

**LAND USE CONFLICTS BETWEEN PASTORALISTS AND FARMERS IN
KILOSA DISTRICT, TANZANIA**

**BY
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DEGREE OF MASTER OF ARTS IN RURAL DEVELOPMENT OF SOKOINE
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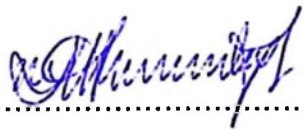
ABSTRACT

Land use conflicts between pastoralists and crop farmers in Tanzania are becoming prominent. Kilosa District in Morogoro Region has been experiencing these conflicts frequently. The survey was conducted in Mfilisi, Mbwade and Rudewa Batini villages in the district with the main objective of determining causes and solutions to land use conflicts between pastoralists and farmers. Ninety respondents, with equal number of pastoralists and farmers were interviewed using a questionnaire. PRA methods and key informants interviews were also used in gathering information from local officials and members of village conflict resolution committees. The major causes of the conflicts revealed include cattle grazing on crops in fields, unclear land demarcations, and land shortage, poor and low level of education, poor and/or lack of social and veterinary services in pastoral allocated areas, ethnicity and lack of respect between group members. Other causes were increase in livestock population, high and unbearable fines (penalties), lack of instant response to conflict and bad governance. The study also highlighted solutions of the conflicts between pastoralists and farmers. The major solutions at village level included effective use of the village conflict resolution committees, individual negotiations and proper allocation of village land. General solutions determined include establishment and respect of land demarcations, education, reduce number and improve livestock management, respect between group members, establishment and improvement of social and veterinary services in pastoral allocated areas. Also review of land policies and good governance were among major solutions. Conflicts between pastoralists and farmers can be resolved and managed in a democratic way. Involvement of main actors (farmers and pastoralists) can contribute significantly in maintaining peace and manage conflicts between pastoralists and farmers.

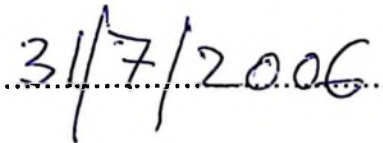
DECLARATION

I, Mark Joseph Tsoxo, declare to the senate of Sokoine University of Agriculture that this dissertation is my own original work and has not been submitted for a degree award in any other University.

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DEDICATION

To my beloved son David Daxo Tsoxo

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ABBREVIATIONS

AU	Animal Unit
FAO	Food and Agricultural Organization
FGD	Focus Group Discussion
GDP	Gross Domestic Product
KDC	Kilosa District Council
LU	Livestock Unit
NAFCO	National Agriculture and Food Corporation
NBS	National Bureau of Statistics
NGO	Non Governmental Organization
PRA	Participatory Rural Appraisal
SACCOS	Savings and Credit Cooperative Society
SPSS	Statistical Package for Social Sciences
UNESCO	United Nations Educational, Scientific and Cultural Organization
URT	United Republic Of Tanzania

CHAPTER ONE

1.0 INTRODUCTION

Conflict is a fact of life that accompanies social, economic and cultural changes. Conflict can be legitimate response to injustice and oppression (Brehony *et al.*, 2003). Conflicts are regarded as inherent within human relations; thus they can neither be completely prevented nor eradicated but rather managed (Simmel, 1995). Land use conflicts between pastoralists and farmers in Tanzania, particularly in areas where they co-exist are experienced as a result of shortage of land and access to diminishing land resources.

Land use conflict occurs when different categories of land users have competing demand for diminishing land resources, and attaching different values to the resource base. Land use conflicts occur in setting that involves an array of culture, economic, and political arrangements that have some bearing on the outcomes of the conflict process (Blench, 1996). Conflicts are not always destructive; they depend on the extent and nature. However, conflicts are generally agreed that they constitute abrasive behaviour in the society and that they must be resolved. Ethnic and economic lobbies affect governments, and these sometimes lead to simplistic and even violent solutions (Blench, 1996). Participatory conflict resolution schemes that involve communities in land planning and resource management seem to be successful (Chachage, 2001).

1.1 Background

Land is one of the major means of production which contains a good number of minerals and other resources. All organisms including human beings depend on land as a sole source of life supporting system. There are a number of land uses, which include cultivation,

grazing, forestation, game reserves, and national parks, water reserve and mining. However, land use is a dynamic phenomenon due to an ever changing relationship between members of the society and natural land resources (Randal, 1987). Though human needs on land are diverse, land resources are fixed with capabilities and limitations for different uses and therefore are susceptible to deterioration when used contrary to its capabilities (Randal, 1987).

Among all land user groups, pastoralists rank the top followed by cultivators (FAO, 1997). Dramatic shifts in the economic, climatic or security conditions can make different ecozones more or less attractive to either pastoralists or farmers. Demographic studies undertaken earlier in the century revealed concentrations of settlements in the humid and semi arid zones. Exhaustion of soil fertility and rise of cultivation techniques that can compensate for the low yields in the sub humid zone have attracted farmers and creating competition for a resource that was formerly ignored (Unruh, 1995).

The main current land use conflicts at a macro scale are situated between crop production and pastoralism systems (De Pauw, 1995). Some of the land use conflicts resulted from land alienation done by government. Monbiot (1994) contends that thousands of hectares of prime grazing land were appropriated from Barabaig pastoralists in Hanang' District for parastatal wheat plantations. In the process, the Barabaig's rotational and transhumant grazing systems collapsed and started exodus with animals (Sosovele and Kulindwa, 2002).

The areas under open access regime are observed to be most utilized for grazing land, thus enabled pastoralists for many years to exercise harmonious mobility and flexible spatial grazing for their livestock. Open access regime observed to create an institutional vacuum

and loophole for encroachment of grazing lands by other land users particularly farmers (Sosovele and Kulindwa, 2002). It allows land resources to be owned by individuals who firstly exercise control over the land. These encroachments to grazing lands due to pastureland reduction can escalate land use conflicts (De Pauw, 1995).

On the other hand, population growth in pastoral areas is associated with ever larger areas being put under arable farming and setting of pastoral community under government villagization policy is limiting pastoralists to maintain their strategies of mobility (Mtengeti, 1994). Seasonal mobility is a measure that has been used for many years against environmental degradation (Sosovele and Kulindwa, 2002). Because of population pressure and policies that favour cropping more than pastoralism, much of the best pasturelands are being turned over to cropping land (FAO, 1997).

Kilosa District represents a unique case in Tanzania with the major co-existing land use systems found in the country. These include leased estate farms, national ranches and parks, reserved catchment forests, smallholder subsistence farming and pastoralism. The interaction and dynamic of these land use systems have led to a long standing conflict, particularly among pastoralists and farmers on the access, control and use of land resources in the district.

1.2 Livestock and crop production

Pastoralism is a mode of production in which livestock are raised through mobile and extensive methods of utilizing water, salt, browsing and pasture resources (Brehony *et al.*, 2001). Livestock are guarded all the time by herders as they graze. Pastoralists derive household income entirely from livestock production. It is the frequency of movement and

distances covered for daily or seasonal movements that determine whether the pastoralism practiced is nomadic, semi-nomadic, semi transhumance or transhumance, semi sedentary or sedentary.

Crop production or farming is an activity whereby farmers derive most of their food and income from crops they grow/cultivate. Unlike pastoralists, farmers normally have permanent settlement. According to World Bank (1994) report, pastoralists and farmers are the major land users in Tanzania. Also these are groups which are frequently in conflict due to their difference in land use (Fisher, 2000 cited by Claude and Mwamfupe, 2003).

1.2.1 Contributions of agricultural sector in Tanzania

Crop farming and pastoralism modes of production are the major components of agricultural sector in Tanzania. The agricultural sector contributes 50% of the country's GDP (Gross Domestic Product), which is portioned into 30% and 20% crop and livestock production respectively. Moreover, agriculture contributes 75% of the foreign exchange and 90% of food requirements produced locally. The agricultural sector employs about 80% of the entire population of the country (World Bank, 1994). Thus, if economic development of this country is to be achieved with a fair distribution in income to the majority of the population, it has to be performed through the agricultural sector.

1.3 Problem statement and justification

1.3.1 The problem

Kilosa is one of the leading districts in Tanzania in terms of land use conflicts between pastoral and farming communities which have been reported since 1960s. In late 1990s over 40 people have been killed, many injured, livestock injured and/or killed, properties

and agricultural crops were destroyed in Kilosa District. These conflicts are controversial for a country like Tanzania whose land size is enough to accommodate both groups of farmers and pastoralists. The country rangelands can carry up to 20 million livestock (current livestock population is 17.7 million) (URT, 2005).

Though, since independence, the government has been trying to solve the problem, yet the problem exists and advances. The conflicts affect people in the district both economically and socially. Persistence of this conflict among the pastoral and farming communities in Kilosa require an urgent action-oriented research which will give light on the exact determinants of the conflict and plausible solutions.

1.3.2 Justification

Since the 1960s, both local and central governments have been trying to solve these conflicts by land and policy reforms. However, some of these policies such as villagization accelerated the problem instead of reducing it. Despite of all efforts solving conflicts between pastoralists and farmers, conflicts persist and even more advanced to a stage of using heavy weapons for example machine-guns. There is a need to find out workable solutions to these conflicts. Thus, this study is aimed to find out workable and long term solutions in resolving and managing existing conflicts between pastoralists and farmers in Kilosa District by involving them as the main actors in these conflicts. Apart from people of Kilosa, the findings will benefit researchers, agricultural stakeholders and policy makers. Also this study complies with strategies of Ministry of Water and Livestock Development in solving pastoral problems.

1.4 Objectives

1.4.1 General objective

The general objective of this study is to determine causes of escalating social conflicts over land use between crop farmers and pastoralists in Kilosa District in order to find solutions to them.

1.4.2 Specific objectives

- i. To determine basic information (linking with land use conflicts) on human population change (between 1988 and 2002), main land use practices, grazing capacity and educational level of the pastoral and agricultural community members in the study area.
- ii. To determine major causes of land use conflicts between pastoralists and farmers in Kilosa District.
- iii. To identify measures to be taken for the conflict resolution and management.

1.4.3 Research questions

- i. What are major causes of land use conflicts between pastoralists and farmers in Kilosa District?
- ii. What measures should be taken to resolve and manage conflicts on land use between pastoralists and farmers in Kilosa District?

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Land distribution and use in Tanzania

Tanzania is endowed with abundant natural resources including land with fertile soils, livestock, minerals, forests, water bodies (lakes, rivers, springs and so on), wildlife and their like. The country has land area of 88.6 million ha. The major land uses in Tanzania are crop and livestock production. However, livestock production is among the world's largest land user (FAO, 1997). The actual area cropped in 1988/89 in any given season was about 3.4 million ha which was only about 3% of the total surface area of the Mainland Tanzania. About 6.5 million ha, outside the reserves is agricultural potential area (this makes a total of 10 million ha of arable land). On the other hand livestock production in Tanzania utilizes about 63 million ha (62%) of Tanzania mainland. However, they are not guaranteed to pastoralists as land tenure is unsecured. This may be due to weaknesses in the mechanism to regulate land use policies (De Pauw, 1995).

Tanzania mainland has allocated 22 million ha, 23% of its surface area as to reserves which is the largest share of land resources allocated to reserves in Sub Saharan Africa (World Bank, 1994). These reserves include National Parks (4.2 million ha; 4%), game reserves (7.7 million ha; 8%), forest reserves (10.1 million ha; 10%), and water reserve (6 million ha; 6%). Within the various reserves, there are an additional 3 to 4 million ha identified as suitable for crop cultivation (World Bank, 1994).

2.1.1 Land Policy in Tanzania

The National Land Policy (1995) sets the direction for land reform which includes significant changes to land acquisition, holding and transfer. The land reform distinguishes between the land under the authority of central government and land under the village authority. Village Land Act, 1999, Section 58 entitled elected village councils to be the land managers charged with the supervision of adjudication and registration of village land within their villages, including range and forest land (URT, 1999b). The National Land Policy provides incentives for more efficient use of land and its resources. Mariki (2002) contended that Land Policy encourages legal ownership of land by individuals, the private sector, communities and villages through acquisition of title deeds. This is meant to reduce land use conflicts and increase the value of land. The National Land Policy links land development with other policies of all land-based sectors including livestock, agricultural policies, natural resources and settlements.

To facilitate proper planning and use of land for development of all sectors, the National Land Use Planning Commission was established in 1984, focusing on coordinating activities of bodies concerned with land use planning as well as enhancing cooperation between the land users. It is also tasked to enhance private and public participation in programmes related to land use planning and ensure accountability of the users or developers. Despite existence of this body for two decades, limited strides observed to be done towards achieving the stated objectives and the much desired land use planning at village level (De Pauw, 1995).

2.1.2 Land tenure in Tanzania

Land tenure issues are crucial to most communities in Tanzania as over 80% of the population depends on agriculture and other land based resources. All land in Tanzania belongs to the state under three main forms: general land, village and reserved land (URT, 1999a). The state ownership of land was following the nationalization of land by the colonial government in 1923 and this status reinstated by the Arusha Declaration in 1967, which is also aimed to placing more authority at village level. Generally, Tanzania is characterized by unstable land tenure system.

Effective implementation of land policy is important for sustainable and systematic utilization of land and land based resources. Security of land tenure system has an influence on farmers planning horizons and confidence that they can make to capture the long term benefits of investment in land (Shivley 1999). Moreover, security of land tends to increase adoption of land improvement technologies (Anim, 1999). Lundgren *et al.* (1993) observed that farmers cultivating on a privately owned land are characterized by high investment in various aspects of soil conservation. Observation shows that investment in soil conservation has been lower in both rented communally owned land than on privately owned land.

Importance of land security however does not guarantee land conservation (Holden *et al.*, 1996). Land can be well secured yet degraded. Traditionally, grazing land and water holes have also been free for all to access and sustainably used (Christianson *et al.*, 1993). For instance, Barabaigs (pastoralists) used their grazing land communally and made best use of scarce resources by seasonal grazing systems (Sosovele and Kulindwa, 2002). Although access to land was free to everybody, control was exercised and maintained through

customary rules and traditional institutional procedures. In some cases, the “tragedy of commons” theory applies; that is when land owned collectively, community of users tends to maximize on land resource use than sustainable use and conservation of land (Hardin, 1968; cited by Sosovele and Kulindwa, 2002).

2.1.3 Grazing and carrying capacities; and stocking rate

Grazing capacity is sometimes mistakenly used synonymously with carrying capacity. Grazing capacity is the total number of animals which may be sustained on a given area based on total forage resources available, including harvested roughages and concentrates expressed as animal-units per hectare (AU/ha) (Mtengeti, 1994). Whercas, Kidunda (1996) defines carrying capacity as the number of animals that can be grazed without undue harm to the soils and vegetation expressed as grazing area per animal units or ha/AU. It is the maximum number of a species that can be supported by a particular habitat, allowing for seasonal and random changes, without degradation of the environment and without diminishing carrying capacity in the future (Mkutu, 2004). Stocking rate is the number of specific kinds and classes of animals grazing or utilizing a unit of land for a specified time period expressed as animal unit months or years per hectare (ha/AU). Unlike grazing and carrying capacities, stocking rate considers time.

Livestock are seen as wealth, and the people are eager to expand their number. Excess number livestock than its carrying capacity of pastureland exhausted pasture beyond repair and the land may become barren. Recovery from over-exploitation can take many years, even centuries and can result into desert Mkutu, 2004). Carrying capacity and stocking rate can be increased by improving the forage production of the pasture hence increased grazing capacity (Mtengeti, 1994). If long-term forage production of the pasture decreases, so does

the carrying capacity. Diminishing of land resources increases competition among major land users; a situation succumb land use conflicts

2.2 Land use conflicts

Conflict is a relationship between two or more parties (individuals or groups) who have, or think they have, incompatible goals. It refers to differences in outlook, opinions and values on specific issues (De Pauw, 1995). Being the most important resource in the world, land use has become a major issue in conflict particularly between major land users; pastoralists and farmers. In the context of Tanzania, it is the goals of pastoralism and crop farmers that are incompatible which resulted into long standing land use conflicts.

2.3 Causes of land use conflicts

2.3.1 Population increase

It is evident that human population in the country is increasing while land size is constant. Kidunda (1996) predicted that the trend in human population growth and economic development will have considerable influence on how grazing lands in various countries will be used in coming years. Food shortages remain an important problem in many developing countries and this is expected to continue for future decades. Increased population may lead to increased demands on land and its resources. Pressure on land use posed by population increase and land degradation is believed to succumb pastoralists and farmers into land use conflicts (Mtengcti, 1994). Pastoralists commend migration to areas where pasture and water are available as one of the solution.

2.3.2 Land alienation by government and marginalization of pastoralists

Land alienation by government for establishing conservation areas (about 40% of the Tanzanian area), national parks, forest reserves, game reserves and government projects such as wheat complex in Hanang' and other is believed to increase mobility among pastoralists (Shivji, 1998). In 1958 pastoralists (Maasai) were forced by colonial government to vacated from Serengeti to over the crater and Ngorongoro highlands, but shortly later, the government banned cultivation around the crater following the conflicts between pastoralists and farmers. Recently, government vacated pastoralists who have been in the area since 1950s (URT, 1999c).

The problem of marginalization is experienced by both farmers and pastoralists though the extent differs; pastoralists are mostly affected. Sosovele and Kulindwa (2002) contended that some of the land use conflicts occur in some places because pastoralists are forced to make their livelihoods in marginal areas. Pastoralists with large herds are forced to migrate out of the villages for pasture and grazing lands. In other places farmers have shortage of land and its resources that is water and they expand into pastoralists grazing areas. In this case, expansion and or competition on land and its resources end up into land use conflicts.

2.3.3 Lack of community participation and improper land use planning

Lack of community participation in land use planning for different uses is believed to be one of the causes of land use conflicts (Shivji, 1995). Planners, in most cases, prepare land use plans according to their own criteria without considering needs of local communities (Sosovele and Kulindwa, 2002). Although the government wants community participation in decision-making when land use planning is being carried out, in most cases planners take the idea superficially (Shivji, 1998).

Misana (1997) contends that lack of proper land planning and lack of political will among some leaders to tackle land use conflict between people of different ethnic groups as one of the determinants of land use conflict. Brackington (1997) argues on the importance of cultural utilization patterns of resources. According to him, wet areas are important to pastoralists for grazing in dry season while to farmers such areas are important for dry season gardening or farming for livelihood. Allocation of best areas such as wet ones has been associated with corruption and favouritism.

2.3.4 Break down of traditional systems

Many land use conflicts have come up due to breakdown of some traditional systems of resource allocation, utilization and conflict resolution (Maganga, 1995). Other conflicts have been caused by colonial and post colonial state intervention measures. These include undermining local tenure arrangement, land appropriation and misuse of leadership positions to grab land. The 1974-76 villagisation process in Tanzania was effected without a clear land tenure framework (Shivji, 1995). Villagisation was an administrative activity based on a policy which exclusively concentrated on only process of resettlement and relocation mode of production to the exclusion of other equally important dimensions such as land ownership and modes of production. Villagisation was observed to alter customary land ownership experienced pastoralists and farmers in some parts of Tanzania.

2.3.5 Ethnic differences

Ethnicity and cultural antagonism often play an important role in farmer-herder conflict. Cultural differences resulted into use conflicts due to their immiscible attributes and poor cooperation among ethnic groups. Farmers consider pastoralists as conservative (not prepared to change their attitudes) whereas pastoralists complain that farmers ignore

their culture. Brehony *et al.* (2001) contended that ethnicity and cultural antagonism often escalate farmer-pastoral conflicts. There seems to be no formal communication between farmers and herders; a situation which may result into fragile relationship due to incomprehension and misunderstanding of the motives of each group.

2.3.6 Lack of clear policies on pastoralists

There are no clear policies related to pastoralists though there is a move to formulate them. While government may lack policies on pastoralism, national-donor supported programmes and policies in other sectors have caused many of the problems (Shivji, 1995). For instance, many of the Barbaigs spoken to say that they had been driven out of their land in Hanang District when the NAFCO farms were established, to “nowhere” (that is no compensation for land). In some areas such as Mbeya and Rukwa, pastoralists faced the same problem of “not wanted” by farmers. Government policies, projects and actions at central and local levels are believed to accelerate migration of thousands of pastoralist cattle to places like Kilosa and consequently leading to land use conflicts (Brehony *et al.*, 2001).

2.3.7 Lack of urgency in solving conflicts

There seems to be a laxity on the side of district committees and officials in not promptly visiting sites of conflict when a land dispute arises. Conflicts can easily be managed at early stages, delay in solving conflicts is believed to give it a chance to advance. Brehony *et al.*, (2001) contended that, there were boundary disputes in some of villages Kilombero District which happened in March 1998, but they were visited in March, 1999. Depending on the extent of the conflict and tolerance to conflicting parties, this can escalate conflicting and groom it to be bigger and bigger.

2.4 Solutions to land use conflicts

2.4.1 Control population increase

Tanzania has population of about 34.4 million people with 3 percent growth rate (NBS, 2002). While population size as well as demands for land increases, land size remains constant. Government should create awareness to its citizens on its population policies, of which one is to reduce population increase. Education on family planning for both male and female parents will assist in reducing an increasing rate of population growth. Both artificial and natural birth control methods should be encouraged. Reduced population increase may release increasing pressure on land use.

2.4.2 Mediation, traditional and official tribunal

Mediation attempts to resolve problems to the satisfaction of both parties – it creates a 'win win' situation for all parties. In the case of law and order, the courts rule according to the law and often there is winner and loser. Where possible, the disputes between pastoralists and farmers are contented to be resolved by mediation (Brehony *et al.*, 2001). If mediation fails at district level then it should be referred to the courts. There are several ways through which land use conflicts can be resolved, such as informal Elders' Council; official tribunals and courts (Chachage, 2001).

2.4.3 Participation of local people

Land use conflicts occurring in Tanzania may be solved democratically and not technically (Chachage, 2001). It has been reported that villagers who are the potential owners and users of village land had not been involved in decisions relating to land disputes (URT, 1999c). Participation of local people in the areas with potential land use conflict is crucial in solving the problems. Mkutu (2004) stressed the need for efforts to enhance

conflict prevention systems and capacities to be available to the authorities and communities in the rural areas and to promote a secure environment in which problems of poverty and resource competition can be addressed with reduced fear of crime and violence. This includes support for efforts to control and reduce possession, transfers and use of small arms and to resolve and prevent agro-pastoral conflicts.

2.4.4 Government policies on pastoralists and proper land planning

There is laxity and shallowness in implementation of government policies on livestock development. This may lead to unfriendly condition between pastoralists and government and its agencies (Brehony, *et al.*, 2001). Issues relating to land use planning and allocation necessitate participatory process and guidance of land planners. The government is moving towards a policy of having ranches for pastoralists based on the experience of Botswana. The idea may bring pastoralists in more defined areas with a view to providing better services and helping them increasing their production such as producing more meat per hectare than is currently the situation (FAO, 1997). National and local authorities and policy-making groups in Kenya were encouraged to identify and understand the factors contributing to conflicts involving pastoralists and to prioritize measures to tackle these conflicts (Mkutu, 2004). This includes recognition that some existing policies, laws and government practices, including some development policies, land tenure systems, and governance and security practices that are contributing to the problem, and need to be revised and developed (Umar, 2004). Mkutu (2004) stressed for a comprehensive land use planning and security of tenure to all residents.

2.4.5 Establishment of village adjudication committees

District authority ensures establishment of village adjudication committees, particularly in villages where there is conflict to assist in monitoring and mediating disputes (URT, 1999b). Each committee appoints a village adjudicator adviser in villages where disputes exist. A similar team needs to be established at district level under the office of district commissioner. This District Adjudication Committee has an executive officer who helps to resolve conflicts that are unable to resolve at local level (URT, 1999c).

2.4.6 Dissolve ethnic differences

Lack of tolerance and extremities among ethnic group members seem as barriers to the efforts of conflict resolution. Umar, (2004) contend to encourage tolerance among citizens even if people do vary. Everyone is responsible to discourage people ethnic extremities and superiority. Referring ethnic identity could incite violence. Nanai (1993) suggested schooling together among children from both groups as tool for socialization that can dissolve ethnic boundaries and extremities.

2.4.7 Early warning system

The key principle in early warning system has been used to manage and solve conflict at the lowest level as possible and helps to allocate responsibilities at different levels. Blench (1996) suggested early warning principle to resolve conflict before it develops to an advance and dangerous stage. The major differences in the various stages are the levels at which the dispute is solved. In one village conflict may be solved at sub-village level while in another village the same issue may have to be referred to the Ward Executive Officer depending on mutual understanding between conflicting parties. The District Commissioner is advised to notify any dispute as a matter of urgency (URT, 1999c).

CHAPTER THREE

3.0 METHODOLOGY

3.1 Location and its description

Kilosa is one of the five districts in Morogoro Region located in east-central Tanzania. The district lies between 5°55' to 7°53' South and 36°50' and 37°30' East. The study was conducted in three villages of the district namely Mfilisi in Mikumi Division, Mbwade and Rudewa villages both from Kimamba Division. The population size of the Kilosa District is 489,513 people (NBS, 2002). Major ethnic groups in the district are Pogoro, Kaguru, Luguru, Sagara, Gogo and Sukuma who are agro-based groups and Maasai and Barabaig who are pastoral groups. Minority ethnic groups include, Hehe, Chaga, Sambaa, Vidunda, Bena, Nyakyusa, Iraqw and Yao. The district has about 223 008 indigenous cattle, 1 000 improved cattle stock, 95 744 goats, 26 820 sheep and 2 936 donkeys (KDC, 2000).

The District is characterized by a dry tropical climate experiencing 25°C mean annual temperature and annual rainfall ranges from 800mm in low-lying areas to 1300mm in high altitude areas (Claude and Mwamfupe, 2003). The vegetation is dominated by miombo woodland in the hilly areas and grassland in the alluvial plains. The district is divided into three physiogeographic units, which also constitute different agro-ecological zones; high altitude zone (up to 2200m above sea level) and plateau zone, which is characterized by plains and dissected hills with moderately fertile and well-drained soils suitable for agriculture. The third zone is flood plains which comprises both flat and undulating plains extending to the foot of the hills in the west. The plains are subjected to seasonal flooding and occupied by the pastoralists particularly the Barabaig and Maasai.

Kilosa District leads in the country in land use conflicts between pastoralists and farmers. Kimamba Division leads in the district in land use conflicts between pastoralists and farmers. The district has experienced a number of conflicts which led to the loss of human and animal lives and other properties.

3.2 Research design

A cross-sectional research design was used in this study. The cross-sectional research design allowed data collection at a single point (village) of the study area in one time. The design was used in descriptive study and for determination of relationships between variables (Bailey, 1998). This research design was considered to be favourable because of limitations of resources in terms of time and funds.

3.3 Sampling

Both purposive and cluster sampling techniques were used in sampling. Purposive sampling technique was used in selecting a target population of pastoralists and farmers relevant to the study. Cluster sampling technique was used in pastoral-based settlements, particularly where population was scattered (common situation in pastoral areas). Pastoralists and farmers were used as sampling units for this study. Three villages were involved in sampling process, each one with its own demographic characteristics. The villages were characterized as pastoral majority, farmer majority and estimated balanced populated village. From each village there were 30 respondents, of which 15 respondents were from each group of pastoralists and farmers. Pastoralists were characterized as those individuals who rely on livestock as their main economic activity whereas farmers were those who rely on crop production as their major economic activity.

3.4 Data collection and instrumentation

A structured questionnaire with both open and close ended questions was constructed. Key informant approach, Focus Group Discussion and timelines and problem/solution ranking (PRA methods) were used in collecting data from few knowledgeable individuals particularly pastoralists and farmers, village leaders and district officials. In addition to those ways of collecting information, a tape recorder was also used in taping and serving useful information during discussion and interviews. The copies of questionnaire were administered to the selected respondents from both farmer and pastoral communities in the three villages. Man-to-man interview was conducted to key informants. This exercise was guided by a simple checklist of questions (Appendix 2). Ten key informants were involved in the process of data collection; they include acting District Commissioner, District Livestock Officer, Councilors and Ward Executive Officers, Livestock and Agricultural officers. Primary information on age, migration, household size, education, occupation, ethnicity and land issues was collected. Prior to actual data collection, preliminary survey was done and validity and reliability of the questionnaire were tested. Necessary amendments and corrections were incorporated before the actual data collection. Secondary data was obtained from village, district and regional reports, library and other sources relevant to the study's objectives.

3.5 Data processing and analysis

Data processing and analysis was done at Sokoine University of Agriculture, Morogoro, Tanzania. The data collected was sorted, coded and summarized prior to analysis. Analysis was done by using the Statistical Package for Social Sciences (SPSS), computer software in conformity with the objective of the study. Descriptive statistics particularly frequencies

and cross-tabulations were done in the analysis. Chi-square was used in comparing and testing statistical significant differences among the variables (categories) in the study.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 An overview

This chapter gives results obtained in the study and discussion of the findings. Results included primary data which was obtained through interviews, PRA and personal observation as well as secondary data obtained from documentary studies, records, reports, library and the internet. These results were grouped into four main sections; namely respondents' characteristics, land use and ownership, pastoralists, farmers and land use conflict sections.

4.2 General characteristics of respondents

Ninety respondents ageing between 24 and 79 years from farmer and pastoralist groups were involved in the study. In terms of sex, respondents proportioned as 81.1 and 18.9 percent for male and female respectively (Table 2). Of all women interviewed in the study area, only 3.3% were from pastoralist communities. Under the lights of traditions, in rural communities men are more likely to be household speakers than women especially among pastoralists who are conservatives to their traditions. Household size ranged from two to 32 members. The majority were migrants to the district. Also pastoralists in the study area were characterized as nomadic and others with multi-residency (having more than one permanent place of residence).

4.3 Human population increase

As in most of the developing countries, population in Tanzania since 1960s has been increasing. Between two consecutive household census conducted in 1988 and 2002 human

population in Kilosa District has increased from 346 575 to 489 513 people. As summarized in Table 1, population has increased by 142 938 people just in 14 years. This change is made up by 70 566 and 72 372 male and female respectively (NBS, 1990,2002)

Population increase is associated with increase in food demand which has to be derived from the limited land. Such an increase in food demands to constant land reflects intensification of available land and encroachment by farmers to grazing lands. Expansion of agricultural land as a result of food demand in catering for the increased population is one of the reasons for the land use conflicts. As one of the pastoralists in Mfilisi Village (a designated village for pastoralists) whispered, "...it (land) was undeveloped when we came and in 1976 the district allocated this land as grazing land, yet invaded by farmers... just nearby our *bomas* (kraal) there are a lot of farms a situation posing where cattle can likely graze on crops in farms". In contrary, one farmer reported that "we all (farmers and pastoralists) need food,... food demand is now on increasing, thus land for cultivation should also be expanded".

Table 1: Human population of Kilosa District in 1988 and 2002 censuses

Sex	Year		Population change
	1988	2002	
Male	173 635	244 201	+ 70 566
Female	172 940	245 312	+ 72 372
Total	346 575	489 513	+ 142 938

Source: NBS 1990 & 2002

4.3.1 Migration

Migration is among three major attributes of population change. Others include deaths and births. Migration in the study area has been reported as a major factor that contributed to population increase in the area. Findings from this study (Table 2) show that, 61.1% and 38.9% of all respondents are in migrants and indigenous respectively in the district. Of all the migrants (61.1% of all respondents), 46.7 and 14.4 percent are pastoralists and farmers respectively (Table 2). The results show high significant association between occupation of the individual and migration at $p \leq 0.01$.

The study revealed that most the immigrants in the district are pastoralists. Thus, with natural human population increase in the district, migration (with pastoralists being among the largest immigrants) contributed to the population increase. Pastoralists who migrated into the district increase pressure to resource use such as land and water. Acting District Commissioner; Mr. Kiwenge contended that "Cattle population increases due to increase in immigrant pastoralists with large stocks of cattle that pose threats to available natural resources in the district".

4.3.1.1 Attractants or incentives

Migration from one point to another is facilitated by either pull or push factors. Attractants or incentives available in a particular area are pulling factors for people to migrate into the area. The major attractants revealed by the studies include pasture, soil fertility and ecological stability. The findings in Table 2 show that all immigrants in the study area (45.6%, 43.3% and 11.1%) are attracted by pasture, soil fertility and ecological stability respectively. Pasture, except for Mfilisi Village was a leading attractant followed closely by soil fertility and at far by ecological stability. This impresses that pastoralists are highly

attracted by pasture and therefore they constitute large proportion of immigrants in the district.

Table 2 shows that pastoralists have neither been attracted by soil fertility (0%) and few by ecological stability (4.4%) but mainly pasture (45.6%). Unlike pastoralists, farmers have been attracted by soil fertility (43.3%) and ecological stability (6.7%) and pasture (0%). Table 2 shows that, of all respondents in the study area, 42.2% immigrants were attracted by pasture whereas only 3.3% indigenous residents were attracted by pasture. Soil fertility has attracted 31.1% indigenous population and 12.2% immigrants. Ecological stability attracted and/or motivated few individuals. Of all respondents, ecological stability attracted only 6.7% immigrants and 4.4% indigenous.

The findings from the results revealed that attractants and/or incentives (pasture, soil fertility and ecological stability) are significantly associated with residence status and occupation of the individual at $p \leq 0.01$. Pastoralists are highly attracted by pasture availability which positively related to soil fertility in the area. They have tendency of moving from place to place searching for good pasture. Soil fertility is one of the major attracting factors for farmers into the area. Thus, farmers and pastoralists can be attracted in the same area. Most of the farmers and pastoralists have been concentrated in Kimamba Division. The division is a leading area in the district with frequent land use conflicts among farmers and pastoralists (Kiwenge, personal information, 2004).

4.3.1.2 Original district of the respondent

Majority of respondents in the study area were indigenous of Kilosa District by 40% (Figure 1). The major pastoral ethnic groups in the district, Barabaigs and Maasai which

constituted 13.3% and 17.8% were originated from Kiteto and Hanang' districts respectively. About 5.6% of all respondents hailed from Shinyanga, 3.3% from Handeni and 4.4 % each originated from Iringa and Babati districts. Respondents from Mbeya and Mpwapa districts each constituted 2.2%. Other migrants from Moshi, Simanjiro, Kondoa, Bukoba, Morogoro and Mbulu districts constituted 1.1% each.

Table 2: Distribution of village, occupation residence status by sex, residency and Attractants

	Village				Occupation			Residency status		
	Mf	Mb	Rb	Total %	Fr	Ps	Total %	Indg	Migr	Total %
Sex										
Male	30.0	23.3	27.8	81.1	34.4	46.7	81.1	26.7	54.4	81.1
Female	3.3	10.0	5.6	18.9	15.6	3.3	18.9	12.2	6.7	18.9
Total				100.0			100.0			100.0
Residency										
Migrants	25.6	16.7	18.9	61.1	14.4	46.7	61.1	-	-	-
Indigenous	7.8	16.7	14.4	38.9	35.6	3.3	38.9	-	-	-
Total				100.0			100.0			-
Attractants										
Pasture	12.2	16.7	16.7	45.6	0.0	45.6	45.6	3.3	42.2	45.6
Soil fertility	15.6	12.2	15.6	43.3	43.3	0.0	43.3	31.1	12.2	43.3
Eco-stab	5.6	4.4	1.1	11.1	6.7	4.4	11.1	4.4	6.7	11.1
Total				100.0			100.0			100.0

Key:

Mf = Mfilisi

Fr = Farmer

Indg = Indigenous

Mb = Mbwaide

Ps = Pastoralist

Migr = Migrant

Rb = Rudewa Batini

Eco-stab = Ecological stability

The findings from the study tell that most immigrants in Kilosa District originated from Hanang' and Kiteto districts. This study, at $p \leq 0.01$ has statistically proven highly significant association between place of origin and individual's occupation. Also results disclose Maasai and Barabaigs as the major immigrants whose major economic activity is livestock production. The findings conform with the fact that pastoralists move from one district/place to another in search of pasture. It also gives a reflection of what happened concerning land in their area of origin. In the late of 1960s, Barabaigs were displaced from thousands of hectares of their original land for the establishment of wheat project in Hanang' District. Similarly in Kiteto herders were driven out leaving their pasture land for large crop plantations. Correlation of migration and place of origin is crucial in finding better sources and ways of preventing and managing agro-pastoral land use conflicts.

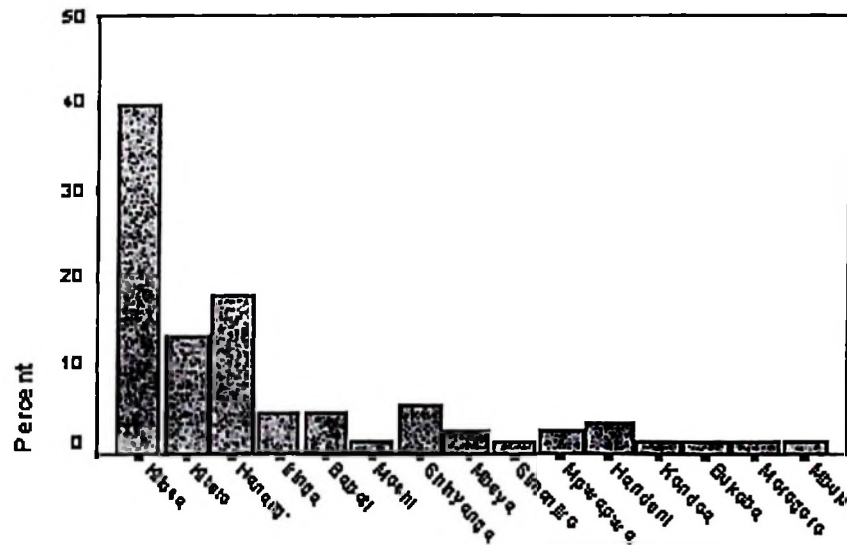


Figure 1: Respondent's District of origin

4.4 Land

4.4.1 Land size and its distribution in Kilosa District

Secondary information from the Kilosa District Council (KDC) shows that the district covers an area of 1 424 500 ha, most of which is suitable for both crop and livestock production. The district area is distributed as follow; arable land (536 590 ha), livestock production (484 480 ha), forest reserve (80 150 ha) Mikumi National Park (323 000 ha) and water bodies (dams and rivers) cover 11 420 ha (KDC, 2000). The source further shows the classification of land as follow; cultivated land (284 909 ha), land suitable for irrigation (34 928 ha) and currently land used for grazing (290 688 ha). Of the total land (484 480 ha) suitable for livestock production, only 163 121 ha were allocated as grazing land, 127 567 ha were allocated for both crop and livestock and land infested tsetseflies was (193 792 ha). Grazing land area available by the time was just about adequate for the number of grazing animals in the district. However, the issue here is distribution of grazing livestock which is supposed to be skewed and observe sustainable utilization of pasture.

4.4.2 Land ownership

In the study area, as in many parts of the country, there were two major patterns of land ownership; private and communal land ownership. This is evidenced by the results (Table 3) that for all respondents, 63.3% and 36.7% own land privately and communally respectively. In respect to occupation, results (Table 3) show that of all respondents who own land privately, 50% and 13.3% were farmers and pastoralists respectively. Unlike in private ownership, all respondents who own land communally (36.7%) were pastoralists. In relating land ownership to residence status of respondents (Table 3), private land ownership was practiced by 36.7% and 26.7% of indigenous and migrants respectively whereas

communal land ownership is practiced by 2.2% and 34.4% of indigenous and migrants respectively.

Table 3: Distribution of land ownership, use and means of acquisition

	Village				Occupation			Residency status		
	Mf	Mb	Rb	Total %	Fr	Ps	Total %	Indg	Migr	Total%
Ownership										
Private	20.0	21.1	22.2	63.3	50.0	13.3	63.3	36.7	26.7	63.3
Communal	13.3	12.2	11.1	36.7	0.0	36.7	36.7	2.2	34.4	36.7
Total				100.0			100.0			100.0
Use										
Cultivation	24.4	25.6	33.3	83.3	47.8	35.6	83.3	35.6	47.8	83.3
Grazing	5.6	3.3	0.0	8.9	2.2	6.7	8.9	2.2	6.7	8.9
Cult+graz	3.3	4.4	0.0	7.8	0.0	7.8	7.8	1.1	6.7	7.8
Total				100.0			100.0			100.0
Means										
Purchase	8.9	5.6	2.2	16.7	10.0	6.7	16.7	4.4	12.2	16.7
Rent	10.0	5.6	13.3	28.9	12.2	16.7	28.9	10.0	5.6	13.3
Inherit	0.0	2.2	8.9	11.1	11.1	0.0	11.1	11.1	0.0	11.1
Allocation	14.4	20.0	8.9	43.3	16.7	26.7	43.3	13.3	30.0	43.3
Total				100.0			100.0			100.0

Key:

Mf = Mfilisi

Fr = Farmer

Indg = Indigenous

Mb = Mb Wade

Ps = Pastoralist

Migr = Migrant

Rb = Rudewa Batini

Cult+graz = Cultivation and grazing

The study statistically revealed that the association of land ownership with occupation is highly significant at $p \leq 0.01$. Proportion of farmers is higher than others and proportion of those who practised private land ownership outweighs their counterparts in communal ownership. Communal land ownership is not common among farmers. On the other hand,

pastoralists who are nomads need massive land to accommodate nomadism. Thus communal ownership is the most preferable than private ownership. For few pastoralists (13.3%) who own land privately they use it for subsistence farming and as grazing/pasture plot for calves and weak or weak animals. However, it is common practice among farmers when one cultivates in communal land he/she claimed it as his/hers (privately owned). One farmer stressed in Focus Group Discussion that "...I cleared a portion which I can afford in virgin land and cultivate; the portion automatically is mine, so it is privately owned". In another village during discussion one pastoralist complained that ".... I don't believe if communal ownership exists, look! When a farmer cultivates in communal land, it become his/hers, yet we (pastoralists) are claiming it as our. This confusion is leading us to conflict unless it has to be clarified".

4.4.3 Land use

Land in Kilosa District is potential for both farmers and pastoralists as it is fertile, just about adequate and water sources are available. In the study area there were three major land uses; crop cultivation; livestock production (mainly grazing) and mixed crop and livestock production. However, in communally owned land as explained above land is used as grazing land. In privately owned land (Table 3), 83.3%, 8.9% and 7.8% of all respondents use it for crop cultivation, grazing and for both crop and livestock production. It has statistically been proved that location (village) is significantly associated to land use at $p \leq 0.01$. Thus, agro-ecological zones vary with geographical location and suited to different land uses.

In respect to occupation, cultivation and grazing are the commonest land use practices among farmers and pastoralists. About 83.3% of all respondents responded for cultivation

as their major land use practice, of which 47.8% and 35.5% use were farmers and pastoralists respectively. While in proportion of land users for grazing, 8.9% of all respondents 2.2% and 6.7% were farmers and pastoralists respectively. Only pastoralists (7.8%) use land for both farming and grazing (Table 3). There is high significant relationship between occupation and land use at $p \leq 0.05$. Observation shows that some pastoralists, though a few, are practicing crop farming on their own and/or in collaboration with farmers.

In relating land use to residence status (Table 3), among all respondents who use land for cultivation (83.3%), 47.8% and 35.6% were migrants and indigenous respectively whereas out 8.9% of those who use land for grazing were migrants (6.7%) and indigenous (2.2%). Among respondents who use land for both cultivation and grazing (7.8%), migrants constitute 6.7% and indigenous only 1.1%. Being a migrant or indigenous is correlating to occupation of individual which both influence land use practiced by an individual.

4.4.4 Means of acquiring land

The results (Table 3) show the means of acquiring land for both crop and livestock production and establishment of settlements in the study area. There were four major means of acquiring land which included purchase, rent, inheritance and being allocated by authorities. Of all responses for the means of acquiring land, 16.7%, 28.9%, 11.1% and 43.3% were for purchase, rent, inheritance and allocation respectively. Respondents who purchased land in respect to village were 8.9%, 5.6% and 2.2% whereas 10%, 5.6%, and 13.3% rented land in Mfilisi, Mbwa and Rudewa Batini respectively. Respondents in Mbwa and Rudewa Batini villages by 2.2% and 8.9% respectively inherited the land while in Mfilisi none inherited land. Authorities allocated land to 14.4%, 20% and 8.9% of

respondents in Mfilisi, Mbwade and Rudewa Batini villages. About 10%, 12.2%, 11.1% and 16.7% farmer respondents acquired land through purchase, rent, inheritance and allocation respectively. On the other hand, 6.7%, 16.7% and 26.7% pastoral respondents acquired land through purchase, rent and being allocated respectively. In respect to residence status, 4.4%, 10%, 11.1% and 30% indigenous respondents acquired land through purchase, rent, inheritance and allocation respectively. Their counterparts the migrants acquired land by 12.2%, 5.6% and 30% through purchase, rent and being allocated respectively. Neither pastoralist nor migrant farmers acquired land through inheritance. Statistical analysis of the data revealed high significant association between village, occupation and residence status of the individual at $p \leq 0.01$.

The results show majority of people particularly pastoralists who are also migrants at large, acquire land through allocation. This stress a need for fairness, equity and involvement of all land users groups in land allocation exercise. Observation shows that pastoralists who rent land are doing for subsistence farming and pasture plots for calves and sick or elderly animals. Land rent means of land acquisition was observed as reflectors of unfairness in land allocation and ownership and/or land shortage suited to use purpose. Thus a few people were provided with large areas while others have nothing and therefore circumstances force them to rent land from land lords. Unless there is fairness on land acquisition, land conflicts are most likely to occur.

4.4.5 Common areas of conflicts

Land use conflicts between pastoralists and farmers can start in any place. However, the study revealed that most of these conflicts occurred in common areas where these actors undergo their activities. These common areas include communal land, farms with crops,

harvested farms as well as in grazing lands. The results (Table 4) show significant association of common areas where conflicts originated to village, occupation and residence status at $p \leq 0.01$. The results (Table 4) show that 87.8% of all respondents mentioned fields with crops in them as most prominent areas for conflict to occur. Proportions of village to this response were 22.2%, 32.2% and 33.3% for Mfilisi, Mbware and Rudewa Batini villages respectively. Only 1.1%, 2.2% and 8.9% out of all respondents for communal, harvested farms and grazing land respectively were mentioned as the areas where conflicts originated. In relation to occupation (Table 4), farmer (47.8%) and pastoral (40%) of all respondents identified farms with crops as place of origin for conflicts. Pastoralists by 1.1% and 8.9% responded for communal and grazing land respectively whereas none identified by farmers (0%). Farmers by 2.2% identified harvested farms as areas where conflicts started whereas no pastoralists mentioned it. In connection with residence status (Table 4), indigenous (37.8%) and migrants (50%) responded for farms with crops as areas where most of the conflicts were originating. Indigenous and migrants by 1.1% each identified harvested farms as place of origin for conflicts whereas communal land (1.1%) and (8.9%) were reported by only migrants.

The study found out that farm with crops as the most initial place for the conflicts between farmers and pastoralists. Observation made during interviews, FGDs and PRA conducted in the study area that, the major cause (13.8%) of conflicts is cattle/livestock grazing on crops in the fields (Table 5). As pastoralist commented in discussion that, "Truly, the chaos started after our livestock grazed on crops in farms...". In addition one farmer said, "We (farmers) don't have problems with herders, unless their livestock entered our farms and...". "However, the fact remains" interrupted the chairperson of the Village Resolution

Committee "...that happened not only because animal moves into farms, but also farmer cultivate in or nearby grazing land".

Table 4: Distribution of village, occupation residence status by attitude and common areas of conflicts

	Village				Occupation			Residency status		
	Mf	Mb	Rb	Total %	Fr	Ps	Total %	Indg	Migr	Total %
Attitude										
Positive	2.2	4.4	3.3	10.0	1.1	8.9	10.0	3.3	6.7	10.0
Neutral	28.9	13.3	15.6	57.8	23.3	34.4	57.8	14.4	43.3	57.8
Negative	2.2	15.6	14.4	32.2	25.6	6.7	32.2	21.1	11.1	32.2
Common areas of conflict										
Communal										
land	1.1	0.0	0.0	1.1	0.0	1.1	1.1	0.0	1.1	1.1
Farms with										
crops	22.2	32.2	33.3	87.8	47.8	40.0	87.8	37.8	50.0	87.8
Harvested										
farms	1.1	1.1	0.0	2.2	2.2	0.0	2.2	1.1	1.1	2.2
Grazing										
land	8.9	0.0	0.0	8.9	0.0	8.9	8.9	0.0	8.9	8.9

Key:

Mf = Mfilisi

Fr = Farmer

Indg = Indigenous

Mb = Mbwahe

Ps = Pastoralist

Migr = Migrant

Rb = Rudewa Batini

4.5 Carrying capacity, stocking rate and grazing pressure

Carrying capacity, stocking rate and grazing pressure are important parameters in determining the capacity of the grazing lands. However, the latter which depends on the former ones, discloses deficit or excess of the livestock units in a given area. The recommended carrying capacity in Kilosa District is 5 ha/LU (KDC, 2000). This means,

not less than 5 ha are allocated to one livestock for sustainable grazing. Sustainable stocking rate in the district for currently available 355 516 livestock is 96 896 LU Year (Appendix 2). This tells us that only 96 896 livestock can sustainably be maintained in the district grazing areas. However, current carrying capacity and stocking rate of the district [which has total of 484 480 ha of grazing land and 355 516 livestock (LU)] is 1.4 ha/LU and 346 058 LU Year respectively. The results disclosed that only 1.4 ha of grazing land is currently available for each livestock and 346 058 are grazing in a year. Moreover, the study revealed that the grazing pressure (difference between sustainable and current stocking rates) as + 249162 LU Year. This means there is an excess of 249162 livestock in the district.

The findings from the results disclose that the grazing area allocated in the district is not enough or rather it is overgrazed. In the near future, unless interventions will be taken, the grazing land will be exhausted. This finding conforms to comments from pastoralists and farmers that there is shortage of grazing land (Table 5). However, neither number of livestock nor size of grazing matters, but vegetation (pasture) and its nutritional quality. Both carrying capacity and related stocking rates can be increased by improving the forage production of the grazing area therefore increasing carrying capacity.

4.6 Causes of conflicts between pastoralists and farmers

The major causes of frequent conflicts among pastoralists and crop farmers in the study area were disclosed through personal observation, interviews and during discussions (PRA and FGD). The causes were ranked (out of all responses/counts) with accordance to their importance. The major causes with their percentile ranks (as summarized in Table 5) were cattle grazing in farmers' fields, unclear land demarcations, land shortage, poor and

low education level, poor and/or lack of social and veterinary services in pastoral areas, ethnic extremities and lack of respect to each other. Others include increase in livestock population, corruption, high and unbearable fines, lack of instant response to conflict, farmers cultivating in grazing lands, bad governance and young children herding cattle.

4.6.1 Livestock grazing on farmers' crop fields

The result of the study (Table 5) show that the major and the top ranked reason for conflict occurrence is livestock grazing on farmers' crop in fields (11.8%). This result correlate with another which contends fields with crops as the most common area where conflicts originated (Table 4). Out of all cases (11.8%) stressed on this reasons, 5.1%, 3.6% and 5.1% were from Mfilisi, Mbwade and Rudewa Batini villages respectively. Distribution for this reason by farmers and pastoralists were 10.5% and 3.6% respectively. Farmers' proportion outweighed pastoralists' (percentiles) since they are the ones who lost their crops. Pastoralists on their side did not point at the problem due to guilt conscience. However, for the few, especially in Mfilisi and Rudewa Batini villages admitted that cattle frequently grazed on crops in farms.

The reason behind cattle grazing on crops included young children are herding cattle (1%) and farmers cultivate in grazing lands (2.6%). One of the farmers commented that "You know! Adults have no problem, but young children are not keen in looking after cattle, yet animals are moving...". "Yes-yes..." interrupted by one pastoralist, "...cattle moves, but you (farmers) move your farms too". Meaning farmers encroach grazing lands and converting into farms. When young children are herding livestock, which is common habit among Maasai in Kilosa District, it is likely for them to start playing games and leaving cattle on their own way to farms nearby. Also when the farms are developed in grazing

lands, nearby water points or along the livestock track, farmers are making them readily available for livestock to feed on crops in them. Livestock feeding on crops in farms is common in villages with large number of livestock, shortage of land, unclear land demarcation and both intensive and extensive crop farming.

Table 5: Causes of the conflicts between pastoralists and Farmers in Kilosa District by village and occupation

Causes of the conflicts	Village			Total %	Occupation		Total %
	Mf	Mb	Rb		Fr	Ps	
Cattle grazing in farmers' crops							
in fields	5.1	3.6	5.1	13.8	10.2	3.6	13.8
Poor or low education	2.0	6.1	1.5	9.7	3.6	6.1	9.7
Lack of social and vet services							
in pastoral areas	3.6	3.1	3.1	9.7	0.0	9.7	9.7
Increase in livestock number	1.0	3.1	3.1	7.2	3.6	3.6	7.2
Young children herding cattle	0.5	1.0	1.0	2.6	2.0	0.5	2.6
Land shortage	0.0	5.6	6.1	11.2	5.1	6.6	10.2
Corruption	2.6	3.1	1.0	6.6	4.6	2.0	6.6
Unclear land demarcations	7.2	2.0	2.6	11.8	5.6	6.1	11.8
Lack of respect to each other	1.5	3.6	2.0	7.2	5.6	1.5	7.2
Delays in solving conflicts	2.6	0.5	0.0	3.1	2.6	0.5	3.1
Farmers invading grazing lands							
for cultivation	2.6	0.0	0.0	2.6	0.0	2.6	2.6
Bad governance	0.0	0.5	1.0	1.5	1.5	0.0	1.5
High and unbearable fines	1.5	1.5	1.0	4.1	1.5	2.6	4.1
Ethnicity	4.1	1.0	3.6	8.7	4.1	4.6	8.7
Total %	34.4	35.3	30.2	100.0	49.7	50.2	100.0

Key:

Mf = Mfilisi

Fr = Farmer

Mb = Mbwahe

Ps = Pastoralist

Rb = Rudewa Batini

4.6.2 Lack and unclear land demarcations

Another major cause of conflict between pastoralists and crop farmers is lack and/or ambiguous land demarcations (11.8%), which are common in cropping (rainy) season. According to results (Table 5), in Mfilisi, a pastoral designated village this problem has shown seriousness than in other two villages; Mb Wade and Rudewa Batini. Proportion of each village out of all (11.8%) was 7.2%, 2.0% and 2.6% for Mfilisi, Mb Wade and Rudewa Batini respectively. Lack and/or unclear land demarcations were mentioned by pastoralists (6.1%) and farmers (5.6%) with slight difference among two.

Lack of land demarcations which show land distribution among major land users lead to uncontrolled interferences between farmers and pastoralists. In areas where land was demarcated, still there are land problems including lack of respect to land demarcations, unclear and ambiguity on them as for most of the demarcations were established without involving both parties (farmers and pastoralists) of the major land users. Normally, village and/or sometimes district authorities are responsible for land village demarcations. Villagers, who are the land users, are also involved in the exercise. However, in most villages, land demarcations were done without considering proper and respective land uses for both grazing and crop farming. Agro-ecological zoning is important in establishing land demarcation for it helps in preventing interference. Furthermore, most of pastoral designated villages have no land title certificates for their areas and for those blessed to have them, are not recognized especially by district authorities as they were established by regional authorities without involving them. Pastoralists, because of their nature (nomadic) cannot be confined in a small area. One pastoralist complained "Villagization has to look again for us (pastoralists), we cannot be accommodated in so called village, it is too small...I think villagization for us should consider our herd size, so that demarcation can

have meaning and being respected". Observation shows, nomadic life among pastoralists does not respect boundaries within and between villages due to the large herd size which can be accommodated in a particular village area.

4.6.3 Shortage of suitable grazing land

Land shortage has been reported by most of the respondents (by 11.2%) in the study are as one of the major cause of the conflicts among pastoralists and farmers (Table 5). This reason has not been reported (0%) in Mfilisi Village, implying that for the time being land size is adequate for both farming and grazing activities. Unlike in Mfilisi, land shortage has been reported in Mbwade and Rudewa Batini villages by 6.1% and 5.1% respectively. Occupationally, shortage of land was reported as one of the conflict causes by 11.2% of all respondents; of which 4.6% and 6.6% were farmers and pastoralists respectively. These results (Table 5) reflect that shortage of land is a more serious problem among pastoralists than farmers. Pastoralists (as previously shown in Table 2) migrating frequently because they do not have enough grazing lands.

Shortage of land lies on the facts that areas allocated and spared as grazing lands are not enough to cater for an increasing number of livestock in the district. Also on the other hand, increasing population in the district reflects an increase in expansion of agricultural activities as justification to increased food demands, therefore encroaching grazing lands. A few areas allocated for grazing were used for such activity, most of them are not suitable, and need some developments. As observed in Mbwade Village, the district government allocated Madoto Sub-village (sized 18 000 ha) as grazing land, but the area is heavily infested with tsetseflies, no water and with fierce animals like lions, leopards and elephants; a condition which is unsuitable for both livestock and herders as well. Also, due

to thick forest, pasture is encroached with bushes and therefore, not readily available for livestock. Such areas were abandoned by pastoralists and live in villages with farmers. In some cases, farmers welcome pastoralists into their villages and selling part of their land to pastoralists without involving village authorities. Also some of the pastoralists especially Maasai and Barabaigs are so generous to their fellow herders such that they invite them into the villages where they live. Thus village land becomes short for both farming and grazing activities which can result into scramble for diminishing land and its resources.

4.6.4 Lack and/or poor education

In Lack of, or low level of education (9.7%) was reported among the causes (Table 5). Education level refers to the highest formal education level attained by the respondents. Regardless of their low levels of education, results (Table 6) show that majority (62.2%) of the respondents have the ability to read and write. Of all respondents, 60% and 3.3% are primary and adult education; and secondary school leavers. The remaining respondents, proportioned 37.7% were illiterates. Of the 60% of primary leavers and adult education learners, 17.8%, 25.6% and 16.7% were in Mfilisi, Mbwade and Rudewa Batini villages respectively. All the secondary leavers (3.3%) were only from Rudewa Batini Village. A few illiterates were in Mbwade (7.8%) and majority of the illiterates in Mfilisi (15.6%) and Rudewa Batini (13.3%) villages. In Table 6, from 60% of adult educated and primary school leavers, farmers and pastoralists constituted 43.3% and 16.7% respectively. In 3.3% of secondary leavers 1.1% and 2.2% were proportions of farmers and pastoralists respectively. Illiteracy (36.7% of all respondents) was higher among pastoralists (32.2%) than farmers (4.4%). Table 6 shows that proportion of adult educated and primary school leavers among indigenous and migrants were 33.3% and 26.7% respectively. It further shows that, among secondary school leavers, 1.1% and 2.2% were indigenous and migrants

respectively. Illiteracy (36.7%) is proved to be higher among migrants (32.2%) than indigenous (4.4%). The study found out that the association of education with village (location), occupation and residency of an individual is highly significant at $p \leq 0.01$.

Rural people in the third world are highly stricken by poverty which is characterized by low household income associated with illiteracy. Because of poverty majority of the parents and guardians who are peasants have no financial power to cater for education of their children in higher than primary school levels. Unlike farmers, most of the pastoralists have such capacity of paying the education expenses of their children higher than primary school. To them, the problem is insufficient insight knowledge to the benefits of education and their nomadic life styles which discourages and/or hinders their children to attend schools.

Education being among the major factors of the socialization process lacking it leads to hindrance of mixing up of members between the ethnic groups. Immiscibility between the pastoral and farmer communities is among the causes that catalyses land use conflicts. Lack or poor education reduces horizons beyond habit and traditions of individuals and discouraging people to participate in development process since it (lack of education) reduces the ability of people to integrate developmental issues including conflict prevention and management. Frequent movement and/or migration of the pastoralists which have tended to damage the environment and spread animal diseases atop fueling disputes among ethnic groups is to a certain extent a result of poor/low education. Education modernizes and/or transforms pastoralists and subsequently reduces nomadism in the country.

Table 6: Distribution of education levels by village, occupation and residence status

	Village				Occupation			Residency status		
	Mf	Mb	Rb	Total %	Fr	Ps	Total %	Indg	Migr	Total %
Education level										
Primary & adult education	17.8	25.6	16.7	60.0	43.3	16.7	60.0	33.3	26.7	60.0
Secondary	0.0	0.0	3.3	3.3	2.2	1.1	3.3	1.1	2.2	3.3
None	15.6	7.8	13.3	36.7	4.4	32.2	36.7	4.4	32.2	36.7
				100.0			100.0			100.0

Key:

Mf = Mfilisi

Fr = Farmer

Indg = Indigenous

Mb = Mbwade

Ps = Pastoralist

Migr = Migrant

Rb = Rudewa Batini

4.6.5 Lack of social and veterinary services in pastoral areas

Lack of and/or poor both social and veterinary services in pastoral demarcated areas is among reasons which led to conflicts between pastoralists and farmers. In Table 5, the results show that, lack of social and veterinary services in pastoral area scored 9.7% of all identified reasons for conflicts. About 3.6%, 3.1% and 3.1% were reported in Mfilisi, Mbwade and Rudewa Batini villages respectively.

Only pastoralists commented on lack of social and veterinary services. Lack of social services including health, education, infrastructures, water supplies, shops, market places, milling machines and the like in pastoral areas discouraged pastoralists to live in such areas. On the hand, inadequate veterinary services, including dips, control of tsetse, water

sources and supplies of animal medicines discouraged pastoralists to shift their animals to such areas. As a result, pastoralists are concentrated in areas where both social and veterinary services are available. Such concentration results into land pressure, from which disputes between farmers and pastoralists are likely to occur. In background, the government seemed to be biased by favouring farmers' communities. As one pastoralists complained "...do you think there is fairness here? NO! Because, we want our children to attend school, health services for our people and animals, water...and so on, but the government is pushing us away from these services". He concluded, "We rather die in land struggles but getting fringe benefits than to be butchered by fierce animals or die of diseases in the bush". Lack of both social and veterinary services in pastoral areas forced pastoralists to migrate into the areas where they are available or accessible.

4.6.6 Ethnicity

Ethnicity, by itself does not have direct link with land use conflicts but just cultural demarcation between the groups. The problem with it results when each ethnic group isolating on its own and does not allow any mixing ups of culture. Grievances in Kilosa District revolve around pastoralists and farmers are due to misunderstanding and incomprehension of motives under each group associated with cultural differences. The poor ethnic relationship between farmers' and pastoral communities has been observed in this study. Neither pastoralists nor farmers accept each other's modes of production. In Table 5, by 8.7%, ethnicity which is associated with tribalism and extreme cultural difference has been reported among the causes of the conflict. The results showed that, 4.1%, 1% and 3.6% out of 8.7% were reported in Mfilisi, Mbwade and Rudewa Batini respectively. About 4.1% and 4.6% were reported among farmers and pastoralists respectively.

Attitude of pastoralists and farmers towards each other was assessed in the study area. The results (Table 4) show that 10% of all respondent from Mfilisi (2.2%), Mbwadc (4.4%) and Rudewa Batini (3.3%) responded for positive attitude to each other. Majority of the respondents (57.8%) showed a neutral attitude (neither so good nor bad). This constituted from Mfilisi (28.9%), Mbwade (13.3%) and Rudewa-Batini (15.6%) villages. Contrary to positive and neutral attitude which can be tolerated and managed, about 32.2% of all respondents showed negative attitude to each others' group. Proportion of negative attitude from each village was Mfilisi (2.2%), Mbwade (15.6%) and Rudewa-Batini (14.4%). The results (Table 4) show that negative attitude towards each others' group responded by farmers and pastoralists were 25.6% and 6.7% respectively. All responses for neutral attitude, 23.3% and 34.4% were reported by farmers and pastoralists respectively. Few farmers (1.1%) and pastoralists (8.1%) showed positive attitude to each others' group. In assessing attitude in respect to residence status of the respondents, results (Table 4) show that of all responses for positive attitude (10%), indigenous and migrants proportioned 3.3% and 6.7% respectively whereas 14.4% and 43.3% commented for neutral attitude. Negative attitude was stressed by 21.1% and 11.1% of farmers and pastoralists respectively. The observation shows that negative attitude is expressed in terms of occupation where each group ignoring others economic activity and regard it as threat. This state of relationship between the two groups resulted into lack of respect to each other. As shown in Table 5, of all responses on the causes of conflicts, 7.2% from Mfilisi (4.1%), Mbwade (1%) and Rudewa Batini (3.6%) reported for ethnic difference as the cause of conflicts.

Findings from the result showed that there is significant association of village, occupation and residence status to attitude towards each others' group at $p \leq 0.01$. In village/location

with highly mixed ethnic composition as in Mfilisi, unlike Mbwade and Rudewa Batini villages, positive and neutral attitude outweigh negative attitude, which scored the lowest percentage (2.2%). These results of attitudinal degree revealed a trend that the larger number the ethnic groups in one village (locality), the higher the interaction among the individuals from ethnic groups. However, farmers in some areas which they are a majority group, they look on pastoralists as invaders, people who can disturb their ways of living (farming) and as one who are posing threats to locally available resource mainly water and land. As a result, majority of the indigenous people have negative attitude against their counterparts the migrants. However, in some cases, where conflicts have frequently been occurring (as in Mbwade and Rudewa – both in Kimamba Division) farmers and pastoralists still have deep hatred for losing their loved ones in 1999-2001 disputes (Chamwaka, H. personal communication, 2004). This might be the reason of having negative attitude towards each others' group. As one farmer commented "I cannot abide and interact with killers (referring to pastoralists), who even having no appreciation for host we gave... 'am saying no...NO!".

There seems to be no formal communication between pastoralists and farmers. What little informal communication exists is mostly in bars. The state of relationship among the major pastoral and farmers' ethnic groups has greatly contributed in planting hatred between them. Farmer's hatred towards pastoralists is associated to the rampant behaviours of pastoral communities including pastoralists not valuing crops in farms, warring behaviour among Maasai warriors (*Morani*) especially when their cattle or themselves destroy crops in farms. In turn, most of farmers have developed a deep hatred as a result both ethnic groups are incompatible.

4.6.7 Increase in livestock population

Among the causes of land use conflicts, increase in livestock population in the district was reported by 7.2% of all respondents (Table 5). In respect to villages in the study area, 1% was reported in Mfilisi and 3.1% each from Mbwade and Rudewa Batini. Increase in livestock population has been reported by farmers and pastoralists in equal proportion (3.6% each). Such one to one ratio among pastoralists and farmers indicates equal consideration to the problem between the two groups.

However, district and local leaders admitted difficulties in establishing the actual population size of the livestock in a particular area due to frequent movements of herders with their animal stocks. In some cases pastoralists were not telling the actual number of their livestock in fear of being found guilty for frequent conflicts and forced to reduce the stock size. As one of the Village Executive Officers briefing me before meeting one of the pastoralist, said "The guy (pastoralist) has about 1000 cattle...", but when I asked, he (the pastoralist) said "...I own 250 cattle". He continued "why do you want to know about my cattle?" This reflects hesitation on providing actual cattle figures by most of the pastoralists, a situation leads to difficulties in establishing an actual livestock size. It is also difficult to monitor/control livestock size because most of the livestock have entered in the district with neither proper regulations nor known routes. Unknown livestock size hinders establishment livestock development strategies, for instance proper land allocation and pasture lands management.

Livestock number has been rising over carrying capacity of the available pasture due to natural livestock increase and in migration into Kilosa District done by herders. Due to the large stock size, pastoralists are not even caring for the health of their animals but number

and regarded as herders than livestock producers. Animals have randomly been grazing on exhausted grazing land and observed to graze on crops in fields.

4.6.8 Poor governance

Poor governance has been reported as one of the major factor that escalates land use conflicts between pastoralists and farmers. Poor governance has been mentioned in various facets including corruption, all kinds of favouratism, unaccountability and irresponsibility among local leaders. Of all the responses to causes of the conflicts (Table 5), 6.6%, 3.1% and 1.5% were for corruption, lack of instant response to conflict by leaders and general poor government respectively. Corruption was highly reported in Mbwade (3.1%) and Mfilisi (2.6%) than in Rudewa Batini (1%) villages where farmers complained more than pastoralists by 4.6% and 2% respectively. Lack of instant response to conflicts by authorities was highly reported in Mfilisi (2.6%) and less (0.5%) in Mbwade Village, whereas this was not reported in Rudewa Batini Village. This reason was mainly reported by farmers (2.6%) than pastoralists (0.5%). Generally, poor governance was reported by only farmers who are living in Mbwade (0.5%) and Rudewa Batini villages (1%).

The findings from the study show that farmers complain more about poor governance than their counterparts the pastoralists. One of the farmers in FGD said “You (pastoralists) have held government at hands” he turned to me “*Bwana!* (sir), don’t take any complaints against pastoralists to court, you will be the loser”. However, there is evidence that political leaders, especially during general election, are favouring farmers (who are majority) trying to win their votes. As an anonymous person said “You know! Local leaders are the catalysts of the conflicts; during their formal and informal campaigns they tend to favour farmers to be voted thereafter, they turn to pastoralists getting something

(bribe)". He warned "unless the authorities will be keen to the exercise (election), we expect to have more conflicts during the coming elections".

An unspoken factor is the political interests of some leaders of siding with one or other side in these conflicts – in most cases with farmers who are majority in the district. This kind of favouratism enflames conflicts in an already delicate situation. A couple of political leaders in local areas have been showing and acting as if they are the leaders and/or representing farmers only. There is a problem with consistency of statements and ignoring proper procedures by government and civil servants as well as elected leaders. Many people see a problem with implementation and follow up of laws and by-laws. Majority of the people claimed of losing confidence in their leaders because of corruption.

4.6.9 High and unbearable fines

As a mechanism for solution at village levels, conflict resolution committees were established. According to by-laws and as mandated by district authorities, these committees have the power of penalizing any one who found guilty. But this study revealed that, instead of calming the problem, some of these committees act as perpetrators of the conflict. In results obtained from the study area (Table 5), 4.1% of all responses, indicated that high and unbearable fines imposed by the committees were the cause of the conflicts. This reason was supported by pastoralists (2.6%) then farmers (1.5%).

It was observed that pastoralists as the most victims of these penalties. In most cases farmers were exaggerating the damage done and actual value of crops damaged by livestock. The actual value of damaged crops were mostly relatively low compared to the value and fine imposed. Because of relatively higher amount of money paid as penalties,

most of the farmers prefer their cases to be solved in village resolution committees than in courts. A situation seem as retaliation was observed whereby pastoralists are requesting some of these committees to impose equal penalty for any farmer who found either cutting trees or grass, collecting firewood, medicinal plants (parts) or doing any other activity that utilizes resources (except water) in grazing lands as it happened to them when cattle enter or graze on crops in fields. To the most of farmers, who are peasants, such fines imposed by village resolution committees are high and majorities failed to pay. In Mfilisi Village, some pastoralists refused to pay fines unless farmers will be fined equally. These signs of weakness among Village Resolution Committees bless and propagate conflicts. Lack of paralegal support among village conflict resolution committees led to unfair judgments on the land disputes among farmers and pastoralists.

4.7 Plausible solutions to land use conflicts between pastoralists and farmers

The results (summarized in Table 7) show the identified solutions to land use conflicts between pastoralists and farmers in study the area. Revealed solutions were categorized into two; solutions at village level as well as general ones. Solution at village level implies capability of villagers in solving land use conflicts on their own. However, in general solutions, involvement of local people is also crucial but in support of extra-village efforts.

4.7.1 Proposed solutions at village level

Solutions identified under village categories included the use of village resolution committees, individual negotiations and proper village land allocation. Of all three solutions (Table 7), 87.6%, 10.3% and 2.1% of responses were for making use of the resolution committees, individual negotiations and proper village land allocation respectively.

**Table 7: Solution to the conflicts between pastoralists and Farmers in Kilosa District
by village and occupation**

Solution proposed by respondents	Village			Total %	Occupation		Total %
	Mf	Mb	Rb		Fr	Ps	
Solution at village level							
Report & resolve at village resolution committee	30.9	25.7	30.9	87.6	42.2	45.4	87.6
Individual negotiation	0.0	2.1	8.2	10.3	2.1	8.2	10.3
Proper land allocation by village government	0.0	1.1	1.1	2.1	2.1	0.0	2.1
Total	30.9	28.9	40.2	100.0	46.4	53.6	100.0
General solution							
Establish and improving social and veterinary services in pastoral areas	0.6	3.0	0.6	4.3	0.6	3.6	4.2
Provision of education	3.6	6.7	4.9	15.2	5.4	9.7	15.1
Change of culture	0.0	1.8	0.6	2.4	1.2	1.2	2.5
Clearing bushes	0.6	0.6	1.2	2.4	0.6	1.8	2.4
Good governance	11.5	0.0	4.9	16.4	10.9	5.4	16.4
Reduce number and improve cattle management	6.1	0.6	2.4	9.1	4.3	4.9	9.1
Respect to each others' business and culture	4.9	0.6	3.6	9.1	4.9	4.3	9.1
Establish and respect land demarcations	17.0	0.6	12.8	30.3	15.1	15.1	30.3
Instant responses to the conflicts by leaders	3.0	0.0	4.9	7.9	0.0	7.9	7.9
Pasture regime management	1.2	0.0	0.6	1.8	1.2	0.6	1.8
Review of land policy	1.2	0.0	0.0	1.2	0.6	0.6	1.2
Total	49.7	13.9	36.3	100.0	44.9	55.1	100.0

Key:

Mf = Mfilisi

Mb = Mbwade

Rb = Rudewa Batini

Fr = Farmer

Ps = Pastoralist

4.7.1.1 Village conflict resolution committee

Village conflict resolution committees are working by the guidance of Village Land Act 1999 Section 60 – 64 which allows them to resolve land disputes between two parties and assist to reach mutually acceptable solution on any matter concerning village land (URT, 1999b). Majority of the respondents (Table 7), in nearly equal proportions of farmers (42.2%) and pastoralists (45.4%) commended the use of village conflict resolution committee (87.6%). In respective to villages, 25.7% of comments were from Mbwade whereas Mfilisi and Rudewa Batini 30.9% each commended the use of conflict resolution committees.

Regardless of proving failure in some of the villages, yet villages conflict resolution committees were reported as the most useful and effective tool in resolving conflicts between farmers and pastoralists. For these committees to be successful, their operations need guided with justice and fairness. For instance in Mbwade Village, as he reporting in one of FGDs, the Village Executive Officer pointed out that, the village conflict resolution committee between November 2002 and August 2003 resolved 127 cases, only one was forwarded to the district court due to serious disagreement between the two parties involved. Between January and October 2004 only 16 cases were resolved; none had been referred to either primary or district court.

To some extent, village conflict resolution committees have proven the capability of resolving conflicts. The decreasing trend of cases observed yearly shows the effectiveness in resolving conflicts at village level. Such successes of village committees are the fruits of well structured committee with members committed to advocate justice for peace (Chamwaka, H. personal communication, 2004). Most of farmers and pastoralists respect it

as gives justice to them in a fair and impartial manner. Village conflict resolution committees have reduced incidences of corruption and disturbances normally experienced when dealing with police and courts. The committees have reduced conflicts between farmers and pastoralists significantly as well as encouraging respect, tolerance, and some degree of trust when it comes to making community decisions.

4.7.1.2 Individual negotiation

Individual negotiation (Table 7) was commended by 10.3% as one of the ways in solving conflicts at grass roots levels. Individual negotiation was highly proposed in Rudewa Batini Village (8.2%). In Mbwa Village 2.1% responses were recommending it whereas in Mfilisi Village none commended it. In respect to occupation, 2.1% and 8.2% positive comments for individual negotiation were from farmers and pastoralists respectively.

Individual negotiation approach is possible among interacting farmers and pastoralists. The approach is commonly used in villages/areas with relatively higher ethnic interactions as in Rudewa Batini and Mfilisi villages. Mediation attempts to resolve problems to the satisfaction of both parties/individuals since it creates a win-win situation for all parties. In the case of law and order the courts rule according to the law and often there is winner and loser situation. Unlike in mediation, the disputes resolved in courts can create unspoken hatred between the two parties. Unless it is necessary, where possible the disputes between pastoralists and farmers are resolved by mediation approach.

4.7.1.3 Proper land allocation by village government

Proper allocation of village land by local authorities was commended by 2.1% of all three solutions at village level (Table 7). This solution was reported only among farmers (2.1%).

This was recorded only in Mbwade and Rudewa Batini villages by 1.1% each. Proper land allocation has the great facilitates proper and peaceful land uses in villages. Section 12 (c) of The Village Land Act 1999 allows the village to divide their land in accordance with different purposes for communal and individual purposes (URT, 1999b). The District Council can advise and provide guidance concerning the administration of the village land.

4.7.2 General solutions

General solution commended by respondents in the study area included establishment and respect of land demarcations, good governance and education, reduce number and improve livestock management. Others included respect among ethnic groups, establishment and improvement of social and veterinary services in pastoral areas and review of land policies (Table 7).

4.7.2.1 Establish and respect land demarcations

Establishment of land demarcation is crucial in order to minimize land use conflicts. Not only establishment of demarcations, but also respect to them will help in preventing conflicts. Establishment of and respect to land demarcations was ranked the top and believed to be the most effective solution. Table 7 shows that, this solution was recommended by 30.3% out of all proposed solutions. Distribution of this solution by village was 17%, 0.6% and 12.8% in Mfilisi, Mbwade and Rudewa Batini respectively. In respect to occupation, establishment and respect to land demarcations was commended equally by both pastoralists and farmers (15.1% each).

In most areas where there is no land demarcation or unclear ones, as in Mfilisi and Rudewa Batini, villages immediate solution. Both parties of main land users should be involved

village land demarcation exercise. Land demarcation should regard zoning and plan of land in order to reduce interference between land user groups. There is need to do a proper zoning for the district due to the potential seriousness of problems which may arise in relation to this exercise. In the long term it is necessary for each village to have a land use plan. However, land planning and zoning require substantial amount of resources including money, time and human resources.

4.7.2.2 Good governance

The results (Table 7) show that good governance is an important solution of the conflicts between farmers and pastoralists. Good governance (16.4%) ranked the second among all identified solutions. It was commended in Mfilisi Village (11.5%) and Rudewa Batini Village (4.9%). Distribution of good governance occupation-wise by farmers and pastoralists shows that farmers (10.9%) outweighed pastoralists (5.4%). Also instant response to conflicts in early stages was reported as important solution among pastoralists (7.9%). It is important that when land disputes arise they are treated with a degree of urgency and professionally. The early warning system can manage and solve conflicts at the lowest level.

Increasing the transparency on the part of government officials, participatory approaches and involvement of the stakeholders in decision making minimizes or prevent the conflicts between pastoralists and farmers. The bottom-up approaches in resolving the conflicts are reported successful than top-down approach of leadership. One respondent in Mfilisi Village pointed out; “Bosses (government officials) do not listen to us (local farmers and pastoralists) on what we want and how do we think in resolving the conflicts instead of applying iron hand approaches (force)”.

4.7.2.3 Provision of education services

Education was mentioned as a factor contributing in resolving and managing conflicts between pastoralists and farmers. The results, summarized in Table 7 stressed on education as among solution of the conflicts by 15.2% out of all responses. In all three villages, Mfilisi, Mbwa and Rudewa Batini villages respondents commended on education as solution by 3.6%, 6.9% and 4.9% respectively. Proportions of recommendation for education as solution were high among pastoralists (9.7%) than in farmers (5.4%).

Education tends to broadens horizons beyond habit and traditions of individuals, encouraging and empowering people to participate in development process. It reveals importance of education in integrating developmental issues by giving exposure to various experiences including conflict management skills. Education also helps in developing confidence and ability to face challenges in life. Among the challenges facing people in the study area is land use conflicts, which were also influenced by illiteracy. Therefore, education can help both farmers and pastoralists to have a better capability of solving and managing conflicts to a minimal and harmless level in their areas.

4.7.2.4 Reduce number and improve livestock management

Proper and environmental friendly livestock production among pastoral communities is one of the ways pointed to minimize the land use conflicts. This can be approached in various forms including reducing number of livestock, changing the culture inclined on large stock size, pasture as well as livestock management. In Table 7, results show that out of all recommended solutions, 9.1%, 2.4% 1.8% and 2.4% commended on reducing the number and improving livestock management, change of culture, pasture regime management and clearing bushes respectively. Among pastoralists and farmers, 4.9% and

4.3% respectively agreed on reducing the number and improve livestock management as one of the solution to land use conflicts.

Pastoralists need to be educated and advised to reduce the number of their livestock which can accommodated with available carrying capacity and improve pasturelands management. Pastoralists and/or village authorities should not continue allowing more livestock into the areas without agreement between pastoralist and local authorities. The permission should be offered only if the carrying capacity can accommodate additional livestock in the village. In so doing conflicts can be prevented and managed and minimized. Small herd size and sustainable land management minimizes occurrence of land use conflicts since land and its resources will be adequate.

4.7.2.5 Respect to each others' mode of production and culture

The results (Table 7) of the study show that, respect to each others' mode of production and culture was commended as solution by 9.1% of respondents. Distribution of villages to reason for land use conflict was 4.9%, 0.6% and 3.6% for Mfilisi, Mbwade and Rudewa Batini villages respectively. Also 4.9% and 4.3% were reported among farmers and pastoralists respectively.

The results reflect that the more the ethnic groups (as in Mfilisi and Rudewa Batini villages) ethnic groups are likely the respect to each others than in villages with fewer ethnic groups (as in Mbwade Village). This is because of easiness to interact and dissolve cultural extremities compared to areas where ethnicity brings members into ethnic isolation. Village and tribal leaders especially among pastoralists should cooperate in advising youths to abolish bad behaviours such as raping, warring, savagery, hatred and

lack of respect in general. Interaction between ethnic groups in the communities such as farmers and pastoralists creates good relationship and therefore maintain peace and tranquility in the area.

4.7.2.6 Establish and improve social and veterinary services in pastoral areas

Provision and improvement of sufficient social and veterinary services in pastoral designated areas minimize tendency where pastoralists to abandon areas which were allocated for their activities. The results (Table 7) revealed that the establishment and improvement of social and veterinary services in pastoral areas (by 4.2%) as one of the solutions of land use conflicts between pastoralists and farmers. The solution was more recognized in Mbwade Village (3%) than in Mfilisi Village (0.6%) and Rudewa Batini Village (0.6%). Also the results show that establishment and improvement of social and veterinary services in pastoral areas was mainly commended by pastoralists (3.6%) than farmers (0.6%).

The findings of the study disclose pastoralists as the most marginalized people compared to their counterparts, farmers. Establishment and improvement of services for both human beings and livestock, and creating conducive environment for the nature of human activity in the area will reduce human and livestock population pressure on land. District council budgets need focus on social and veterinary services of pastoral areas. On the other hand, pastoralists needed collaborate with local government in establishing social and veterinary services. In order to improve social and veterinary services in their areas, pastoralists should also be advised and empowered to establish community based organizations and other economic groups including petty trade, vet-pharmacies, grinding/milling machines and their likes. Social and veterinary services can be used to attract pastoralists to the areas

which are suited to livestock production and therefore relieved pressure on land. Relieved land pressure can reduce competition on diminishing land and its resources.

4.7.2.7 Review of land policies

The whole scenario of the land use conflicts between pastoralists and farmers in Kilosa and other districts in the country is centred on land issues. The study revealed that many of the problems revolve around boundary disputes, different categories of land ownership and utilization, lack of respect for land allocated to either pastoralists or farmers and lack of tenure security. The results (Table 7) show the need for review of land policies to minimize and prevent conflicts between farmers and pastoralists. In Mfilisi Village farmers and pastoralists equally recommended for review of land policies as among solutions by 1.2% of proposed solutions.

The proportion for this conflict reason was the lowest compared to other identified reasons for conflicts. This study revealed that only a few people in rural communities are knowledgeable to land policies. The majority agreed that the land is a critical issue in these conflicts. Surprisingly, one local leader urged “truly, majority including me, we are ignorant of land policies, but since we observed and feel land problems, land policy has to be amended. Most of the people in the district were getting confused land policies with acts, constitution and the like. A comprehensive land resource policy is the one which addresses the shortcomings that have been generated by past policies and land laws. Conflict resolution and management target on security of land tenure, land resource sustainability, equitability and involvement of major land users. Since conflicts are prominent in the country, review of land policy is needed to accommodate and address such land use disputes.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The best way to resolve the pastoral-agricultural crisis in the country is to address both causes of conflict through devolution of control of natural resources and conflict resolution by stakeholders including government and land users. The main role of government with respect to devolution is that of creating an enabling environment. This includes creating a positive and supportive legislative environment, using bottom-up and participatory approach. Establishment of local organizations will help to cooperate with NGOs and local community institutions in supporting common resource management, training and sensitization of all stakeholders (particularly farmers and pastoralists) on participation and accountability of land management. Government institutions are important in resolving disputes and reconciling different interests of land user groups that could not be handled by local authorities, and in providing an appropriate legal framework to facilitate land resource use agreements.

Land use conflict occurring in Tanzania can be solved democratically. Participation of local people in the areas with potential land use conflict is crucial in solving the problems. Understanding on the actual needs of conflicts management remains important in determining long term solutions. Participatory approach and joint task forces from village to regional as well as inter-regional level can help in minimizing the problem. The long term and permanent solution is at the hands of the major land users; particularly pastoralists and farmers of this country.

5.2 Recommendations

There should be an effective programme for enabling and facilitating groups of pastoralist to possess part of the National Ranches and forming mini ranches or cooperatively owned ranches. The government and other stakeholders should encourage pastoral communities to form savings and credit institutions such as SACCOS, trust funds and rural banks which can assist them in commercialization of livestock production. Commercialization of livestock production can at large extent reduce nomadism which is the major function of land use conflicts between farmers and pastoralists. Pastoralists should be trained on modern and commercial livestock production individually or in groups.

The government and other stakeholders should promote and encourage pastoralists to improve livestock production from traditional to commercial form. This should include selection programmes, reduction of herd size and reliable market for livestock disposed after selection and destocking programmes, improving veterinary and social services within their areas. The government should recognize and promote traditional forage conservation practices for dry season feeding, develop appropriate technologies in proper utilization of forage. Also the government should ensure grazing lands in general and village lands are surveyed, demarcated and allocated as range lands for integrated and sustainable use.

There is need for informal education for pastoralists and farmers focusing on land policy and acts. This education programme should focus on land users' rights and responsibilities in relation to the land acts especially the decision making power of the village assembly. Education programmes should entail civic rights on land and policies relating their (farmers) livelihoods such as agricultural and livestock policies. Farmers and pastoralists

should be imparted with knowledge on land regulations particularly Land Policy 1995, Land Act 1999 (Section 4) and Village Land Act 1999 (Section 5). Land users should be educated on procedure in securing land and proper use of land. It is advisable for pastoralists and farmers; who are the major stakeholders in land use to be involved in process of formulating National Land Use Masterplan.

An emphasis is needed in education programme that can enable children from both groups to be socialized and dissolve their ethnic extremities easily. Apart from schooling together, campaigns through other socialization process such religion, inter-marriages between pastoral and farmer community members should be promoted in conflict prevalent areas. Other campaigns to be promoted include tolerance, respect to each other and to others' possessions and mode of production, encourage inter dependence among pastoralists and farmers and promote adoption of each other's mode of production; that is pastoralists encouraged to adopt farming and farmers adopt livestock keeping.

In order to combat land use conflicts which are now prominent in Tanzania, the government should establish a task force which will deal with land use conflicts. The force should have representative from ministries of livestock development and water, agriculture and food security, land and settlement, justice, home affairs, natural resources and tourism. Such ministries should form a multidisciplinary task force for conflict management focusing on understanding of actual needs in terms of conflict resolution structure. Prototypes of such joint committees between/within region(s), district(s) as well as between villages are important combating land use conflicts.

Equal representation and participation of each group major land users should be observed and enhanced at various levels of decision making. Pastoralists should be involved in the development of policies related to pastoralism. Village leaders should strongly be encouraged to actively involve both pastoralists and farmers in village government and in district affairs. Either appointment or elections should be fair and not in favour of any group. Also religious leaders and village elders should be involved in local conflict resolution committees.

Land demarcation for different uses should be looked at different perspectives; requirements, suitability and size of land to be demarcated. All these need a guidance of well trained personnel with well informed land users. Involvement and participation of land users shouldn't be ignored nor overlooked in demarcation process of village land. Land demarcation shouldn't associate with any kind of corruption, neither nepotism nor favouritism.

The key principle in early warning system is recommendable in managing and solving conflict at the lowest levels. If major a dispute arises one can look at the actions taken at the various stages and see what happened or did not happen which allowed the dispute to develop to a more dangerous stage. The system should also help in identifying where there is need for future improvement and where further strengthening and training is required.

REFERENCE

- Anim, F.D.K. (1999). A Note on the Adoption of Soil Conservation, Measures in the Northern Province of South Africa. *Journal of Agricultural Economics* 50: 336 – 345.
- Bailey, D.K. (1998). *Methods of Social Research*. The Press Collier. Macmillan Publisher, London. Pp 478.
- Blench, R. (1996). *Aspects of Resource Conflicts in Semi-Arid Africa*. Overseas Development Institute, Portland House, Stag Place, London SW1e5DP, UK. Pp 182.
- Brackinton, D. (1997). *Land Loss and Livelihoods*. The Effects of Eviction on Pastoralists Moved from Mkomazi Game Reserve, Dar es Salaam, Tanzania. 43pp.
- Brehony, E., Ole Nangoro, B. and Sakafu, A. (2001). *Conflict between Pastoralists and Farming Communities*. A Case Study of Kilombero District, Arusha, Tanzania, 34pp.
- Brehony, E., Ole Nangoro, B. and Sakafu, A. (2003). *Conflict between Pastoralists and Farming Communities*. A Case Study of Kilosa District, Arusha, Tanzania. 28pp.

Chachage, C.S.L. (2001). *"Disputes Settlement or Escalation? A Rejoinder of Hon. Njelu Kasaka's Views on the Land Issues"*. Department of Sociology, University of Dar es Salaam, Dar es Salaam University Press. pp45

Christiansson, C., Mbegu, A.C. and Yrgard, A. (1993). *The Hand of Man, Soil Conservation in Kondoa Eroded Area*. Tanzania Regional Soil Conservation Unit/Swedish International Development Authority, Nairobi. Pp55.

Claude M. and Mwamfupe, D. (2003). Poverty and Changing Livelihoods of Migrant Maasai Pastoralists in Morogoro and Kilosa Districts, Tanzania. *Research for Poverty Alleviation, No. 03.5*. Mkuki Na Nyota Publishers, Dar es Salaam. Pp 3-5.

De Pauw, E. (1995). *Main Report. Development of Pond Use Planning and Land Tenure in Tanzania*. Technical Support Service Project TSSI-URT/94/02T. 56 pp.

FAO (1997). *Livestock and the Environment: Meeting and Challenge*. Food and Agricultural Organization of the United Nations. 32pp.

Holden, S.T., Shiferaw, B. and Wik, M. (1996). Poverty Credit Constraints and Time Preference of Relevance for Environmental Policy. *Discussion Paper No. D - 26/1996*. Department of Economics and Social Sciences, Agricultural University of Norway, Aas. Pp23-24.

- Kidunda, R. S. (1996). *Range and Pasture Management*. Sokoine University of Agriculture, Department of Animal Science and Production. Morogoro, Tanzania. 122pp.
- Kilosa District Council (2000). *Reports, Letters, By-Laws and Various Correspondences Related to Conflicts Between Farmers and Pastoralists in Kilosa District*. Kilosa District Council, Morogoro, Tanzania.
- Lundgren, L., Taylor, G. and Ingerball, A. (1993). *Twenty Years of Soil conservation in Eastern Africa*. Swedish International Development Authority, Regional Soil Conservation Unit, Nairobi. 50pp.
- Maganga F. (1995). *Local Institution and Sustainable Resource Management*. The Case Study of Babati District, Dar es Salaam University Press, Dar es Salaam, Tanzania, 189pp.
- Mariki, S.W. (2002). *A Country Study for "Poverty Alleviation and Conservation": A Case Study of Tanzania*. Report Produced For IUCN– The World Conservation Union, Eastern Africa Regional Office As Part of IUCN Project. 28 pp.
- Misana S.B. (1997). *Strategies for Village Management for Resource Conservation in Selected Villages in Tanzania*. The Case of Kilosa District. Dar es Salaam University Press, Dar es Salaam, Tanzania. 32pp.

Mkutu, K (2004). Pastoralism and Conflict in the Horn of Africa. A Report for Africa Peace Forum/Saferworld/University of Bradford. [<http://www.saferworld.org.uk/web/laikipia.htm>] site visited on 12/7/2004.

Monbiot, G. (1994). *No Man's Island: an Investigative Journey through Kenya and Tanzania*. Macmillan, London, UK. 149pp.

Mtengeti, E.J. (1994). Breakdown of Pastoralism in Tanzania: Its Effects on the Sustainable Utilization of Pasturelands. In: *National Conference on Indigenous Knowledge and Sustainable Development*. 15th – 16th September 1994. Dar es Salaam University Press, 189, Tanzania. pp 22 - 26.

Nanai, N.A.K. (1993). Peasant's Participation in Community Development Project: Its Implication in Lying Strategies for Participatory Extension. Unpublished Dissertation for Award M.Sc. (Agric. Edu &Ext) Degree at Sokoine University of Agriculture, Morogoro, Tanzania, pp 45 - 138.

NBS, (1990). *1988 Population Census: Morogoro Regional Profile*. United Republic of Tanzania, President's Office Planning Commission Bureau of Statistics, Dar es Salaam, Tanzania. 133pp.

NBS, (2002). *2002 Population Census: Morogoro Regional Profile*. United Republic of Tanzania, President's Office Planning Commission Bureau of Statistics, Dar es Salaam, Tanzania. [<http://www.tanzania.go.tz>] site visited on 16/10/2004.

- Randal, A. (1987). *Resource Economics. An Approach to Natural Resource and Environmental Policy*. Second Edition. John Wiley and Sons. New York. 321pp.
- Shivji I. (1998). Not Yet Democracy Forming Land Tenure in Tanzania. In: *National Land Policy Workshop*. 15-18 February, 1998, Dar es Salaam, Tanzania, 9 –11 pp.
- Shivji, I. (1995). Problems of Land Tenure in Tanzania: A Review and Appraisal of the Report of Presidential Commission of Inquiry into Land Matters. In: *National Land Policy Workshop*. 16-19 January, 1995, Arusha, Tanzania, 13 – 17pp.
- Shivley, G.E. (1999). Consumption Risk, Farm Characteristics and Soil Conservation among Low Income Farmers in the Philippines. *Agricultural Economics* 17: 65 – 177.
- Simmel, G. (1955). *Conflict and Land Web of Group Affiliation*. Gollier-Macmillan Ltd London. 195pp.
- Sosovele, H. and Kulindwa, K. (2002). Change and Adaptation: Lessons from Barabaig Pastoralists. *Tanzania Journal of Population Studies and Development*. Demographic Training Unit, University of Dar es Salaam. 9:33-55
- Umar, B. F. (2004). The Pastoral-Agricultural Conflicts in Zamfara State, Nigeria. North Central Regional Centre for Rural Development Iowa State University, Ames. [<http://conference.ifas.ufl.edu/ifsa/posters/umar.doc>] site visited on 12/7/2004.

- Unruh, J.D. (1995). The Relationship between Indigenous Pastoralists Resource Tenure and State Tenure in Somalia. *Geojournal*, 36:19-26.
- URT (1999a). Land Act No.4 Of (1999). The Land Regulations 2001. Subsidiary Legislation (Supp. No. 16 Of 4th May, 2001). The United Republic of Tanzania. Dar es Salaam.
- URT (1999b). Village Land Act 1999, Act Supplement. Section 12 (C), No 8 – 13, 58, 60 - 64. The United Republic of Tanzania. Dar es Salaam.
- URT (1999c). *Presidential Commission on Land Matters (1999)*. Report of the Presidential Inquiry into Land Matters, Volume 2 – Selected Land Disputes and Recommendations. The United Republic of Tanzania. Dar es Salaam, Tanzania. 46pp.
- URT (2005). *The Livestock Policy of Tanzania*. Ministry of Water and Livestock Development. The United Republic of Tanzania. Dar es Salaam, Tanzania, 256pp.
- World Bank (1994). *Tanzania Agriculture*. A Joint Study by the Government of Tanzania and the World Bank. Washington, D.C. 326 pp.

APPENDICES

Appendix 1: Questionnaire for Farmers/Pastoralists

Questionnaire code number	
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A: Background information

1. Fill this table bellow

Name:	Sex:	Age:
Village:	Ward:	Division:
Ethnicity:	Origin:	Occupation:
Education:	Residence status:.....	Length of residence:
Household size:	1.Resident 2.Migrant	

B: Land use and ownership

2. Which type of land ownership is practicing?

1. Private 2. Communal

3. What is the total size (in acre) of land you own?

4. How did you acquire land you own?

1. Purchased 2. Rented 3. Inherited

4. Allocated 5. Other (specify).....

5. How do you use your land?.....

1. Cultivation 2. Grazing 3. Both. 4. Other (specify).....

6. For how long have you been using this land?.....

1. Less than 1 year. 2. 1 to 3 years. 3. 4 to 8 years. 4. More than 8 years

7. Is the land you own adequate for the activity mentioned in 3 above?1. Yes 2. No

8. If land is not adequate (6 above), how do you manage such scarcity?

1. reduce crops 2. reduce number of animals 3. buy additional food 4. other

9. How much additional land you need? (in acre)

10. Which institution(s) regulate land use in the village?

1. Customary authority 2. Farmers' groups 3. Grazing management group

4. Formal institution set by government 6. Other

11. Do you have any institutional right/certificate to land ownership? 1. Yes 2. No
12. What institutional right do you have over your land?
1. Title deed 2. Customary right 3. Village protection
4. Other (specify).....
13. How does such right (in 10 above) influence your investment decisions with regard to land utilization?
1. Expanding land 2. Improving land 3. Diversifying the investment
4. Other (specify).....
14. What are the incentives attracted you to stay or migrate into this village?
1. Pasture 2. Water 3. Land for cultivation 4. Ecological stability
5. Other (specify).....
15. Has the in-migration of other ethnic groups into your village affected the land you had traditionally?
1. Yes 2. No

C: Pastoralist

16. How many livestock you have and what feeding system are using? Fill this table.

Livestock type	Number	Feeding system
Cattle		
Goat		
Sheep		
Donkey		
Pigs		

17. Where do you graze your livestock?
1. Communal grazing lands 2. Fallow lands 3. Open access lands
4. Harvested fields 5. Other (specify).....
18. If you have an access to crop residues on fields, which terms are used?.....
1. Free 2. Purchase 3. Barter exchange 4. Other (specify).....
19. If you are not allowed by the farmer, what do you do?.....
1. Leave 2. Graze by force 3. Other (specify).....
20. At what season of the year do you experience shortage of pasture?.....
1. Dry season 2. Wet season 3. Year round 4. Other (specify).....

21. Do you have rights to access and use open and fallow lands in this village?.....

1. Yes 2.No

22. Are there any restrictions on stocking rates in the village?.....

1. Yes 2.No

D: Farmer

23. Which types of crops do you grow?.....

1. Annual 2. Perennial 3. Both 4. Other (specify).....

24. Do you allow pastoralists to feed their livestock on crop residues and land you own?..... 1. Yes 2. No

25. If yes in 23 Above, in what terms do you allow pastoralists to use your crop residues after harvest?.....

1. Give freely 2. Sell 3. Barter exchange

4. Other (specify).....

26. If no in 23 above, did they ever graze their livestock in your farm without permission? 1. Yes 2. No

27. If yes in 25 above, what did you do?

1. Report to the authorities 2. Keep quite 3. Resolve with the pastoralists

4. Other (specify).....

28. How far is your farm from grazing land?

1. Less than a Km 2. 1 to 5 Km 3. More than 5 Km

29. Do you use manure from livestock belonging to pastoralists? 1. Yes 2. No

30. If yes in 28 above, in what terms do you get manure from pastoralists?.....

1. Get freely 2. Purchase 3. Barter exchange

4. Other (specify).....

E: Conflict

31. Is the land a major issue in conflicts between farmers and pastoralists?.....

1.Yes 2. No

32. If yes in 30 above, in which land do these conflicts are commonly occurring?.....

1. Communal grazing lands 2. Fallow lands 3. Harvested fields

4. Open access land 5. Farms 6. Other (specify).....

33. What is the attitude of each group (farmer and pastoralists) towards its counterpart?.....
1. Positive 2. Neutral 3. Negative
34. What are the major causes to land use conflicts between farmers and pastoralists in your area?.....
35. Can you resolve and manage these conflicts at village level?..... 1. Yes 2. No
36. Do you think external force can help in maintaining peace in your village? 1. Yes 2. No
37. Which general solutions do you think are the workable and long term ones to these conflicts?.....

Appendix 2: Checklist Questions for Interviewing Key Informants

A: Causes

1. What are causes of the conflicts?
2. Which group frequently instigates the conflicts than the other?
3. Why these conflicts are outstanding in this area?
4. What internal and external catalysts to the conflicts?
5. How can you relate nomadism to the causes of the conflicts?

B: Socio-economic Impact of the Land Use Conflicts

1. What are socio-economic impacts of land use conflicts?
2. Which group is mostly affected by land use conflicts?
3. Can social and psychological damaged by land conflicts be cured?

C: Resolution and Management

1. What are solutions to the conflicts at grassroots level?
2. What measures to be considered in solving the conflicts at higher (district, regional, national) levels?
3. Which measures are experienced to be effective?
4. Are the solutions/measures in favour of any user group? If yes, how do you manage to maintain peace?
5. In what ways you think different land user groups in a given village/locality can both use land peacefully?

Appendix 3: Calculation of carrying capacity, stocking rate and grazing pressure

Formulae:

- Carrying capacity (ha/LU) = $\frac{\text{Total grazing area (ha)}}{\text{Total number of livestock (LU)}}$
- Stocking rate = $\frac{\text{Total grazing area (ha)}}{\text{Carrying capacity (ha/LU) / year}}$
- Grazing pressure = Current stocking rate – Sustainable stocking rate

Data given: Total grazing in the district = 484 480 ha

Total number of livestock (cattle, sheep, goats & donkeys) = 355 516

Recommended carrying capacity = 5 ha/LU

$$\begin{aligned}\text{Current carrying capacity (Ha/LU)} &= \frac{484\,480\text{ ha}}{355\,516\text{ LU}} \\ &= 1.4\text{ ha/LU}\end{aligned}$$

$$\begin{aligned}\text{Sustainable stocking rate (LU Year)} &= \frac{484\,480\text{ ha}}{5\text{ ha/LU}} \\ &= 96\,896\text{ LU Year}\end{aligned}$$

$$\begin{aligned}\text{Current stocking rate (LU Year)} &= \frac{484\,480\text{ ha}}{1.4\text{ ha/LU}} \\ &= 346\,058\text{ LU Year}\end{aligned}$$

$$\text{Grazing pressure} = 346\,058 - 96\,896 = +249\,162\text{ LU Year}$$