area was a swamp but as people came in and cut down the trees for farming the place dried up slowly. Many people used to cut down the trees for timber but you can’t do that now.” Mzee Mutua.

Table 19

<table>
<thead>
<tr>
<th>Reliance on Charcoal Sales as a Long Term Coping Strategy</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>11</td>
<td>27.5</td>
</tr>
<tr>
<td>No</td>
<td>29</td>
<td>72.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Herders conflict with the Kenya Wildlife Service officers as they drive their cattle into the game reserves in such of water and pasture during drought. During the 2008/2009 drought, illegal access to the game reserve provided an important coping mechanism for the pastoralists. Most of the Maasai pastoralists interviewed stated that most of the wildlife in the Game reserve does not eat grass and therefore there is always
plenty of grass in the reserve although it is illegal to graze their cattle in there. Many of the pastoralists interviewed also complained about arrests by Kenya Wildlife Service (KWS) officers over the illegal access to the game reserve as stated by Tonkei in the following quote:

“It is prohibited to take our animals to the park but sometimes we do not have a choice. Even if they arrest us, we have to find food for our animals. If they arrest my brother, we send another brother to take care of the livestock as we await the court decision.” Tonkei, a Maasai pastoralist.

The survey data shows that movement of livestock has not reduced much and it is still an important coping strategy in Njukini. This is bearing in mind that the survey sample did not include pastoralists who according to key informants and participant observations still rely on movement of livestock both as a livelihood strategy and a strategy for coping with droughts. Table 20 illustrates the importance of the reliance on moving as a long term drought coping strategy.

Table 20

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>5</td>
<td>12.5</td>
</tr>
<tr>
<td>Yes</td>
<td>35</td>
<td>87.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

According to key informants, proximity to Tsavo game reserve is more of a burden to coping than it is a resource. There have not been any efforts to involve the members of the community in the affairs of the park so as to create a sense of ownership among the local residents. The local community therefore views the game reserve as a
hindrance to the access of the important resources within it. The KWS has been trying to initiate development programs in the area to change the resident’s perception of the game reserve but the residents complained that they were not involved in deciding which projects were to be funded. Therefore, residents still feel that it is not enough compensation for the destruction caused by the wildlife to their farms and their livestock. Mzee Kithyaka said that the residents “don’t get much from the wildlife reserve but they (The Kenya Wildlife Service) dug a borehole for us and helped one of our schools access electricity”. He also said that this was direct compensation for the destruction that the animals cause to our farms.

Settlements in Njukini have also interrupted spatial patterns of movement for wildlife causing major conflicts. Human/wildlife conflict is common in Njukini and is caused mainly by the proximity to the game reserve. Some farms are, for example, known to be located within wildlife routes and therefore as the animals, especially elephants, move around in their traditional routes which have now been inhabited, they destroy people’s crops and sometimes injure or even kill inhabitants. However, the government has built an electric fence to prevent the animals from straying out of the park but this has not solved the problem as the animals often break the fences.

“We cannot blame the animals. This is their place because we found them here. Most of the elephants have not changed their traditional routes. They move in groups and use the same routes and therefore those who have settled on their routes face the greatest destruction.” Mzee Nzalu.

Lions are also known to stray from the reserve into people’s homesteads killing livestock and even people. Human/wildlife conflicts are intensified by droughts as wildlife move out of the reserves in search of food. According to key informants, a
Maasai herder, the lions were a big problem in the 2008/09 drought because they could not easily find animals to prey on inside the park. Lions therefore moved out of the park at night and attacked cattle in the Rombo group ranch several times. Maasai morans (warriors) responded by killing a lion and this major conflict between the morans and the KWS.

*Proximity to the national border*

Another major aspect of spatial differentiation in drought coping is brought about by the proximity of Njukini to the Kenya/Tanzania border. The border provides opportunities for diversification through trade, social networks, labor, and migration. As opposed to the game reserve border which is seen by residents as a source of conflicts and a significant threat to their livelihood and drought coping capacities, the national border is considered an important asset in drought coping. However, it also has its potential sources of conflicts but these seem to be amicably resolved through some special committees called *Kamati za ujirani mwema* (good neighborliness committees in Kiswahili).

Trade is also an important means of diversification for the border communities of Njukini. There is a thriving trade in the Kenya/Tanzania border on livestock, farm produce, and other commodities that range from wholesale industrial goods to small scale retail goods. The level of trade is mostly determined by socioeconomic status and access to capital. Small scale retail trade is however practiced by people across the socioeconomic divide. This trade is facilitated by availability of motorcycle transport across the border that is not interrupted.
The border does not have a customs office and therefore all kinds of goods can pass through it without a problem. Many respondents suggested that cross-border trade is beneficial for livelihood diversification and drought coping because commodity prices in Tanzania are more favorable than on the Kenyan side. However, the trade mostly depends on supply and demand of goods on each side. This trade is a major source of diversification and becomes more important during drought as the ‘normal’ livelihoods of local people come under pressure.

“There is also cross-border trade because the prices are very favorable. The youth mostly conduct that trade by use of their motorcycle taxis. They use these (motorcycles) to transport goods across the border to the business people in the market. Others use bicycles and they do not pay any duty.” Mwedawiro.

Most women cross the border to sell retail items such as tomatoes, onions, sunflower oil, and fruits. Most of the men cross the border to sell livestock in Tanzania and also to buy timber for building because Tanzanians have a lot of wood resources. Mzee Mutuku, a local businessman in Njukini, said that the communities in Njukini depend on Tanzanians for business because they (Tanzanians) cross the border every day to purchase Kenyan products for sale in Tanzania. Tanzanian, who are mainly Chagga crop farmers, also buy livestock from Njukini and the herders and other livestock keepers benefit from this trade. Participant observations also indicated that many young men work on the border point as businessmen and are mainly engaged in currency exchange and providing transportation for goods over short distances.

There is also an existence of strong social networks across the border. These are created through intermarriage, business relationships, migration histories, and even family relations. The interviews indicated that there are a significant number of Chagga
women married on the Kenyan side of the border as shown in Table 21 (in the next page). Most of the marriages involve Tanzanian women getting married to Kenyan men but not as many Kenyan women marry Tanzanian men. The researcher’s attempts to establish a reason for this disparity was not very successful. Most of these Tanzanian women are married to men from the Akamba, Taita, and Maasai communities who form majority of the population in Njukini.

Business relationships also exist among business people across the border and these facilitate exchange of coping options in times of stresses. These social networks are crucial in providing diversification options. For example, residents reported that there was significant movement of livestock from across the border to areas with more pasture in Tanzania especially during the 2008/2009 drought. However, Majority of the Chagga people are mixed farmers and could not take as many livestock as the Kenyan pastoralists wanted to send because of their land sizes and the fact that they were also affected by the drought. It is important to consider that there were no Chagga men settled on the Kenyan side of the border but they are the dominant group across the border in the Tanzanian side although there are still some Kenyan communities settled there especially the Akamba.
Table 21

*Ethnicity of Female Household Head*

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not married</td>
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<td>10.0</td>
</tr>
<tr>
<td>Chagga</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Kamba</td>
<td>22</td>
<td>55.0</td>
</tr>
<tr>
<td>Luhya</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Taita</td>
<td>10</td>
<td>25.0</td>
</tr>
<tr>
<td>Turkana</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Migration histories are also interesting sources of social networks. Some of the earliest inhabitants of Njukini, most of who live not very far from the border, in Uthiiani village, crossed into Kenya immediately after independence from Mkuuu, Rombo, Tanzania. Most of them had crossed into Tanzania in the colonial period and wanted to be part of Kenya when it gained its independence. Important social networks therefore exist between these people and their former neighbors, friends, and some relatives across the border and these serve a major purpose in providing access to coping resources during drought.

Labor migration is also an important part of the cross-border interaction that helps the border communities to cope with droughts. This migration for labor mostly benefits the Chagga people on the Tanzanian side of the border. The Chagga people are said to migrate from Rombo to Njukini to look for cultivation labor during drought. This is because even during droughts, the farmers in Njukini who have access to irrigation water can still farm throughout the year. They produce tomatoes, brenjols, karalla, water melons, okra, cucumber, onions, baby corn, and chillis which are transported to
Mombasa for export. The tomatoes and other food crops such as maize, beans, and green grams are also produced for food and the local market. Labor migration therefore provides an important coping mechanism for the Chagga while availing much needed labor to the irrigation schemes in Njukini.

The national border also creates conflicts as some people steal animals and sell them in slaughterhouses across the border. This is because the border in this area is open and there is a lot of interaction between people from both sides. However, during the research, some committees had been formed (Kamati za ujirani mwema) to deal with these issues. Most of the people who had been caught were however from Njukini and were just exploiting the presence of the border which makes it hard to trace stolen goods once they cross to the other side. The committees were hailed as being effective in combating these practices. There were also cases where food distribution officers would seize relief food during drought and illegally sell it across the border.

Place therefore presents a set of opportunities and constraints that shape drought coping strategies. Compared to the rest of Kenya, Njukini’s geographical location gives it some opportunities and constraints in livelihoods and drought coping strategies that may be very different from other areas in the country. Wedged between a conservation border and an international border, Njukini presents a spartial variant of Kenya’s drylands that may not be found in any other place in Kenya. Differentiation in livelihood activities and coping strategies is also prominent within Njukini. Proximity to either the game reserve or the national border comes with its opportunities and constraints and so does location
near or far from water points within the location. However, the livelihoods are also very integrated and the challenges and benefits are often felt throughout the location.

Drought Coping by Socioeconomic Status

Drought coping by socioeconomic status is determined by availability and access to different types of capital and institutions that affect access in different places. According to Scoones (1998), context and available types of capital determine the ability of local people to follow certain livelihood resources and hence producing particular livelihood strategies and outcomes. As earlier stated, people’s coping strategies tend not to differ very much from their ‘normal’ livelihood strategies. Context therefore provides and determines the available diversification options. Drought coping by socioeconomic status therefore overlapped with variation by place in this study as many place-based sources of capital to a large extent determined socioeconomic status.

Socioeconomic status was assessed using the following variables: social networks, size of farms, location of the farms, access to water points, number of livestock, migration, ethnicity, and availability of diversification options like trade and remittances. It is worth noting that this study was conducted after a major drought and both mixed farmers and pastoralists had lost a lot of their livestock during the drought. Some of the residents also felt that the drought was not over while others claimed that the last decade (2000 – 2010) was just one long drought. Variables such as the number of livestock per household were therefore hard to fully explain because the previous drought had killed large numbers of livestock. This section attempts to examine certain important
sources of capital that are important and that define socioeconomic status of individuals and households in Njukini.

*Generational/age status*

Generational differences were observed as a major determinant of socioeconomic status. The main variants within this category were access to mobility versus ownership of natural capital resources. Younger (especially under the age of 40 years) people were more mobile and could access many diversification options such as casual labor, trade, and migration than the older more settled members of the community. Older people on the other hand tended to own important resources such as land, livestock, and water sources such as boreholes among other important assets. Other types of capital such as social networks were available to people across the generational divide but age differences to a large extent defined access. However, there was a lot of interdependence between these groups in shaping the livelihoods of the entire household and location.

Older household members benefitted most from remittances from their children during drought. Younger members of the household from the non-irrigated areas would seek casual labor in the irrigated areas and remit some of the returns to older parents at home. Women also tended to benefit from remittances from their husbands who were involved in casual labor or had migrated to other areas. However, qualitative assessments showed that women were also involved in casual labor, trade and migration. Eighty-five percent of those interviewed in Njukini said that they receive some help whether monetary, food or any other type support from their kin during drought as shown in Table
22. This clearly shows that reliance on the extended family for coping options remains strong despite other forms of aid especially from the government and NGOs.

Table 22

**Reliance on Help from Kin as a Long Term Drought Coping Strategy**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
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<td>15.0</td>
</tr>
<tr>
<td>Yes</td>
<td>34</td>
<td>85.0</td>
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<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Reliance on remittances as a livelihood strategy is also evident in the data. Key informant interviews also suggested that the amount and frequency of remittances increases during. The table below shows that out of the forty respondents interviewed 47.5% (see Table 23) receive some kind of remittance. This shows the importance of remittances in both the livelihood system and coping strategies.

Table 23

**Reliance on Remittances as Part of Livelihood in Njukini**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
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<tbody>
<tr>
<td>Yes</td>
<td>19</td>
<td>47.2</td>
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<tr>
<td>No</td>
<td>21</td>
<td>52.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

However, key informants also suggested that during drought, there are too many people willing to work and this brings the wages for casual labor down. This is caused by an influx of casual laborers in the irrigated areas seeking ways to diversify their coping
strategies. The result of this is usually less pay for work done and also younger more energetic individuals may be favored over older people. The availability of casual labor is also limited by the size of the plots given that during extreme droughts, some farmers lose access to irrigation water as some streams dry up.

“What you see today is not the same situation during drought. Some of the small streams dry up during drought and the farmers have to struggle for casual labor with us…but they join us later after we have been suffering for some time. Drought is really bad.” Mzee Masila.

_Diversification status_

Diversification options were important sources of drought coping strategies in Njukini. During drought, the people tended to either pursue agricultural intensification and extensification, diversify to other types of capital that were accessible, or pursue both. Most households in Njukini consisted of at least a combination an aspect of farming and diversification. Key diversification options in Njukini included participation in trade, migration, pastoral mobility, and access to resources in the game reserve.

Ability to participate in both internal and cross-border trade was also an important diversification option. The researcher observed booming trade among residents of Njukini and across the border during the research in the summer of 2010. Participation in trade was of much help especially to Kenyans living in Njukini because of the open border. Goods tended to be cheaper in Tanzania for the Kenyans due to the strength of the Kenyan Shilling against the Tanzanian Shilling. Traders mainly sell livestock, farm produce and other commodities. The researcher also observed a currency exchange business mainly run by young men. Availability and access to these diversification
options especially the non-farm practices are important for coping because they are not controlled by environmental of climatic factors.

Key informants also reported a widespread migration in search of employment to other places in both Kenya and Tanzania. Most of the migrants from Njukini went to Mombasa, Voi, Taveta, and Loitoktok in Kenya and Moshi, Dar es Salaam, and Himo in Tanzania. These migrants were mainly looking for labor as a diversification option from farming and pastoralism. Migration therefore provided a means of subsidizing agricultural intensification and extensification. The migrants were an important part of coping strategies for relatives in Njukini because they send back remittances to help cushion them from the effects of the drought. Mzee Mwashighadi said that the help he got from his two daughters and a son was his main source of livelihood as summarized in the quote:

“They (his two sons and a daughter) are my life. If I didn’t have them, I would probably be dead…They send me money to help cultivate my land and my son who lives in Voi sends us food”

As mentioned in the previous chapter, Njukini was not permanently inhabited until the mid-20th century. This vast empty land therefore provided an important grazing area for the Maasai pastoralists who moved to Njukini during dry seasons and droughts for pasture. Due to increased settlements, mobility for the pastoralists in Njukini and surrounding areas like Loitoktok has been hindered and this has forced more herders in Njukini to take up a more sedentary lifestyle that involves crop farming to diversify their livelihoods while reducing of livestock numbers as illustrated by the following quote.

“Majority of our pastoralists also practice crop farming. They did not know the importance of farming but when they started losing large herds because of
drought they decided to look for alternatives and farming is easy and attractive. Their herds have reduced very much.” Mzee Mutunga, the local chief.

This quote reflects a popular view by the residents of Njukini that pastoralists only need to understand the benefits of crop farming in order to give up their herds. It also reflects a kind of ‘prestige’ associated with crop farming as opposed to pastoralism and reflects the thinking of the wider society that pastoralism is “backward”. However, according to key informants from the Maasai community, the main reason that they are diversifying to farming is the significant reduction in open grazing land caused by privatization of land ownership and settlement. Intermittent droughts have also killed many of their livestock in the last decade and diversification to crop farming is seen as a move to secure their threatened livelihood as suggested by Tonkei, a herder from the Rombo Group Ranch:

“I have lost a lot of livestock since el nino. There have been a lot of droughts and these days we do not have large grazing areas. There are people settled all over these days. It is very hard for us.”

Resource access status

The people of Njukini have relatively small plots of land. Even those living in irrigated areas claimed that the land was not enough to produce enough crops for food while saving enough surpluses to sell in order to cater for other needs such as school fees, transport costs, healthcare, and other basic needs. Some residents suggested in the interviews that they have to lease all their land or part of it to get money to take their children to school. Those farmers with access to irrigation water especially around Town, Sir Ramson, and part of Irrigation could easily find people to lease their farms to while
those who did not have access to water i.e. those living in Kijiji and Uthiiani could only lease their land to pastoralists for pasture.

“There are also other problems. For example, I may have access to irrigation water but be forced to lease my small plot to get school fees for my children. When the drought comes, everybody assumes I have food so I do not receive relief food from the government. Sometimes some of us lease our small plots and work as casual laborers in them.” Mzee Msabaa, a resident of Sir Ramson village.

The size of land owned by the family was also a marker of socioeconomic status even with the tenure insecurities discussed earlier in the previous chapter. Many of the farmers in Njukini owned between one and two acres of land which is significantly small for intensive farming unless the farmers had access to irrigation water (see Table 6). This suggests that the location of the farm was also an important determinant on the usefulness of the land during ‘normal’ season and also during drought. Farmers with relatively larger plots could lease part of it for grazing especially to the pastoralists during drought.

This is therefore evidence that access to irrigation water alone is not a marker of high socioeconomic status although it is definitely an important livelihood asset. Other factors such as school fees, medical bills, and other debts may make it hard for those individuals whose pots are close to irrigation water more vulnerable. There however seems to be assumptions by the local leadership that these farmers are relatively food secure which may be faulty in some cases. Determining drought coping capabilities is therefore hard because some forms of capital are hard to survey over a short research period while some causes of vulnerability are more spontaneous and cannot be timed. It is, for example, impossible to tell how many members of the household will fall sick in
the next two months and how much it will cost their family in terms of treatment and labor losses.

As discussed in the previous chapter, some farmers tended to have more than one plot of land (see Table 8). These plots were either permanently owned or leased seasonally for farming. Most of the alternative land (extra piece of land) would be located in the irrigated areas for those farmers whose home farms had no access to water. Majority of the farmers who had an extra plot of land owned permanently in the irrigated areas tended to be relatively socioeconomically higher in status. Some who could not access farming land in the irrigated areas had alternative land in the rain-fed areas. These extra farms are an important coping resource because they provide pasture for the household’s cattle or are leased out to pastoralists or other livestock keepers.

The number of livestock a household had was important in the assessment of coping strategies. One Maasai herder said to me that just one of his cattle was worth more than an average season’s harvest in Njukini. Those farmers with numbers of livestock could sell them to buy food while also providing other needs during drought. All the forty respondents interviewed said that they sell livestock as a way of coping with drought. The Maasai, who are predominantly herders, tended to have significantly larger numbers of livestock than the other communities.

The number of livestock was a problematic variable because the people were just recovering from a drought and many complained that they had experienced major reductions in numbers. The other reason was that pastoralists and mixed farmers had to be considered separately for the index to make sense. It was therefore difficult to
ascertain the average number of livestock a farmer has in Njukini in a ‘normal’ season. However, those who had cattle could also sell manure as a long term coping strategy. 

*Table 24* shows that out of the non-pastoralists interviewed, 72.5% of them rely on selling manure as a long term coping strategy. The manure is usually sold to the farmers with access to irrigation water during drought.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>11</td>
<td>27.5</td>
</tr>
<tr>
<td>Yes</td>
<td>29</td>
<td>72.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Ethnicity*

Although there seemed to be no significant differentiation in socioeconomic status by ethnicity, it is notable that the Taveta and the Maasai ethnic groups have tend to have a significant level of social capital through political influence over key resource access in Njukini. The Taveta for example still claim territorial to all the land in Njukini which was actually trust land researved for them but was taken up by other communities from different parts of the country. As stated earlier, key informants suggested that there is an unwritten rule that political leadership positions in the whole of Taveta district belong to the Taveta community. This rule exists even with the fact that the Taveta ethnic group does not constitute the majority in Njukini and also in Taveta district. Political positions
to some extent guarantee some level of security in terms of resources such as land and also diversification options for those who are connected with the leadership.

On the other hand, key informants said that the Maasai community benefited from political connections in the demarcation of the Rombo group ranch in Njukini location. Several key informants claimed that powerful politicians in the Moi government in the late 1980s influenced the creation of this ranch in Njukini. Without these political connections, it was said, the Maasai would not have had a ranch curved out for them in a land that was regarded as trust land for the Taveta ethnic group. Political connections within the high echelons of government therefore ensured that the Maasai ethnic group gained some natural capital in terms of grazing land in Njukini.

Size of farms, location of the farms, access to irrigation water, and availability of livelihood diversification options like business practices and remittances were good pointers of the socioeconomic status of a household. It was however hard to determine the socioeconomic status of any household given the multiple livelihood activities and coping strategies and the level of integration within the different activities and strategies.

Determining coping strategies by socioeconomic status is problematic because it is hard to quantify variables in a short research period. Measuring a household’s access to coping assets and resources also involves a lot of sensitive prodding and may make respondents uncomfortable. It is also a major challenge to determine socioeconomic status by physical assets like a brick and concrete house because socioeconomic status changes with time and the type of house those households live in does not necessarily rate it to a certain status. It is also hard to quantify data on remittances because most of
the times we cannot tell how much are being remitted and how many times in a drought
event or year. In this case, it is hard to how much boost the remittance offers to the
livelihood system. However, it is an important asset that cannot be ignored in both studies
on coping strategies and livelihood activities especially in rural dryland. It is therefore
more informative to talk about how certain groups with particular capitals/assets access
or lack coping strategies.

In summary, livelihoods are becoming more diversified in Njukini in line with
changing climatic factors and patterns of resource access. The residents of Njukini seem
to be quickly resorting to more extremeforms of coping like casual labor, dependence on
remittances, and burning of charcoal for sale among others. These diversification options
are being transformed into everyday forms of coping which could suggest an increase in
vulnerability levels in the midst of dwindling coping and diversification options.

However, diversification provides the people of Njukini with important non-farm
coping strategies when agricultural production is hindered by meteorological factors.
Although the livelihoods of the local people in Njukini are still very agriculturally-based,
drought coping strategies heavily tend towards non-farm diversification practices. The
increase in frequency of droughts and also population tend to have contributed to both
increase and emergence of new vulnerabilities.

Access to land, irrigation water, casual labor, trade, livestock ownership, and
formal permanent employment are very important determinants of the socioeconomic
status and coping capabilities of households in Njukini. However, few households tend to
have access to all the six resources as some of these livelihood resources tend to be
distributed geographically within the location. Households with different resources tend to be integrated and interdependent with other households. Access to a certain resource also tends to almost guarantee access to certain other opportunities. For example, those farmers with access to irrigation water tend to have access to trade because they can sell their harvests from the irrigated farms. These farmers however provide opportunities for casual labor to those who do not have access to irrigation water and others seeking opportunities for livelihood diversification around Njukini.

Context, place and diversity matter in determining the nature of people’s drought vulnerability. These factors interact at the local level to shape peoples resource access patterns and opportunities available for diversification. Place and political geography is important in drawing spaces of inclusion and exclusion from livelihood and drought coping resources. Njukini’s location close to a national border, for example, to a large extent has a substantial effect on access to key drought coping and diversification opportunities such as trade, migration, access to cheaper goods and services from Tanzania. However, these opportunities may be affected by relations between the two countries in different periods. The location of households within a certain local setting may also determine their level of access to certain important coping strategies. In Njukini, proximity to water access points and the national border provides certain opportunities that other groups within Njukini may not have the same level of access to while proximity to the game reserve border is a source of both vulnerabilities and highly contested opportunities. This suggests a danger in furthering the notion of undifferentiated communities.
Settlement histories also contribute to resource insecurity and violence. This is mainly as far as claims to land ownership and access to resources such as water access points are concerned. Several groups and individuals claim territorial and legal land rights in Njukini and these have caused both political tensions and resource conflicts in the past. However, local institutions mediate the conflicts. Peace committees (Kamati za amani) and good neighborliness committees (kamati za ujirani mwema) continue to play a key role in mediating the conflicts in Njukini and also between the people of Njukini and their neighbors across the border in Tanzania.
CHAPTER 5: CONCLUSION

Drought coping strategies in Njukini vary both spatially and socioeconomically depending on the distribution of the different forms of capital available. However, spatial and socioeconomic patterns overlap because of the synergies caused by the interrelatedness of the resources and institutional forces and processes (Watts, 2000). This study shows that coping strategies may be diverse within a small area and this diversity reflects the patterns of resource access. This diversity also reflects the local histories of settlement, agro-ecology and land tenure.

Change of resource access patterns and conflicts through time is important in characterizing the current state of livelihoods and drought coping strategies in Njukini. This study shows that coping strategies and livelihoods become more diversified along with broader shifts in the local social, economic, political and environmental forces. This change in both livelihoods and coping strategies shows that resource access patterns are dynamic and are transformed along with socioeconomic processes. It also indicates that coping strategies do not necessarily vary much from ‘normal’ livelihood practices but often local people tend to pursue their livelihoods more intensely during drought while at the same time diversifying to other livelihood and coping strategies. However, these diversification options are also dependent on available forms of capital that can also be largely associated with the ‘normal’ livelihoods only that they may not be utilized when local people are not under pressure.

Place and political geography play an important role in shaping resource access patterns. Several place-based factors such as settlement histories, local institutions, and
land tenure regime shape patterns of resource access. Although these resource access patterns are differentiated within communities there is a high level of interdependence among the different livelihood groups. This study concludes that although rural livelihoods are diversifying to non-natural capital based livelihood options, natural resources still matter.

**Implications for Political Ecology**

This study furthers Robbins (2004) environmental conflict thesis which centers on local conflicts accelerated by appropriation and enclosure of resources by individuals, governments, or state authorities. The illegal appropriation of a government water catchment area in Njukini by highly connected people within the current and former government regimes has continued to produce landless residents (former employees of the estate and their families) in Njukini and this continues to cause tensions over land ownership. Evictions of squatters from land belonging to the large-scale farm owners have been violent in the past although the evictions seem to have been recently stopped. There also seems to be tensions between the old squatters and those who came to Njukini more recently.

The people of Njukini have not benefited much from their proximity to the Tsavo West national park. This has happened as the government continues to earn a lot of money from tourist visits in the game reserve. There are no substantial returns from the tourism money to the local people and the locals view the game reserve as a threat to their livelihoods through destruction of crops by wildlife and a barrier to access of coping resources in the game reserve such as pasture, water, wood, and even game meat. Due to
this, the local people’s perception to the conservation border has become negative as they feel that the government cares more about the game reserves than the people living close to it while the ignoring the interactions between the local people and the game reserve.

The author found substantive evidence that residents of Njukini view the game reserve as a threat to their livelihood moreso than they saw it as a benefit to them. They also feel that the priorities of the government lean towards maintaining the game reserve while ignoring the needs of the people who interact with it every day. Local people also understand the movements of the animals and also what gains they can get from the reserve without necessarily destroying the ecosystem. Failure of the government to consider the interests of local people makes them feel like they are the victims of both the wildlife and the KWS.

Land Tenure and Resource Access

Water access and availability has continued to influence the local people’s diversification options. Despite the fact that not all the people in Njukini have access to irrigation water, the availability of water in Njukini has continued to secure certain sources of capital that provide important diversification options and coping strategies during drought. Availability of water in at least two rivers throughout the year secures, to some extent, the all-important casual labor needed by those residents who do not have access to irrigated farming. Access to water throughout the year for some farmers also indicates that there will be some level of food production going on in Njukini even during drought which ensures some level food availability within the location.
Ownership of land in Njukini continues to be a problem in light of ethnic tensions over territorial ownership claims by different communities. However, these claims to ownership continue to be contested as political interests and legal issues come to influence major decisions on the settlements. Therefore, there seems to be no single formal tenure regime that is going to satisfy all the different ethnic groups in Njukini especially given the fact that the government has turned a blind eye on local tenure issues. As this happens, more and more people continue to arrive in this border town for both trade and in search of casual labor while the number of landless people continues to grow.

Historical claims to land ownership and lack of title deeds for majority of the people of Njukini continue to threaten their livelihoods. Due to lack of security of ownership of land, the people of Njukini continue to live under fear of eviction or violence. The political class has also exploited this situation and continues to play divisive politics for political gain. This threatens investment in long term adaptation and therefore reduces the people’s capacity to cope with drought.

There is an urgent need for the government to intervene and issue titles to the people of Njukini. Issuance of title deeds will instill a sense of ownership and encourage the locals to plan for long term farming activities that will increase production and enhance their coping capacities. Without guarantee of ownership, farmers are reluctant to invest a lot with the land ownership tensions still going on. The government needs to come up with a land policy that mediates the competing claims to the ownership of land in Njukini. This policy will need to be consistent with national land policy but must
consider local histories of settlement and access to the land resource for the different communities. Njukini’s land problem is however one of the many areas in Kenya where land ownership is highly contested. This happens especially on areas classified as trust land.

Disaster Risk Reduction and Climate Change Adaptation

Stakeholders in Kenya recognize that Kenya continues to face major disasters including drought, landslides, floods, and fires (DDR report, 2008; EM-DAT, 2011). According to the DDR report (2008) the concept of Drought Risk Reduction has not been given the necessary priority and key elements such as drought preparedness, resilience enhancement, sustainable food security, and livelihood diversification have not been taken seriously by stakeholders although there are draft policies on disaster management. In addition to the poor policy framework on drought risk reduction, climate change poses a serious and continuing threat to development (Scholes and Biggs, 2004) especially on agricultural productivity. Global climate models project that while the region between Lake Victoria and the Central highlands will experience increases in annual rainfall, the regions in the arid East and North of Kenya are likely to experience decreases in rainfall (Few et al, 2006).

Foreign exchange earnings (through prioritizing wildlife conservation to attract tourists) for example have always guided policy on areas bordering game reserves. These policies come without much consideration of the effects they might have on the livelihoods of the people living around game reserve borders. Governments and conservation agencies have more often than not put the environment first and the people
second forgetting that the people and the environment around them co-exist and their relationship is complementary. Most of these conservation policies have therefore failed and have actually created conflicts between the humans and their environments around these areas. There is therefore a need for an integrated approach whereby local people are involved in conservation.

Peoples’ perceptions about onset of long rains and meteorological data which provides inter-seasonal rainfall anomalies. Key informant interviews in Njukini indicated that there have been changes in rainfall patterns and the frequency of droughts since the late 1980s. They claimed that rainfall has become erratic and unreliable and there is a greater sense of greater climatic uncertainty. Drought may also occur in Njukini without a significant reduction in the average annual rainfall. This happens mainly because the rainfall patterns have become more erratic and unpredictable. For example, key informants suggested that it may rain very heavily during the onset of the rainy season and the farmers will start planting only for the rain to disappear for a several weeks or even a month leading to withering of the crops. This increase in variation has a negative effect on agricultural productivity and therefore threatens livelihoods that are dependent on rainfall for farming. Some residents indicated that it is not possible to depend on rainfall for farming any more.

The people of Njukini are however not passive observers of the events that take place in the area but they are active agents of the change for the better or for worse. They are actively transforming their livelihoods to cope with extreme events such as drought. This is done through agricultural intensification and extensification as well as
diversification of livelihoods. Drought coping in Njukini therefore changes with the prevailing circumstances and is characterized by a lot of improvisation.

Diversification of rural livelihoods to cope with drought and socioeconomic changes has transformed livelihoods. For traditional pastoralists, diversification involves adopting new ways of sourcing pasture and water for their livestock which may involve transporting the livestock using large trucks to other areas far from their homes. Some pastoralists have also ventured into crop farming and significantly reduced their herds due to the reduction in grazing areas. Other forms of diversification have involved investments in boreholes to provide irrigation water, involvement in trade, labor migration, and leasing land in irrigated areas for farming among others.

It is evident that Njukini and many other drylands in Kenya face climatic uncertainty and droughts. Kenya continues to face negative economic impacts due to these disasters. It is therefore important for the country to put in place a drought risk reduction and disaster preparedness policy that will strengthen livelihoods. Drought should also be perceived as a development issue and not just an emergency issue because interventions do not help much in boosting resilience and enhancing long term coping capacities.

Political Geography of Borders

Place also comes out as a crucial determinant of people coping capacities and capabilities. Geographical areas may be marked by different borders that determine resource access patterns. Some borders come out as more important in strengthening the livelihood by providing diversification options, others are a threat to livelihoods and
drought coping strategies while others have no significant effect on livelihoods and coping strategies. Borders therefore come out as important coordinates of mapping out lines of inclusion and exclusion in resource distribution.

In this age of globalization, borders have become more porous as economies and political systems become more and more integrated. National claims to sovereignty have weakened in the wake of a global economy that is characterized by non-place-based multinational companies and organizations. However, borders have not completely lost their place and they continue to contribute significantly in determining access to important goods and services. The people of Njukini therefore continue to exploit a resource that many other communities do not have access to. It is important to note that the border might sometimes have no significant effect on the livelihood system. However, in the case of Njukini it is a key resource in the livelihood system.

The formation of the East Africa Community (EAC) has also facilitated easier movement of people and goods across the borders of the member countries. The EAC is a common market agreement between Kenya, Tanzania, Uganda, Rwanda, and Burundi. This agreement has seen an increase in trade at both the national and the local scale while at the same time avoiding tensions and suspicion among trading partners from the member states. At the local scale, the people of Njukini were happy that they could move further into the interior of Tanzania for trade and other activities without worrying about being harassed for passports. This has opened more channels of trade to these people for exploitation and also increased diversification options.
Cross-border interactions through trade, labor migrations, intermarriages, and other social relations continue to be an important drought coping resource. There is also a booming healthcare business going on along the border with at least five clinics along the border. Although these clinics are on the Tanzanian side of the border, they offer much needed health care to Kenyans in Njukini. The relationship between the two sides of the border is very complementary. There are no major conflicts between these border communities and the small conflicts that arise are usually solved amicably by special peace committees. However, the relationship in the border reflects, the relationship between Kenya and Tanzania at all times. Tensions between the two countries, e.g. the collapse of the East Africa Community in the 1970s, play out in the relations between these communities.

The road network in Njukini needs to be improved to ease transportation. The main road that runs from Taveta town to Loitoktok through Njukini is a dusty rough road. The other road that runs from Taveta to Voi is also in a very bad state. This makes transport of people and goods to and from Njukini very costly in terms of time and money. Given that Njukini produces a lot of perishable horticultural crops for both domestic use and export, the state of the infrastructure delays the delivery of the goods to Mombasa. These delays lead to some of the produce going bad or losing value because of its state when it finally gets to Mombasa. For example, Njukini produces a lot of tomatoes and if they do not reach the market at the right time, they lose value or go bad very easily.
In summary, the study of the human and environmental aspects of drought coping has important implications for disaster risk reduction strategies and, more broadly, for climate change adaptation. Scholars agree that disaster risk reduction requires putting in place mechanisms that reduce impacts, boost coping capacities and should include aspects of socioeconomic development that reduce social vulnerability (Few et al, 2006; Parry et al 2007). A major challenge however lies in linking risk reduction efforts to efforts aimed at promoting climate change adaptation. It is therefore central for risk reduction strategies and climate change policy to consider the extent to which current disaster risk reduction strategies are line with future risks and adaptation needs (Few et al, 2006).

Land tenure insecurity is a major component of risk facing many people in Njukini. A land tenure policy is needed in Kenya that addresses issues of conflicting claims in Njukini and many other areas. This is because trust land has been a victim of land grabbing and appropriation. However major questions arise on whether there can be a tenure regime to address the situation in Njukini and satisfy the residents while at the same time maintaining its legality. As far as risk reduction and climate change adaptation is concerned, the main question is whether progress can be made toward addressing both the technical and scientific challenges of drought risk reduction and the political challenges of resolving issues of resource access.
References


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