

**POST CONFLICT COPING STRATEGIES AND WELL-BEING OF FARMERS
AND PASTORALISTS IN KILOSA AND KITETO DISTRICTS, TANZANIA**

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**A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY OF SOKOINE UNIVERSITY
OF AGRICULTURE. MOROGORO, TANZANIA.**

EXTENDED ABSTRACT

Natural resource use conflicts are a global phenomenon and in Sub-Saharan Africa, such conflicts can be extreme leading to deaths of farmers and pastoralists. The most reported conflicts over natural resource use occur between farmers versus farmer, pastoralists versus pastoralists, ethnic groups and state and communities to mention a few. Farmers and Pastoralists conflicts are the concern of this study. However, the literature on the effects of conflicts on both well-being and coping strategies to manage the conflicts in Tanzania is rather scarce. The study explored the forms and drivers of conflicts; analysed the role of governance in natural resource use conflicts; determined the effects of conflicts on household well-being and explored conflicts coping strategies among farmers and pastoralists in Kilosa and Kiteto districts. A cross-sectional research design was used whereby 373 respondents were randomly selected. Primary data were collected through interviews, observations and focus group discussions. In addition, secondary data were collected from government reports and the media. SPSS and Stata software was used for both descriptive and inferential statistical analyses. Content analysis was used for the qualitative data. Study findings show that the main form of conflict involved farmers-pastoralists over village boundaries. Drivers underlying the conflicts were crop damage by livestock and unwillingness of government officials to address the conflicts. Although there was inadequate knowledge among respondents on the regulatory framework governing land matters, both women and men had an equal opportunity for participation in land matters. Corruption was systemic in nature and it involves village leaders, district council officials and the police. There was a significant difference ($p < 0.01$) in households well-being with regard to asset ownership, subjective well-being (happiness) and education. Generally, female-headed households were more likely to be happier ($p < 0.05$) than their male counterparts who in most cases are in combat as

women and children are left at home or hidden in the bush. Moreover, those affected with natural resource use conflicts were forced to buy food or rely on relatives and wider social networks to provide practical support. Emotional support from relatives and religious organisations were also important. Male-headed households were more likely to use coping strategies ($p < 0.05$) than female-headed households. Land ownership is likely to increase the use of post-conflict coping strategies among households. Therefore, it is recommended that the Government of Tanzania through the Ministry of Lands, Housing and Human Settlement Development prior to establishing any land use plan should undertake land suitability index and establish the livestock carrying capacity of areas intended for livestock keepers.

DECLARATION

I, Parit Luka ole Saruni, do hereby declare to the Senate of Sokoine University of Agriculture that this thesis is my own original work done within the period of registration and that it has neither been submitted nor being concurrently submitted to any other institution.

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TABLE OF CONTENTS

EXTENDED ABSTRACT.....	ii
DECLARATION.....	iv
COPYRIGHT	v
ACKNOWLEDGEMENTS	vi
DEDICATION.....	viii
TABLE OF CONTENTS	ix
LIST OF TABLES	xv
LIST OF FIGURES	xvii
LISTS OF APPENDICES	xviii
LIST OF ABBREVIATIONS AND ACRONYMS.....	xix
 CHAPTER ONE	 1
1.0 INTRODUCTION	1
1.1 Background of the Study	1
1.2 The State of Farmers-Pastoralists Conflicts	6
1.2.1 Overview	6
1.2.2 Forms and drivers of conflicts.....	9
1.2.3 Governance and farmers-pastoralist conflicts	10
1.2.4 Natural resource use conflicts and well-being of farmers and pastoralists.....	11
1.3 Natural resource use conflicts coping strategies among farmers and pastoralists	12
1.4 Problem Statement.....	13
1.5 Study Justification	14

1.6	Research Objectives	15
1.6.1	Overall objective of the study	15
1.6.2	Specific objectives of the study.....	15
1.7	Research Questions	16
1.8	Theoretical Framework	16
1.9	Conceptual Framework	18
1.9.1	Organization of the Thesis	20
	References.....	21
CHAPTER TWO	28
2.0	Forms and Drivers of Conflicts Between Farmers and Pastoralists in Kilosa and Kiteto Districts, Tanzania.....	28
2.1	Abstract.....	28
2.2	Introduction	29
2.2.1	Theoretical framework.....	34
2.3	Methodology.....	35
2.3.1	Study areas	35
2.3.2	Research design, sampling procedures, and sample size	37
2.3.3	Data collection.....	38
2.3.4	Data analysis	39
2.4	Results and Discussion	40
2.4.1	Socio-economic characteristics of the surveyed households	40
2.4.2	Forms of conflicts in the study areas.....	42
2.4.3	Drivers of farmer-pastoralist conflicts in the study areas	45
2.4.3.1	Crop damage by livestock	45

2.4.3.2	Inefficiency of government to timely take action to defuse conflicts	47
2.4.3.3	Excessively large herds of cattle	51
2.4.3.4	Pastoralists corrupting government officials	52
2.5	Conclusions and Recommendations	54
	References	56
CHAPTER THREE		63
3.0	The Role of Governance in Managing Farmer-Pastoralist Conflicts over Natural Resources in Kilosa and Kiteto Districts, Tanzania	63
3.1	Abstract	63
3.2	Introduction	64
3.3	Methodology	68
3.3.1	Description of the study areas	68
3.3.2	Sampling, data collection, and data analysis	69
3.3.3	Data collection	70
3.3.4	Data analysis	72
3.4	Results and Discussion	73
3.4.1	Level of knowledge and understanding among respondents on policies, laws, and strategies governing land matters	73
3.4.2	Role of community participation on land matters in farmers- pastoralists conflicts	80
3.4.3	Corruption as a cause of resource use conflicts between farmers and pastoralists	83
3.5	Conclusions and Recommendations	87
	References	89

CHAPTER FOUR.....		98
4.0	Effects of Natural Resource Conflicts on the Well-Being of Farmers and Pastoralists in Kilosa and Kiteto Districts, Tanzania	98
4.1	Abstract.....	98
4.2	Introduction	99
4.2.1	Conflicts and well-being	99
4.3	Methodology.....	103
4.3.1	Description of the study area and research design	103
4.3.2	Sampling technique and sample size.....	103
4.3.3	Data analysis	104
4.3.3.1	Measurement of happiness as a proxy measure of subjective well-being.....	104
4.3.3.2	Computation of household asset index.....	105
4.3.3.3	Oral histories	106
4.3.3.4	Analysis of quantitative data	107
4.4	Results and Discussion.....	109
4.4.1	Threats of natural resource use conflicts to the personal security and well-being of farmers and pastoralists.....	109
4.4.2	Threats of resource use conflicts to the psychological well-being of farmers and pastoralists in Kiteto and Kilosa districts.....	112
4.4.2.1	Household assets, dwelling condition and happiness indices for farmers and pastoralists in Kiteto and Kilosa Districts	114
4.4.2.2	Comparison of well-being between farmers and pastoralists	118

4.4.3	Factors influencing happiness among farmers and pastoralists in Kilosa and Kiteto Districts	121
4.5	Conclusions and Recommendations	124
	References	126
CHAPTER FIVE		134
5.0	Determinants of Conflicts Coping Strategies among Farmers and Pastoralists in Kilosa and Kiteto Districts, Tanzania	134
5.1	Abstract.....	134
5.2	Introduction	135
5.2.1	An overview of natural resource use conflicts	135
5.2.2	Theoretical framework	138
5.3	Methodology.....	139
5.3.1	Description of the study areas	139
5.3.2	Sampling, data collection, and data analysis	141
5.3.3	Data analysis	141
5.4	Results and Discussion	144
5.4.1	Farmers' and pastoralists' coping strategies for managing natural resource use conflicts	144
5.4.2	Factors influencing the use of coping strategies among actors in conflicts	149
5.5	Conclusions and Recommendations.....	153
	References	155
5.6	Summary.....	164
5.6.1	Contribution of the study to existing theories	164
5.6.1	Policy implications of the study	165

5.6.2	Theoretical implications	166
CHAPTER SIX		167
6.0	Conclusions and Recommendations	167
6.1	Conclusions	167
6.1.1	Drivers and forms of natural resource use conflicts.....	167
6.1.2	Governance and management of natural resource use conflicts	168
6.1.3	Natural resource use conflicts and the well-being of farmers and pastoralists	169
6.1.4	Coping strategies over natural resource conflicts among farmers and pastoralists	170
6.2	Recommendations	171
6.2.1	Forms and drivers of natural resource use conflicts.....	171
6.2.2	The role of governance in natural resource use conflicts.....	173
6.2.3	Improving the well-being of farmers and pastoralists.....	173
6.3	Areas for Further Research.....	174
APPENDICES		175

LIST OF TABLES

Table 2.1:	Socio-economic characteristics of respondents	41
Table 2.2:	Forms of conflicts in the study areas Error! Bookmark not defined.	
Table 2.3:	Drivers of farmers-pastoralists conflicts in Kilosa and Kiteto districts	45
Table 3.1:	Respondents' knowledge of the laws governing land matters	74
Table 3.2:	Participation of farmers and pastoralists on land matters in Kiteto and Kilosa districts	80
Table 3.3:	Mann-Whitney U test for a household opinion on corruption in Kilosa and Kiteto Districts	86
Table 4.1:	Personal security threats due resource use conflicts between farmers and pastoralists in Kiteto and Kilosa districts	110
Table 4.2:	Threats of conflicts to the psychological well-being of farmers and pastoralists in Kiteto and Kilosa districts	112
Table 4.3:	Normalised household assets, dwelling condition and happiness indices for farmers and pastoralists in Kiteto and Kilosa Districts	115
Table 4.4:	Household number of years spent in school in Kiteto and Kilosa Districts	117
Table 4.5:	Mean SD and t value of household well-being for farmers and pastoralists in Kiteto and Kilosa Districts	118
Table 4.6:	Factors influencing the household degree of happiness in Kiteto and Kilosa Districts	122
Table 5.1:	Farmers-pastoralists coping strategies for managing natural resource use conflicts in Kiteto and Kilosa Districts	145

Table 5.2:	The mean score of use of coping strategies among farmers and pastoralists in Kiteto and Kilosa Districts	149
Table 5.3:	Factors influencing the use of coping strategies to resource use conflicts in Kiteto and Kilosa Districts	150

LIST OF FIGURES

Figure 1.1:	Conceptual framework underlying situations of resource use conflicts ...	19
Figure 4.1:	Mr. X life history showing levels of well-being over time	120
Figure 4.2:	Mrs Y life history showing level of well-being over time	121

LISTS OF APPENDICES

Appendix 1: A Household questionnaire on Post Conflict Coping Strategies and Well-Being of Farmers and Pastoralists in Kilosa and Kiteto Districts, Tanzania.....	175
Appendix 2: A Guide for Life Histories	185
Appendix 4: Checklist for Key Informant Interviews.....	186
Appendix 4: A Focus Group Discussion Guide.....	187
Appendix 5: Sample size determination formula.....	189
Appendix 6: A Map of the study areas.....	190

LIST OF ABBREVIATIONS AND ACRONYMS

ASDS II	Agriculture Sector Development Strategies II
CBNRM	Community-Based Natural Resource Management
CBOs	Community-Based Organisations
CJ	Chief Justice
CHORDS	Community Research and Development Services
Coef.	Coefficient
CSOs	Civil Society Organisations
CSSH	College of Social Studies and Humanities
DAS	District Administrative Secretary
DC	District Commissioner
DDS	Department of Development Studies
DED	District Executive Director
DLO	District Land Officer
DLUFP	Director of Land Use Planning
DPO	District Police Officer
DRM	District Resident Magistrate
EOCS	Emotional-oriented Coping Strategies
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database
FDGs	Focus Group Discussions
GDP	Gross Domestic Product
IGP	Inspector General of Police
KDP	Kiteto District Profile
KDP	Kilosa District Profile

KINNAPA	Kimana Namelock Partimbo
LAMP	Land Management Programme
LGAs	Local Government Authorities
LU	Livestock Units
MIF	Mo Ibrahim Foundation
MoHCDEC	Ministry of Health, Community Development, Gender, Elderly and Children
MLF	Ministry of Livestock, and Fisheries
MWEDO	Maasai Women Development Organisation
NBS	National Bureau of Statistics
NFYDP II	National Five Year Development Plan II 2016/17 to 2020/21
NGOs	Non-governmental Organisations
NLUPC	National Land Use Planning Commission
NSGRP II	National Strategy for Growth and Reduction of Poverty II
OCD	Officer Commanding District
OECD	Organization for Economic Co-operation and Development
OHQ	Oxford Happiness Questionnaire
PAICODEO	Parakuyo Pastoralists Indigenous Community Development Organisation
PCA	Principal Component Analysis
PCCB	Prevention and Combating of Corruption Bureau
POCS	Problem Oriented Coping Strategies
PTSD	Posttraumatic Stress Disorders
QOL	Quality of life
RDS	Rural Development Strategy

SPSS	Statistical Package for Social Sciences
SSA	Sub-Saharan Africa
SSCS	Social Support Oriented Coping Strategies
SUA	Sokoine University of Agriculture
SWB	Subjective Well-Being
TLU	Tropical Livestock Unit
TZS	Tanzanian Shilling
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational Scientific and Cultural Organization
UNICEF	The United Nations Childrens' Fund
UPE	Universal Primary Education
URT	United Republic of Tanzania
US\$	United States of America Dollar
VLUPs	Village Land Use Plans
WEOs	Ward Extension Officer

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Conflicts over natural resources are a global phenomenon and they have been there for centuries. According to Gefu and Kolawole (2002), the competition for land between various user groups has been bothering mankind since time immemorial. In recent years, Tanzania has experienced many resource use conflicts between farmers and pastoralists because of competition for land (Mwamfupe, 2015). In Tanzania, there are three structural factors which are the main drivers behind these conflicts including agricultural encroachment that obstruct mobility of pastoralists and livestock, the opportunistic behaviour of rural actors as a consequence of an increasing political vacuum and corruption and rent seeking among government officials (Benjaminsen *et al.*, 2012). Protection of property rights in a biased manner can also enhance conflict between farmers and pastoralist groups (Butler and Scott, 2012; Mwamfupe, 2015).

Studies on conflicts between farmers and pastoralists have been frequently reported by different authors. For example, Kizima (2003) reported that increased demand for land at the household level and increased conflicts between farmers and pastoralists can be explained by the failure of farmers to use improved technologies to enhance production instead they prefer the use of extensive agriculture. Other causes of natural resource use conflicts include the opening of farms on grazing land, blocking of traditional livestock routes and crop damage caused by cattle (Kisoza, 2007; Saruni, 2011; De Haan *et al.*, 2016).

Some studies have reported on bad governance as a fundamental cause of natural resource use conflicts. For example, some conflicts occur due to the tendency of the government to implement changes without consulting local communities and key stakeholders (Kajembe *et al.*, 2003) and excluding community participation in decision-making over rules of management (Bluwestein *et al.*, 2016). Persistence of conflicts between farmers and pastoralists can also be caused by factors including policy deficiency and contradictions; insecurity of land tenure, inadequate capacity of local institutions and corrupt practices (Benjaminsen *et al.*, 2009; Benjaminsen *et al.*, 2012, Zagama, 2014; Mwamfupe, 2015); inadequate capacity in village land use planning, and the poor methods used in resolving the conflicts (Mwamfupe, 2015).

The concept of governance is too elusive and therefore difficult to define in most literature. Botchwey (2000) describes good governance as the existence of a government having the capacity to effectively undertake a set of economic management and policy tasks necessary to achieve economic growth and social well-being of the society. In fact in Tanzania, governance forms one of the three pillars of the National Strategy for Growth and Reduction of Poverty (NSGRP) that emphasizes on social tolerance, among other things, such as peace, political tranquillity, national unity and cohesion and accountability. Therefore, good governance is not a luxury but a basic requirement for society well-being (Botchwey, 2000). Corruption which undermines development is also an outcome and a symptom of poor governance (Mo Ibrahim Foundation (MIF), 2017). The Tanzania government's governance programme is anchored on strengthening the participation of people in decision making for social, political and economic development (URT, 2011). According to Tanzania's National Development Vision 2025, citizen participation and zero tolerance to corruption are perceived as strong pillars of good governance (URT, 2005). Therefore, if the conflicts between farmers and

pastoralists are to be addressed, it is important for people to be involved in the decision-making process regarding the use and control of natural resources such as land in a manner that is transparent and inclusive.

This study conceptualizes conflict as an incompatible interaction between at least two actors, whereby one of the actors' experiences damage and the actor causes this damage intentionally (Norman, 2013). Intentional and violent conflicts take several forms such as pillage, vandalism, arson, displacement, kidnapping, hostage taking, detention, beating, torture, mutilation, rape and desecration of dead bodies (Kalyvans, 2006). It is imperative therefore to note that, the incompatible interaction among different natural resource users might cause stress which the parties in conflicts need to overcome in order to get along with their normal life situations which entirely involves crop production and livestock rearing. Conflicts between farmers and pastoralists lead to stress. Stress, however, may have a different meaning to different people under different circumstances. For example, according to Selye (1956), stress is the reaction that people have when they are subjected to excessive pressure or demand. The negative effects of the conflicts between farmers and pastoralists are responsible for stress which needs to be managed through the use of coping strategies.

The main conflict actors in this study are farmers and pastoralists. Generally, Tanzania's agriculture is dominated by small-scale subsistence farming. Approximately 85% of the arable land is used by smallholders who operate between 0.2 and 2.0 hectares, and traditional agro-pastoralists who keep an average of 50 heads of cattle (Nikusekela, 2016). Therefore, based on these perspectives, farmers could be referred to as those people whose greater percentage of income comes from crop production as a means to meet their livelihoods.

Pastoralists are defined as people who depend on livestock for a significant level of income i.e. greater than 50% and some form of mobility being key elements in pastoralism (Tenga *et al.*, 2008; Homer-Dixon, 2010). In other words, pastoralism is a system which is predominantly based on livestock and which strategically uses extensive grazing and water resources (De Haan *et al.*, 2016). Pastoralism requires relatively free movement and access to common land and works better where common land is widespread and experiencing different weather patterns.

According to Eneyew (2012) pastoralists in Africa are poor, vulnerable and marginalised because the majority belong to ethnic minorities and not to the politically, economically and culturally dominant ethnic groups. He further argues that unfavourable government policies towards traditional pastoralism are widespread in developing nations further increasing the vulnerability of the pastoralists. This study argue that pastoralists are not poor as most of them have modern houses in most town centres in Morogoro region. Although the pastoralists continue staying in the bush owning mud and grass thatched houses most of them have permanent houses in various urban centres in the region. In addition, pastoralists build these houses without taking loans from Banks. Therefore, the concept of poverty among the pastoralists is only being propagated by elites who do not know how pastoralism as a livelihood system operates. Thus, various actors in the sector particularly government officials are required to understand pastoralism as a means of livelihoods for the indigenous communities. In Tanzania, there are several ethnic groups practising one or another form of pastoralism from pure pastoralism (Barbaig and Maasai) to transhumance (Ntuzu-Sukuma) and agro-pastoralism to more or less settled (Sukuma, Gogo, Kaguru, and Nyaturu) (Tenga, 2008). The most frequently reported conflicts are those involving the Maasai pastoralists and farmers.

Generally, it is important to note that, as pastoralists move across the country with large herds of livestock in search of pastures and water, the livestock are randomly led into farms where they forage on crops. As a result angered framers often take the law into their hands and fight the invaders (Gwaleba, 2018). In such a scenario armed fights erupt between framers and pastoralists resulting to human and livestock deaths, destruction of crops and homesteads, fear and poverty hence jeopardizing the well-being of the actors.

Natural resource conflicts are a threat to personal security and individuals' well-being. This perspective is supported by OECD (2011) which asserts that personal harm and contact crimes have severe and long-lasting effects on people's well-being. Well-being is a multifaceted concept which has a different meaning to different people. For example, according to Sen (1992), a person's well-being can be seen in terms of the quality of life (QOL). That is, living may be seen as consisting of a set of interrelated 'functionings', consisting of beings and doings. Sen (1992) continues to argue that a person's achievement in this respect can be seen as the vector of his or her functionings. These can vary from such elementary things as being adequately nourished, being in good health, avoiding escapable morbidity and premature mortality, among others. The functionings are also reflected in more complex achievements such as being happy, having self-respect, and taking part in the life of the community and so on.

Happiness is a subjective measure of well-being (Hills and Argyle, 2002) which is equally impacted by the stress resulting from persistent conflicts between farmers and pastoralists. According to OECD (2011), living in safe communities is essential to people's well-being, as feelings of insecurity limit people's daily activities. It is evident that violent conflicts have negative implications socially, economically, emotionally and psychologically to the victims. The effects may include sleepless nights, anger and other

forms of anxiety (Adisa, 2011) occurring among the actors, such as taking away their happiness, thus requiring a remedy in terms of coping to guarantee the actors survival in the aftermath of conflicts. According to literature (Folkman and Lazarus, 1985; Moos and Schaefer, 1993), coping is perceived as changing thoughts and behaviours that people use to manage stress and the problem underlying the distress in the context of stressful encounters or situations. In the study's context, actually, coping strategies are interpreted as life skills to overcome stress caused by natural resource conflicts. According to Yahia *et al.* (2014); Onyekuru and Marchant (2014), drinking alcohol excessively and migrating away from the conflict-affected areas are some of the coping strategies among various actors in conflict-affected areas.

1.2 The State of Farmers-Pastoralists Conflicts

1.2.1 Overview

As pointed out earlier in (subsection 1.1), pastoralism is a production system which is predominantly based on livestock, and which makes strategic use of extensive grazing and water resources and the system requires substantial mobility. Therefore, pastoralism requires relatively free movement and access to common land and the system works well where common land is widespread experiencing different weather patterns. This is because pastoralists are also highly vulnerable to environmental hazards, such as climate extremes particularly drought and disease which negatively affect their well-being.

In addition, the laws affecting land tenure in Tanzania, have also tended to promote private ownership and exclusive rather than shared use. In production strategies, livestock development is seen, according to government policy documents to require “modernization” which seems to depend on more intensive production rather than extensive pastoralism. For example, the National Land Policy of 1995 is not well-

equipped to solve conflicts because; it does not promote and ensure secured tenure systems that encourage optimal use of land resources (Gwaleba, 2018). Generally, there are four types of instability that are reported in Sub-Saharan Africa (i) localised conflicts between farmers and pastoralists over crop damage from livestock, access to water, and dry season grazing; (ii) rebellion based on ethnicity, such as in case of the Tuareg and Toubou; (iii) criminal activities such as drugs, smuggling, kidnapping, and money laundering; and (iv) religion extremism such as Alqaeda in Islamic Maghreb (AQM) (De Haan *et al.*, 2016).

Studies on conflicts between farmers and pastoralists in Tanzania are well-documented in the literature. Such studies include the incident of resource use conflicts in livestock production system (Kizima, 2003), the local institutions in managing resource use conflicts in Kilosa and Ngorongoro (Kisoza, 2007), democracy and conflict (Shao, 2008), resource use conflicts in Usangu plains (Kajembe *et al.*, 2003) and governance in resource use conflicts in Simanjiro (Saruni, 2011). In Ngorongoro, Kilosa and Simanjiro districts, Kisoza (2007) and Saruni (2011) reported that the existing nature of competition over natural resources between non-agricultural user groups and agricultural user-groups on one hand and the various levels of intra-user group competition on the other hand. The most frequent intra-user group conflicts are farmers-farmers conflicts over farming plots and pastoralists-pastoralists conflicts over water.

Furthermore, corruption among local authorities have increased natural resource use conflict in large scale and spread in different areas in the country including Kilosa, Mvomero and Kilombero districts in Morogoro region; Kiteto district in Manyara region; Rufiji and Mkuranga districts of Coast Region; Kilwa district Lindi region; Mbarali district in Mbeya region, and parts of Kongwa district in Dodoma region.

In addition, other districts like Handeni and Kilindi in Tanga region have also reported land conflicts (Gwaleba; 2018; Mwamfupe, 2015; Semberya. 2014; Benjaminsen *et al.*, 2009; Shao, 2008).

Violent conflicts between farmers and pastoralists over natural resource use have been reported in Kilosa and Kiteto. According to literature (Mungo'ngo and Mwamfupe, 2003; Benjaminsen *et al.*, 2009), 38 people lost lives in Rudewa village in Kilosa District in 2000. Hostilities, however, reignited in 2008 in Kilosa where eight people were killed, several houses set ablaze and livestock stolen. In 2015, four people were killed in Kilosa. The above killings happened even though earlier studies in Kilosa District had cautioned that land use conflicts between crop cultivators and livestock keepers could lead to bloodshed (Misana, 1996).

In Kiteto, 20 people were killed in 2000 following the arrival of farmers from Kongwa. In 2006, 50 farmers were evicted from their farms. In 2014, 12 people were killed, 60 houses set ablaze, 53 bicycles and six motorcycles destroyed due to conflicts between farmers and pastoralists (Kitabu, 2014; Makoye, 2014). In 2013 and 2014, Mvomero district reported seven deaths, 60 injuries, 40 livestock slashed and over 300 houses set on fire (Makoye, 2014; and Semberya, 2014). In 2015, six people were killed in Mvomero and 38 houses were set on fire (Makoye, 2014). All the above-mentioned incidences can affect households well-being in one way or another: For example, emotionally caused by loss of a family member, economically as a result of the loss of household assets, psychologically because of the fear of being attacked and socially through separation of families due to out-migration from conflict affected areas.

1.2.2 Forms and drivers of conflicts

Conflict is a disagreement and differences within, between and among individuals, groups, and structures. These disagreements and differences become conflicts when they have devastating effects on the individuals. Conflicts emanate from poorly managed changes which are inevitable elements of individual or societal life (Taras and Ganguly, 2015). A conflict occurs when the parties want to gain control over some disputed and perceived indivisible resources, such as a piece of land or local political power (Galtang, 1965; Wellensteen, 2007). Local conflicts over natural resource use usually occur between the “original” inhabitants of an area and more recent settlers (Brosche, 2014). In Kilosa, for example, pastoralists are perceived as recent settlers while farmers are the original inhabitants. In Kiteto, the situation is vice versa. According to Fearon and Laitin (2014), this form of divide often causes conflicts where the original inhabitants perceive themselves as the rightful owners of the disputed natural resource. In addition, other forms of conflicts are based on one’s livelihood and this arises, for example, between groups such as pastoralists and farmers (Brosche’, 2014). In regions also where the regime acts in a particular manner, by offering benefits and support to some communities but not others, violent communal conflicts are more prevalent (Brosche’, 2014).

In Kenya, for example, forms of natural resource use conflicts include land conflicts, ethnic displacement, and livestock raiding because pastoralists are involved most in conflicts as ethnic actors as their interest is conjoined with the politics of patronage (Galaty, 2016). A conflicting policy environment fuels many conflicts. For example, there are contradictions between Land Act (No. 4 of 1999) and Village Land Act (No. 5 of 1999). The flexibility afforded by the Village Land Act in how boundaries of each village land are defined has been suppressed by the Land Use Plan Act, which requires this to be done through a formal survey, which few villages have the capacity to

undertake or fund (Alden, 2011). Butler and Scott (2012) argue that violence is an enacted behaviour rooted in culture and an accepted form of interaction.

1.2.3 Governance and farmers-pastoralist conflicts

Land use conflicts between farmers and pastoralists should not be seen as emanating from the two parties (pastoralists and peasants), but from broader issues of land and national policies, governance, and democratic principles in general (Shao, 2008). The top-down centralised bureaucratic and authoritarian system does not allow for any meaningful people centred-democratic use of land by pastoralists and peasants themselves (Shao, 2008). In the Horn of Africa, it was found that resource use conflicts in areas inhabited by pastoralists occur because pastoralists are physically remote and often politically isolated and therefore political forces tend to be biased towards the urban and more affluent agricultural population (Ahmad *et al.*, 2014). Makoye (2014) argues that natural resource use conflicts such as land disputes in Tanzania persist because of corruption and a weak system of enforcement of existing land laws. An issue that is further explained by Mwamfupe (2015), who reported the major factors for the persistence of farmers-pastoralist conflicts in Kilosa and other parts of the country as caused by policy deficiency and contradictions, insecurity of land tenure, inadequacy of capacity of local institutions, corrupt practices, inadequate capacity in village land use planning, and acting forcefully without care and thought to resolve the conflicts.

These observations suggest that there is a lack of security of tenure among smallholder farmers and pastoralists who hold and use unsurveyed land which makes it liable for alienation through acquisition and encroachment. This is echoed by Benjaminsen *et al.* (2012) who argue that if property rights are provided in a biased manner, conflicts between pastoralists and farmers tend to increase. A view that is supported by Brosche'

(2014) who reported that violent conflicts are more likely to be more prevalent when rules do not reflect local conditions and when local actors are unable to influence decisions. In Tanzania, for example, the land laws are in contradiction with certain policies because they do not reflect the situation at hand. For example, the Village Act No. 5 of 1999 and the Livestock Policy of 2006 contradict each other in the sense that while the livestock policy recognises pastoralism as a means of livelihood the village act is silent about how village land should be allocated to livestock keepers.

1.2.4 Natural resource use conflicts and well-being of farmers and pastoralists

Natural resource use conflicts lead to huge human and economic losses such as loss of revenue which significantly has a negative impact on the well-being of farmers and pastoralists. Insecurity also directly leads to increased poverty for the already poor smallholder farmers and pastoralists which may eventually be reflected in the social and economic well-being of the entire population in the affected areas (De Haan *et al.*, 2016). According to OECD (2011), conflicts over natural resource use are a threat to personal security which is a key component of people's well-being. OECD (2011), further, argues that though there are a number of factors influencing personal security, crime is one of the most common one. Crime may lead to loss of life and property, physical pain, post-traumatic stress, and anxiety, both in the short and in the long run. Therefore, it is undisputable that living in safe communities is essential to people's well-being, as feelings of insecurity will limit people's daily activities including taking away their happiness.

1.3 Natural resource use conflicts coping strategies among farmers and pastoralists

Stress is a condition of strain on one's emotions, thought processes, and or physical conditions that seem to threaten one's ability to cope with the environment (Anbazhagan and Rajan, 2013). Generally, conflicts are responsible for stress and are also a threat to the quality of life, and to the physical and psychological well-being of people. Coping is a dynamic process that changes as a single stressful encounter depending on changes in what one is coping with. Coping is a dynamic phenomenon; it depends on whether an event is a harm, loss or threat (MacCrae, 1984). Coping is influenced by both environmental and social factors (Menaghan, 1982; Parkes, 1986) and what is at stake and what the options for coping are (Folkman and Lazarus, 1980; Folkman and Lazarus, 1986). When individuals experience stress, they adopt different ways to address it as they cannot continuously live in the state of tension. Coping is a way individuals use to manage stress.

According to Anbezhagan and Rajan (2013), coping includes first "emotion-oriented" coping strategies, and these involve increased social support, increased tolerance of ambiguity, relaxation techniques, and health maintenance and having friends and colleagues who are supportive. Second, it includes the "escape/avoidance strategy"; this helps to confront the problems of stress as a challenge and increases the capacity of dealing with it. Third stage of coping with stress includes strategies which attempt to reduce the feeling of stress through maladaptive coping strategies such as the use of alcohol and drugs among other negative stress management strategies.

1.4 Problem Statement

Despite frequent occurrence of conflicts between farmers and pastoralists, the groups have continued to co-exist. However, one wonders why natural resource use conflicts are recurrent while people have been living together and using the same resources together for centuries. In addition, there are traditional, local and central government institutions which are supposed to address the conflicts in the area. The concern from different stakeholders over the persistence of violent conflicts between farmers and pastoralists is great. This is because such conflicts have far-reaching devastating physical, social, economic, emotional and psychological consequences to various actors including farmers and pastoralists. Oftentimes, extreme forms of these conflicts affect the subjective well-being (happiness) of farmers and pastoralists. According to King (2008), subjective well-being is an individual's personal assessment of how well things are going in his or her life: how much positive affect (that is, feeling) and negative affect the person experiences and how he or she feels about life in general. In addition, these conflicts lead to physical losses among the conflicting parties. The physical losses experienced as a result of violent conflicts include inflicting body injuries to individuals, and in extreme circumstances, death may occur as was the case in Kilosa, in 2000/01 and 2008 and Kiteto in 2000, 2014/15 as presented in (section 1.2) above.

Despite these killings and recurrence of the situation, scholarly literature on the farmers-pastoralists coping strategies and well-being in relation to violent conflicts is missing in Tanzania. This is because most studies have not paid attention to the aftermath of conflicts in order to find out how the affected parties cope with the distress in a post-conflict era. Studies were done in West Africa by Adisa (2011) and Umar *et al.* (2013), established that understanding how conflict actors and affected persons respond, socially and psychologically to conflict situation is an important step towards achieving

sustainable peace and development. This study, therefore, aimed to: address the post conflict coping strategies employed by farmers and pastoralists households to manage the aftermath of conflicts in Kilosa and Kiteto Districts, Tanzania.

1.5 Study Justification

The study's findings are expected to provide empirical data that will be helpful in the formulation or review of acts, strategies and policies, for example, Tanzania's 2001 Rural Development Strategy (RDS), Land Tenure (Tanzania's 1999 Village and Land Acts) and the Agriculture and Livestock Policy of 2006. This is because the above-mentioned policy documents have ignored pastoralism as a livelihood strategy. For example, Gwebu (2018) reported that, the National Land Policy of 1995 is not well-equipped to resolve natural resource use conflicts because, it does not promote and ensure secured tenure system that encourage optimal use of land resources as is the case with pastoralism. In addition, there are legal contradictions between the Land Act No. 4 of 1999 and Village Land Act No. 5 of 1999 which classify land as: Reserved land; Village land; and General land. Reserved land is statutorily protected as national parks, land for public utilities, wildlife and game reserves and other land designated by sectoral legislation. Village land is the land which is within the demarcated or agreed boundaries of any Tanzania's villages.

Generally, village land is under the managerial authority of Village Councils, which are answerable to the Village Assembly. General land is a residual and includes all public land which is not reserved land or village and includes unoccupied or unused land village land. According to Mwamfupe (2015), general land is "ambiguous since unoccupied or unused village land is considered as "excess", thus, falls under the jurisdiction of Land Commissioner and not the village authorities". Generally, this provision reduces the

powers of the Village Council in managing their land. This study will also benefit planners and policy makers in managing victims of conflicts in a resource use post-conflict era. The study will also enrich literature on, the forms and drivers of conflicts, governance, and resource use conflicts, conflicts and well-being particularly the aspect of subjective well-being (happiness) of farmers and pastoralists and on post-conflict coping strategies in Tanzania. In the light of this, it will contribute to enhanced peace and tranquillity among various actors as enshrined in Tanzania's National Development Vision 2025.

1.6 Research Objectives

1.6.1 Overall objective of the study

This study sought to identify how post conflict coping strategies to natural resource use conflicts are associated with the well-being of farmers and pastoralists in the study areas.

1.6.2 Specific objectives of the study

Specifically, this study intended to:

- i). Ascertain the forms of resource use conflicts and their drivers;
- ii). Analyse the role of governance in enhancing or arresting resource use conflicts;
- iii). Determine the role of natural resource use conflicts on the well-being of farmers and pastoralists in the study areas;
- iv). Examine factors influencing the subjective well-being (happiness) among farmers and pastoralists, and
- v). Identify farmers-pastoralists coping strategies to natural resource use conflicts in Kiteto and Kilosa Districts.

1.7 Research Questions

1. What is the nature of natural resource use conflicts in the study areas?
2. What are the underlying factors behind conflicts in study areas?
3. How does governance influence the management of farmers-pastoralists conflicts in the study areas?
4. How do farmers' and pastoralists' knowledge and understanding of the policies, laws, and strategies governing land matters relate to natural resource use conflicts in the study area?
5. What is the relationship between farmers-pastoralists households well-being and natural resource use conflicts? and
6. Which post conflict coping strategies are employed by farmers-pastoralists in managing the negative effects of natural resource use conflicts in the study area?

1.8 Theoretical Framework

This study was guided by the Lazarus's Cognitive Appraisal Model of Coping with stress (Folkman and Lazarus, 1984) as a theoretical basis for the analysis of coping strategies to natural resource conflicts between farmers and pastoralists. The model explains the mental process which influences the stressors. According to Lazarus, stress is a two-way process which involves the production of stressors by the environment, and the response of individuals subjected to these stressors. In this regard, natural resource conflicts between farmers and pastoralists are perceived as stressful situations to the actors in the conflict process, which is determined by the individual's feelings of vulnerability and ability to cope. Lazarus and Folkman (1987); and King (2008), defined coping as the sum of cognitive and behavioural efforts, which are constantly changing, that aim to handle particular demands, whether internal or external, that are viewed as taxing or demanding. Coping is thus an activity we do to seek and apply solutions to stressful situations or

problems that emerge because of our stressors. Moreover, Lazarus stated that cognitive appraisal occurs when a person considers two major factors that generally contribute to his/her response to stress. These two factors include: (1) the threatening tendency of the stress to the individual and (2) the assessment of resources required to minimize, tolerate or eradicate the stressor and the stress it produces.

Generally, according to Lazarus when an individual is faced by stress, a person uses three kinds of appraisal to analyse the situation namely: (i) Primary appraisal; is a person's judgment about the significance of an event as stressful, positive, controllable, challenging or irrelevant. For example, when conflicts become a threat to personal security it may cause harm such as loss of life and property. (ii) Secondary appraisal; entails facing stressors which in this case are natural resource conflicts between farmers and pastoralists. It is generally an assessment of people's coping resources and options (Cohen and McKay, 1984; Weiten, 2007; King, 2008). Secondary appraisal addresses what one can do about the situation. Therefore, this is the process of conceiving a potential response which could either be positive or negative and (iii) Reappraisal process of coping resources appraisal (actual strategies used to mediate the primary and secondary appraisal). Reappraisal generally aims at regulating the problem and gives rise to outcomes of the coping process.

Coping strategies are brought about by a person's conscious mind, it does not mean that all of them bring about positive coping; there are some types of coping mechanisms which are maladaptive nature such as the use of alcohol (King, 2008). Generally, according to psychologists, there are three classifications of coping strategies namely problem focused (POCS), emotional focused (EOCS) and social support seeking strategies (SSCS) (Lazarus and Folkman, 1984; Weiten, 2007; King, 2008).

The problem-oriented coping strategies seek to change one's mind set for example selling of land and migrating away from a conflict ridden location. Emotional oriented coping strategies seek to modify the behaviour of persons for example, through the use of drugs and revenge in the aftermath of conflicts. Finally, the social support seeking coping strategies aimed at getting support such as seeking legal support in order to solve the repercussion of the conflicts.

1.9 Conceptual Framework

According to the study's conceptual framework (Figure 1.1), the perceived contextual factors for Kiteto and Kilosa Districts have been shown. These include ethnicity, farming and herding experiences, the alternative occupation of the respondent, farm size, land ownership, production system, land tenure security systems, proximity to the farm, and household size among others. These variables were conceptualised to have an influence on the forms of conflicts as well as the coping strategies adopted by both farmers and pastoralists in the aftermath of conflicts in a post conflict era. Furthermore, the existing forms of conflicts were perceived as stressors which were responsible for causing stress among the actors. The manner in which various natural resources particularly land is governed with respect to adherence to the existing policies, laws, and strategies; participation of communities; and in terms of prevalence in corrupt practices may as well determine the forms of conflicts and implications these conflicts may have on farmers-pastoralist households. The most notable implications of natural resource use conflicts in this aspect are those that were associated with the negative dimension of such conflicts. These include sleepless nights, abandonment of farms, loss of life and loss of property. However, the extent to which households are affected by conflicts tends to determine the type of coping strategies adopted by the affected actors.

According to Lazarus (1984), coping strategies to stress follow a three stage pathway namely emotional, problem and social support focus coping strategies to conflicts which are hereby expressed as a stressor.

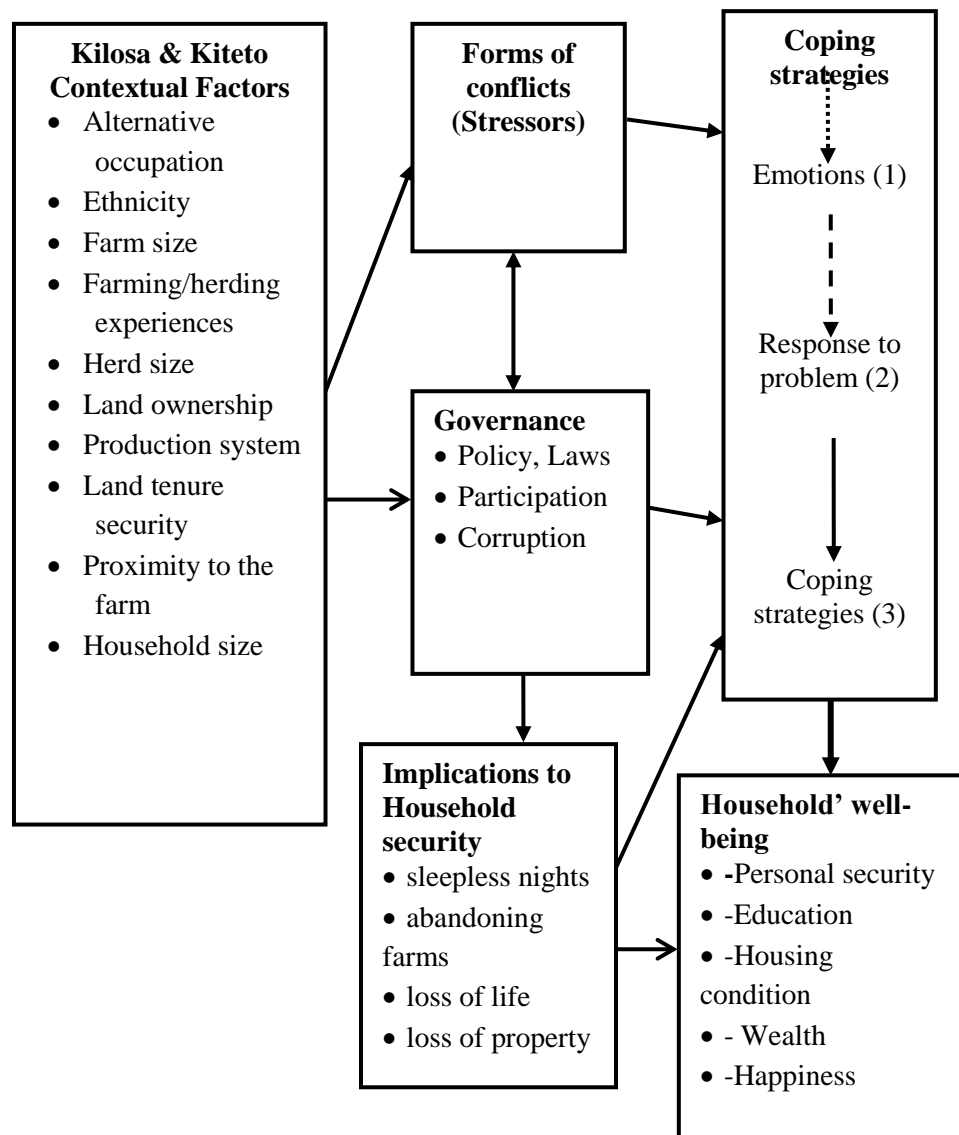


Figure 1.1: Conceptual framework underlying situations of resource use conflicts

Modified from Folkman and Lazarus (1966) and Adisa (2011)

The way a household, is able to cope with stress caused by natural resource use conflicts is however largely thought to determine its well-being which is measured in terms of personal security; education of the household members; household head housing conditions; household wealth status and subjective well-being whose proxy measure is happiness. Happiness as a measure of subjective well-being was preferred in this study because it has rarely been studied in the study areas despite being conflicts hot spots. Generally, the extents to which households are affected by conflicts determine the actual types of coping strategies to be used to overcome the stress.

1.9.1 Organization of the Thesis

The thesis is organised into six chapters. Chapter one gives the background of the study. This is followed by four chapters from Chapters 2 to 5, four publishable manuscripts are presented. The first manuscript (chapter 2) focuses on forms and drivers of conflicts between farmers and pastoralists. Chapter 3 deals with the role of governance in managing farmers-pastoralist conflicts over natural resources. Chapter 4 deals with effects of natural resource use conflicts on the well-being of farmers and pastoralists. The fourth paper (chapter 5) presents coping strategies underlying conflicts between farmers and pastoralists in Kilosa and Kiteto Districts, Tanzania. Finally, chapter 6 presents a conclusion and recommendations.

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CHAPTER TWO

2.0 Forms and Drivers of Conflicts Between Farmers and Pastoralists in Kilosa and Kiteto Districts, Tanzania

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2.1 Abstract

Farmer-pastoralist conflicts represent a significant challenge for rural communities and the Tanzanian government. The study objectives were to (i) determine existing forms of conflicts and (ii) identify drivers underlying resource use conflicts. The study adopted a cross-sectional research design whereby data were collected from 373 randomly selected respondents from Kilosa and Kiteto districts, Tanzania. While primary data were collected through interviews, observations and focus group discussions, secondary data were gathered from government reports and newspapers. Quantitative data were analysed using the Statistical Package for Social Sciences (SPSS) version 20.0. Descriptive statistical analysis was carried out for quantitative data. Factor analysis was

used to extract component factors on drivers and forms of conflicts. Content analysis was used to analyse the qualitative data. Generally, study results show that there were three main forms of conflicts namely farmers versus pastoralists over village boundaries; farmers versus pastoralists over livestock routes, and farmers versus farmers over the farming land. In addition, four main drivers underlying resource use conflicts were identified namely; crop damage by livestock; inefficiency of some government officials to take action to diffuse conflicts; excessively large herds of cattle and corruption. It is therefore recommended that the Ministry of Livestock and Fisheries should provide pastoralists with essential services such as water ponds and grazing lands in order to minimize the movement of their livestock herds from their designated villages to other areas in search of water. This would, in the long run, minimise crop damage which has been a major source of conflicts. In addition, proper land use planning is recommended to minimize resource use conflicts.

Key words: Forms of conflicts, Drivers, Pastoralists, Farmers, Kilosa and Kiteto

2.2 Introduction

Competition for land between and within various user groups has been bothering mankind since time immemorial (Gefu and Kolawole, 2002). The emergence of these conflicts could be traced back to the Biblical era when the Holy Bible gives an account of conflicts in Genesis 13:7¹. Benjaminsen *et al.* (2009), refers to the biblical story of the conflict between Cain and Abel, which led to the murder of the latter by the former, as an archetypal example of the tension between sedentary farmers and migrating pastoralists.

¹ And there was a strife between the herdsmen of Abram's cattle and the herdsmen of Lot's cattle: and the Canaanites and the Perizzites dwelled then in the land (King James Bible 2000)

For many years, Sub-Saharan Africa has experienced complex and several unresolved conflicts between and among farmers and pastoralists. For instance, in South Sudan, the conflicts are frequent and take the form of inter and intra-communal conflicts, which are mainly driven by cattle raids (Kircher, 2013). Other drivers of conflicts include historical tensions and a tendency to resolve these through violent means, increasing competition of access to grazing land and water, declining influence of traditional authorities, weakening of state institutions, promotion of a culture of impunity, heightened demand and competition for land and appropriation of large tracts of land for agricultural expansion as well as inflation in the “bride price” among the pastoralists (Kircher, 2013). A similar situation is reported in Ethiopia, where different forms of resource use conflicts can be identified among the farmers and pastoralists (Kircher, 2013). According to Wood (2010), the forms *inter alia* include inter-group conflicts, these are conflicts between different ethnic groups; intra-group conflicts, these are conflicts between different socio-economic groups within an ethnic group; Intra-state conflicts-these are conflicts between the state and people, and intra-government conflicts-these are conflicts between different groups and organisations.

In Tanzania, long standing conflicts and clashes between farmers and pastoralists are now a serious national challenge, which takes political and humanitarian dimensions. Among the most notable bloody clashes pitting farmers against pastoralists occurred in Kilosa District in December 2000, whereby 38 people were killed among them women and children (Brehnoy *et al.*, 2003). Conflicts in Kilosa date back to the late 1980s, and since then conflicts have assumed different forms. These conflicts have generally been driven by disputes over boundaries between pastoralists in Mabwegere Village against farmers in six neighbouring villages, namely, Mfulu, Dumila, Mambegwa, Matongoro, Mateteni and Mbigiri (Ubwani, 2014a).

Other, clashes occurred way back on 12th January 2014 in Kiteto which led to the death of 10 people leaving 20 others injured, 60 houses burnt down and a number of properties including six motorcycles and 53 bicycles destroyed (Benjaminsen *et al.*, 2014). Since then, more than 30 people have been killed and about 200 injured in the clashes (Ubwani, 2014b). These clashes were ignited by the eviction of invaders from Emboley Murtangos, which is a Community Based Natural Resource Management Area ²(CBNRM). This area was set aside by seven adjacent villages³ between 2002 and 2003 (Askew *et al.*, 2016). Moreover, as reported by Askew *et al.* (2016), the disputed CBNRM between farmers and pastoralists covers roughly 3200 square kilometres, of which 15 square kilometres are wetlands and salt licks, which are resources of crucial importance for livestock keeping. The 15 km² area occupied by pastoralists has been known as Emboley Murtangos from the very early times.

Apart from the afore-mentioned conflicts, Morogoro has also experienced typical intra-group conflicts involving members of the same ethnic group, Maasai against fellow Maasai with respect to ownership of mini ranches. The concept of mini ranches emerged in 2003 following the privatisation of Dakawa ranch which is officially known as Farm No. 299 covering 5 2502 hectares. According to Hakiardhi (2009), the ranch was divided into plots and allocated to private companies and the local people including the Maasai. During the allocation, the private investors obtained 2 479 hectares, Mtibwa Sugar Company had 30 000 hectares, Wami Luhindo village in Mvomero had 1 997 hectares, small-scale farmers had 5 000 hectares, Mvomero District Council had 3 000 hectares, indigenous livestock keepers got 5 019 hectares, and modern livestock keepers got 5 000

²Emboley Murtangos is CBNRM set aside by the seven villages¹ in 2003 desired to protect their wildlife, vegetation and to provide grazing for their livestock. Source CBOs operating in the Kiteto district; KINAPA, CHORDs, MWEDO and NADUTARO between August-October 2015

³EnguseroSidai, Emarti, Kimana, Loltepes, Namelock, Ndirigish and Nhati

hectares, which were meant to support modern livestock keeping. In addition, the 5 019 hectares for indigenous livestock keepers were further subdivided into small plots of 100 hectares which were referred as “*ranchi ndogondogo*” (mini ranches) leading to the concept of small ranches, and these were later sold to the Maasai pastoralists. Nevertheless, following this land subdivision, the wealthy pastoralists were accused of grabbing a number of small ranches leaving their fellow Maasai without any pieces of land. The majority of the pastoralists who did not get land within the mini ranches migrated to Kilosa and Morogoro Districts.

Tanzania has approximately 21 million heads of cattle, the largest number in Africa after Ethiopia and Sudan. According to the Ministry of Livestock, and Fisheries (MLF) (2018), livestock contributes at least 6.7 percent of the country’s GDP. The Ministry of Agriculture data base shows that small-scale farmers produce more than 90 percent of the food consumed in the country. Of the country's 94.5 million hectares, only about half, that is, 44 million hectares are arable land (Makoye, 2014). Consequently, Tanzania’s agriculture is dominated by small-scale subsistence farming and approximately 85% of the arable land is used by smallholders who cultivate between 0.1 and 2.0 hectares and traditional agro-pastoralists who keep an average of 50 heads of cattle (URT, 2007). Based on these statistics, farmers could be referred to as people whose greater percentage of income comes from crop production; but according to Norman (2013), farmers are the people who are involved in the cultivation of land for growing various types of crops. Normally, farmers are differentiated from peasants by the acreage of land cultivated. Peasants are considered to be those who cultivate farms for subsistence mainly to meet their basic needs. Yet, farmers have the ability to produce a surplus, as they have bigger areas of farm lands as opposed to peasants. In this study, therefore, land use conflict is a phenomenon which involves both farmers and peasants against pastoralists.

While pastoralists are people who depend on livestock and whose significant level of income of greater than 50% comes from livestock keeping with some form of mobility as a characteristic of pastoralism (Tenga *et al.*, 2008). Thus, pastoralism refers to a socio-economic system which involves raising and herding of livestock (Norman, 2013). In Tanzania, there are several ethnic groups that practise one or another form of pastoralism from pure pastoralism (Barbaig and Maasai) to transhumance (Ntuzu Sukuma) and agro-pastoralism to more or less settled agro pastoralism (Sukuma, Gogo, Kaguru, and Nyaturu).

Several studies in sub-Saharan Africa and Tanzania in particular have studied the causes, effects and management of these conflicts (Kajembe *et al.*, 2003; Tenga *et al.*, 2008; Kizosa 2007; Benjaminsen *et al.*, 2009; Saruni, 2011; King, 2013; Mwamfupe, 2015). Nevertheless, little has been done to examine the linkage between forms and drivers of resource use conflicts among farmers and pastoralists, though, in the recent past, these conflicts have been escalating. The magnitude of these conflicts particularly in Kilosa District has prompted the Government through the Ministry of Lands, Housing and Settlement Development to appoint a High Court Judge to investigate the conflicts pitting pastoralists in Mabwegere Village against farmers in six neighbouring villages (Domasa, 2016). Therefore, determining the drivers and forms of conflicts will eventually equip different stakeholders including policy makers with the requisite knowledge/information which will then enable them to devise specific interventions to address the existing forms of conflicts.

According to Bujra (2002), in rural areas of many countries, many of the conflicts are ethnically based, mainly emanating from competing for grazing land and or ownership of cattle amongst pastoral people. Similarly, there are conflicts based on competition for

arable land amongst peasant farmers within the same ethnic group and also across ethnic groups. Occasionally, inter-ethnic conflicts over land and cattle may develop into rebellions and armed struggle between ethnic groups and the state, when the latter sends the military to stop the infighting. As stated earlier, several studies in Tanzania have focused on the causes of conflicts between farmers and pastoralists and that empirical data on the forms and drivers of these conflicts are scanty (Lawuo *et al.*, 2014; Msigwa and Mvena; 2014). Therefore, the manuscript is specifically aimed at (i) ascertaining the existing forms of conflicts; and (ii) identifying drivers underlying resource use conflicts in Kilosa and Kiteto Districts, Tanzania.

2.2.1 Theoretical framework

There is evidence in human society of the existence of different forms of conflicts. On the one hand, psychology has espoused on intra-personal forms of conflicts whereby a person's situation is manifest through anger, depression, confusion, frustration all of which eventually could result to erratic behaviour such as suicide (Tangney, *et al.*, 2007). This form of conflict is also known as "man against self" (MacNaire, 2011) and is characterised by addictive habits such as smoking, drug use, alcoholism, and lying. On the other hand, sociology identifies intra-personal as well as intragroup forms of conflicts. This form of conflict, according to Folarin (2015), is a disagreement that takes place between two or more sectarian or religious groups, ethnic groups, inter-communities or interest groups such as farmers and pastoralists.

This article deals with inter-community conflicts and their drivers. However, different approaches might be used to explain the potential drivers of natural resource use conflict in the society. For example, Mpangala (2004) and Bernauer *et al.* (2012) link natural resource use conflicts in Africa, to the struggle for political and economic resources for

personal interests. Homer-Dixon (2010) and Bernett and Adger (2007), link environmental scarcity to natural resource use conflict. They argue that, although environmental scarcity is not a major factor behind most of these conflicts, it helps to generate chronic and diffuse subnational violence. Moreover, environmental scarcity is expected to exert influence in the future because of increasing human population and higher per capita resource consumption rates.

Collier-Hoeffler analytical model of conflicts provides a strong association between the size of population and conflicts. Large populations are more prone to conflicts than otherwise (Collier and Hoeffler, 2005). De Soysa (2002) draws a sketchy link between natural resource use conflicts and cultural aspects such as ethnicity and religiosity, although myriad theories, generally, identify grievances of groups as a primary reason for violent conflicts. A review of some theoretical perspectives in this paper shows that there is no single model that can explain the drivers of resource use conflicts. Thus, application of different models in the analysis of forms and drivers of conflict relatively yield better results.

2.3 Methodology

2.3.1 Study areas

The study was conducted in Kilosa and Kiteto districts in Morogoro and Manyara Regions respectively (Appendix 6). The selection of the study districts was based on the following criteria: prominence, persistence, and severity of conflicts in terms of loss of human life, property damage and presence of a higher population of farmers and pastoralists. In the government and development reports and in national newspapers, the districts are often referred to as areas of land scarcity and conflicts (Benjaminsen *et al.*, 2009).

Kilosa is one of the six districts in Morogoro Region, Tanzania covering 14 265 km² out of which 4286 km² are under wildlife conservation and forests reserves. The conservation areas cover almost one third of the District's total area. Mikumi National Park covers 3230 km² or 22.7 per cent of the District. Forests reserves cover 1056 km² or 7.4 per cent of the District (Brehony *et al.*, 2003). Kilosa borders Kiteto and Kilindi districts to the north, Mvomero and Morogoro districts to the east, Mpwapwa and Kongwa districts to the west and Kilombero and Kilolo districts to the south (PAICODEO, 2013). As reported by the National Bureau of Statistics (NBS) 2016-2017 population projections, Kilosa district had 492 879 people (NBS, 2016). In Kilosa, rainfall varies substantially from year to year. Generally, the rain falls in two seasons: short rains in November to December and long rains from mid-February through April (Benjaminsen *et al.*, 2009). Ethnic groups found in the district include Kaguru, Sagara, Vidunda, Parakuyo Maasai, Barabaig, Gogo and Sukuma (Benjaminsen *et al.*, 2009).

Kiteto district is in Manyara Region, Tanzania. The district has semi-arid conditions and covers over 16 305 km² with rainfall ranging from 450 to 650 mm per annum (URT, 2011). Rainfall regimes in the district are bimodal, with a short and long rain seasons. The short rains begin in October through December while the long rains start in February to May (Conlibaly *et al.*, 2015). According to the National Bureau of Statistics (NBS), 2016-2017 population projections, Kiteto district had 286 741 people in (NBS, 2016). The existing land conflicts between farmers and pastoralists in Kiteto district started way back in 2003. Ever since, at least 30 people have been killed and about 200 were injured in the clashes (Ubwani, 2014a).

2.3.2 Research design, sampling procedures, and sample size

A cross-sectional research design was adopted for the study. The design allows collection of both qualitative and quantitative data in a short period of time (Babbie, 2013; Rubin and Babbie, 2016). The study population comprised all households within the land use conflict-affected areas. According to URT (2013), the population size for the wards which were affected by the conflicts in Kilosa and Kiteto were 45 687 and 38 649, respectively. The Sample size determination formula was adopted from Kothari (2004) as shown in Appendix 5.

In Kiteto district, Partimbo division whose majority of villages were severely affected by conflicts between farmers and pastoralists was given priority after a detailed discussion with the District Council authorities. Respondents from the study districts were determined using a proportionate sampling formula by Kothari (2004) as presented in Appendix 1. Overall, 373 respondents were randomly selected. Using proportionate sampling formula 145 and 228 respondents were randomly selected in Kiteto and Kilosa, respectively.

Though the pastoralists preferred the head of the homestead *enkan'g*⁴ or *boma*⁵ to participate in the interview, the researcher took the initiative to explain to the head of the *enkan'g* the importance of individual household members to participate in the study which they agreed. The heads of the Maasai pastoralist homesteads were meant to understand that in an event of deadly conflicts the effects were mostly felt at the household level than at the entire '*boma*' level.

⁴Maasai enclosure for livestock surrounded by many huts fenced with thorn bushes to safeguard them from theft and attacks from wild animals

⁵ A Kiswahili word meaning a livestock enclosure and is comprised by more than one household.

The study areas including districts and villages, participating local organizations and key informants were purposively selected based on the frequency and perceived damage caused by resource use conflicts. Stratified sampling was used to select farmers and pastoralists because they were the main conflict actors. Since conflict is a very sensitive phenomenon, at some point in time, snowball sampling technique was used to locate those respondents who were perceived to have knowledge regarding conflict situations, and those who had suffered severe damages or effects caused by the conflicts with an intention of getting some detailed information. These included farmers and pastoralists whose houses were set ablaze, property destroyed, and victims of any form of abuse such as rape, individuals with sustained body injuries and those who had lost family members through death as a result of land disputes between farmers and pastoralists. In addition, snowball sampling was used to track those people who had moved out of the study areas due to conflicts in which case random sampling could not have allowed their participation in the study.

2.3.3 Data collection

In order to address the research questions, both primary and secondary data were collected. Qualitative data were collected using informal discussions, observations, interviews and focus group discussions (FGDs). Twelve FGDs were held with the participants. These comprised six FGDs in each study district. Each FGD involved eight to twelve participants. However, for each district, there were three separate groups, those composed of farmers and those of pastoralists and groups with a combination of farmers and pastoralists. The purpose was to enable each specific livelihood group to freely express their needs and concerns. Direct observation techniques in data collection featured on land and herd sizes owned, livestock routes to water points, sources of water,

distance to the pastureland and the mode of livestock grazing, persons involved in tending livestock, those whose property was destroyed during the conflicts, abandoned farms, burnt houses, farmer and pastoralists' daily socio-interactions.

Quantitative data were collected through a household questionnaire, whereby information on socio-demographic characteristics of the respondents, and forms and drivers of conflicts among farmers and pastoralists were determined. Key informants to the study included among others: the District Commissioner (DC), the District Executive Director (DED), Officer Commanding District (OCD), leaders of community based organisations, traditional leaders '*Laigwanak*' among the Maasai community, local government staff such as extension officers, and the elderly and influential people in the study villages.

A checklist containing questions in tandem with the theme of the study was used as an interview guide in the FGDs and key informant interviews. Secondary data were collected from diverse credible sources, including government reports; existing NGOs and CBOs reports, and newspapers. Information which was collected from the aforementioned sources included incidents of the occurrence and extent of property damage as a result of resource use conflicts. Other sources included court testimonies, criminal records from the police, including reports on the malicious damage of property and records on the unlawful land acquisition from the community without following legal procedures.

3.3.4 Data analysis

The study's unit of analysis was the household. Therefore, the descriptive statistical analysis was used to determine the socio-economic characteristics of the respondents. Multiple responses and factor analysis mainly Principal Component Analysis (PCA) was

used to determine the forms and drivers of resource use conflicts. The assumption used in this analysis was based on the fact that only components with Eigen values greater than (1.0) should be employed (Horn, 1965). Therefore, principal component analysis (PCA) was used to extract component factors on the drivers of farmer-pastoralist conflicts in the study areas. Factor Analysis is a multivariate technique which is employed to establish the interrelationship between variables as well as in explaining the variables in terms of their common factors (Comrey and Lee, 2013). Content analysis was used to organise qualitative information into similar themes for the purpose of generating some meaningful information. According to Bryman (2004), the content analysis comprises searching for underlying themes in the material being analysed.

2.4 Results and Discussion

2.4.1 Socio-economic characteristics of the surveyed households

Basic descriptive demographic and socio-economic results are presented in Table 2.1. In both Kilosa and Kiteto districts, the majority of the respondents were married. According to Mutayoba (2011), stable families would concentrate more on production compared to unstable ones hence, the possibility of influencing agricultural production. However, separation and divorce rates were higher among farmers possibly due to seasonal employment away from home which allows them to seek temporary sexual partners during farming seasons. Among the farmers, female respondents were more represented as opposed to pastoralists who portrayed complete male domination.

Farmers have slightly higher levels of formal education compared to pastoralists suggesting that the latter are less informed about modern livestock techniques which could assist them to minimize resource use conflicts. According to Saruni (2011), despite the adequacy of primary schools in most pastoral villages, pastoralists are generally

reluctant to send their children to school because, either, they have inadequate knowledge on the importance of education, or stakeholders in the education sector have failed to effectively play their role hence denying the community the benefits of education and in particular universal primary education (UPE). Another plausible reason could be that pastoralist communities seem to rely more on family labour for livestock keeping activities that is why they don't send their children to school.

Table 2.1: Socio-economic characteristics of respondents (n=373)

Characteristic		District		Respondents (%)		Overall (%) 100 (n=373)
		Kilosa (%) nk=228	Kiteto (%) nkt =145	Pastoralists np=143	Farmers nf=230	
Marital status	Married	80.9(74.8)	90.7(79.1)	84.6	76.5	80.5
	Widowed	13.5(7.9)	3.7(1.1)	9.8	5.2	7.5
	Single	3.4(7.2)	3.7(9.9)	3.5	8.3	5.9
	Living together	0.0(3.6)	1.9 (1.1)	0.7	2.6	1.7
	Separated	1.1(3.6)	0.0 (7.7)	0.7	5.2	3.0
	Divorced	1.1(2.9)	0.0(1.1)	0.7	2.2	1.4
Sex	Male	80.9(79.9)	87.0(82.4)	31.9	49.9	81.8
	Female	19.1(20.1)	13.0(17.6)	6.4	11.8	18.2
Education level	No schooling	65.2(27.3)	42.6(25.3)	56.6	26.5	41.6
	Primary education	16.9(66.9)	33.3(63.6)	23.1	65.7	44.3
	Adult education	10.5(2.2)	9.3(2.2)	9.8	2.2	6.0
	Post-Secondary					
	Education	5.6(0.0)	7.4(1.1)	6.3	0.4	3.4
Age category	Secondary education	2.2(3.6)	7.4(7.4)	4.2	5.2	4.7
	20-35 years	15.8(15.8)	13.3(22.2)	37.1	25.8	31.5
	36-50 years	15.8(29.4)	39.1(53.9)	41.3	45.8	43.5
	Above 50 years	68.4(54.8)	47.6(23.9)	21.6	28.4	25.0
Household size	Mean household size	5.2(8)	6.5(5.8)	7.0	5.0	5.8

Key: Numbers in the parenthesis represent socio-economic characteristics for farmers in both Kilosa and Kiteto Districts. NB: nk represent the number of respondents, nkt number of respondents, np number of pastoralists, nf number of farmers in Kilosa, and Kiteto pastoralists and farmers respectively

Generally, there were more pastoralists shifting towards crop cultivation than farmers shifting to livestock keeping. A discussion with key informants revealed that farmers refused to engage in livestock keeping for fear of theft by Maasai pastoralists. Moreover, this could further increase farmer-pastoralist conflicts due to competition for grazing land and water resources. In addition, farming and pastoralism were portrayed as activities for

the elderly as these mainly involved respondents above 35 years old. On average, pastoralists had slightly larger household sizes compared to farmers implying that the former had enough labour to be employed in livestock rearing.

2.4.2 Forms of conflicts in the study areas

Literature shows that there are different forms of resource use conflicts in Africa (Bujra, 2004; Saruni, 2011; Kisoza, 2014). Overall, the study identified eight forms of conflicts in the study areas as shown in Table 2.2. By using the PCA, three main forms of conflicts were identified based on Eigen values. These were farmers versus pastoralists over village boundaries (2.220); farmers versus pastoralists over livestock routes (1.73); and farmers versus farmers over land (1.28). Similarly, Kisoza *et al.* (2004) identified three categories of resource use conflicts in Kilosa, namely, inter-ethnic conflicts, inter-village conflicts, and village versus government agencies conflicts. However, in Kagera, Kisoza (2014) reported four forms of conflicts namely, farmers against pastoralists, farmers against farmers, farmers against investors, and farmers against government agencies. The findings of the current study differ from the findings of the aforementioned studies because Kilosa has all major land use systems found in Tanzania namely, leased estate farms, state ranches, national park, and reserved catchment forest, smallholder subsistence farming system and pastoralism (Kisoza, 2004) that could possibly allow for more diversity, thus, conflict among various stakeholders. Similarities in the forms of conflicts across two different geographical locations imply a lack of genuine efforts by different stakeholders including the local government to address the factors underlying the conflicts.

Table 2.2: Forms of conflicts in the study areas (n=373)

	Respondents (%) n=373	Eigen Value	% of variance	Cumulative % of Variance
Forms of natural resource use conflicts				
Farmers versus pastoralists along village boundaries	81.1	2.221	27.77	27.77
Farmers versus pastoralists over livestock route	98.4	1.732	21.66	49.44
Farmers versus farmers over land	24.1	1.282	16.02	65.44
Farmers-pastoralist versus investors conflicts over land	55.0	.938	11.72	77.16
Farmers pastoralists versus conservation authorities	34.9	.664	8.30	85.46
Household against a family member over land inheritance	24.4	.604	7.55	93.01
Pastoralists versus pastoralists	24.1	.475	5.94	98.94
Residents versus village government over settlement	23.6	.085	1.06	100.0

Conflicts of farmers versus pastoralists over village boundaries were reported both in Kilosa and in Kiteto districts. In Kilosa district, for instance, the study found the existence of boundary disputes between Mabwegere village and other neighbouring villages of Magole, Mfulu, Karadasi, Mateteni, and Mbigiri. The results from the FGDs show that these boundary disputes were politically driven. This argument is based on the fact that Mabwegere was officially registered as a grazing area on 8th December, 1989 and acquired a title deed on 10th June, 1999. However, there has been some interference from political leaders, who have been in favour of farmers, thus, allowing them to trespass legally the set boundaries. This was manifested by increased farming activities in the area, thus, leading to competition over the use and control of land between farmers and pastoralists. A similar form of conflict was reported in Kiteto, pitting two villages, namely, Namelock and Kimana, with the major driver being a violation of legally recognised land boundaries. This was further reported to have been driven by corrupt village officials, and political leaders, and, mainly councillors who illegally sold village land to outsiders at the expense of local communities. The persistence of conflicts in Kilosa and in Kiteto districts suggests a lack of adequate knowledge about pastoralism as

a system of livelihood. In addition, the district councils in the study areas lack strategies of transforming pastoralism into the modern system of livestock keeping.

Farmer-pastoralist conflict over livestock routes was common in the villages, where farms are established along water points, but, most prevalent in such villages such as Magole, and Kitete wards in Kilosa District where crops are under irrigation. These conflicts occur because when pastoralists try to get access to crops residues from the farms; their livestock always destroy crops in the neighbouring farms. Kajembe *et al.* (2003) and Abbass (2014) ranked crop damage as the major cause of many conflicts. Resource use conflicts were also reported in those areas where farms are found along the traditional livestock routes. This type of conflict was reported to be a common phenomenon in Kimana village in Kiteto District. During the survey, livestock was observed passing along the routes, which were too close to farm lands as they found their way towards water points. Equally important, farmers have established their permanent residences and vegetable gardens adjacent to water points which undermine further the rights of pastoralists to have access and use the water resources. This suggests that lack of clearly recognized livestock routes subject crops to livestock damage leading to conflicts. Conflicts between farmers over land use were triggered by multiple allocations or leasing of same farm lands to more than one person and trespassing. The double allocation trend was caused by unscrupulous village officials who would stop at nothing in bending the rules for personal gains. In Kiteto, for example, the respondents cited examples of leasing of a single farming plot to more than one person and hence triggering conflicts. According to Saruni (2011), farmers' conflicts over farm plots significantly increase the likelihood of resource use conflicts particularly in the villages where farming is the predominant activity and the majority of land users are farmers.

2.4.3 Drivers of farmer-pastoralist conflicts in the study areas

Study results (Table 2.3) show drivers to resource use conflicts between farmers and pastoralists in the study areas. The drivers include government officials' reluctance to take timely actions to defuse conflicts; crop damages by livestock; excessively large herds of cattle; and the tendency of pastoralists corrupting government officials.

**Table 2.3: Drivers of farmers-pastoralists conflicts in Kilosa and Kiteto districts
(n=373)**

Drivers of conflicts	Eigen values	% of Variance	Cumulative % of the variance	%
Crop damage by livestock	2.502	22.746	35.977	96.5
Inefficiency of government to timely take action to defuse conflicts	1.455	13.231	46.780	80.2
Excessively large herd of cattle	1.188	10.803	56.161	69.7
Pastoralists corrupting government officials	1.032	9.382	65.040	70.0
Farmers' forcibly confiscating cattle	.977	8.879	73.389	88.2
Warring behaviours of herders warriors (morans)	.918	8.349	80.957	65.4
Herders violating boundaries	.832	7.568	86.866	83.9
Farmers disregarding village boundaries	.650	5.909	96.396	51.7
Ethnic-based hatred between farmers and pastoralists	.547	4.971	91.837	60.6
Heavy penalties demanded by farmers for crop damages	.501	4.559	100.000	89.5
Government officials favouring farmers	.396	3.604	22.746	89.3

However, according to Mwamfupe (2015), it is important to note that no single factor can adequately explain the prevalence of conflicts between farmers and pastoralists; instead, it is the combined effects of these factors which can be held responsible for the worsening situation. Table 2.3 further shows the respective Eigen values and the percentage of variance for different drivers. Generally, the results in Table 2.3 show that only four components had Eigen values of greater than 1.0 with the fourth factors representing the accumulative variance of 65.0 per cent.

2.4.3.1 Crop damage by livestock

The study findings showed that the leading drivers of conflicts between farmers and pastoralists include crop damage by livestock (Table 2.3) and this had an Eigen value of

2.502. However, the incidences of crop damage were either accidental or deliberate in nature. Accidental incidences were those related to cattle straying into farming plots, which implies that there was improper tending/herding of cattle, blocking of livestock routes to the existing water points and weak fencing⁶ made at kraals or “*bomas*”. Weak fencing encouraged, livestock to often escape at night, stray into farms and destroy crops. The deliberate damage of crops involves feeding livestock on late maturing crops such as pigeon peas. Chronic conflicts between the two groups were reported to be experienced towards the harvesting season. Pigeon peas according to pastoralists are a good fodder during drought. On the other hand, Pigeon pea is a more climate friendly crop than ordinary beans. Thus, the tendency by pastoralists turning food crops into fodder has of late increased the friction between the two groups. Usually, after harvesting all crops, pigeon peas are left in the field, until they are fully mature before harvesting. Unfortunately, this happens during the dry spell when pastoralists are desperately in need of pastures to feed their stock. This is when some of the pastoralists get tempted to feed their cattle on crop residues available in the farms, and in so doing they destroy the pigeon peas. Other studies have associated crop damage by livestock to conflict through increased food insecurity (Mkonda, 2016) and competition for wetlands and river valleys during the dry spells (Kisoza *et al.*, 2004). In this study, the respondents reported that lack of good land use planning had increased the chances of crop damage by livestock. These results are backed by police records which linked major reported cases of conflicts to crop damage by livestock resulting in fights between farmers and pastoralists. According to the police, these incidences are usually treated as criminal offences due to the malicious nature of the damage of property or crops. The exception is when one is

⁶Researcher’s observation on the nature of fencing of the Kraals or “*bomas*” where cattle are confined at night to safeguard them against theft and attacks from wild animals.

seeking for compensation for the damage caused by the offender who is charged under civil case procedures.

2.4.3.2 Inefficiency of government to timely take action to defuse conflicts

Government officials' inefficiency to take timely actions in defusing conflicts was also reported by the majority (80.2%) of the respondents, and, this had an Eigen value of 1.455 as shown in Table 2.3. With regards to this driver of resource use conflict, an accusing finger was directly pointed to the village governments which were seen to propagate the prevailing conflicts due to lack of involvement of the people in major and various land use decisions including land allocation. During the FGDs, it was reported that village leadership had always tried their best to handle the farmers-pastoralists conflict but they did not get any support from higher authorities⁷. This observation suggests a divided government position towards natural resource use conflict between farmers and pastoralists. According to Mwamfupe (2015), the traditional conflict resolution machinery at the village level has been weakened partly by the emergence of statutory approaches based on formal procedures, and on the other hand, by the influx of pastoralists who do not share the values and beliefs upon which these mechanisms are anchored. The above observation is echoed by Kirk (1999) who argues that in Sub-Saharan Africa, land conflicts are proving more difficult to solve because traditional instruments of reconciliation, such as compromise have been rendered obsolete.

The tendency of failing to take timely actions in defusing the conflicts is blamed for the land conflicts existing at the Emboley Murtangos Community Based Natural Resource Management (CBNRM) in Kiteto whereby politicians, civil servants, and farmers have been implicated. Pastoralists in Kiteto District revealed that keeping a blind eye on land

⁷FDG on 31/7/2015 in Kimana village, Kiteto district over the role of local leadership in conflict management

grabbing practices by the government prompted their rebellion against the land grabbers after several attempts of removing the invaders from their land amicably and through legal procedures proved futile. A plausible explanation for the reluctance of taking timely actions is due to conflict of interests, among government officials who are directly involved in natural resource use planning and management. These findings are consistent with findings from other studies on land grabbing is done elsewhere. According to Pantuliano (2007), weak land management institutions and lack of enabling legislations are responsible for large-scale land grabbing in South Sudan. Hall (2011) argues further that land grabbing at the global level is attributed to various mechanisms ranging from straight forward private-private purchases and public-private leases for biofuel production. Similarly, MacLean and Scott (2012) point out that land grabbing has been escalated by alliances between state officials, local political elites, and domestic and foreign investors thus, opening up opportunities for these investors to appropriate scarce resources. The stated alliances provide further opportunities for these investors in extending their reach, exerting power over marginal areas and people, as well as extracting rent from such ‘unruly’ practices.

In Kiteto District, the respondents reported four drivers of land grabbing, first is the urban affluent population which has bought and hold more land for speculative reasons; second, land alienation for conservation purposes; third, increased demand for land among local investors and fourth, the vice of corruption among village government officials who get involved in illegal land transactions to the affluent urban population without following normal land allocation procedures as stipulated in the Land Act Number 4 of 1999 and the Village Land Act Number 5 of 1999. These findings suggest that land grabbing has propagated a seed of hatred among farmers and pastoralists, thus, leading to deadly conflicts between the two land use groups.

According to Kiteto district security records, the 2014 deadly conflicts between farmers and Maasai pastoralists led to the death of more than 50 people out of these, 34 deaths occurred at the Emboley Murtangos CBNRM whereby the majority of the victims were casual labourers. People of various age groups were also killed including a 70 year old man, three infants, and five women. In the incident, over 2000 cows were stolen. These conflicts were reported to have been planned and they were thus considered as an organised crime against innocent people⁸. The above view was echoed by farmers who revealed that; "...the conflicts were not spontaneous in nature but rather they seemed to have been strategically planned by a group of influential individuals including wealthy livestock keepers, Maasai traditional leaders '*Ilaigwanak*' and some government officials with some political agenda⁹".

The farmers argument is based on the fact that nobody within the mentioned category of individuals took the initiatives early enough to halt the situation; rather they all were inactive while the tension between the parties in conflicts was getting worse until the situation ran out of control. Seven villages were reported to have fallen victims of a rapid influx of farmers from outside the region. The so called 'invaders' were poor people who were deployed by 78 prominent wealthy politicians, businessmen and civil servants living far away in commercial urban centres. The invaders occupied approximately 63 740 hectares, equivalent to 47.8% of the CBNRM where most of the people lost lives in the deadly conflicts between farmers and pastoralists. Farmers reported further that pastoralists, who were enjoying the government's support, were issued with a letter which directed them to solicit funds to be used to evict the invaders from the community conservation land. Further consultations with different stakeholders, established that the

⁸ Interview with a senior security officer in Kiteto district, August 3, 2015

⁹ Farmers responses during an informal discussion held at Mbeli a sub-village (hamlet) of Kimana Village, Partimbo ward in Kiteto District on (July 30, 2015).

Government eviction order¹⁰ of removing all land grabbers from Emboley Murtangos CBNRM was lawful and farmers were just using the fund raising directive as a scapegoat of protesting against the court of appeal ruling¹¹ with the aim of tarnishing the Government's image. According to the study findings, the unlawful establishment of settlements within the CBNRM took place at Kuti, Silalei, Orkeri, Latimi, *Kwa* Mtanzania, *Kwa*Kibumu, Seseni, Majengo, Pori *kwa* Pori, Kisima 1 and Kisima 2¹².

The establishment of permanent houses within the conserved land further signifies lack of resolve by the relevant authorities in enforcing the existing law. The would be farmers permanent houses were demolished by the District Council following the appeal by the appellant Kiteto District Council which was granted the powers to evict the invaders. In fact, records show that the first lawful order was issued in 2011 and the second in 2013 but none of these was implemented until 2014. Individuals' noncompliance to lawful orders seemed to have triggered the impatient Maasai pastoralists' anger which led into the launching of the unprecedented deadly attacks against the farmers, mostly innocent casual labourers working on the farms which were grabbed within the community conservation area. Despite the early warning signs of what would turn out to be deadly conflicts between farmers and pastoralists,' traditional leaders and local government officials were rather inactive in mitigating the conflicts. This implies that there was a conflict of interest among community leaders on land matters at Emboley Murtangos and, thus, effectively or implicitly making them part of the land grabbing plan.

¹⁰ *Kumb. Na. HMW/KY/R/09/35, 12/12/2011* from Jane K. Mutagurwa, District Executive Director, Kiteto, to village chairman, Kimana village.

¹¹ Civil appeal No. 58 of 2010 In Land Case No. 6 of 2004 in the land Division of the High Court of Tanzania at Dar es Salaam of which Kiteto District Council was the appellant & Tito Shumo and 49 others respondents (Judgment of the court 5 September and 10 November, 2011)

¹² Researchers own observation of the demolished houses following the government directives

2.4.3.3 Excessively large herds of cattle

Excessively large herds of cattle had an Eigen value of 1.188 (Table 2.3), and it was mentioned by more than two thirds (69.7%) of the respondents as one of the drivers of farmers-pastoralists resource use conflict in the study area. A study by Lawuo *et al.* (2014) reported an association between large livestock population beyond a land's carrying capacity and conflicts at Ngorongoro and how it negatively affects lives of local communities. The study findings indicate that land grabbing and invasion of farmers at Emboley Murtangos in Kiteto District had reduced pastureland leading to a concentration of pastoralists into smaller areas that could no longer support their livestock. As a result, there was an increase in the incidences of natural resource use conflicts between farmers and pastoralists.

According to the study findings, Godes sub-village/hamlet in Majambaa village was a typical case of excessive livestock population surpassing land carrying capacity in Kilosa District. The area had 5000 hectares of land that was designated for pastoralists in 1997. Within the sub-village, there were 39 Maasai kraals, each having approximately 150 herds of cattle, thus, a total of 5850 cattle¹³ were recorded in the sub-village. According to FAO (2005) and Pica-Ciamarra (2007), stocking rates are measured in Tropical Livestock Units (TLUs)/hectare. The TLU is a standardized animal unit obtained by multiplying the number of animals with a conversion factor that takes into account “feed requirement” for the animals (FAO, 2005). Therefore, Godes might be a typical example of an area with an excessive number of livestock where the recommended number is 3500 cattle. Literature shows that the TLU in sub-Saharan Africa is 0.7. Therefore, the current estimate of the number of livestock in Godes is 1.17 LU/hectare thereby

¹³ Interview with a 63 year old Maasai elder on 24/9/2015 at Majambaa village Kilosa District

exceeding the land carrying capacity by 0.47 LU/hectare, which is equivalent to 2340 cattle. In this respect, inadequate pastures forced livestock to graze outside the designated areas adjacent to the farms hence predisposing crops to livestock damage, and thus driving farmers and pastoralists into natural resource use conflicts. According to Pica-Ciamarra *et al.* (2007), the number of ruminant livestock is increasing to such high levels that some livestock stock in some countries appears to have exceeded the carrying capacity of the land thus, leading to exceptionally high pressure on the limited resources leading to the eruption of overt conflicts. According to FAO (2015), the current livestock unit (LU) per hectare in sub-Saharan Africa is between 0.48-0.75 LU/Ha; this indicates that in some parts, livestock numbers fall below the recommended number per unit area while in others they exceed the land carrying capacity.

2.4.3.4 Pastoralists corrupting government officials

The study results further show that the tendency of pastoralists to corrupt government officials was another driver of conflicts. Oral testimonies from the respondents showed that corruption was widespread among the police who in most cases were alleged to be colluding with the farmers to obtain money illegally from the pastoralists. The police were reported to be the source of the farmers-pastoralists conflicts as they receive bribes from both sides and thereby failing to dispense justice due to a conflict of interest¹⁴. These results are supported by Benjaminsen *et al.* (2009). According to a quote from an interview conducted in Kilosa in 2009, the respondents had these to say:

“Corruption is another reason for the conflicts between farmers and pastoralists in Kilosa District. For instance, if my cattle are caught by farmers, grazing in their farms, the cattle would be taken to the village office so that the farmer can

¹⁴ An oral testimony from a male farmer aged 45 years in Kilosa

be compensated. Alternatively, I can give money to the authorities to return the cattle to me without compensating the farmer”¹⁵.

Cases of corruption are complicated by village leaders who are not faithful. They receive bribes from pastoralists and allow them to graze their livestock on land which was not designated for grazing. This is further supported by Gweba (2018) who reported that, corruption among some local authorities have increased and spread in different districts in Tanzania such as Kilosa, Kiteto, Mvomero and Kilombero to mention but a few.

On their part, pastoralists use their economic power to bribe magistrates and the police instead of compensating the farmers whose crop have been damaged¹⁶. This suggests that denial of a person’s right through corruption, leads to hatred against the offender, thus, escalating the likelihood of revenge among conflicts actors. This is considered to be a plausible reason for increasing cases of intentional injuring and killing of livestock by farmers in Kilosa. Once the livestock have been killed, pastoralists react by taking the law on their hands against the act thus complicating the situation even further. According to Abroulaye *et al.* (2015), local leaders in Senegal abused rules in order to solicit bribes from the parties in a conflict which ends up in deepening the conflicts. Likewise, Umar *et al.* (2013) reported that in Nigeria corruption is accelerated by local leaders through overestimation of the number of crops damaged by livestock in order to be given some amount of money by farmers as bribes.

¹⁵Response from a pastoralist interviewed in Kilosa by Benjaminsen *et al.* in 2009

¹⁶ Verbal testimony from a senior agricultural officer in Kilosa District interviewed on 6/10/2015

2.5 Conclusions and Recommendations

Conflicts between farmers and pastoralists are widespread and affect millions of people in sub-Saharan Africa every year. In view of the study findings, the various forms and drivers of conflicts are, to a large extent, a product of failure by the law enforcement agents of observing rules and regulations in resource use management in the study areas. The most notable forms of conflicts are the intragroup and intergroup conflicts occurring among and between farmers versus pastoralists, triggered by dispute around village boundaries, blockage of livestock routes as well as the double allocation of land to more than land user. With regard to the drivers of conflicts government officials, reluctance to timely take action in managing conflicts and corruption reflect the extent of moral degeneration among the people in the studied areas. Moreover, these tendencies account for the failure among those entrusted with the responsibility of sensibly and ethically managing the resources in order to reduce the conflicts.

Based on the study findings and conclusions it is recommended that the government through Ministry Livestock and Fisheries should ensure that pastoralists are provided with the essential services such as water in order to minimize movement of their herds of livestock from their designated villages to other areas in search for water. This would, as a result, minimize farmers' crop damage which has been a major source of conflict. Moreover, land carrying capacity studies should be carried out to determine appropriate land carrying capacity of rangelands in order to maintain the appropriate numbers of livestock that would not put excessive pressure on the available grazing resources. The Kilosa and Kiteto District Councils should establish land use plans to minimize resource use conflicts between different land users. The District Councils in the study areas should formulate bylaws for controlling livestock populations in areas with limited land in order to match with the land carrying capacity. The alleged corrupt practices and

the reluctance among government officials of taking action in time in conflict affected areas should be investigated by the relevant authorities such as the Prevention and Combating of Corruption Bureau (PCCB) in order to identify the source of these vices and institute legal procedures/actions against the offenders.

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CHAPTER THREE

3.0 The Role of Governance in Managing Farmer-Pastoralist Conflicts over Natural Resources in Kilosa and Kiteto Districts, Tanzania

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3.1 Abstract

Conflict over natural resources is a governance issue in Sub-Sahara Africa. Therefore, good governance is a guarantor of peace and tranquillity among farmers and pastoralists. The paper addresses the role of governance in the resolution of resource use conflicts between farmers and pastoralists in Kilosa and Kiteto Districts, Tanzania. The issues covered include farmers-pastoralists knowledge on existing policies, laws and strategies governing land matters, participation, and corruption. The study adopted a cross-sectional research design whereby data were gathered from 373 randomly selected households using interviews and participatory methods particularly focus group discussions. SPSS was used for both descriptive and inferential statistical analyses

particularly chi-square and Mann-Whitney tests. Content analysis was used for the qualitative data to generate specific themes. The findings show that both farmers and pastoralists have limited knowledge of the existing policies, laws, and strategies governing land matters. However, there is an equal opportunity for both women and men to participate in land matters. The findings further show that the vice of corruption is systemic in nature and it involves village leaders, district council officials and other government agencies including the police. It is hereby concluded that bad governance in the study area is reflected through corruption and allocation of land contrary to the law. Therefore, it is recommended that knowledge on policies, laws, and strategies governing land matters should be imparted to the farmers and pastoralists on a continuous basis as this will enable easy management of the natural resource use conflicts in the study areas. Furthermore, Kilosa and Kiteto district councils should report all alleged corrupt practices to the Prevention and Combating of Corruption Bureau (PCCB) for investigation and relevant action.

Key words: Governance, Conflict, Participation, Corruption, Farmer-Pastoralist.

3.2 Introduction

Although the concept of governance is widely discussed among policy makers and scholars, there is as yet no strong consensus around a single definition of governance (Kaufmann, 2010). In this paper Governance refers to a situation where there is equal participation of all actors including community members in management of natural resources further characterised by knowledge of the existing policies, laws and strategies controlling the resources as well as presence of zero level of corruption and rent seeking among government officials. However, the literature shows evidence of a link between governance and resource use conflicts in Sub-Saharan Africa (SSA) (Benjaminsen and

Ba, 2009; Burnely, 2011; Balint *et al.*, 2011; Cuvelier *et al.*, 2014; Kapesa *et al.*, 2015). Generally, different organizations and authors have classified the concept of governance differently. On one hand, governance involves rule enforcement mechanisms and organizations (World Bank, 2012). On the other hand, governance involves the provision of political, social, and economic public goods and services including the right to security by a state to every citizen (Mo Ibrahim Foundation (MIF), 2017).

Conflicts over natural resources between farmers and pastoralists have always played a role in human society, but recently, the situation in SSA has led to an increase in their intensity and complexity (Umar *et al.*, 2014). Therefore, capable governance is a better guarantor of peace and tranquillity among farmers and pastoralists (Benjaminsen *et al.*, 2017). According to Coser (1964), conflict is a threefold concept consisting of incompatibility, action, and actors. The term conflict as used throughout this paper refers to a social situation in which a minimum of two actors or parties strive to acquire at the same moment in time an available set of scarce resources (Wallensteen, 2007). In this paper, the key actors in the conflict process are farmers and pastoralists. While pastoralists are defined as agriculturalists that keep domesticated livestock on natural pasture and depend upon their animals as their primary source of income (Freudenberg and Miller, 2010). Farmers, on the other hand, are people who are involved in the cultivation of land for various types of crops (Norman, 2013).

Normally, when natural resources are poorly managed or inequitably shared, without due consideration for context and communities, they can contribute to tensions that can escalate into violent conflicts and intensify pre-existing conflicts dynamics (Chabay *et al.*, 2015). Moreover, if natural resources are responsible for conflicts, then, improving governance over those resources can reduce the likelihood of the conflicts

(Burnley, 2011). This is so because biased national policies and laws give priority to farmers' development at the expense of pastoralists together with pastoral marginalization results into increased land conflicts (Kameri-Mbote *et al.*, 2007; Benjaminsen and Boubacar, 2009). Generally, governments are biased towards farmers because the majority of government officials are elected by sedentary communities as pastoralists hardly participate in elections and consequently their interests are undermined (Jajere, 2015). Also when people are denied access to resources or are continually marginalized from resource-planning processes, disputes may escalate to civil strife (Ayling and Kelly, 1997). Nonetheless, according to Homer-Dixon (2010) conflicts are not always a bad thing, because, mass mobilization and civil strife can produce a useful change in the distribution of land and wealth and in institutions and the processes of governance.

In Tanzania, resource use conflicts at the local level are born out of weak policies, by-laws; and inadequate administrative capacity (John and Kabote, 2017), land alienation towards various uses without proper consultation and participation of local people (Kajembe *et al.*, 2003; Peter, 2013) corruption (Baha *et al.*, 2008; Mwamfupe, 2015) which can end up in prolonged conflicts (Castro and Nielson, 2003).

Corruption is a term with many meanings however, it entails misusing one's office for a private gain or unofficial end (Baha, *et al.*, 2008; Transparency International (TI), 2016). Abuses of office by leaders include irregular allocation of village land to migrant farmers without involving the village councils (Ogola, 2008). Generally, corruption undermines people's trust in authorities to prevent conflicts (Maganga, 2007). In addition, lack of transparency hinders participation and policy implementation (Johnsen *et al.*, 2015).

Moreover, participation becomes unsuccessful because pastoralists do not accept expert advice (Johnson *et al.*, 2016).

Some studies have cast some light on governance and resource use conflicts by addressing issues such as involvement of local communities (Kajembe *et al.*, 2003), corruption (Mwamfupe, 2015; Benjaminsen *et al.*, 2009). Despite the efforts made to manage conflicts between farmers and pastoralists through governance, conflicts still persist. Therefore, this paper attempts to analyse three issues of governance namely existing policy and laws governing land matters, the participation of farmers and pastoralists on land related matters and corruption. In addition, it shows how the above mentioned factors contribute to natural resource conflicts between farmers and pastoralists in the study areas. Generally, misuse of natural resources provide a fertile ground for corruption (Newman, 2014), but, good governance has been proven to reduce natural resource use conflicts (Burnley, 2011).

Moreover, good governance is one of the key pillars enshrined in Tanzania's National Strategy for Growth and Reduction of Poverty II (NSGRP II) and Tanzania's National Five Year Development Plan 2016/17-2020/21 (FYDP II) which among other things, underscore aspects of (i) peace, stability and unity and (ii) rule of law and particularly regarding eradicating petty corruption and weak accountability in government institutions (URT, 2006; URT, 2016). According to Burnley (2011), good governance practices include devolving rights to local communities, improving land use planning and zoning, securing tenure security to land and resources, ensuring stakeholders participation in resource management, integrating practices related to natural resources and legitimizing community-based management initiatives. Therefore, the study reported in this paper

aimed at; determining the role of governance in managing farmer-pastoralist conflicts over natural resources in Kilosa and Kiteto Districts, Tanzania.

3.3 Methodology

3.3.1 Description of the study areas

The study was conducted in Kilosa and Kiteto districts in Morogoro and Manyara regions respectively (see Appendix 6). The selection of the districts is based on the fact that they are renowned hotspots for pastoral-farmer conflicts in Tanzania (Massoi, 2015) and in the government development reports and in national newspaper articles they have been referred to as areas of land scarcity and conflicts (Benjaminsen *et al.*, 2009). Furthermore, according to Kizosa (2007), Kilosa has almost all major land use systems found in Tanzania, namely, leased estate farms, a national park, reserved catchment forests, smallholder subsistence farming system and pastoralism and therefore it is likely to experience different types of conflicts.

Kilosa borders Kiteto and Kilindi districts to the North, Mvomero and Morogoro districts to the East, Mpwapwa and Kongwa districts to the West and Kilombero and Kilolo districts to the South (Wassena *et al.*, 2015). Kilosa is located between latitudes 5° 55' and 7° 53' South of the equator and longitudes 36° 30' and 37° 30' East of the Greenwich Meridian. According to the National Bureau of Statistics (NBS) 2016-2017 population projections, there are 492,879 people in Kilosa district (NBS, 2016). Rainfall in the district varies substantially from year to year and generally falls in two seasons, the short rains in November and December, and the long rains from mid-February through April (Benjaminsen *et al.*, 2009). The major farming systems include maize-rice, agro-pastoralism, and pastoralism (Wassena *et al.*, 2015).

Kiteto, on the other hand, is a semi-arid district found in Manyara Region, Tanzania. The district covers over 12 944.72 km² (KDP, 2016) with rainfall of between 450 and 650 mm per annum (URT, 2017). Kiteto is surrounded by six districts: Simanjiro to the North, Kilindi, and Kilosa to the East, Kongwa and Dodoma to the West (SchÖpperle, 2011). The district has a bimodal rainfall pattern, with the short rains falling in October to December while the long rains start in February and end in May (Conlibaly *et al.*, 2015). According to the National Bureau of Statistics (NBS) 2016-2017 population projections, there are 286 741 people in Kiteto district (NBS, 2016).

3.3.2 Sampling, data collection, and data analysis

The study employed a multistage sampling technique in selecting regions, districts, divisions, wards, and villages. The first stage involved choosing Morogoro and Manyara regions based on prevalence and extent of occurrence of natural resource use conflicts between farmers and pastoralists. The second stage involved selection of the study districts. In stage three, five wards were purposively selected based on the incidences and extent of damage in terms of property and loss of lives caused by conflicts between farmers and pastoralists. The same criteria were also used in the selection of the study wards. Therefore, based on the above criteria, five wards were selected namely Msowero, Kitete and Magole in Kilosa district and Partimbo and Kimana in Kiteto District.

The study's sampling frames included the lists of all households in the study villages. In addition, key informants were purposively selected based on their position as heads of departments and knowledge on the prevailing conflicts between farmers and pastoralists. The respondents from each district were determined using a proportionate sampling formula as shown in Appendix 5 adopted from Kothari (2004). Therefore, 230 farm households and 143 pastoral households were randomly selected. The unit of analysis

was the farmer pastoralist household in the study areas. The study covered fewer pastoralists respondents than farmers because most of the pastoralists lived in kraals where heads of the homesteads were preferred for an interview. According to Mwamfupe (2003) among the Maasai pastoralists a household was understood as comprising a person, or a group of persons, generally bound by ties of kinship, who may or may not live together under a single roof or within a single compound, but who share a community of life, in that they are answerable to the same head.

3.3.3 Data collection

To allow a better understanding of the phenomena under investigation which in this case were farmer-pastoralists conflicts, both primary and secondary data were collected. Interviews were used to collect data on respondents' knowledge on policy governing land ownership, livestock and crop production as well as on participation in land matters. In addition, the information covered trust on existing institutions mainly the police and the local courts, corruption and how the two institutions addressed disputes arising from natural resource conflicts in the study area. Prior to collecting secondary data from the police and courts, permission was obtained from the relevant districts, the Inspector General of Police (IGP) and the Registrar of Tanzania's High Court. This is because the two institutions are independent units.

Generally, data were collected through three main methods. The first, involved face to face interviews with key informants from the government, non-governmental organizations (NGOs) as well as individual farmers and pastoralists. A total of 32 key informants were interviewed 16 from each district. Key informants were selected based on one's seniority in a given institution and also knowledge of the conflicts between farmers and pastoralists. As regards to the government institutions, people interviewed

included: District Commissioners, District Executive Directors; District Commanding Officers (OCD); District Land Officers (DLOs); District Administrative Secretaries (DASs); District Agricultural, Livestock and Cooperative Officers (DAICO); District Resident Magistrates (DRM); and Ward Extension Officers (WEOs). And for the Non-Governmental Organizations (NGOs) and Civil Society Organisations (CSOs) interviews were held with their leaders. Also, at the community level information was obtained from religious and traditional leaders. In addition, information from knowledgeable and influential individuals from both farmers and pastoralists was sought. Data collected from key informants include community's general knowledge on laws governing land, community's participation and the level of corruption in relation to land matters.

Secondly, focus group discussions (FGDs) were held with pastoralists and farmers mainly in villages affected by farmer-pastoralist conflicts. In total, twelve FGDs were held; Six in each district. The FGDs involved between eight to twelve participants. In each district, there were three separate groups which comprised of farmers, pastoralists and a blend of both farmers and pastoralists. The reason for separation of the two groups was meant to enable them to express their views freely. Data from FDGs were similar to those from key informants. The third stage involved analysis of various reports, which were largely based on the review of various policy and strategy documents, district council reports related to farmer-pastoralist conflicts, media reports, non-governmental organisations' reports, Ministry of Agriculture and Ministry of Livestock and Fisheries reports, regional administration as well as local government reports. Issues analysed in the documents include rights to land ownership. In addition, the observation method was employed mainly with respect to the encroachment of farming activities on pastoral lands; pastoralists' invasion of areas designated for crop cultivation and abandoned farms after the eviction of invaders particularly at Emboley Murtangos in Kiteto district.

An FGD guide and a checklist containing questions in line with the theme of the study were used as guides for both FGDs and key informants interviews.

3.3.4 Data analysis

The descriptive statistical analysis was used to generate frequencies and percentages. Chi-square test was performed to determine if there is the statistically significant difference between farmer and pastoralists' opinion regarding the authority involving them in land- related matters ($p < 0.05$). Mann-Whitney U test ($p < 0.05$) was also run to determine if there were differences in corruption statements based on mean ranking scores between farmers and pastoralists. The Mann-Whitney U test, testis used for differences between two groups on a single ordinal variable with no specific distribution (Harris and Hardin, 2013). The test also requires two independent sample groups and assess whether the two groups differ on a single, continuous variable (Mcknight and Najab, 2010). Based on the above observation, corruption was measured at ordinal level. Scores on corruption were obtained using a 5-point Likert type scale with 9 statements with following options: strongly agree (5) agree (4) undecided (3), disagree (2), and strongly disagree (1). Therefore the choice of the test was adequate for this paper. Qualitative information was analysed using content analysis whereby different data gathered in the field were placed into specific themes of the study which aided to generate meaning. The themes for content analysis revolved around the specific objectives of the study including respondents knowledge on policies, laws, and strategies governing land issues, participation, and corruption in allocation of land and in managing the natural resource use conflicts.

3.4 Results and Discussion

3.4.1 Level of knowledge and understanding among respondents on policies, laws, and strategies governing land matters

The results show that there were inadequate knowledge and understanding among respondents on policies, laws, and strategies governing land matters (Table 3.1). About half of the farmers and pastoralists reported that they were not aware of the laws; more than one third reported that the laws were not in place, while the rest reported that the laws existed but were not enforced. Generally, the opinions authenticated that there was inadequate knowledge among respondents with respect to the regulatory frameworks governing natural resources. Generally, inadequate knowledge among community members can subject both farmers and pastoralists to more conflicts. Moreover, possession of knowledge and understanding of laws governing natural resources is essential in conflict management. This is further proven by responses given during an FGD conducted on 1st August 2015 at Mbeli sub-village in Kiteto district as shown in the quote below:

“The majority of us are not aware of the policies, rules, and regulations governing land matters in our area. This is why we are in constant land disputes with our neighbours”

Based on the above there is a need for the central and local governments’ authorities to impart knowledge on a continuous basis to create awareness to both farmers and pastoralists with regard to management of natural resources. Doing so will develop an understanding of the available policies, laws, and strategies related to governance of natural resources. Moreover, the knowledge can be important in managing natural resource use conflicts.

Table 3.1: Respondents' knowledge of the laws governing land matters (n=373)

Are there laws governing land matters in your area	District				Overall n=373)	
	Farmers (nf=230)		Pastoralists (np=143)			
	(nf)	%	(nf)	%	(n)	%
I don't know	111	48.3	76	53.1	187	50.1
They don't exist	94	40.9	45	31.5	139	37.3
They exist but are not enforced	25	10.9	22	15.9	47	12.6

Key: n_f=frequency for farmers, n_p frequency for pastoralists

In light of the above, it is imperative to note that there are a number of laws governing natural resources particularly on land matters in Tanzania. For instance, land use in Tanzania is governed by the National Land Policy of 1995, Land Act No.4 of 1999 and the Village Land Act No. 5 of 1999, and Land Use Plan Act No. 10 of 2007. For instance, the Land Act No. 4 of 1999 and Village Land Act No. 5 of 1999 govern land in villages. The Land Use Plan Act No.10 of 2007 provides guidance for village land use plans, but rarely involves pastoralists and farmers on land management; this is because land allocated for grazing can hardly support the livestock throughout the year. In addition, these acts are implemented without determination of land suitability indices. The index provides preliminary guidance about the locations where ground water on agricultural production is likely to be visible (O'Green, 2015) In addition, the index quantification of land use and agricultural cover suitability assists decision makers. According to Kilic *et al.* (2005), quantification of land use and agricultural land covers suitability assists decision makers in ensuring that tracts of land are used according to their capacities to satisfying human needs for present and future generations, thus, sustaining ecological and economic production of natural resources. It is therefore argued here that lack of land suitability index leads to allocation of land to a wrong use, consequently, increasing conflicts between farmers and pastoralists.

The Village Land Act No. 5 of 1999 also tends to deny pastoralists access to important resources such as water and dry season grazing resources. According to Msuya (2013) in Tanzania, there is overgrazing of pasturelands taking place in about 8.5 million hectares outside the permanent pasture area. This suggests that despite the existence of the Land Use Plan Act No.10 of 2007 farmers and pastoralists have not been allocated enough land for their economic activities. This leads to concentration of livestock in small areas resulting into depletion of grazing resources, thus forcing pastoralists to migrate to undesignated areas, mainly those inhabited by farmers, thus, resulting into resource use conflicts between the two groups. Literature in Tanzania is rich in evidence related to resource use conflicts involving farmers, pastoralists, and other land users most of which are the result of improper land use plans. These include persistent conflicts related to gold mining in Geita (Kitula, 2006; Lange, 2011), farmers pastoralists activities in Kiteto (Askew *et al.*, 2016), Kilosa (Maganga, 2007; Benjaminsen *et al.*, 2009; Mushi, 2013; Mwamfupe, 2015; Massoi, 2015) and women participation in Kondoa (Misafi, 2014). Most of these conflicts occur largely because the existing land laws do not favour pastoralism as a means of livelihood as opposed to the National Livestock policy of 2006 which clearly recognises pastoralism as a viable mode of production. Also there is no sufficient land to allocate to farmers and pastoralists given that 30% of the land are under conservation.

On the other hand, Tanzania's 1995 National Land Policy provides security of tenure to smallholders and pastoralists and streamlines land administration issues. Similarly, a study in Ghana by Kuusaana and Bukari (2015) reported that policies pursued by successive colonial and postcolonial governments have neglected the needs of pastoralists because there seems not to be any policy that seeks to regulate pastoral

livelihoods, thus intensifying the problems of pastoralists, particularly in relation to access to scarce natural resources hence, increasing their insecurities.

Furthermore, gaps can also be identified in other specific acts governing livestock production including the Grazing Land and Animal Feed Resources Act No. 13 of 2010. The Act's main objective is to control livestock carrying capacity within a specified area, dealing with management of stocking rates, livestock unit (LU) productivity per unit area, and registration of the grazing land (URT, 2010). However, the declaration of registration of grazing land by law is supposed to be announced by the Minister in charge of the Livestock. But, evidence shows that, since the act was enacted in the parliament, so far this requirement has not been fulfilled. As a matter of procedure, the Act requires, among other things that there must be a declaration, registration, ownership, control, and management of all land offered to livestock keepers. Based on the aforementioned requirements, the act appears to be good. However, its implementation is hampered by the fact that its ownership rests within the powers of the central government, while to the contrary its execution powers fall within the local government authorities (LGAs).

Furthermore, the Grazing Land and Animal Feed Resources Act. No. 13 of 2010 cannot operate in isolation as it highly depends on the Village Act No. 5 of 1999 which also empowers the village general assembly to decide on various land uses within any given village in Tanzania. This further suggests that the village general assembly has the overall mandate to decide on the area of land to be allocated for either crop farming or pastoralism without due consideration of the nature of land productivity due to lack of land suitability index mapping. Additionally, the existing livestock units (LUs) in most villages to a large extent have not been taken into consideration. Furthermore, during one

of the key informant's interviews in Kilosa on 21st September 2015, it was reported that as indicated in the quote below:

“More than seven years have now passed since the declaration for grazing land was made. However, since then no land has ever been set aside for livestock production”

Based on the above, it can be argued that even though land in some areas has been set aside for various uses including livestock and crop production, the areas are yet to be gazetted. Therefore, leaving land without an official legal binding announcement as it is with forest reserves and national parks leaves loopholes for manipulation of the land laws especially by unfaithful government authorities. Consequently, the above encourages invasion into pastoral or crop lands by other land users, thus, causing conflicts. Despite Tanzania government's good intention of giving people mandate on land governance through the Village Land Act No. 5 of 1999, the goal is not achieved as implementation is being done by village authorities with limited knowledge regarding the *modus operandi* of the above mentioned Act.

On the other hand, the obligation of the Land Use Planning Act No. 6 of 2007 is to ensure that all registered villages in Tanzania are surveyed and their land allocated to five different categories of land uses namely, human settlement, social services, crop production, grazing and conservation purposes. Despite the act giving a mandate to registered villages, most villages have not fulfilled this condition. According to the government report issued on 26th November 2017 through the National Land Use Planning Commission (NLUPC) Director-General, it was reported that only 1731 out of 12 545 villages, which is equivalent to 13.8 %, have land use plans (VLUPs). Moreover, the report indicates that only 49 out of over 150 districts had been served with

a letter directing them to develop Land Use Plans (DLUFs) (Kolumbia, 2017). Generally, discussions with community-based organisations in the study areas revealed that there were only two villages namely, Kambala and Ujamaa in Mvomero and Kilombero districts respectively in Morogoro Region which had land use planning as required. In Kiteto, land use planning in various villages was put in place by the Land Management Programme (LAMP) but it was later altered by village leaders who did not adhere to the law. Therefore, this indicates a sign of bad governance.

Furthermore, Grazing Land and Animal Resources Act No. 13 of 2010 is equally weak in its implementation because until now, there are no regulations in place to direct its implementation. Moreover, the analysis shows that implementation of the Act is in contradiction with the 2007 Land Use Planning Act. The implementation of the Act is complicated by the fact that, the land to be allocated to various uses is limited as, most of the land is under village ownership, and hence anybody seeking to own and distribute land among other uses must first and foremost seek consent from the village general assembly.

Similar challenges impede implementation of the animal identification, registration and traceability, in line with Livestock Products Act no. 12 of 2010. The act among other things aims at ensuring that livestock number, age, breed type, colour, farm, farmer, and sire are identified. The Act also requires that livestock markets, transport facilities, and auctioneers must be registered to comply with the Meat Act No. 7 of 2006. But, in order for the traceability act to function, there must be compliance with the Meat Act No. 7 of 2006, and the Animal Welfare Act No. 19 of 2007, and the Animal Disease Act No. 17 of 2003 which requires the issuance of transportation of animal's movement permits to allow movement of livestock from one place to another.

In this paper, I argue that there is a lot of bureaucracy when it comes to obtaining livestock movement permits more so due to impracticability in the implementation of the above-mentioned Acts. This is because under the prevailing circumstances where the implementation of rules and regulations is weak, hence leaving loopholes for concerned officials to ask for bribes. In addition, when the pastoralists seek to evade the bureaucratic system in obtaining livestock movement permits, some find it easy to bribe officials in order to fast track the movements of their livestock from one place to another. As a consequence these unregulated livestock movements, stemming from corrupt practices, lead to congestion of farmers and pastoralists in one area, creating competition for natural resources and finally conflicts. The above argument is supported by testimonies given by pastoralists during the interviews. One pastoralist aged 40 years on 15th October 2015 at Majambaa village in Kilosa had this to say:

“I find it very difficult to report to the veterinary offices, then to the village chairpersons to obtain a livestock movement permit. What we often do is we skip all these procedures by compromising the officers concerned particularly the village chairpersons. This is what most of us do to avoid unnecessary bureaucracy”

Generally, it can be summed up that pastoralists who are the key stakeholders in the implementation of the Livestock policy of 2007 have limited knowledge of the policy, including other regulatory frameworks governing land issues in the study areas and in Tanzania in general. There is, therefore, a need to impart knowledge of these policies, laws, and strategies among the farmers and pastoralists. The Policies, among other things, seek to enhance the attainment of the National Development Vision 2025 which seeks to ensure that peace and tranquillity prevail among all citizens, farmers and pastoralists alike. This paper further speculates that as long as the people remain

unfamiliar with the laws governing land use, in particular, efforts to address natural resource use conflicts between farmers and pastoralists will be in vain and as a result, more conflicts will occur exacerbated by ignorance of laws.

3.4.2 Role of community participation on land matters in farmers-pastoralists conflicts

Farmers and pastoralists were asked whether they participated in land matters affecting their day to day activities. The majority of the respondents reported that the authorities involved them in land related matters such as land use planning, land division, and land distribution. When asked about women's participation, more than 50% of the respondents reported that women were not involved, while the rest reported that women participated fully as some of them were members of the village land committees (Table 3.2). The Land Act no 4 and the Village Act no. 5 both of 1999 give women the same right to acquire, hold, use and deal with the land as men. The study's findings suggest that members of the gender groups had a crucial role to play on land matters.

Table 3.2: Participation of farmers and pastoralists on land matters in Kiteto and Kilosa districts

Respondent opinion	Farmer		Pastoralists		χ^2	p-value
	Yes	No	Yes	No		
Do the authorities involve you on land-related matters	125(54.3)	105(45.7)	106(74.1)	37(25.9)	14.63	0.000**
Do women make decision on land related matters	121(52.6)	109(59.6)	70(49.0)	73(51.0)	0.473	0.492 ^{ns}
Does exclusion of community on land matters lead to conflict	177(77)	53(23.0)	126(88.1)	17(11.9)	7.198	0.007*

Numbers outside the bracket are frequencies, numbers inside the brackets are percentages *** Significant at 0.1%, * significant at 5%, ^{ns} not significant.

Furthermore, the majority reported that inclusion of all members is important when it comes to managing natural resource use conflicts in the study areas. This is due to the

fact that exclusion of some community members on land matters tend to deepen the conflicts. According to Kisambu *et al.* (2017), there are also legal requirements for female representation in key decision-making bodies including village land committees. However, putting this requirement in practice is challenging, as women's participation is often limited. The study findings differ from those reported by Saruni (2011) for Simanjiro showing that women were discriminated with regard to land matters, and their opinions were not taken into account as the entire business was man-biased. A plausible explanation for the difference is that most decision making at household level regarding land ownership in pastoral societies are largely made by men and women are rarely involved.

According to Kiteto District Land Officer, efforts were made to educate residents on land laws and regulations. These efforts were developed by the District Land Division in cooperation with local non-governmental organisations such as Kimana, Namelock and Partimbo Villages (KINNAPA), Community Research and Development Services (CORDS), and Maasai Women Development Organisation (MWEDO). Among other things, they supplied simplified copies of the Village Land Act of 1999 to all 58 villages in the district. Despite the efforts, the main challenge remained on the greed of village authorities who are fond of distributing land without adhering to the laid down procedures. One of the land officers said:

“These village leaders are powerful. They have a tendency to overlook the rules and laws governing land matters. They are corrupt; they are fond of bending laws, particularly when dealing with land matters for their own benefits. This aspect becomes even worse when the land deal involves outsiders who, in most cases are in need of large pieces of land beyond what is provided by the law”

Based on the evidence given by various stakeholders in the study areas, this study argues that bad leadership that does not consider the importance of participation of the community on land matters, coupled with total disregard of existing land use plans, as well as violation of the village land act No 5 of 1999 is responsible for the prevailing resource use conflicts between farmers and pastoralists in Kiteto district. This implies weak law enforcement by the district council authorities (Gwebu, 2018).

The Chi-square results in Table 3.2 show that there was a significant ($p < 0.001$) association between farmers and pastoralists opinions with regard to authorities involving them on land-related matters. The findings suggest that the authorities involved both farmers and pastoralists in land matters but the extent of participation is not known. According to Fonjong *et al.* (2016), in Cameroon, and as is the culture in most SSA countries, the process of granting land to communities neglects women and other marginalized groups such as herders because there is no mechanism to hold actors accountable when especially it comes to women who depend on land for their livelihood. This further suggests that women's participation on land matters is not considered important.

Also, both farmers and pastoralists reported that exclusion of community members from taking part in land-related matters could lead to conflicts. In addition, χ^2 test results indicate that there was a significant relationship between farmers and pastoralists exclusion from taking part in land matters and occurrence of conflicts ($p < 0.05$). This suggests that the more farmers and pastoralists are excluded from taking part in land matters, the more the two groups remain suspicious of each other leading to loss of trust and hence conflicts. In contrast, there was no significant association between farmers and pastoralists on women's participation on decision making with regard to land matters

($p=0.473$). It appears both farmers and pastoralists are not bothered whether women are part of the decision making process on land matters despite the existing laws and policies governing land matters giving them all the rights. For example, the principles of Land Governance in Tanzania are embodied in the National Land Policy of 1995 (section 2) and the Land Act of 1999 (section 3) Part (8); which requires all citizens to participate in decision making on matters concerned with the occupation of their land.

The impediments to women being part of the decision-making process according to Goldman *et al.* (2016) include access to knowledge about legal rights, such as the right to own land; access to customary forms of authority; as well as access to join social identity as women. Generally, the aspects are important to empowerment process, protecting community and women's land resulting in fewer land conflicts. However, a study conducted in Longido District, Tanzania reported that women participation in decision making is limited because women are not regarded as elders and female's ideas were not taken into account compared to male ideas in village meetings (Kandusi and Waiganjo, 2015). Also, this is motivated by social-cultural factors such as social identity, social acceptance, social role and other cultural practices (Kandusi and Waiganjo, 2015).

3.4.3 Corruption as a cause of resource use conflicts between farmers and pastoralists

Corruption tends to fuel conflicts between farmers and pastoralists in the study areas. During the interviews with a group of farmers and pastoralists in the Msowero ward, it was revealed that corruption was responsible for the demise of local reconciliation committees created to address emerging resource use conflicts. An accusing finger was directed to village government officials for deliberately leading to the disbandment of the committees so that they could remain sole beneficiaries of rent-seeking and bribery from

parties in conflicts. It was further reported that, in the event of a dispute, the implicated officials involved in the malpractice usually charge one hundred and fifty thousand Tanzanian shillings (TZS 150 000/=) (about 67US\$) in order to convene a conflict resolution meeting. According to Mwamfupe (2015), though corruption partly contributes to conflicts between farmers and pastoralists, the situation has been made worse because the traditional conflict resolution machinery at the village level has been weakened partly by the emergence of statutory approaches based on formal procedures.

According to Chand and Moene (1999), it is difficult to obtain adequate information on corruption because the involved parties naturally strive for concealment. For example, UNEP (2007) reported that studies in SSA have shown that the main reasons for conflicts particularly in Sudan since 1930 to the wake of the millennium are born out of local politics of administration, administrative boundaries, and land disputes. The situation became even worse when politicians seeking for votes show bias towards farmers because they are the group with the majority of votes (Chand and Moene, 1999). For example, in Kiteto during one of the focus group discussions, the participants had the following to say:

“Village government officials from the pastoral society sold land illegally to farmers against the wish of pastoralists. In most cases, they are engaged in corruption and receive bribes from various land users, as such increasing land use conflicts in the area. In addition, political figures do influence the conflicts through their political statements in public rallies by being ethnic-biased. A good example is on the role of some political figures that have been behind the invasion of the community reserved land at Emboley Murtangos, disregarding the court order that directed all invaders to vacate the land’.

Other forms of corruption reported surfacing during land demarcation and creation of new villages. This occurs particularly when new boundaries are marked by disregarding land use plan. Interviews with a resident magistrate in Kilosa district revealed that the issue of corruption is prevalent in the study area. In the course of the discussion the magistrate had this to say:

‘We have heard a lot about pastoralists bribing the police to the tune of five hundred thousand shillings (TZS 500 000/ equal to 225 US\$) and that is why many crop producers seek justice from the courts of law. However, there seems to be a change of attitude based on the prevailing circumstances whereby the majority of the pastoralists have declined to make payments and instead take their concerns to the court of law in pursuit of justice’.

Therefore, based on the testimonies given by farmers, pastoralists as well as government officials, this paper argues that systemic corruption contributes to the ever-increasing conflicts between farmers and pastoralists. This confirms findings by Eskew *et al.* (2016) who reported that, in Kiteto District, having access to deeper pockets and being able to out-law and out-manoeuvre the poor and often less-educated opponents enables elites (including the government officials) to reward themselves in the judicial system and acquire land through illegitimate means. Studies by Benjaminsen *et al.* (2009) and Mwamfupe (2015) have also reported allegations of corruption where pastoralists in Kilosa were ready to give bribes to the police to rescue their livestock from being impounded.

In light of the above evidence as provided by different stakeholders on the prevalence of corrupt practices among farmers and pastoralists, Table 3.3 provides information in the Mann-Whitney U Test. Table 3.3 shows mean rank scores of the statements on

corruption for the farmers and pastoralists. The group with highest mean ranking score is the pastoralists suggesting that cases of corruption were more prevalent among the pastoralists than farmers.

Table 3.3: Mann-Whitney U test for a household opinion on corruption in Kilosa and Kiteto Districts

Variables	Mean Rank		Mann-Whitney U test	Z	p-value
	Farmer (n=230)	Pastoralists (n=143)			
Household having been a victim of corruption	185.34	189.67	16063	-0.499	0.618 ^{ns}
Whether there are laws regarding corruption enforcement	185.16	189.96	16022	0.442	0.658 ^{ns}
Corruption is widespread throughout the local government	193.08	177.22	15047	-1.539	0.124 ^{ns}
Whether there is a legislation that prohibits corruption	193.85	175.99	14871	-1.718	0.086 ^{ns}
Having received quality service delivery in their areas	177.98	201.51	14370	2.258	0.024 [*]
Whether there is a vernacular name for corruption in their communities	177.08	202.95	14164	2.505	0.012 [*]
Whether an anticorruption agency exists in their areas	171.87	211.34	12965	3.860	0.000 ^{**}
Household having been asked to pay a bribe within the previous month	202.16	162.62	12959	-4.080	0.000 ^{**}
Whether the anti-corruption agency is undermined by political inference	203.33	160.74	12690	-4.038	0.000 ^{**}

^{**} Significant at 0.1%, ^{*} significant at 5%, ^{ns} not significant

The mean ranking scores on the opinion of respondents on corruption among pastoralists differed significantly ($p < 0.05$). The areas of difference include whether anticorruption agency exists in their areas, households having been asked to pay a bribe within the previous month, whether the anti-corruption agency is undermined by political interference, whether one has received quality services, and whether there is a vernacular name for corruption in their communities as indicated in Table 3.3.

However, when it comes to farmers households, having been asked to pay a bribe within the previous month and whether the anti-corruption agency is undermined by political interference were the most significant variables. On the other hand, pastoralists differed with farmers on their mean rank scores on whether a household had received quality service delivery, indicating the existence of a term corruption in local languages and knowledge of the existence of the anti-corruption agency.

These findings suggest that corruption in the study areas exist, but at the same time, efforts to combat the vice are in place. On the basis of the Mann-Whitney U test mean ranking scores, it can be concluded that corruption was more reported among pastoralists than farmers. However, farmers were more aware of the existence of the anti-corruption body compared to pastoralists. In addition, farmers appreciated the efforts made by the government to enforce the anti-corruption laws compared to their counterpart pastoralists.

3.5 Conclusions and Recommendations

Generally, farmers and pastoralists in the study areas have limited knowledge of the policies, laws, and strategies governing land matters. Furthermore, the desire by various individuals to own land in the study areas and particularly in Kiteto District has created loopholes for corrupt practices due to lack of transparency and limited participation of community members on land matters. This, in fact, reflects a sign of poor governance. Moreover, this has opened a door among local government officials, particularly at the village level, to engage in illegal land deals which have been cited as the main source of conflicts between farmers and pastoralists.

Based on the study findings and the above conclusion, the following recommendations are made to the central and local governments' authorities. They should impart knowledge on a continuous basis to farmers and pastoralists on policies and laws governing natural resources, particularly on land in order to create awareness in the study areas. This will, among other things, develop an understanding of the laws which are central in the day to day governance of land and other natural resources in their areas and hence reductions of resource use conflicts. The governments at the village and districts levels should ensure that the rule of law with regard to land matters is enforced by all stakeholders for easy management of conflicts over land resources. The district governments should conduct investigation against illegal practices of selling of village lands so that those behind such deals are held accountable, doing so could reduce the corrupt tendencies which are a major cause for increased natural resource use conflicts. The respective district councils should report all alleged corrupt practices to the Prevention and Combating of Corruption Bureau (PCCB) for further investigation and relevant action. Finally, the Land Use Plan Act No. 10 of 2007 should be repealed to provide a section on soil mapping prior to allocation of any village land to any use.

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CHAPTER FOUR

4.0 Effects of Natural Resource Conflicts on the Well-Being of Farmers and Pastoralists in Kilosa and Kiteto Districts, Tanzania

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4.1 Abstract

Natural resource use conflicts are a global issue. In sub-Saharan Africa, such conflicts can be extreme, leading to deaths. There is a growing literature on the causes and effects of natural resource use conflicts. This paper reports on the relationship between natural resource use conflicts and households' well-being and the socio-economic determinants of such well-being (happiness) among farmers and pastoralists in Kilosa and Kiteto Districts, Tanzania. The study on which the paper is based adopted a cross-sectional research design where data were collected through key informant interviews and focus group discussions. In addition, a questionnaire was administered to 373 randomly selected respondents 143 pastoralists and 230 crop farmers. Quantitative primary data were analysed using SPSS and STATA software. Content analysis was used to analyse

qualitative data from FGDs, key informant interview and open-ended questions. There was a significant difference ($p < 0.001$) in asset ownership, household dwelling conditions, the degree of happiness and education levels between farmers and pastoralists. Female-headed households in conflict-ridden areas were more likely to be happy ($p < 0.05$) than their male counterparts; whereas less educated households and households with better dwelling conditions were less likely to be happy compared to more educated and those with poor dwelling conditions. District of domicile influenced the degree of happiness among households with those in Kilosa being happier than those in Kiteto District. The paper concludes by calling the government to educate all stakeholders on the threat of resource use conflicts against the well-being of the society and recommends ways to minimize negative effects of conflicts among farmers and pastoralists.

Key words: Conflict, Well-being, Happiness, Farmers, Pastoralists.

4.2 Introduction

4.2.1 Conflicts and well-being

Conflict and low levels of subjective well-being are not a recent development in Africa (Helliwell *et al.*, 2014). In the 1970s, the largest global study of well-being found that African countries produced the lowest ladder of life scores; this means that people in Africa have a low level of well-being compared to people in the countries of the developed world. The factors that have undermined Africa's potential of achieving happiness and satisfaction in life in the 21st century include endless conflicts, famine, diseases and dictatorship (Helliwell *et al.*, 2014). In this paper, conflict refers to a situation where two or more opposing user-groups are fighting for a particular resource (Adisa, 2011). The most common conflict in Tanzania is that between farmers and pastoralists over natural resource use (HAKIARDHI, 2009).

Well-being is a multifaceted concept which denotes happiness, security, preferences, needs, and relative comparisons (Haywood *et al.*, 2005; Helve and Hirrilamin, 2015). The proxy measures of well-being which are used in this study are threats to personal security and psychological well-being, household assets, the condition of the household dwelling, number of years spent in school, as well as happiness of farmers and pastoralists in the study area. Veenhoven (2013) defines happiness as the degree to which an individual judges the overall quality of his or her life as being favourable. Layard (2011) regards happiness as enjoying life and feeling good and is thus synonymous with subjective well-being (SWB). Well-being, which is measured in terms of the quality of life (QOL), and it, is only possible when people's needs are satisfied in all dimensions (Sen, 1992). According to Estes, (2007) and Gasper (2010), a person's achievement is reflected in his/her quality of life such as being in good health, education, income, and happiness. Nonetheless, this may also include avoiding escapable morbidity and premature mortality, and having complex achievements including self-respect, and taking part in the life of the community (Sen, 1992).

Generally, living in a safe community is essential for someone's well-being since the feelings of insecurity limit people from engaging in their daily activities (Durand, 2015). Also according to Adisa (2011), the conflicts between farmers and pastoralists have undermined the well-being of these groups by compromising their personal security, education, income, wealth, and civic engagement. Studies in sub-Saharan Africa have established a link between conflict and well-being. In Nigeria for example, increased natural resource-based conflicts have been associated with negative effects on productivity (Majekodumni, 2014). Similarly, in Kenya insecurity and fear are reported to have reduced the levels of food production at the household level due to the reduction of the quality and quantity of livestock (Kipkemai *et al.*, 2017).

Tanzania has a rich land resource for agricultural development. Nonetheless, out of the country's 88.5 million hectares of land, only 44 million hectares are arable and only 24% of this land is under cultivation. Of the 50 million hectares suitable for livestock production, only 26 million hectares are under use (URT, 2015). Moreover, Tanzania has the largest livestock population of 21.3 million heads of cattle, in Africa after Sudan and Ethiopia. In Tanzania, 85% of agriculture is dominated by smallholders' farmers and traditional agro-pastoralists who keep an average of 50 heads of cattle (URT, 2015). An empirical study by Chongela (2015), revealed that Tanzania's agricultural sector is the key contributor (accounting for 25.88%) to the national economy, (crops subsector (18.93%); livestock subsector (4.7%) and fisheries subsector (2.25%). Generally, in 2015, agriculture contributed to 30 % of the export earnings and employed about 65.0 % of the total labour force (URT, 2016). Livestock production contribution to agricultural GDP is 18% (URT, 2015).

Despite the country's abundance of natural resources such as land and water, conflicts between farmers and pastoralists are still prevalent. In the country's 10 year Agriculture Sector Development Strategy (ASDS II), it is clearly stated that; "...the ever increasing conflicts between farmers and livestock keepers are a hindrance to the sector's growth". This statement suggests the severity of incidences of conflict and their effect on the nation and individuals well-being. Farmers in this papers are referred to as people who are involved in the cultivation of land for growing various types of crops (Norman, 2013), while pastoralists are people who live mostly in dry remote areas and whose livelihoods depend on their intimate knowledge of the surrounding ecosystem as well as on the well-being of their livestock (Tessema *et al.*, 2014). These people are characterized by mobility involving moving with their herds in search of fresh pastures and water (Semberya, 2014).

Generally, efforts by different stakeholders including the government in addressing natural resource-based conflicts between farmers and pastoralists in the country have been in place for quite some time. For example, there have been sporadic attacks in Kilosa and Kiteto for a long time. These attacks have claimed lives of many innocent men, women, and children and thus, posing major challenges to their economic, social and psychological well-being (Semberya, 2014). The most notable conflicts include the December 2000 fighting between pastoralists and farmers in Kilosa district which claimed the lives of 38 people in Rudewa-Mbuyuni Village. The December 2008 fight at Kikenge Hamlets of Mambegwa and Mabwegere villages left 8 people dead, several houses burnt, several hectares (ha) of crops destroyed, and thousands of livestock stolen (HAKIARDHI, 2009; Benjaminsen *et al.*, 2009; Benjaminsen *et al.*, 2014; IPS; 2014; Mwamfupe, 2015). Likewise in Kiteto, the January 2014 farmer-pastoralist clashes left 10 people dead, 20 injured, 60 houses burnt and a number of properties including six motorcycles and 53 bicycles destroyed (Benjaminsen, *et al.*, 2014; Makoye, 2014). Moreover, the notorious clashes threatening the well-being of farmers and pastoralists have also been reported in Kilindi, Mvomero, Kilombero, and parts of Lake Rukwa Basin (Benjaminsen *et al.*, 2009).

A number of studies have analysed the effects of income on happiness in Sub-Saharan Africa (Ram, 2010; Mahadea, 2013; Steptoe *et al.*, 2015). Nonetheless, little is known in the scholarly literature about the effects of conflicts on well-being specifically how these conflicts affect the happiness of the farmers and pastoralists in Kilosa and Kiteto Districts, Tanzania. These groups of people have been victims of land conflicts since 2000. Though, according to Inoguchi and Estes (2017), the reasons as to why few studies have focused on the effects of conflicts on subjective well-being include inadequate data, the unclear memory of such conflicts or war episodes, as well as complications

accompanying the conflict situations. Therefore, it is important to consider the damaging consequences of natural resource use conflicts on the well-being of farmers and pastoralists. Moreover, understanding how conflicts affect the well-being of the actors is an important step towards the achievement of sustainable peace and development. Unfortunately, the well-being of actors in natural resource-based conflicts, especially in Kilosa and Kiteto has not attracted sufficient theoretical and empirical analysis. Therefore, the current study aimed at determining effects of natural resource conflicts on the well-being of farmers and pastoralists in Kilosa and Kiteto Districts, Tanzania.

4.3 Methodology

4.3.1 Description of the study area and research design

The study was conducted in Kilosa and Kiteto Districts in Morogoro and Manyara regions, respectively (Appendix 6). The districts were selected because of the prevalence of persistent conflicts between farmers and pastoralists (Ubwani, 2014a; Makoye, 2014). Moreover, Kilosa is often referred to as an area of land scarcity and conflicts in government development reports and in newspapers (Benjaminsen *et al.*, 2009). Thus, the district is identified as a conflict hot spot (Massoi, 2015). The study employed a cross-sectional research design which entails collection of data in more than one case at a single point in time (Bryman, 2004). Household data were gathered through a questionnaire.

4.3.2 Sampling technique and sample size

A multistage sampling technique was used to select the regions, districts, divisions and wards. First, Morogoro and Manyara regions were selected using purposive sampling technique because these were known as hot spots for natural resource use conflicts. In stage two, Kilosa and Kiteto districts were selected also through a purposively

sampling technique based on the criterion stated above (Benjaminsen, 2009; Mwamfupe, 2015; Massoi, 2015). Moreover, Kiteto and Kilosa are homes to many migrant farmers and pastoralists. In stage three, three wards namely, Magole, Kidete, and Msowero were purposively selected in Kilosa; and two wards namely, Partimbo and Namelock were purposively selected in Kiteto. In stage four, villages were selected using proportionate sampling technique (Kothari, 2004). Based on this criterion, five villages namely; Mabwegere, Magole, Majambaa, Mfulu, and Karadas were randomly selected in Kilosa and three villages namely, Partimbo, Kimana, and Lan'gtomon were randomly selected in Kiteto. Finally, in stage five participating households were selected using simple random sampling technique. Thus, a sample of 228 and 145 households was randomly selected, in Kilosa and Kiteto respectively, making a total sample of 373 households. According to Kar and Ramalingam (2013), there is no magic number when it comes to sample size calculations and an arbitrary number such as 30 must be considered adequate. Thus, based on this argument a minimum number of 45 households were selected from each village.

4.3.3 Data analysis

4.3.3.1 Measurement of happiness as a proxy measure of subjective well-being

A summated index scale was used to measure happiness as a subjective measure of well-being. The Oxford Happiness Questionnaire (Hills and Argyle, 2002) had 29 statements. Each respondent was asked to answer whether he or she strongly disagreed, moderately disagreed, slightly disagreed, slightly agreed, moderately agreed or strongly agreed with each item included in the scale. The scores ranged from 1 for strongly disagree to 6 for strongly agree. Generally, a score below 43 represented lack of happiness, 43 to 60 represented moderate happiness, and above 60 represented full happiness. In addition, data normalisation was done using the formula given in (i) below

for the purposes of classification to avoid variables with the largest scale dominating the results (Ebert and Welsch, 2004).

$$Z_i = \frac{X_i - \min(x)}{\max(x) - \min(x)} \text{ Where } x = x_{ij} \dots x_n \text{ and } Z_i \text{ is the } i^{th} \text{ normalised data} \dots (i)$$

After normalisation of data, the happiness index was re-categorised as follows; below 0.43 represents lack of happiness, between 0.43 to 0.60 moderate happiness, and above 0.60 full of happiness. Also, the normalisation formula was used in computing indices for asset ownership and the condition of the household dwelling. Thus, the responses were clustered into three categories to get rid of any confusion that may arise from having several responses. According to Ebert and Welsch (2004), the objective of data normalisation is to identify the most suitable procedures of handling the problem at hand taking into account their properties with respect to the measurement units which the indicators are expressing and their robustness against possible outliers. The reliability analysis test for degree of happiness was applied using Croubach's alpha. The alpha values were interpreted according to George and Mallery (2003) as follows, >0.9 excellent, >0.8 good, >0.7 acceptable, >0.6 questionable, > 0.5 poor and <0.5 unacceptable. The scale reliability coefficient for the degree of happiness in this paper was 0.716 which was acceptable.

4.3.3.2 Computation of household asset index

Given the difficulty in measuring household income or consumption expenditure due to recall bias, seasonality, and data collection burden, the asset-based measures were used as a proxy measure for a household well-being (Vyas and Kumaranayake, 2006). Therefore, household wealth was assessed based on the ownership of the assets and the sample was categorised into very poor, poor, and rich. Nonetheless, this paper takes a

wealthier household as one that owned some mode of transport, agricultural equipment, livestock, other household assets and a good house. Transport assets included a motorcycle, a bicycle, an ox-cart and a car. Agricultural assets assessed included a hand hoe, a sword/knife, a spade and an ox-plough. Other household assets were an improved cooking stove, a radio, a television, a mobile phone, chairs and mosquito nets. Livestock assets included cows, goats/ sheep and poultry. The condition of the dwelling of the household focused on; house ownership, type of roofing, wall material, floor material and the number of rooms. However, based on the conditions of the dwelling, households were categorised as good, moderate, and poor. The formula (ii) used in valuing the domestic assets is given as:

$$\sum_{h=1}^H [\sum_{k=1}^K (w_h + a) \dots\dots\dots (ii)$$

Where H is the number of assets owned by the household, w_h which is the weight of the asset h , a is the age-adjusted to weight, K is the number of assets h owned by the household (Johnson *et al.*, 2013). Livestock assets were further computed using Tropical Livestock Units (TLU/ha) which for cattle, goats/sheep, and poultry were 0.7, 0.1 and 0.01, respectively (FAOSTAT, 2015). The first measure of material wealth focuses on multispecies livestock holding represented in Tropical Livestock Units weight equivalent (Seiff, 1999).

4.3.3.3 Oral histories

In addition to the above, oral histories on specific case studies were used to give accounts of life histories for households' changes in well-being over time due to resource use conflicts. This approach was used because according to Davis (2009), the variable based research where the household is used as the unit of analysis creates a problem of hiding

events which are associated with specific household effects. Therefore, the life history approach helped to unmask this problem. Thus, life trajectory patterns were based on the perception of a person's live conditions which have undergone changes over time. Life history also helped to single out those specific cases or households that were severely affected by conflicts among farmers and pastoralists.

4.3.3.4 Analysis of quantitative data

Descriptive and inferential statistical analyses were used for quantitative data. Independent t-test was used to determine whether there were significant differences ($p < 0.005$) in farmers-pastoralists opinions on personal security, happiness, asset ownership, the condition of the household dwelling and education as a result of resource use conflicts. However, the factors influencing happiness were determined using the ordered logistic regression model. According to literature (Haghjou *et al.*, 2013; Boes and Winkelmann, 2006), an ordered logistic regression analysis is applied when the response variable has more than two categories with a natural order or rank. The model was preferred because the dependent variable happiness was presented in terms of graded scale: very happy (3), moderately happy (2) and not happy (1). Happiness scores were normalised to vary from 0 to 1 using $(\text{observed value} - \text{min value}) / (\text{max value} - \text{min value})$ formula as shown in Equation (i).

The ordered logistic model (iii) was specified as follows: the categories of happiness were defined based on the assumption that there was a set of j indicators of happiness. When $j = 0$ no household is happy. Happiness is dependent on the following factors: age, sex, wealth, education and so on. It was assumed that an ordered logistic regression model is adequate to define the probability of a household being happy if $j = 1$

$$p[y_1 = j / x_i] = \frac{e^{\beta_j x_i}}{1 + \sum_{k=1}^j e^{\beta_k x_i}} + \varepsilon_{ij} \dots\dots\dots (iii)$$

Whereby

$p(y)$ = The probability of success,

ℓ = the natural log,

α = the intercept of the equation and

ε_{ij} = the Random error for happiness i.

β_1 to β_k = coefficients of the predictor variable,

x_1 to x_k = the predictor variables entered in the ordered logistic regression model.

In this study, the probability of a household being in the highest category of happiness in the conflict affected area was computed. The independent variables comprised:

x_1 = Age of the household head in years,

x_2 = (Sex: 1 = Male and 0 = Female),

x_3 = Household size: (the actual number of people living in the household),

x_4 = (Ethnicity: 1=Maasai and 0= Non-Maasai),

x_5 = (District: 1=Kilosa and 0= Kiteto),

x_6 = Education: the number of years spent in school,

x_7 = Normalised household asset index,

x_8 = Condition of the household dwelling: Poor housing=1, Moderate housing = 2, Good housing = 3)].

The Maasai ethnic group was also singled out over other pastoralists groups because they are the most dominant ethnic group keeping livestock and therefore it is the leading group of being in constant conflicts with farmers in the study areas. Other pastoralists and agro-pastoralist groups, particularly in Kilosa, include Barabaig and Sukuma (Matee and Shem, 2006).

4.4 Results and Discussion

4.4.1 Threats of natural resource use conflicts to the personal security and well-being of farmers and pastoralists

Personal security threats due to resource use conflicts were identified in the study areas, these included: loss of life; this was reported by less than a fifth (19.0%) of the respondents suggesting that there was a low rate of violent conflicts; loss of property; this was reported by about two thirds (63%) of the respondents showing that households suffered a substantial loss of household assets due to conflicts; farmers suffered more physical pains or assaults (40.4%) compared to pastoralists who suffered less (4%), apparently indicating that pastoralists were the ones causing troubles to farmers in most cases. Finally, post-traumatic stress was higher among farmers, while the fear of being attacked was almost at the same level among farmers and pastoralists as shown in Table 4.1. Studies in sub-Saharan Africa suggest that depression and posttraumatic stress disorders (PTSD) (Oyok and Akello, 2011), loss of close relatives, suffering, beatings, and loss of property mainly-livestock, which occur during looting (Turyahabwa *et al.*, 2011) are common aftermaths of natural resource use conflicts in the affected areas. This suggests that the psychological effects caused by these conflicts might even be worse than the physical injuries. This is because of the high rate of fear of being attacked and post-traumatic stress reported by farmers and pastoralists. This situation is

manifested through reduced morale among the respondents of engaging in farming activities for fear of being attacked, thus, affecting their overall well-being.

Table 4.1: Personal security threats due resource use conflicts between farmers and pastoralists in Kiteto and Kilosa districts (n=373)

The threat to personal security (n=373)	Responses		Overall(%) n=373	Rating mean score		t-values (p<0.05)	values
	Farmers (%) n=230	Pastoralists (%)n=143		Famers \bar{x}	Pastoralists \bar{x}		
Post-traumatic stress	196(85.3)	116(80.9)	308(83.0)	1.1913	1.2098	0.274	0.816
Fear of being attacked	214(93.0)	133(93.1)	346(93.0)	1.5957	1.6643	1.330	0.181
Loss of property	40(17.4)	102(71.3)	234(63.0)	1.4261	1.2867	2.783	0.006*
Loss of life	56(24.3)	16(11.2)	72(19.0)	1.7565	1.8881	3.393	0.001*
Physical pains	138(40.4)	6(4.0)	141(38.0)	1.0696	1.0769	0.263	0.793

NB: Numbers in brackets indicate percentage while those outside the brackets indicate frequencies; *Significant at p < 0.05, two-tailed independent t-test

The observation was supported by observation during focus group discussions whereby farmers pointed out that they were living in constant fear of their crops being destroyed by livestock and being beaten by the “*Koriangas*” as they tried to resist the attacks. *Korianga* is presently a powerful age-group among the Maasai ethnic group vested with all the rights and privileges of protecting the society and their cattle against the enemies. Therefore, the group acts as the militia among the Maasai community. Similarly, FGDs with pastoralists revealed that persistent conflicts had always kept the young men on the alert, to strategically keep watch during the day and at night against any attempt directed towards their cattle or community members. Similarly, among the farmers, the presence of a militia groups known as *ujaki* and *sungusungu* in, Mbigiri village was referred to during interviews and FGDs. The role of the militia groups was to protect their communities against attackers by providing the required security. The presence of militia groups within the crop cultivation and pastoral communities does not auger well in the personal security and well-being of the farmers and pastoralists. According to Ero

(2000), as much as these militia groups were mobilized to defend their communities against violence, they also perpetuated much of the violence and armed internal conflicts, causing massive loss of life and widespread damage.

The results of an independent t-test (Table 4.1) show that personal security threats as a result of resource use conflicts were more or less the same between farmers and pastoralists. The results further showed that households' personal security, which entailed loss of property ($t=2.78$) and loss of life ($t=3.39$), differed significantly ($p<0.05$) in their mean rating scores between the two groups. These results suggest that farmers and pastoralists had similar opinions on the threat to personal security caused by resource use conflicts. Nonetheless, compared to farmers, loss of property among pastoralists ($\bar{x}=1.426$) was the most significant personal security threat than the loss of life ($\bar{x}=1.888$). The above finding suggests that loss of life and property due to conflicts were the most threatening security issues which are related to the well-being of farmers and pastoralists in the study area. These study findings are similar to those reported in Nigeria by Adisa (2011) who showed that manifestations of the conflicts ranged from mere disputes to violent clashes resulting in loss of livestock, crops, life and valuable property. Interestingly, post-traumatic stress, fear of being attacked as well as physical pains were not significant among the two groups. These results suggest that there were few physical confrontations between the farmers and pastoralists during the conflicts. These findings further indicate that the parties in conflicts continued with their production activities without having the fear of being attacked.

4.4.2 Threats of resource use conflicts to the psychological well-being of farmers and pastoralists in Kiteto and Kilosa districts

Table 4.2 shows psychological effects of conflicts between farmers and pastoralists in the study area. An independent sample t-test results showed that losses as a result of resource use conflicts were more felt among the farmers than among the pastoralists.

Table 4.2: Threats of conflicts to the psychological well-being of farmers and pastoralists in Kiteto and Kilosa districts

Psychological effect	Rating mean scores			
	Farmers (n = 230) \bar{x}	Pastoralists (n = 143) \bar{x}	t-value (p < 0.05)	p-values
Anger/anxiety/ emotional exhaustion	1.1652	1.0350	4.494***	0.000
Frequently staying away from home	1.3478	1.1748	3.862***	0.000
Marital dissatisfaction	1.5348	1.7063	3.398***	0.001
Farm abandonment/migration	1.2130	1.1119	2.673*	0.080
Sleepless nights	1.1391	1.0699	2.209**	0.028
Declining quality of children education	1.2565	1.1608	2.177**	0.024
Reduced interest on family matters	1.2957	1.1888	1.757**	0.008
Physical exhaustion	1.1174	1.0839	1.062	0.289
Complaints at home	1.2870	1.2448	0.901	0.368
Reduction of food quality and quantity	1.1652	1.1538	0.292	0.771

*** Significant at p =0.001; ** Significant at p < 0.05; * Significant at p =0.1 two-tailed independent t-test

The results in Table 4.2 show that rating mean scores of the effects of conflicts with respect to the quality of life among households between pastoralists and farmers differed significantly (p < 0.05). The areas with differences include anger/anxiety/emotional exhaustion (t = 4.49), staying away from home (t = 3.87), marital dissatisfaction (t = 3.40), farm abandonment/migration (t = 2.68), and sleepless nights (t = 2.21). The above findings suggest that both farmers and pastoralists had similar opinions on the effects of resource use conflicts. On the other hand, anger/emotional exhaustion (\bar{x} = 1.65), leaving away from home (\bar{x} = 1.35), abandoning farms/migration (\bar{x} = 1.21), and sleepless nights (\bar{x} = 1.14) were the most significant effects of conflict among farmers.

On the other hand, pastoralists differed from farmers on their rating mean scores indicating that marital dissatisfaction ($\bar{x}=1.71$) was the leading effect of resource use conflicts. The findings differs with those reported by Adisa (2011) showing that respondents in Nigeria agreed with the statement that, the quality of education of their children had been seriously affected by the economic losses they suffered as a result of resource use conflicts between farmers and pastoralists. During the interview, one of the pastoralists in Kimana village, Kiteto said:

“How shall we enjoy staying with our wives in a place where fighting has become the order of the day? Our attention is currently focused on defending our cattle; when we lose them, all these wives and children will run away from us”.

It is also interesting to note that the declining of the quality of children’s education, reduction of the quantity and quality of food, and reduction of the interest in the family matters did not significantly among the two groups. The above findings suggest that communities in the areas which are affected by conflicts were unaware of the effects of resource use conflicts on the education of their children. These findings are different from the findings reported by Gakuria (2013) who revealed that the effects of resource use conflicts at household level include reduced access to food, interruption of children’s schooling and forced migration among families. Moreover, the findings in Table 4.2 show that parties in conflicts, farmers ($\bar{x} = 1.28$) and pastoralists ($\bar{x} = 1.25$), show that an increase of complaints at the household is a major effect of resource use conflicts. In Kiteto, the complaints were to do with convincing one’s spouse to return back to their home region as a means of avoiding conflict-ridden areas.

These results show that the on-going conflicts severely interfered with family unity at the household level. However, these effects are location specific. These observations confirm

the findings by Yahia *et al.* (2014) who reported that a decline in the quality of children's education and the reduction of food production were the leading effects of resource use conflicts between farmers and pastoralists. The current study suggests that the higher scores observed on anger/anxiety/emotional exhaustion, sleepless nights, marital dissatisfaction, and staying away from home (Table 4.2) for both farmers and pastoralists are caused by the frequent conflicts between the two groups. Constant fear and staying away from home for long periods helped in avoiding further attacks and injuries caused by persistent conflicts. This strategy was common among households that preferred to keep away from direct confrontations. Also, the higher scores on farm abandonment might have serious repercussions on agricultural production, food security, overall sustainable development as well as household well-being among farmers and pastoralists in the study areas. These findings are in line with studies by Besada and Werner (2015); Zaehringer *et al.* (2018) and Ukamaka *et al.* (2017) who reported that conflicts between farmers and pastoralists in Sub-Saharan Africa are a formidable challenge to economic development, a threat to food security and sustainable livelihood of the affected communities.

4.4.2.1 Household assets, dwelling condition and happiness indices for farmers and pastoralists in Kiteto and Kilosa Districts

In view of normalised household asset index, results show that the majority (77.5%) of the households in the study areas were poor, while only 13.4% of the households were non-poor. However, the very poor households were below 10% (Table 4.3). On the basis of wealth index, there were fewer non-poor among pastoralists than among the farmers. This suggests that the value of livestock, which is the single most important asset owned by pastoralists, was higher than the value of household assets owned by farmers. According to Østby *et al.* (2009), the onset of conflicts in Sub-Saharan where deprivation

regarding household assets is relatively strong, is most likely to lead to strongly integrated inequalities and further deprivation.

External conditions of the household dwelling were also used as an indicator of the quality of a household's well-being. Each attribute of the household quality scored 1, 2 and 3 where 1 is the lowest score and 3 are the highest. Indicators used in this case include house ownership, types of roofing, wall material, floor material and the number of rooms including semi-detached houses in the homestead. The mean and standard deviation were used to normalise data in order to determine the condition of the household's dwelling. However, as an indicator of well-being, households dwelling conditions were classified into good, moderate and poor housing quality as shown in Table 4.3.

Table 4.3: Normalised household assets, dwelling condition and happiness indices for farmers and pastoralists in Kiteto and Kilosa Districts (n=373)

		Frequency (%)		
Household asset index	Wealth category	Farmers	Pastoralists	Overall
Below 0.034	Very poor	24(10.4)	10(7.0)	34(9.1)
Between 0.034-0.214	Poor	182(79.1)	107(74.8)	289(77.5)
Above 0.214	Rich	24(10.4)	26(18.2)	50(13.4)
Household condition index	Housing attribute			
Above 0.742	Good housing quality	47(20.4)	15(10.5)	68(16.6)
Between 0.156-0.742	Moderate housing quality	138(60.0)	44(30.8)	182(48.8)
Below 0.156	Poor housing quality	45(19.6)	84(58.7)	129(34.6)
Happiness index	Happiness status			
Below 0.43	Lack of happiness	23(10.0)	32(22.4)	55(14.7)
Between 0.43-0.60	Moderate happiness	184(80.0)	89(67.1)	280(75.1)
Above 0.60	Very happy	23(10.0)	15(10.5)	38(10.2)

Key; *Mean index=0.124, Median=0.100, Mode=0.025, Standard Deviation=0.090, Maximum=0.627, Minimum=0.000; ** Mean index 0.4489; median; mode; SD 0.29306; minimum 0.0; maximum 1.0; *** Numbers in brackets are percentages

Accordingly, conditions of the housing index indicate that 80.4% of farmers had relatively good and moderate housing quality as compared to only 41.3% of pastoralists on similar categories. The majority of pastoralists fell below average housing quality; thus, their housings were categorised as poor. These results were not surprising as most pastoralists have a tendency of building temporary housing structures as a result of mobility (Toth, 2014; Bassi, 2017) which is the main feature of pastoralism.

Summary data on happiness among farmers and pastoralists are also presented in Table 4.3. Happiness was measured on a scale ranging from 1 to 3 namely, 1, Lack of happiness; 2, Moderate happiness; and 3, full of happiness. Also, comparisons of happiness scores between farmers and pastoralists are presented in Table 4.3. Although the number of observations was different between the two groups, the results show that on average, pastoralists seemed to be less happy than farmers. Similarly, the respondents who declared themselves as moderately happy and very happy were 90.0% and 77.6% among farmers and pastoralists, respectively. It is interesting to note that the percentage of the respondents who declared themselves as very happy was not significant among the pastoral group (10.5%) than among the farmers (10.0%). These results suggest that farmers were more dissatisfied with the on-going conflicts making them less happy.

The level of education of household heads in terms of the number of years spent in school was also used to determine the well-being of farmers and pastoralists in the study areas. Generally, the results showed that about 40.0% of the household heads had not attained formal education. Pastoralists were the majority among those with no formal education (Table 4.4). These results suggest that even without conflicts, pastoralists normally do not take their children to school. Notwithstanding the prevailing conflicts, the issue of schooling among pastoralists seems to be more culturally based than was the

case with the results of the influence of conflicts. This aspect is evidenced by earlier studies which reported that the relationship between pastoralism and education was widely acknowledged to be problematic (Tahir, 1991; Kratli, 2000). This made some analysts (e.g. Amadi, 2015) to assume that pastoral practices are inconsistent with the schooling system which requires people to stay at the same place for longer periods of time to acquire education. Low level of education among the inhabitants in the pastoral areas is escalated by lack of schools. For example, there were no schools at Emboley Murtangos in Kiteto District which is considered as a hotspot of conflicts. The majority of respondents who had completed primary education were farmers. However, this falls below the national average. According to UNDP (2016), Tanzania's expected years of schooling are 8.9 suggesting that conflicts have severely affected individuals' education in the study area. It is also interesting to note there were more pastoralists than was the case with farmers who had an education above primary school level. This was because pastoralists have livestock which are valuable assets which they could sell to meet the cost of secondary school education for their children. In addition, UNICEF and UNESCO (2015) reported that one-half of the world's out-of-school children live in conflict-ridden areas. These results are not surprising because resource use conflicts in both Kilosa and Kiteto have existed for a relatively long period of time; that is, over 15 years thus interfering with the education of farmers and pastoralists.

Table 4.4: Household number of years spent in school in Kiteto and Kilosa Districts (n=373)

Years spent in school	Number of years spent in school					
	0	2	7	11	12	13
Pastoralists (%)	84(58.7)	10(7.0)	35(24.5)	6(4.2)	5(3.5)	3(2.1)
Farmers (%)	61(26.6)	5(2.2)	151(65.9)	11(4.8)	0(0.0)	1(0.4)
Overall	145(39.0)	15 (4.0)	186(50.0)	17(4.6)	5(1.3)	4(1.1)

NB: Numbers outside the bracket are frequencies and number inside bracket (%)

4.4.2.2 Comparison of well-being between farmers and pastoralists

An independent sample t-test was conducted to compare the well-being of farmers and pastoralists in the conflict ridden areas. This comparison was based on four measures of well-being namely, the number of years spent in school, a household asset's ownership, housing condition, and the degree of happiness (Table 4.5). The results show that there was a significant difference, at $p < 0.001$ level between farmers and pastoralists in the household's asset ownership. On this aspect, pastoralists were wealthier than farmers; and this may have been due to the possession of livestock among the pastoralists. Livestock had a higher value compared to other household assets which were mostly owned by farmers. Table 4.5 further shows that there was a significant difference at $p < 0.001$ level on the housing conditions between farmers and pastoralists.

Table 4.5: Mean SD and t value of household well-being for farmers and pastoralists in Kiteto and Kilosa Districts

Variables	Group Mean		t-value	p-value
	Farmers (n=230)	Pastoralists (n=143)		
Number of years spent in school	5.252(3.392)	0.131(0.013)	-5.691	0.000**
Normalized household asset index	0.020(0.013)	0.036(0.012)	3.236	0.001**
Housing condition index	0.542(0.284)	0.319(0.013)	-8.235	0.000**
Happiness Household Index	0.538(0.538)	0.528(0.086)	-2.587	0.011*

NB: Numbers in the bracket are the standard deviations, **Significance levels at 1% and *significance levels at 5%

These results suggest that farmers were wealthier than pastoralists on housing conditions implying that conflicts decreased ($t = -8.235$) the well-being among pastoralists. The results show further that there was a significant difference, at $p < 0.005$ in the degree of happiness between farmers and pastoralists. This means that farmers were relatively happier than pastoralists suggesting that conflicts had a higher negative impact on the well-being of pastoralists. The results further show that there was a significant difference,

at $p < 0.001$ in the household number of years spent in school between farmers and pastoralists. This means that farmers were relatively more educated than pastoralists, suggesting that inadequate education could have a significant negative contribution to conflicts and well-being among farmers. Conflicts and well-being of farmers and pastoralists based on life histories of the respondents in the study areas which are presented as cases number 1 and 2 summarised in figures 4.1 and 4.2 respectively.

Case 1: Socio-economic well-being decline in Kimana village due to conflicts

Mr. X (not his real name) was born in 1950 in Njombe District. His main occupation and that of his parents before and after he started his self-independent life was small-scale farming. At the time of this interview in July 2015, Mr X had three wives and 9 children. This is a good example of households whose socio-economic well-being was torn to pieces because of conflicts between farmers and pastoralists at Emboley Murtangos CBNRM area in Kiteto District. The trajectory of Mr X socio-economic well-being is as follows (Figure 4.1).

According to him, violent conflicts between farmers and pastoralists at Emboley Murtangos made him loose a number of household assets. These include one motorcycle, a television set, three bicycles, 60 bags of maize, 15 bags of sunflower, 10 bags of finger millet, five houses, 20 litres of water containers, clothes, a retail shop valued at 13 000 000 TZS and 400 litres of diesel. Currently, Mr. X sells local beer as his major source of income. He also narrated the ordeal of bad memories of eviction, fighting where a group of 20 fighters with guns attacked people in broad daylight. He recalls the killing of three people in Kihoko and 7 in Latimi where his 400 acres land was located. Mr X was one among many household heads whose well-being had been negatively affected due to conflicts between farmers and pastoralists.

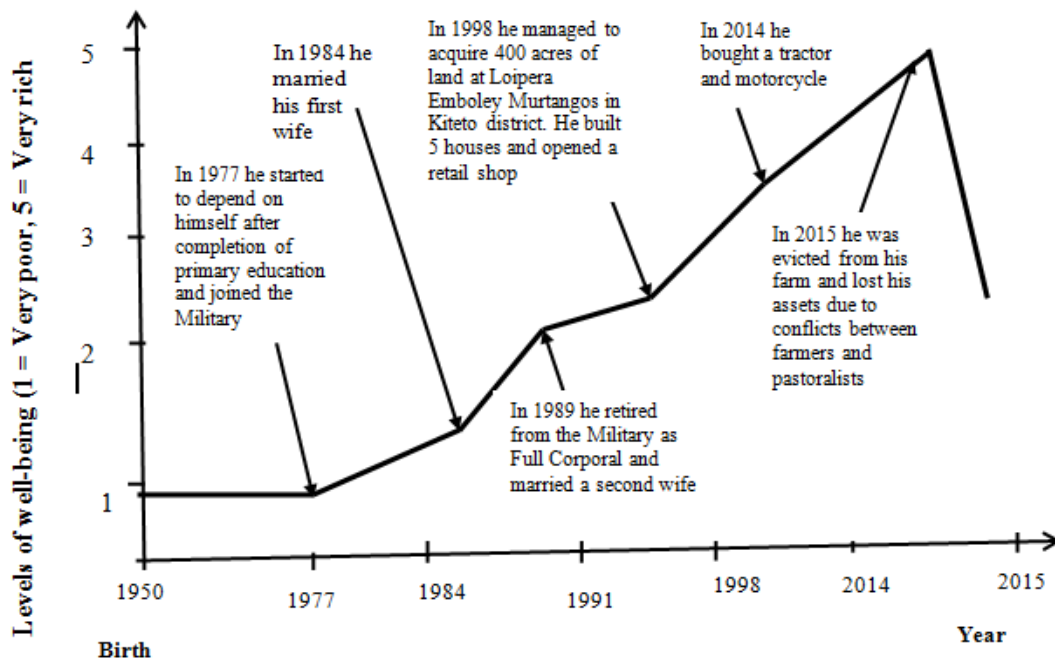


Figure 4.1: Mr. X life history showing levels of well-being over time

Case 2: Socio-economic well-being decline in Kimana village due to conflicts with

Mrs Y (not her real name) was born in 1973 in Sonkoro village in Kondoa District in Dodoma region. Her main occupation and that of her parents before and after she got married was agro-pastoralism. At the time of this interview in August 2015, Mrs Y had three children. She is also an example of household heads whose socio-economic well-being was severely affected by conflicts between the farmers and pastoralists at Emboley Murtangos in Kiteto District.

The trajectory of Mrs Y socio-economic well-being is as follows. Her deceased husband was a farmer until the end of his life on 1st December 2014 during the conflicts between farmers and pastoralists. Currently, Mrs Y owns a small food vending shop, which she acquired after abandoning farming. Mrs Y witnessed her husband being hacked to death by his attackers, and this has left her traumatized to this day. According to Mrs Y during

the conflicts, she and her husband lost their retail shop, motorcycle, 20 bags of maize, 1 700 000 TZS, 20 acres of finger millets, 2 bicycles, a solar panel and 9 mobile phones.

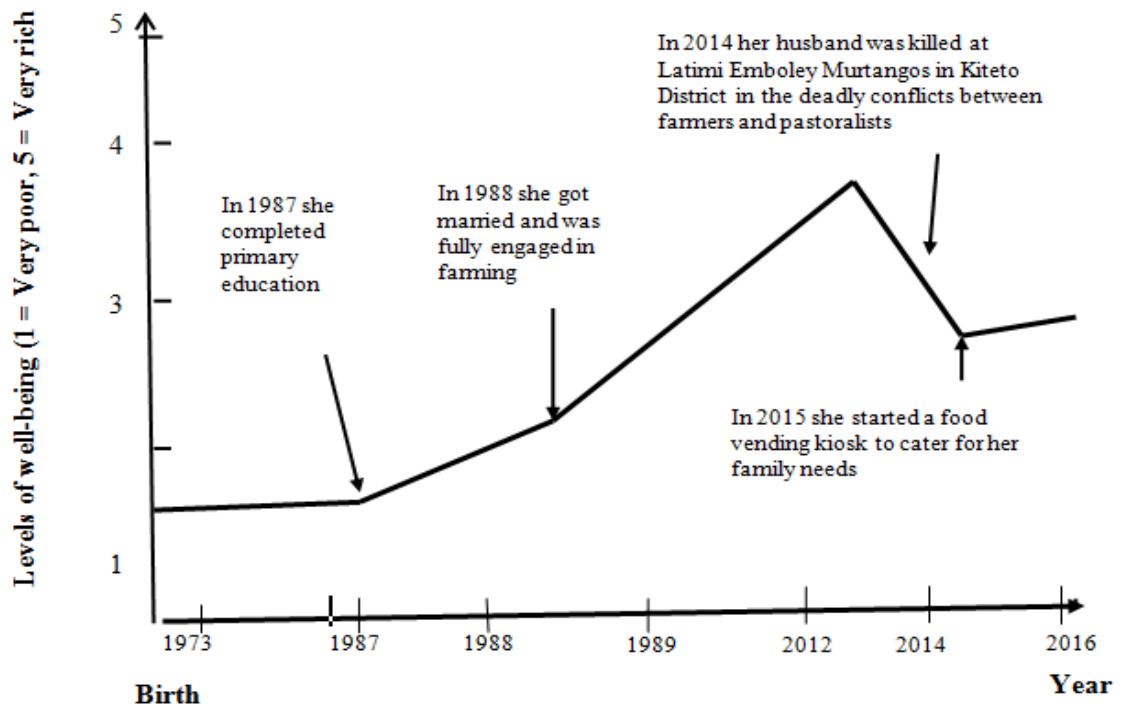


Figure 4.2: Mrs Y life history showing level of well-being over time

4.4.3 Factors influencing happiness among farmers and pastoralists in Kilosa and Kiteto Districts

An ordered logistic regression model show that the likelihood ratio chi-square was 250.35 and p-value was 0.029, which indicates that the model was statistically significant compared to models with no predictors. According to Louviere *et al.* (2000), a model with an R^2 of 0.495 and above is considered as an excellent fit. Since proportional odds were assumed, a single coefficient was estimated for each predictor. The dependent variable of 'happiness' was regressed on the 8 covariates shown in Table 4.6.

Table 4.6: Factors influencing the household degree of happiness in Kiteto and Kilosa Districts

Variables	Coef.	z	P>z	[95% Conf.	Interval]
District of domicile	0.593	2.190	0.029*	0.061	1.124
Age of household head	-0.014	-1.330	0.184	-0.034	0.007
Household size	-0.002	-0.050	0.962	-0.078	0.074
Sex of the household head	-1.113	-3.460	0.001**	-1.743	-0.483
Education of the household	-0.915	-7.460	0.000*	-1.156	-0.675
Ethnicity of the household head	0.465	1.640	0.100	-0.089	1.020
Household asset ownership	0.375	0.140	0.891	-5.015	5.766
Condition of Household dwelling	-0.389	-2.430	0.015*	-0.703	-0.076
/cut1	-3.011			-5.143	-0.880
/cut2	1.344			-0.762	3.450

Number of observation=370: Wald Chi²(8) = 66.50: Prob> chi² = 0.0000: Log likelihood = -250.34502: Pseudo R² = 0.4953:**significant at 0.05 level: *** significant at 0.001 level

The results show that district, sex, education, and condition of the household dwelling significantly ($p < 0.005$) influenced a household's degree of happiness. The rest of the predictors particularly age, household size, ethnicity, and asset ownership had no significant influence. These results are inconsistent with the findings by Dedehauanou *et al.* (2013) in Senegal who reported that household demographic characteristics, land and livestock assets, and which showed that housing indicators affect the degree of happiness of an individual.

The reason for this difference is that ethnicity in Tanzania, unlike in other African countries, is not considered when it comes to sharing of natural resources such as land. However, the authors did not link the variables mentioned in the foregoing discussion to resource use conflicts. As shown in Table 4.6, one's district of residence highly ($p < 0.029$) influenced one's degree of happiness. There was a positive association (Coef. 0.593) between the district of domicile and household's degree of happiness. The respondents in Kilosa were happier than their counterparts in Kiteto District. This could be attributed to the reason that there were violent conflicts in 2014/2015 in Kiteto, and which led to the loss of lives and damage to property. In addition, there was

the mass eviction of farmers from Emboley Murtangos which might have influenced the respondents' degree of happiness, resulting from abandonment of their farms which were crucial to their households' well-being.

Results in Table 4.6 further show that there was a negative correlation (Coef. -1.113) between degree of happiness and sex of the respondent; this was statistically significant ($p < 0.001$), implying that being a male decreased the likelihood of being in the highest degree of happiness in conflict-affected areas, all the other variables in the model is constant. In other words, in the study areas, female respondents were happier than their male counterparts. This observation is supported by the results from the focus group discussions which revealed that during conflicts, women, children, and the elderly were either left at home or hidden in the bush while men were engaged in guarding the property and fighting back the attackers. However, these findings are different from those by Jaisri (2016) who reported that there was no significant difference in the degree of happiness based on one's sex due to conflicts. However, Jaisri (2016) reported higher degree of happiness among young adults as opposed to the other groups.

Furthermore, there was a negative association (Coef. -0.915) between education of the household head and degree of happiness, and this was statistically significant ($p < 0.000$) implying that household degree of happiness decreases with an increase in the level of education due to prevailing conflicts between farmers and pastoralists. The study findings differ from those reported by Chen (2012) in Asia and Botha (2014) in South Africa which indicated that more educated individuals had more extensive social networks and greater involvement in the wider world and thus, they were happier. However, according to Cuñado and de Gracia (2012); Schimmel (2009) higher levels of education do not automatically lead to greater happiness.

The logistic regression results further show that condition of the household dwelling was negatively (Coef.-0.389) correlated with the respondent's degree of happiness. This was statistically significant ($p < 0.05$) implying that the conditions of the household dwelling decreased the degree of happiness among households in the conflict-prone areas. The findings are similar to those reported in a study by Hu (2013) which showed that the status of home ownership increases one's overall happiness. In addition, Hu (2013) reported that in terms of housing satisfaction, female respondents seemed to value ownership of a house more than did males. The plausible explanation on this aspect is that households with better dwelling conditions were less happy for fear of being affected by violent conflicts as this would likely to make them conspicuous and likely to experience huge losses due to the destruction of their houses. This is in contrast with their counterparts who had temporary housing structures. However, McDougal *et al.* (2015) in Nigeria reported that the microeconomic cost of farmer-pastoralist conflict to the total economy is approximately 2.9 percent.

4.5 Conclusions and Recommendations

Generally, based on the study findings it is concluded that resource use conflicts affect the well-being of farmers more than they do to pastoralists in Kiteto and Kilosa Districts. It can also be concluded that there was a significant association between resource use conflicts and various dimensions of household well-being, namely, personal security, psychological aspects, the condition of the household dwelling, degree of happiness and education. It is further concluded that the factors that influence the degree of happiness, a subjective measure of well-being, included respondent district of residence, sex, education, and conditions of the household dwelling. Therefore, these results not only validate research findings from other countries but also confirm the importance of

education, sex, place of residence and housing dwelling conditions as important factors underlying the concept of happiness.

Based on the study findings, it is recommended that the government in collaboration with non-governmental organisations and community based organisations operating in Kilosa and Kiteto districts should put in place programmes to ensure that peace and tranquillity prevails among farmers and pastoralists. These programmes among other things will ensure among other things that both farmers and pastoralists discuss disputes over natural resources in an open and transparent manner and this will eventually ensure that there is increased agricultural production among framers and pastoralists hence improving their well-being. Also, the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDEC) should address the issues of depression and post-traumatic stress that seem to be rampant in the study areas. For instance, clinical psychologists and psychiatrics could conduct studies on depression and post-traumatic stress in the study areas and in other conflict ridden areas to quantify the magnitude of the problem.

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CHAPTER FIVE

5.0 Determinants of Conflicts Coping Strategies among Farmers and Pastoralists in Kilosa and Kiteto Districts, Tanzania

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5.1 Abstract

Natural resource use conflict is a global issue. In sub-Saharan Africa, such conflicts can be extreme; even resulting into deaths of individuals. There is a plethora of literature exploring the causes and effects of such conflicts. The study explored strategies used by those affected to respond to and cope with such conflicts and the socio-economic determinants of these strategies. To answer the above objectives, key informant interviews and focus group discussions were conducted with stakeholders in Kilosa and Kiteto Districts in Tanzania to establish our understanding of the issue and its local context. A stratified random sample of pastoralists (n=143) and farmers (n=230) was selected to quantify responses to conflict. The finding show that conflicts were quite

extreme and included cases of physical violence including setting fire on the farms. Those affected were forced to buy food or rely on relatives and wider social networks (including local government) to provide practical support. Emotional support from relatives and social networks and from religious organisations was also important. Male-headed, larger, and younger households were more likely to use coping strategies ($p < 0.05$) than female-headed, smaller, and older households. Also, land ownership is likely to increase the use of strategies for coping with conflicts among households. Therefore, it is recommended that people in the areas affected by conflicts should be encouraged to own land, have proper land planning and use in order to minimize natural resource use conflicts among actors especially farmers and pastoralists. Additionally, the design of rules and regulations should be informed by the actual coping strategies adopted by farmers and pastoralists.

Key words: Conflict, coping strategies, farmers, pastoralists, Kilosa, Kiteto

5.2 Introduction

5.2.1 An overview of natural resource use conflicts

Natural resource use conflicts have occurred in Tanzania and elsewhere in the world. Though, those conflicts in Tanzania exists in various forms such as neighbour about field boundaries; men, women, and generations about their respective land rights; pastoralists and farmers; states and indigenous peoples as well as companies and local populations about rights to exploit mineral and gas and other natural resources (Odgaard, 2006). In addition, Worldwide, violent conflicts are partly a result of competition over agricultural and grazing land (UNEP, 2007). The concept of conflict in the context of this study refers to the misunderstanding, disagreement, or divergence of ideas, which result into coercive measures that suggest forceful victory on either party (Norman, 2013). In Tanzania,

conflicts largely involve misunderstanding or disagreement between farmers and pastoralists over resource use (Tenga *et al.*, 2008). In this paper, farmers are defined as individuals who cultivate land and grow or plant various crops (Norman, 2013). Pastoralism refers to a phenomenon of earning part of a households' livelihood from livestock and livestock products (Rata and Sperandini, 2009). Therefore, pastoralists are people who derive more than 50 per cent of their income from livestock and livestock products with mobility being a key feature of pastoralism. According to Nassef *et al.* (2009), livestock is a major source of income for pastoralists, but the significance of livestock is more cultural than economic to people connected to pastoralism.

Long standing conflicts and clashes between farmers and pastoralists are now a serious national challenge which has taken both political and humanitarian dimensions in Tanzania. The most notable bloody clashes pitting farmers against pastoralists occurred in Kilosa District in December 2000, whereby 38 people among them women and children lost their lives (Brehony *et al.*, 2003). Similar clashes occurred in Kiteto, on 12th January 2014 leaving 10 people dead and 20 people injured. Among the damaged property, including 60 houses, which were burnt down and a number of properties including six motorcycles and 53 bicycles were destroyed (Benjaminsen *et al.*, 2014). Moreover, notorious clashes have been repeatedly reported in Kilindi, Mvomero, Kilombero, and parts of Lake Rukwa Basin (Benjaminsen *et al.*, 2009). Generally, farmers and pastoralists' conflicts cause a lot of harm to people involved, both physically and psychologically. Psychological and emotional effects of violent conflicts may include lack of sleep, anger, anxiety, and depressions (Adisa, 2011a), thus, requiring a remedy in terms of coping strategies at post conflict period. Moreover, UNEP (2007) pointed out that, the socio-economic and environmental consequences of conflicts include rural-urban migration and over exploitation of natural resources, all of which have a negative

impact on the development of the communities concerned, and the country at large. They also affect planning and management of resources leading to unsustainable use patterns and degradation of the resources.

Generally, researches have established association between conflict and stress (Oboke, 2011; Oyok and Akello, 2011; Turyahabwa *et al.*, 2011). For example, when individuals encounter stress, they adopt different ways of managing it, as they cannot afford to continuously live in a state of tension. Stress management enables individuals to cope with stress. According to Lazarus and Folkman (1991), Moos and Schaefer (1993) and Marquez-Arrico (2015), coping strategies are efforts made by an individual to manage internal and external demands of stressful situations. However, King (2008) describes coping as a specific term for problem-solving strategies. Generally, coping is used to manage stress through the use of emotional-focused coping strategy or to solve a stressful problem itself. In the study context, coping is seen as a life skill of overcoming stress caused by resource use conflicts. Studies on coping strategies on resource use conflicts among natural resource users in sub-Saharan Africa have established that in mitigating the effects of conflicts, a combination of coping strategies is necessary for farmers, pastoralists, and other resource users (Adisa, 2011b).

Although there has been much emphasis on the drivers and effects of resource use conflicts between farmers and pastoralists in a post conflict era (Mwamfupe, 2015; Benjaminsen *et al.*, 2014; Kircher, 2013; King, 2013; Saruni, 2011; Benjaminsen, 2009; Kisoza, 2007; Tenga *et al.*, 2008; Brehnoy *et al.*, 2003; Kajembe *et al.*, 2003; Kizima, 2003; Mwamfupe and Mun'gon'go, 2003), coping strategies in the aftermath of these conflicts have not been documented in the scholarly literature in Tanzania. Moreover, empirical literature in Tanzania has not addressed coping strategies on resource use

conflicts, instead the focus of scholarly literature has been more on the coping strategies against food insecurity (Matunga; 2008; Ngongi, 2013; Rakundo *et al.*, 2016; Tumaini and Msuya, 2017), HIV and AIDS (Semali *et al.*, 2011) and climate change (Mongi *et al.*, 2010; Mwakalila, 2010).

Despite several studies having been done on conflicts between farmers and pastoralists in Tanzania, empirical data on the post conflict coping strategies are lacking. However, few studies in Nigeria (Adekunle and Adisa 2010; Adisa and Andekunle, 2010; Adisa, 2011b; Umar and Umar, 2014) and in Sudan (Yahia *et al.*, 2015) have addressed the manner in which farmers and pastoralists cope with the aftermath of conflicts. These strategies include problem` oriented (POCS), emotional oriented (EOCS), and social support seeking oriented coping strategies (SSCS) (Folkman, 2013; King, 2008; Lazarus, 2006; Folkman and Lazarus, 1984; Lazarus and Folkman, 1991). The objective of this paper is to ascertain determinants of conflict coping strategies among farmers and pastoralists in Kilosa and Kiteto Districts, Tanzania.

5.2.2 Theoretical framework

The study is guided by the Lazarus's Cognitive Appraisal Model of coping strategies. Generally, resource use conflicts are perceived as a stressful situation to actors in the conflict which is generally determined by the individual's feelings of vulnerability and ability to cope. According to King (2008), stress and coping strategies are developmental processes and ways by which individuals go through life experiences. According to Folkman and Lazarus (1984), individuals use three kinds of appraisal to analyse situations namely: Primary appraisal which involves the process of evaluating the significance of stressors or threatening events such as conflicts; secondly, the process of conceiving a potential response; and thirdly, the process of resource appraisals (i.e. actual

strategies which are used to mediate primary and secondary appraisals). There are three ways by which people cope with stress (see Anbezhagan and Rajan, 2013). The first way is “emotion-focused” coping strategies which help individuals adjust to stress more easily. These involve increased social support as well as having friends and colleagues who are supportive in an event of a problem. The second approach involves the use of “escape/avoidance strategy” in which the stress is perceived as a challenge hence, increasing the capacity of dealing with it. The third way involves the use of negative strategies which attempt to reduce the feeling of stress through the use of alcohol, drugs which are part of maladaptive coping strategies against stress. The Lazarus’s Cognitive Appraisal Model of coping strategies is deemed appropriate for this study in addressing resource use conflicts among farmers and pastoralists in Kiteto and Kilosa Districts. This is especially so because the extent to which households are affected by conflicts determines the type of coping strategies that need to be used to overcome the stress.

5.3 Methodology

5.3.1 Description of the study areas

The study areas were Kilosa and Kiteto Districts in Morogoro and Manyara regions respectively. The selection of the districts was based on the prominence, persistence, and severity of conflicts between farmers and pastoralists in these districts (Makoye, 2014). Similarly, the areas have high population densities of farmers and pastoralists which have led to stiff competition on resources use. Moreover, as Benjaminsen *et al.* (2009) argue, in the government development reports and in the national newspapers, the two districts are often referred to as areas of land scarcity and resource use conflicts.

Kilosa is one of the six districts in Morogoro Region, Tanzania. The district covers 11774 km² out of which 4 286 km² are reserve areas (KDC, 2012) with Mikumi National

Park covering 3 230 km² or 22.7 per cent of the district, and forest reserves covering 1 056 or 7.4 per cent of the District (Brehony *et al.*, 2003). Kilosa borders Kiteto and Kilindi Districts to the North, Mvomero and Morogoro Districts to the East, Mpwapwa and Kongwa Districts to the West and Kilombero and Kilolo Districts to the South (Wassena *et al.*, 2013). Kilosa is located 300 km west of Dar es Salaam and is found between latitudes 5° 55' and 7° 53' South and longitudes 36° 30' and 37° 30' east. As reported by the National Bureau of Statistics (NBS) 2016-2017 population projections, Kilosa district had 492 879 people (NBS, 2016). Rainfall in the district varies substantially from year to year. The rain falls in two seasons, short rains from November to December, and long rains from mid-February through April (Benjaminsen *et al.*, 2009). The ethnic groups in the District include Kaguru, Sagara, Vidunda, Parakuyo Maasai, Barabaig, Gogo and Sukuma (Benjaminsen *et al.*, 2009). The major farming systems include maize-rice, agro-pastoralism, and pastoralism (Wassena *et al.*, 2013).

Kiteto District, in Manyara Region, Tanzania, has semi-arid conditions. The District covers over 12 944.72 km² (KDP, 2012) with an average rainfall of between 450 and 650 mm per annum (URT, 2013). Kiteto is surrounded by five districts; Simanjiro to the North, Kilindi, and Kilosa to the East, and Kongwa and Dodoma Rural to the West (SchÖpperle, 2011). The inhabitants in the district mainly deal with crop farming and maize is the main crop yielding up to 15 bags (1 500 kilograms) of grains per hectare. Rainfall regimes are bimodal, with a short and long rain seasons. The short rains begin in October and end in December while the long rains start in February and end in May (Conlibaly *et al.*, 2015). According to the National Bureau of Statistics (NBS), 2016-2017 population projections, Kiteto District had 286 741 people in (NBS, 2016). The existing land use conflicts between farmers and pastoralists in the district started way

back in 2003, and ever since, at least 30 people have been killed and about 200 have been injured (Ubwani, 2014).

5.3.2 Sampling, data collection, and data analysis

The sampling frames were the lists of all households in the study villages. The sample size determination formula was adopted from Kothari (2004). From each of the districts, five wards that had frequent and severe incidents of natural resource use conflicts between farmers and pastoralists were purposively selected. Therefore, on the basis of these criteria, three wards in Kilosa, namely Msowero, Kitete and Magole, and two wards in Kiteto namely Partimbo and Lolera were selected. In addition, purposive sampling was done to select local organizations and key informants involved in the study. The respondents from each district were determined using a proportionate sampling procedure formula in Appendix 5 (Kothari, 2004). A random sampling technique was used to select 230 farming households and 143 pastoral households. Structured interviews were used to collect data on socio-economic characteristics, coping strategies and the effects of conflicts on the respondents' well-being. Interviews with individuals were performed after getting clearance from the Local District Authorities (LGAs). Likewise, secondary data were obtained from various authentic sources such as government reports, policy briefs, and newspapers.

5.3.3 Data analysis

The Statistical Package for Social Sciences (SPSS) and STATA soft wares were used for descriptive statistical analysis. In addition, independent t-test was used to determine whether there were significant differences ($p < 0.005$) between farmers' and pastoralists' opinions towards the effects of natural resource use conflicts. Scores on coping strategies used were obtained using a 4-point Likert-type scale with 20 items adopted from Adisa

(2012) with the following options: often used (3), somehow used (2), not used (1) and not applicable (0). Out of the twenty (20) items, 10 represented the problem oriented coping strategies (POCS), 6 emotional oriented coping strategies (EOCS), and 4 social support seeking coping strategies (SSCS) as presented in Table 5.1. A combined score of the coping strategies was computed and used in determining the factors influencing coping strategies using the ordinal logistic regression model. The reliability analysis test for coping strategies was measured using Croubach's alpha values. According to Nunnally and Bernstein (1994); Bland and Altman (1997); DeVellis (2012); Mohsen and Reg (2011) acceptable values of an alpha range from 0.70 to 0.95. The scale reliability coefficient for coping strategies in this paper was 0.73 which is acceptable. This is a type of logistic regression analysis which is applied when the response variable has more than two categories that have a natural order or rank (Reddy and Alemayehu, 2015; Haghjou *et al.*, 2013). The model was preferred because the dependent variable (coping strategy with resource use conflicts) was presented in terms of ordered levels: often used (4), somehow used (3), not used (2) and not applicable (1). These levels were used to compute an overall score for the use of the coping strategies.

The ordered logistic model was specified as follows: the categories of coping strategies were defined based on the assumption that there was a set of j coping strategies for resource use conflicts. When $j = 0$ there was no strategy chosen. The choice of a coping strategy is dependent on the following factors:

$$x_1 + x_2 + x_3 + \dots \dots \dots x_n \dots \dots \dots (1)$$

It was assumed that an ordinal logistic regression model is adequate to define the probability of choice of strategy $j = 0$

$$p[y_1 = j / x_i] = \frac{e^{\beta_j x_i}}{1 + \sum_{k=1}^j e^{\beta_k x_i}} + \varepsilon_{ij} \dots\dots\dots (2)$$

$p(y)$ = The probability of the success,

e = the natural log,

α = the intercept of the equation and

ε_{yi} = Random error in Y_i for coping strategy i.

β_1 to β_k = coefficients of the predictor variable,

x_1 to x_k = predictor variables entered in the ordered logistic regression model.

In this study, $p(y)$ = the probability of the household is in the highest category of coping strategies with resource use conflicts.

Where:

x_1 = Age of the household head in years,

x_2 = Sex: (Male = 1, Female = 0),

x_3 = Size of farm owned in hectares (ha),

x_4 = Ethnicity: (Maasai = 1, Non-Maasai = 0),

x_5 = District: (Kilosa = 1, Kiteto = 0)

x_6 = Production purpose: (Subsistence = 1 Commercial = 2, Both = 3),

x_7 = Years of residence: (1-4 years = 1, 5-9 years = 2, 10-14 years = 3, more than 15 years = 4),

x_8 = Land tenure system: (Title deed = 1, Customary = 2, Village offer = 3),

x_9 = Land use type: (Agricultural use = 1, Land for speculation = 0),

x_{10} = Household size: (Actual number of people living in a household),

x_{11} = (Land ownership; Owned = 1 Rented = 2 Does not owned = 3,) and

x_{12} = Proximity to the farm: (Homestead = 1, Away from the homestead = 0).

The reasons why the Maasai pastoralists were chosen as opposed to other pastoral ethnic groups in the study area is because they were an ethnic group that was in constant conflicts with farmers in the study area.

5.4 Results and Discussion

5.4.1 Farmers' and pastoralists' coping strategies for managing natural resource use conflicts

The results in Table 5.1 show that both farmers and pastoralists use a mixture of strategies to give them a sense of relief from resource use conflicts. The use of different types of coping strategies depicts the uniqueness of challenges encountered by actors in the conflicts thus, necessitating the use of different strategies to deal with the conflicts. Similar findings are reported by Yahia *et al.*(2015) in Sudan and Umar *et al.* (2013); Adisa and Andekule, (2010) in Nigeria. According to the findings in Table 5.1, the often used problem oriented coping strategies (POCS) by farmers in the post conflicts stage include; buying food for household's use, working harder, using one's own experience to manage the conflicts, and sowing less and tightening farm security. For pastoralists, the most used POCS were tightening herd security, preparing themselves for the worst to revenge against their enemies, buying food, borrowing money and the use of one's experience to deal with the conflict situation. Buying food as a conflict coping strategy implies that the respondents were food insecure, due to the destruction of their crops by livestock. The results are as shown in Table 5.1

Table 5.1: Farmers-pastoralists coping strategies for managing natural resource use conflicts in Kiteto and Kilosa Districts (n=373)

Coping strategies	Variable	Often used	Used somewhat	Not Used	Not applicable
Problem oriented coping strategies (POCS)	Use of Charms	5.2(19.6)	14.8(28.0)	65.7(42.7)	14.3(9.7)
	Tightening farm/herd security	38.3(61.5)	20.0(11.9)	22.6(14.7)	19.1(11.9)
	Looking for another alternative livelihood option	29.6(16.8)	30.0(32.1)	19.1(46.9)	21.3(13.3)
	Sowing less/reduce stock	38.7(19.6)	24.8(25.2)	18.7(46.9)	17.8(29.3)
	Buying food	43.9(49.0)	33.5(34.3)	16.1(14.0)	21.1(2.8)
	Selling farm	6.5(27.3)	27.8(47.7)	54.3(26.6)	11.3(9.8)
	Preparing for the worst scenario	37.4(49.7)	37.8(31.5)	18.3(21.0)	6.5(6.3)
	Borrowing money from relatives	28.7(43.4)	37.4(28.0)	28.7(20.3)	5.2(8.4)
	Use of experience	41.7(40.6)	50.9(53.8)	7.0(5.6)	0.0(0.0)
	Working harder	42.2(31.5)	35.7(42.0)	19.6(24.5)	2.6(2.1)
	Average %	56.0	12.1	26.1	5.9
Emotional oriented coping strategies (EOCS)	Appeasing others	36.9(21.0)	7.8(55.2)	48.3(21.7)	70(2.1)
	Use of drugs/alcohol	18.3(20.3)	24.8(16.8)	42.6 (49.0)	14.3(14.0)
	Revenging/Aggression	12.6(11.2)	30.0(44.1)	48.3(42.7)	9.1(2.1)
	Pretending it was not bad	80.8(3.5)	27.5(18.2)	51.3(65.0)	13.9(13.3)
	Praying for peace	74.3(82.5)	13.3(7.0)	9.1(9.8)	7.7(0.7)
	Accepting as it is	23.5(44.8)	50.4(42.0)	16.5(8.4)	24.1(4.9)
	Average %	57.5	16.1	21.4	5.0
Social support seeking oriented coping strategies (SSCS)	Seeking for litigation	41.3(26.6)	31.7(50.3)	16.5 (14.7)	10.4(8.4)
	Seeking help from local leaders	24.3(67.1)	30.4(21.7)	41.3(9.8)	3.9(1.4)
	Looking help from local Government	58.7(62.9)	20.9(26.6)	16.5(7.7)	3.9(2.8)
	looking for help from relatives	35.2(69.9)	37.8(18.2)	24.3(11.2)	2.6(0.7)
	Average %	65.1	11.0	19.8	4.0
	Overall %	54.3	7.6	33.2	4.9

Note: Numbers which are not in parenthesis represent scores of farmers in percentages; and the numbers in parenthesis represent scores of pastoralists.

Although food security can be achieved by producing and or purchasing it, among other means, access could be highly hampered by poor relations between the parties in conflicts. According to Makoye (2014), natural resource use conflicts are responsible for food insecurity among farmers because they (farmers) become unable to harvest crop products for fear of revenge attacks from angry pastoralists. Also, the tightening of security around the herd implies that pastoralists are more sensitive to security issues than would be the case with farmers. Furthermore, the most often use of preparedness for the worst as a coping strategy among pastoralists, reflects their militant behaviour which

is one of the likely things that worsen the conflict situation. Overall, farmers, as opposed to pastoralists, used problem oriented coping strategies to deal with conflicts, suggesting that farmers perceived natural resource use conflict as a problem deterring their success in agricultural activities. Again, it shows that pastoralists suffer less from the effects of natural resource use conflicts than would be the case of farmers.

Other often used POCS by each group include the use of charms, selling of farm land and seeking alternative livelihood options apart from crop and livestock production. The least often used POCS by farmers include the use of charms and selling of land. Land in Tanzania as in other Sub-Saharan African countries is regarded as a primary asset for survival and a major source of income and livelihoods among the rural population. In addition, land carries with it cultural and spiritual attachments (Maksi, 2013). Therefore, this perspective makes the selling of land difficult as a coping strategy for natural resource use conflicts.

The results of EOCS are summarised in Table 5.1. The majority of farmers and pastoralists often conduct prayers for peace as a coping strategy to manage the conflicts. This implies that adherence to religious principles plays a key role as a coping strategy among the respondents. Most of the farmers were of the opinion that the conflicts were not as bad as the pastoralists would wish to believe. This implies down playing the conflicts, by making this conflicts coping strategy appear less important. Despite the use of positive EOCS to deal with the situation, negative coping strategies were also reported among the respondents. According to the study findings, some of the negative strategies of coping with resource use conflicts as reported by respondents include poisoning of livestock, excessive alcohol consumption, and revenge attacks. Similar findings are reported by King (2008) Holton *et al.* (2015) who revealed that negative coping

strategies involved the use of drugs/alcohol and carrying out of revenge attacks. While the rate of the use of revenge attacks was higher among farmers, alcohol consumption and drugs use was higher among pastoralists. The use of revenge attacks as a coping strategy reflects a latent tension and mistrust between the conflicting parties, which may ultimately hamper the productive economic activities among the people in the study areas. According to Yahia *et al.* (2015), alcohol consumption/drugs use as a coping strategy in natural resource use conflicts among farmers and pastoralists may result into serious health problems which consequently threaten agricultural production.

Table 5.1 also shows the use of social support coping strategies. Generally, the results show that seeking help from the government was often used by farmers and pastoralists as a strategy for managing conflicts. Pastoralists also often sought help from relatives, which signifies the existence of strong family bonds, which may eventually give them a sigh of relief in the aftermath of conflicts. Also, seeking for help from the government suggests that both parties in the conflicts have confidence in government institutions. However, the rate of the use of litigation was higher among farmers than was the case among the pastoralists. This could be due to the fact that farmers were more knowledgeable on laws governing land matters than were the pastoralists. These findings contradicts those by Adisa (2011) who reported that in Nigeria lack of use of litigation as a coping strategy by the vast majority of farmers compared to pastoralists despite the existence of regulations regarding use of agriculture land was a result of their “lack of awareness” of their legal right or a result of lack of resolve leading to the acceptance of their situation as their “fate”.

Seeking for help from local leaders was the least used coping strategy by farmers and pastoralists in the study area. This is because local leaders are regarded as corrupt and

responsible for land disputes among the people, as they tend to receive bribes from perpetrators of criminal offences so as to bend the rules leading to miscarriage of justice. To exemplify the prevalence of corrupt practices among government officials, one of the district residents magistrates had this to say;

“We have heard of cases of pastoralists being asked for bribes of up to five hundred thousand Tanzanian shillings (USD, 225) to have their cases against them for damaging crops resolved quietly” (field interviews).

Similar findings are reported by Abroulaye *et al.* (2015) in Senegal who found that local leaders abuse their authorities in order to seek for bribes from the parties in conflicts. On the same token, Umar *et al.* (2013) in their Nigeria study found that corrupt tendencies by local leaders revolve around overestimation of the amount of the crops damaged by livestock in order to elicit some amount of money from farmers in the form of bribes.

The average scores for the coping strategies both in Kiteto and Kilosa districts are summarised in Table 5.2. The Table provides a summary of the findings of the average scores regarding the three coping strategies discussed so far for farmers and pastoralists. The results show that, among the pastoralists, the use of problem oriented coping strategies had an average score of 45.5%, while among farmers it had an average score of 54.5%. On the average, therefore, farmers mostly use POCS as opposed to pastoralists. This suggests that farmers encounter more problems related to natural resource use conflicts than pastoralists. Moreover, the findings also show that farmers are more aggressive in trying to address problems related to natural resource use conflicts than pastoralists. The same applies to the use of EOCS. In addition, the use of SSCS scored higher among farmers (52.7%) than it did among the pastoralists (47.3%).

The implication here is that, in the event of natural resource use conflict between the two groups, pastoralists sought help from external sources more including the government and relatives as a coping strategy to manage conflicts than did the farmers. On the other hand, one half of each group often used a combination of coping strategies. This implies that there is no single coping strategy that works best in dealing with negative effects of resource use conflicts (Yahia *et al.*, 2014; Umar *et al.*, 2013; Adisa, 2011).

Table 5.2: The mean score of use of coping strategies among farmers and pastoralists in Kiteto and Kilosa Districts (n=373)

Strategy	Kilosa		Kiteto		Overall	
	Farmers (n=139)	Pastoralists (n=91)	Farmers (n=91)	Pastoralists (n=54)	Farmers (n=230)	Pastoralists (n=143)
Average use of POCS score (%)	53.4	56.6	55.0	45.0	54.5	45.5
Average use of EOCS score (%)	56.0	44.0	49.0	51.0	51.2	48.8
Average use of SSCS score (%)	53.8	46.2	52.2	47.8	52.7	47.3
Combined coping strategies score (%)	53.1	46.9	49.1	50.9	50.0	50.0

5.4.2 Factors influencing the use of coping strategies among actors in conflicts

An ordered logistic regression was used to determine the socio-economic factors that influenced the use of coping strategies among farmers and pastoralists. The dependent variable, coping strategies, was regressed on the 12 covariates shown in Table 5.3. The regression was carried out in order to determine the influence of each of the variables on the probability of a household is in the highest category of using a strategy for coping in a conflict situation. The likelihood ratio chi-square 107.2 with a p-value of 0.000 indicates that the model was statistically significant compared to the null model with no predictors. According to Louviere *et al.* (2000), a model with an R^2 of 0.2 and above is considered as an excellent fit. Since proportional odds were assumed, a single coefficient was estimated for each predictor.

Table 5.3: Factors influencing the use of coping strategies to resource use conflicts in Kiteto and Kilosa Districts

Variable	Coef.	Std. Err.	z	P>z	95%Conf.	Interval
District of domicile	-1.688	0.281	-6.01	0.000*	-2.238	-1.137
Age of household head	-0.013	0.010	-1.30	0.194	-0.033	0.007
Household size	0.025	0.036	0.69	0.492	-0.046	0.096
Sex of the household head	-1.451	0.329	-4.41	0.000*	-2.095	-0.806
Ethnicity of the household head	-1.472	0.276	-5.33	0.000*	-2.014	-0.931
Proximity to the household farm	-0.001	0.000	-2.94	0.003*	-0.002	0.000
Land size in acres	-0.003	0.003	-1.00	0.318	-0.009	0.003
Land ownership of the household	0.829	0.312	2.66	0.008**	0.217	1.440
Production purpose	-0.608	0.272	-2.23	0.025**	-1.141	-0.075
Land tenure system	-0.478	0.300	-1.59	0.111	-1.065	0.110
Land hoarding	0.020	0.313	0.07	0.948	-0.592	0.633
Years of residence	-0.428	0.288	-1.49	0.137	-0.993	0.136
/cut1	-8.811	1.156			-11.078	-6.544
/cut2	-8.295	1.158			-10.565	-6.025

Number of observations =372;Wald Chi² (12) =107.72: Prob> chi² =0.000:Log pseudo likelihood = -265.12104:
Pseudo R²=0.2092: **=p<0.005, *p<0.001

Table 5.3 presents the coefficients, their standard errors, z-tests and associated p-values, as well as 95% confidence interval of the coefficients. The results show that one's district, sex, ethnicity, location of the farm, land ownership, and production purpose significantly ($p < 0.005$) influenced a household's choice of coping strategies. The rest of the predictors particularly age, household size, land size, land hoarding, land tenure system and years of residence had no significant influence. These results differ from those reported in a study by Adisa (2012) which showed that socio-economic factors such as age, family size, and farming experience significantly influenced the choice of coping strategies to resource use conflicts.

As shown in Table 5.3, one's district of residence highly ($p < 0.001$) influenced one's choice of a coping strategy. The respondents in Kilosa were more able to cope with resource use conflicts compared to their counterparts in Kiteto District. Literature (Pedersen, 2016; Pedersen, 2018) also shows that conflicts in Kiteto are less frequent and are a more recent phenomenon than is the case with Kilosa. Therefore, having fewer

coping strategies in Kiteto could be attributed to the low frequency and relatively shorter duration of the occurrence of these conflicts. The descriptive statistical analysis in Table 5.1 show that over 40% of both farmers and pastoralists have been reported to have been often using their experience to cope with resource use conflict. In this paper, it is further argued that one's place of origin played a key role in the choice of a coping strategy to natural resource use conflicts. For example, in Kilosa, the Maasai are immigrants, thus, this explains why they are more restraint compared to people in Kiteto who are perceived as migrants of other ethnic groups and farming communities.

Males were less likely to be in the highest category of choosing a coping strategy to natural resource use conflicts. This implies that there was a negative correlation (Coef. -1.451) between coping strategies and sex of the respondents and this was highly statistically significant ($p < 0.001$). In other words, in the study areas, males stood a better chance of coping with natural resource use conflicts than females. Similarly, Chandra *et al.* (2017) found that, in conflict-prone areas of Philippines, men and women were affected differently in a case where women were subjected to forced migration, increased discrimination, loss of customary rights to land, resource poverty and insecurity, thus, making them to coping less with natural resource use conflicts. This argument is supported by results from focus group discussions which revealed that during conflicts women, children, and the elderly are either left at home or hidden in bushes while the men assume the responsibility of guarding the properties and fighting back the attackers.

Table 5.3 shows that Maasai were less likely of being in a higher level of choosing coping strategies to resource use conflicts, implying that ethnicity is negatively correlated (Coef.-1.472) with coping strategies, and this was highly statistically ($p < 0.001$)

significant. This also implies that the ability to cope with resource use conflicts varies across ethnic groups. Therefore, a non-Maasai pastoralist has a better chance of coping with resource use conflicts than his Maasai pastoralist counterpart. The plausible explanation for this is that non-Maasai, have more than one income generating activity which guaranteed them survival even after the destruction of their crops by livestock; this is unlike the Maasai pastoralists who are primarily engaged in livestock production as their major and the only source of livelihood. These findings are confirmed by the findings of Yahia *et al.* (2014) in Sudan which show that farmers' possession of more than one income generating activities enhance their chances of coping with natural resource use conflicts as opposed to their pastoralists' counterparts who solely depend on livestock for their survival.

The proximity of the household to the farm had a negative correlation (Coef.-0.001) with coping strategies to resource use conflicts and this was statistically significant ($p = 0.003$). This suggests that a household with their farms far away from the homestead are less likely to be in the highest level of choosing coping strategies to natural resource use conflicts than the homestead whose farms are closer. This could be explained by the fact that farms located far away from the homestead are prone to damage by livestock, as most of these would likely be closer to grazing areas than is the case with farms closer to the homesteads.

The results from the regression analysis show further that the household's production purpose was had negative (Coef.-0.608) and this was statistically significant ($p = 0.025$). This implies that the more the respondent put his/her farm to different production options the less the likelihood for him/her to be able to cope with resource use conflicts. This means that if a farmer engages in subsistence, commercial production or both, the likelihood of experiencing more crop damage due to conflicts is likely to be high. This is

not the case with pastoralists who would always migrate to other areas whenever conflicts occur to avoid confrontation with farmers, only to return back during the dry season when crops have already been harvested. These frequent migrations deny them a chance to engage in commercial livestock production (Salzman, 2018; Rain, 2018).

Land ownership had positive (Coef.0.829) and statistically ($p = 0.025$) significantly associated with natural resource use conflicts coping strategies. The finding is consistent with the findings by Deressa *et al.* (2010) in Ethiopia who reported that individuals with land ownership and land tenure security are likely to cope better with natural resource use conflicts than those without the security of tenure. The results in Table 5.3 show that one unit increase in land ownership is likely to lead to a 0.829 increase of a household's ability to cope with resource use conflicts. This is further supported by results in Table 5.1 that show that only 6.5% and 27.3% of farmers and pastoralists respectively, sold their farms as a strategy of coping with conflicts. The finding simply that if land ownership procedures are properly followed, most farmers and pastoralists will have access to land ownership security and hence minimize resource use conflicts in the study areas. According to UNEP (2007), land ownership increases farmers' and pastoralists' chances of coping with conflicts. Therefore, land ownership is an important aspect if both farmers and pastoralists' land tenure security is to be guaranteed as this will reduce conflicts as a result of land grabbing and trespassing.

5.5 Conclusions and Recommendations

Natural resource use conflicts between farmers and pastoralists are prevalent in Tanzania. Generally, farming and pastoralism in the study areas are male dominated activities, specifically because of the prevailing conflicts between farmers and pastoralists. The negative effects of these conflicts have been manifested through threats of food

insecurity resulting from abandonment of farms. Thus, coping strategies become a necessary aspect for sustainable development in the aftermath of a post conflict era. Generally, there is no single strategy which is completely adequate in bringing the necessary remedy in the aftermath of conflicts. Thus, the actors employ a portfolio of coping strategies in order to address the effects of resource use conflicts. Though there were slight differences in the adaptation of coping strategies against resource use conflicts, both farmers and pastoralists use emotional focused coping strategies mainly praying for peace, which shows their strong adherence to God. Moreover, despite the allegation of corruption, the parties in the conflicts still sought help from the local government for social support seeking as a coping strategy hence demonstrating trust in the government. The study concludes that land ownership and land use planning are important aspects of actors in conflicts in minimising further conflicts.

Based on the study findings and conclusion, it is hereby recommended that Kiteto and Kilosa District Councils, through the Land Department, should ensure that farmers and pastoralists who are in the conflict-prone areas are encouraged to own and manage their land sustainably in order to minimize natural resource use conflicts among and between them. Also, the coping strategies to resource use conflicts adopted by farmers and pastoralists should be mainstreamed in the designing and enforcement of rules and regulations governing strategies of coping with natural resource use conflicts in the study areas. In addition, there should be co-management committees' at all administrative levels in the districts to ensure that farmers and pastoralists observe rules and regulations governing natural resources use on a daily basis. Finally, more research on the addressing effects of post-traumatic stress and resilience among farmers and pastoralists in conflict-ridden areas in Tanzania should be undertaken.

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5.6 Summary

Generally, the study dealt with post-conflict coping strategies and the well-being of farmers and pastoralists in Kilosa and Kiteto District, Tanzania. The situation of natural resource use conflicts at global, Sahel and Tanzania particularly in the study districts are adequately addressed. Specifically, the thesis has discussed various forms and drivers of conflicts; the concept of governance and conflicts, the well-being of farmers and pastoralists in relation to natural resource use conflicts; and finally the post conflicts coping strategies and the factors determining the strategies. In view of the above, the contribution of the study to existing theories, policy implications, conclusion, recommendations and areas for further studies are adequately covered.

5.6.1 Contribution of the study to existing theories

The study makes three main contributions. The first contribution concerns identifying various forms of conflicts namely pastoralists versus pastoralists, farmers versus pastoralists, pastoralists-farmers versus government institutions to be considered when addressing natural resource use conflicts, which may increase the opportunities for preventing and managing natural resource use conflicts. Furthermore, the analysis emphasises that drivers of such forms of conflicts among different actors and the importance of treating each form of conflict in a unique manner in the process of promoting peace and tranquillity.

Second, the study provides an insight into farmers-pastoralists coping strategies used in a post-conflict situation. In fact, several studies in Tanzania have paid attention to coping strategies to climate change, food insecurity and HIV and AIDS. The findings of this study, therefore, can be used as a yardstick in coming up with strategies used to manage farmers-pastoralists conflicts over natural resources elsewhere in Tanzania.

Third, the study has also managed to link between natural resource use conflicts and subjective well-being (happiness) of farmers and pastoralists in Kilosa and Kiteto district Tanzania where previous studies did not focus.

5.6.1 Policy implications of the study

The study has observed the existence of boundary disputes between farmers and pastoralists in Kilosa and Kiteto districts. The prevailing disputes, however, have been a consequence of interference from political leaders who have been in favour of farmers, thus, allowing them to trespass the set boundaries. The study has also observed that farmers-pastoralists conflicts over livestock routes to access common resources such as water and pasture are prevalent. The conflicts were caused by the establishment of farms along the livestock routes leading to crops susceptibility to damage by livestock. The study further observed that there is a serious violation of the Land Act No. 4 of 1999 and the Village Land Act No.5 of 1999 mostly by local government officials and affluent civil servants illegally working with unfaithful village officials to grab village land without the consent of the village general assembly. In addition, the Land Use Plan Act No.10 of 2007 has to a large extent not been implemented. The findings of the study further show that most of the land allocated to farmers and pastoralists are not gazetted like is the case with the national parks and forest reserves and hence, opening avenues for corrupt government officials to allocate the land to investors without compensation to farmers and pastoralists. In the view of the aforementioned concerns, it is suggested that:

- i. The Land Use Plan Act No.10 of 2007 needs to be taken to parliament by the Ministry of Land and Settlement for review to include a clause that makes land mapping or land suitability index mandatory before carrying out any land use planning in any area in the country; and.

- ii. The Ministry of Constitution and Legal Affairs in collaboration with Ministry of Agriculture, and Ministry of Livestock and Fisheries should draft a bill and present it to parliament to allow the review of the National Land Policy of 2001, Land Act No. 4 of 1999 and Village Land Act No. 5 of 1999 to include statements that makes gazetting of land allocated for crop farming and pastoralism compulsory.

5.6.2 Theoretical implications

This study was guided by the Lazarus Model of Coping to Stress which explains the dynamics of dealing with stress. According to Folkman and Lazarus (1984), stress is a two-way traffic. Hence, it involves the production of stressors by the environment, and the response of an individual subjected to these stressors. The proponents of the model are of the opinion that individuals respond to stress when they are encountered with a stressful situation. The Model also identified three coping strategies to stress including; problem-oriented coping strategies, emotional oriented coping strategies and social support seeking coping strategies. Although the stressor in this study was the conflict situation prevailing between farmers and pastoralists, in overcoming the stress caused by the conflicts the conflict actors employed different coping strategies to deal with the aftermath of the conflict situations. This confirms the importance of Lazarus model in the study of coping strategies to cope with different situations caused by different stressors apart from natural resource use conflicts.

CHAPTER SIX

6.0 Conclusions and Recommendations

This chapter presents the study's conclusion in line with the findings of the study. The chapter also presents the study's recommendations which stipulate actions to be taken at different stages by different line ministries including the Ministry of Agriculture, Ministry of Livestock and Fisheries, Ministry of Lands, Housing and Human Settlement Development, Ministry of Health, Community Development, Gender, Elderly and Children and other stakeholders dealing with land matters with the purpose of addressing the conflicts between farmers and pastoralists in the study areas.

6.1 Conclusions

6.1.1 Drivers and forms of natural resource use conflicts

Generally, based on literature and the study findings, it can be concluded that different drivers and forms of natural resource use conflicts exist among farmers and pastoralists in Kilosa and Kiteto districts. The conflicts have also become intense because of failure of the various stakeholders including the government and traditional leaders to take actions to implement the various laws governing natural resources. This aspect was more largely manifested through reluctance of the government officials to take relevant actions to address the conflicts in time before they get out of control. The participation of district officials on illicit land acquisition practices seem to be as a result of moral decay manifested through rent seeking and corruption. This is exacerbated by unfaithful village officials in collaboration with district council officials to involve in illegal land deals which seem to be the major sources of conflicts between farmers and pastoralists in the study areas.

6.1.2 Governance and management of natural resource use conflicts

The role of governance in managing farmers-pastoralists conflicts in Kilosa and Kiteto District in Tanzania has been pursued through the context of three governance issues namely: understanding of policies, laws and strategies governing land matters; participation of communities on land matters and corruption. A deeper analysis of the conflicts, shows that on one hand, poor management and inequalities in sharing of natural resources among different users can lead to tension that can escalate violent conflicts. On the other hand, good governance over the management of natural resources use between farmers and pastoralists is a better a guarantor for peace. The study conclude that, the root cause of the conflicts lies mostly in policy deficiency and contradictions of the Land Act No.4 of 1999 and Village Act No. 5 of 1999 which have opened loopholes to corrupt and unethical government officials to engage on rent seeking behaviour to exploit the poor farmers and pastoralists. In particular, gazettelement of the land designated for pastoralists and farmers as is with the case for forest reserves, national parks, game reserves, wildlife management areas and game control areas which makes it difficult to evict farmers and pastoralists from their designated areas.

Furthermore, participation of members across the gender groups have a crucial role to play when it comes to addressing natural resource use conflicts between farmers and pastoralists. In addition, exclusion of farmers-pastoralists from taking part in land matters is significantly associated with occurrence of conflicts. Moreover, bureaucracy in issuing movement permits to pastoralists equally enhances the vice of corruption whose effects have been felt through occurrence of natural resource conflicts especially when farmers and pastoralists are concentrated in one area. It is also concluded that lack of land use plans for most of the villages in the study areas coupled with rent-seeking among district council officials and the police makes the natural resource use conflicts inevitable.

6.1.3 Natural resource use conflicts and the well-being of farmers and pastoralists

This part of the study investigated the relationship between natural resource use conflicts and households well-being and the socio-economic determinants of the subjective well-being (happiness). The proxy measures of well-being are personal security, psychological well-being, education, and happiness. Happiness was used as a proxy measure of subjective well-being. Extreme threats of natural resource use conflicts to personal security among farmers and pastoralists households well-being were exacerbated through post-traumatic stress caused by the loss of life, loss of property and the fear of being attacked especially by the organised militia groups namely the *Korianga's*, *Ujaki* and *Sungusungu*. The militia groups perpetuated most of the conflicts between farmers and pastoralists hence, jeopardising households' overall well-being in Kilosa and Kiteto Districts. Furthermore, physical threats imposed by natural resource use conflicts have negative effects to the psychological well-being of the actors. Such effects include anger, staying away from home for fear of being attacked, marital dissatisfaction and abandonment of farms ($p < 0.05$). Moreover, stress was visible through decline in agricultural productivity which negatively impacted the quality of life of the farmers and pastoralists thus, taking away their happiness.

It can also be concluded that the higher scores on the farm abandonment as a conflict coping strategy has serious repercussions on agricultural production, food security, sustainable development and overall household well-being of the affected household. It is also concluded that though, the conflicts are location specific and their effects differed from one location to another, the on-going conflicts have severely interfered with family unity at the household level. It is further, concluded that on the basis of the household asset ownership index, most households were poor. However, there were more rich households among pastoralists respondents compared to farmers due to the higher value

attached to livestock as an asset compared to other household assets. On the basis of housing quality, farmers are wealthier than pastoralists who are having fond of constructing temporary structures reflecting their mobile life in search of pastures. Based on a number of years spent in school, it can be concluded that the well-being of farmers was better than that of pastoralists. The aspect of schooling, however, seems to be more cultural-based than a result of the influence of conflicts. Based on the study's findings, it can be concluded that there was a significant difference in the degree of happiness between farmers and pastoralists. Farmers were relatively happier than pastoralists because conflicts impacted negatively on the well-being of pastoralists more than farmers. The main socio-economic factors influencing happiness were one's district of domicile, sex, education, and condition of the household's dwelling. Lastly, it can be concluded that beside the on-going conflicts, there are other factors which are responsible for the well-being of farmers and pastoralists in the study areas including land ownership and poor farming and livestock keeping practices.

6.1.4 Coping strategies over natural resource conflicts among farmers and pastoralists

Generally, conflicts over natural resources occur because of disputes over use and control of land, water and grazing resources. In this aspect, the most severely affected groups are the farmers and pastoralists compared to other groups. Despite the physical, emotional and psychological effects of natural resource use conflicts to farmers and pastoralists, they have also imposed huge economic losses resulting from abandonment of farms which have had serious negative connotations on agricultural production, food security and overall development of both parties in conflict. Furthermore, the study findings indicate that the extreme types of these conflicts have led to fatalities thus, posing a great challenge to various stakeholders such as the government and the parties involved in

conflicts (farmers and pastoralists). The aftermath of the conflicts situation has also subjected farmers and pastoralists to undue stress caused by loss of lives, property damage and abandonment of farms. These negative effects of conflicts were considered as the major threats to personal security which in turn lead the parties in conflict to employ different coping strategies in the aftermath of conflicts. Therefore, in order to manage the aftermath of the conflicts, farmers and pastoralists have used a mixture of coping strategies to overcome the effects of the conflicts. The strategies used by these groups include problem, emotional and social support seeking focused coping strategies. The use of all categories of coping strategies shows the importance and uniqueness of each strategy in managing the aftermath of farmers-pastoralists conflicts. It can further be concluded that, the parties in conflicts used both positive and negative (maladaptive) coping strategies in a post-conflict situation. The use of maladaptive coping strategies such as revenge, alcoholism, and charms to overcome the stress caused by natural resource use conflicts is an indication of how the conflicts negatively affected the victims psychological and emotional well-being. Lastly, it can be concluded that with regard to coping strategies to natural resource use conflicts ethnicity, land ownership, proximity to the farm and sex of the respondents are the most important factors influencing farmers-pastoralist households.

6.2 Recommendations

6.2.1 Forms and drivers of natural resource use conflicts

Based on the study's findings and conclusion on the drivers and forms of natural resource use conflicts between farmers and pastoralists, it is recommended that:

- (i) The Local Government Authorities particularly Kilosa and Kiteto District councils should provide pastoralists with essential services such as water to minimize movement of their livestock herds from their designated villages in search of water.

This would, in the long run, reduce crop damage which has been a major driver of natural resource use conflict;

- (ii) The Ministry of Lands, Housing and Human Settlements Development collaboration with Kilosa and Kiteto District Councils should ensure that there are proper land use plans in all villages. Doing so will help set aside areas for both livestock and crop production hence, minimising conflicts over use natural resource;
- (iii) The District Councils should ensure that traditional natural resources conflicts resolution mechanisms of farmers and pastoralists are revived so that they could assist in addressing the conflicts on a daily basis to prevent them from escalating to violent scales. Moreover, these will give the conflict actors legitimacy and ownership of the entire conflict management process;
- (iv) The Ministry of Agriculture, Ministry of Livestock and Fisheries should carry out land carrying capacity studies to determine appropriate land carrying capacity of rangelands in order to maintain the right number of livestock units that would minimise excessive pressure on the available grazing resource hence, curbing down the unwarranted livestock migration to undesignated areas;
- (v) The district councils should formulate bylaws for controlling livestock population in areas with limited land and grazing resources; and
- (vi) The alleged corrupt practices and reluctance among government officials on taking action in time in conflict-affected areas should be investigated by the relevant authorities such as the Prevention and Combating of Corruption Bureau (PCCB) in order to identify the source of these vices and institute legal procedures/actions against the culprits.

6.2.2 The role of governance in natural resource use conflicts

- (i) The government through the Ministry of Agriculture, Ministry of Livestock and Fisheries, Ministry of Constitution and Laws should closely work with the local government authorities to impart knowledge on a continuous basis to farmers and pastoralists as well as other stakeholders including the district council officials on the policies, laws and strategies governing land matters and other natural resources. This should be done with the primary objective of creating awareness and understanding of the *modus operandi* of the regulatory framework which clearly defines how land issues should be governed in the country. This is important because it will enhance farmers-pastoralists understanding of policies, laws, and bylaws governing natural resource in the study areas hence, minimizing conflicts; and
- (ii) All stakeholders including non-governmental organisations, community-based organisations and the government at the village and district levels should ensure that the rule of law with regard to land matters is adhered to by all stakeholders for ease management of natural resource use conflicts.

6.2.3 Improving the well-being of farmers and pastoralists

- (i) Based on the fact that most housing conditions for the respondents were poor, programs to improve their conditions in both Kiteto and Kilosa Districts should be put in place by the Ministry of Land and Settlement Development through respective district councils; and
- (ii) Since some households have been severely affected by conflicts, the government should assist them through the disaster management department to help them improve their socio-economic well-being so as to enhance their resilience including restoring their happiness in the aftermaths of conflicts.

6.3 Areas for Further Research

This study opens up several avenues for future research. Generally, the analysis made in this thesis shows that the interaction between natural resource conflicts, governance, communities well-being and coping strategies is critical in managing natural resource use conflicts between farmers and pastoralists. Based on the study findings:

- (i) It was found that depression and post-traumatic stress seems to be rampant in conflict affected areas among farmers and pastoralists. It is hereby recommended that the Ministry of Health, Community Development, Gender, Elderly, and Children could engage clinical psychologists and psychiatrics to conduct empirical studies on depression and post-traumatic stress in the study areas and in other conflict-ridden areas to quantify the magnitude of the problems. This will help in setting priorities for resilience in the aftermath of natural resource use conflicts;
- (ii) It was revealed that the allegations for corruption and rent-seeking practices were rampant in conflict-affected areas. Therefore, it is recommended that the magnitude of corruption in relation to natural resource use conflicts should be researched among different stakeholders including farmers and pastoralists. This is because the determination of the extent of participation in corruption by different stakeholders could help in fighting and combating the vice of corruption;
- (iii) It was also revealed that land carrying capacity within certain localities of the study could not contain the current livestock numbers. Therefore, it is suggested that; there is need to carry out studies to establish the appropriate carrying capacity of rangelands within different localities in order to have a right number of livestock in those areas. Maintaining the right numbers of livestock in a particular area will lead to the use of available grazing resources sustainably hence, minimising conflicts between farmers and pastoralists.

APPENDICES

Appendix 1: A Household questionnaire on *Post Conflict Coping Strategies and Well-Being of Farmers and Pastoralists in Kilosa and Kiteto Districts, Tanzania*

Dear participants,

My name is Parit Saruni a PhD student from Sokoine University of Agriculture (SUA). I am conducting a study on *Post Conflict Coping Strategies and Well-Being of Farmers and Pastoralists in Kilosa and Kiteto Districts, Tanzania*. You have been selected randomly to participate in the study to present your truthful information about natural resource use conflicts and household well-being in your community. In doing so, please take into consideration that all answers you will give are correct and true. Your contribution in terms of ideas is very important to inform strategies to address natural resource use conflicts among farmers and pastoralists. Therefore, you are kindly asked to speak out your mind so that it can be easier to write down what you will say. Feel free to speak because your identity will be kept anonymous. Before we start, do you have a question or comment?. Please if you have any comments raise it now for clarification.

Objectives of the study

- i. Ascertain the forms of resource use conflicts and their causes;
- ii. Analyse the role of governance in managing natural resource use conflicts;
- iii. Find out socio-psychological coping strategies to conflict and their determinants;
- iv. Determine well-being levels among farmers and pastoralists; and
- v. Examine the effects of conflicts coping strategies on household well-being.

Section 1: Household Identification

1.	Name of interviewer	
	Household Head's name-	
	Household Head's Phone number	
	Date of interview	
2.	Location of household	
	Region:	
	District:	
	Division	
	Ward	
	Village/street:	

Section 2: Characteristics of the Household

3. Household head's age in years-----

4. How many people live in this household? -----

(Household size include semi detached rooms)

5. Household head's marital status -----

1=Single 2=Married 3=Living together 4=Separated 5=Divorced 6=Widowed

6. Household head's Sex -----

1=Male 2=Female

7. Household head's religion-----

1=Moslem 2=Roman Catholic 3=Other Christian 4=Traditional 5=No religion

6=Other (Specify)

8. Household head education-----

1=No schooling 2=Adult education 3=Primary Education 4=Secondary school education 5=Post-secondary education (certificate, diploma, degree etc) 6=Other (Specify)

10 Household head's head main occupation-----

1=Farmer 2= Livestock keeping 3=Trader 4=Formal employment 5=Casual work
6=Retired from employment

11. To what ethnic group does the Household head belong? -----

1=Maasai 2=Non-Maasai

12. Household head's years of residency in the village-----

1 =1-4 Years 2=5-9 Years 3=10-14 Years 4= More 15 Years

13. Household head's land ownership in the village?

If the answer is no in question (13) skip question 14 1=Yes 2=No

14 How was acquire the land acquired?-----

1=Inheritance 2=Bought 3=Government allocation 4=Clan 5=Lease
6=Others (Specify)

16 What is the total size of the land in hectares under use by the household?

17 Do you have plots of land away from the main homestead?-----

1=Yes 2=No

18 What is the size of the land in acres?

19 What is the location of the land?

1=Homestead 2=Away from the homestead

20 What is the nature of the land tenure?-----

1=Owned 2=Rented

21 Is your land adequate? -----

1=Yes 2=No

22 How much land in acres did you hire in-----

(a) 2010/11 (b) 2011/12 (c) 2012/13 (d) 2013/14 2014/15

23 What major problems do you experience as far as your land is concerned?

S/No.	Problem	Response	
		Yes	No
1	The land is not enough		
2	Insecure land rights		
3	Lack of inputs		
4	Lack of decision making on land use		
5	Low soil fertility		
6	Soil erosion		
7	Land grabbing		

24 What rights do you have over the land?

1=Title deed 2=Customary 3=User rights 4=Other (Specify)

25 Is your land registered?

1=Yes 2=No

25 Under whose name is the land registered?

1= Husband 2=Wife 3=Both 4= Others (**Specify**)

Determine the forms of resource use conflicts and their causes; (Objective 1)

26 What is your opinion with regard to availability of land for crop production in this area?

27 What is your opinion with regard to availability of land for livestock production in this area?

28 Why do you think land is enough/not readily available to cater for the activities mentioned in (above)?

29 What is your opinion towards the relationship between farmers and pastoralists with regard to resource use in this area?

30 In the table provided below identify the forms of resource use conflicts existing in your area (you select more than one form of the existing conflicts in your location/area)

S/No.	Form of conflicts	1=Yes	2=No
1.	Land Conflicts along village boundaries		
2.	Farmers versus pastoralists' conflicts		
3.	Farmers versus farmers' conflicts		
4.	Natives and investors conflicts		
5.	Residents conflicts versus conservation areas		
6.	Residents conflicts over settlements area		
7.	Conflicts versus land rents		
8.	Land conflicts over inheritance		
9.	Pastoralists versus pastoralists' conflicts		

S/No.	Cause of conflict	1=Yes	2=No
1.	Crop damages by livestock		
2.	Government officials' reluctance to take action to defuse conflicts on time		
3.	Excessively large herds of cattle		
4.	Pastoralists corrupting government officials		
5.	Farmers' forcibly arresting /confiscating cattle		
7.	Antagonistic values between farmers and pastoralists		
8.	Farmers disregarding village boundaries		
9.	Ethnic-based hatred between farmers and pastoralists boundaries		
10.	Heavy penalties demanded by farmers for crop damages		
11.	Government officials favouring farmers		
12.	Non-recognition of indigenous rights		

**Analyse the role of governance in enhancing or arresting resource use conflicts;
(Objective 2)**

16 (*Strongly disagree(1),Disagree(2),Undecided(3), Agree(4) and Strongly Agree(5)*)

S/No.	Statement	Score
1.	Has your household been a victim of corruption	
2.	Have you been solicited for a bribe in the past month	
3.	Is corruption widespread throughout the government?	
4.	Are the quality of service delivery in your adequate	
5.	Do you have alternative measures of corruption in your area?	
6.	Are there legislation that prohibit corruption	
7.	Does anti-corruption agency exists	
8.	Are the laws regarding corruption enforced	
9.	Does political interference undermines the anti-corruption agency in your area	

17 Accountability and resource use conflicts

- (a) What is your opinion regarding the laws governing land matters in your area?
- (b) What is your comment to the extent to which these rules operate in practice?
- (c) What are your views on the functioning of the institutions institution (police)
- (d) What are your views on the functioning of the institutions institution (Courts)

18 . Community participation and resource conflicts

- a.) Does the authority involve you in any land related matter in your area?
- b.) What is the role of women in decision making on the land-related matter?
- c.) If some members in your community are excluded from taking part on land matters do you think this may lead to conflict
- d.) Briefly explain how this may happen
- e.) Please explain if the government wanted to allocate land for different purposes in the village, how is this process usually accomplished?
- f.) Which authority is responsible for land allocation matters in the village?
- g.) Do you pay anything in order to be allocated land?
- h.) Respondents knowledge of existing policies governing land in Tanzania (*Identify various policies governing land in Tanzania*)

**Find out socio-psychological coping strategies to conflict and their determinants
(Objective 3)**

19 . Socio-psychological coping strategies resource Conflict actors

Please indicate the extent to which the coping strategies listed below apply to your household (3=Used often 2=Used somewhat 1= Not used 0=Not applicable). Note that statements number 1-10 are problem-oriented coping strategies (POCs), 11 – 16 emotional oriented (EOCs) and 17-20 social support (SSCs) coping strategies

S/No.	Coping strategies	Score			
		0	1	2	3
1.	Worked harder				
2.	Used own experience				
3.	Borrowed money				
4.	Prepared for the worst				
5.	Sold farm (or herd for pastoralists)				
6.	Bought food (or new herd for pastoralists)				
7.	Sowed less/reduced stock				
8.	Looked for another job				
9.	Tighten farm/herd security				
10.	Used charms				
11.	Accepted it as it is was				
12.	Prayed for peace				
13.	Pretended it wasn't bad				
14.	Took it out on others (aggression)				
15.	Used drugs/alcohol				
16.	Appeased other parties				
17.	Sought help from relatives				
18.	Sought help from local leaders				
19.	Sought litigation				
20.	Sought help from the local government.				

20 Do you think the following factors influence the way the farmers and pastoralists cope with resource use conflicts in your area?

S/No.	Determinants of household's conflict coping strategies	1=Yes	2=No
1	Age of the head of the Household,		
2	The ethnicity of the household		
3	Gender of the household head,		
4	Highest level of Education attained by the household head,		
5	Average annual income of the household head,		
6	Production systems system at the household level,		
7	Production motives of the household,		
8	Farmer-pastoralist household experience in years,		
9	Land tenure and security system of the household,		
10	Land hoarding in your area		
11	Years of residency		

Determine well-being levels among farmers and pastoralists in the study areas (Objective 4)

21 The condition of the dwelling of the household

We use external conditions of the household dwelling as an indicator of the quality of household quality where each household quality attributes scores 1, 2, or 3

House ownership	Type of roofing	Wall material	Floor materials	Number of rooms
If household owned=3 If rented=2 If borrowed=1	Tiles=3 Galvanised/iron sheets=2 Thatched/grass=1	Blocks/burnt bricks=3 Wood/thatched/iron sheets=2 Earth/mud=1	Tiles=3 Cement=2 Earth=1	≥ 5 room score=3 3 to 4 rooms=2 1 to 2 rooms=1

22 Nature and conditions of the main dwelling:

1=seriously dilapidated, 2=Need for major repairs 3=Sound structure

23 Electricity supply:

1=No connection, 2=Shared connection, 3=Owned connection

24 Type of cooking fuel;

1=Gas 2=Paraffin 3=Collected wood, 4=Charcoal

25 Source of drinking water:

1=Rainwater 2=Dam, 3=Rivers, 4=Public well sealed with pump,
5=Piped public water

Type of toilet facilities:

1= Bush (no facility), 2=Shared pit toilet, 3=Own pit toilet, 4=Shared ventilated improved pit latrine, 5=own improved latrine.

26 Household asset index. This index was adapted from analyses recommended for all Bill and Melinda Gates funded projects, in 2010 by Njuki *et al.* (2011:2013).

Assets(h)	Number of assets owned (k)	Weight of asset (w_h)	Adjusted of asset based on the age of an asset			Total weighted asset index
Transport assets				>7 years old	3-7 years old	>3 years old
Motorcycle		48	0.5	0.8	1	
Bicycle		6				
Ox-cart		12				
Car or Track		160				
Agriculture assets				>7 years old	3-7 years old	>3 years old
Hand hoe		1	0.5	0.8	1	
Sword/knives		1				
Shovels/spades		1				
Ox-plough		4				
Power pump		12				
Other HH assets				>7 years old	3-7 years old	>3 years old
Improved cook stove		2	0.5	0.8	1	
Radio		2				
Television		2				
Mobile phone		4				
Chairs		4				
Mosquito net		1				
Gas stove		2				
Livestock				>7 years old	3-7 years old	>3 years old
Cow		10	No adjustment			
Goat/sheep		3				
Poultry		1				
Pigs		2				
Grants total						

27 The education level of the respondent

ID code	Family	Sex	Age	Relationship To HH	In School	Level of schooling	Working Full time	Working Part-time	Working in the farm
1									
2									
3									

Family:1=Yes 2=No, Sex: 1=Male 2=Female, Relationship to HH:1=spouse, 2=child, 3=parents,4=Other relative, In school 1=yes 2=no, level of schooling:1= No schooling, 2=Adult education, 3=primary education, secondary school education, 5=post-secondary education(certification, diploma, degree), 6=other (specify), working part time: 1=Yes 2=No, Working full time: 1=Yes 2 No

Measuring happiness of farmers and pastoralists well-being in the study area

Below are a number of statements about happiness. Please indicate how much you agree or disagree with each by entering a number in the blank after each statement, according to the following scale:

1=strongly disagree 2=moderately disagree 3=slightly disagree 4= slightly agree
5=moderately agree 6=strongly agree

The Oxford Happiness Questionnaire adopted from (Hills, P., and Argyle, M. 2002).

1. I don't feel particularly pleased with the way I am. (R) _____
2. I am intensely interested in other people. _____
3. I feel that life is very rewarding. _____
4. I have very warm feelings towards almost everyone. _____
5. I rarely wake up feeling rested. (R) _____
6. I am not particularly optimistic about the future. (R) _____
7. I find most things amusing. _____
8. I am always committed and involved. _____
9. Life is good. _____
10. I do not think that the world is a good place. (R) _____
11. I laugh a lot. _____
12. I am well satisfied about everything in my life. _____
13. I don't think I look attractive. (R) _____
14. There is a gap between what I would like to do and what I have done. (R) _____
15. I am very happy. _____
16. I find beauty in some things. _____
17. I always have a cheerful effect on others. _____
18. I can fit in (find time for) everything I want to. _____
19. I feel that I am not especially in control of my life. (R) _____
20. I feel able to take anything on. _____
21. I feel fully mentally alert. _____
22. I often experience joy and elation. _____
23. I don't find it easy to make decisions. (R) _____
24. I don't have a particular sense of meaning and purpose in my life. (R) _____
25. I feel I have a great deal of energy. _____
26. I usually have a good influence on events. _____
27. I don't have fun with other people. (R) _____
28. I don't feel particularly healthy. (R) _____
29. I don't have particularly happy memories of the past. (R) _____

28 Household personal security

Did your household suffer the following security threats as a result of resources use conflicts between farmers and pastoralists?

S/No.	Household security threats as a result of resource use conflicts	1=Yes	2=No
1	Loss of life		
2	Loss of property		
3	Physical of pains due to body injuries		
4	Post-traumatic stress		
5	Anxiety/fear of being attacked		

Effects of conflicts coping strategies on rural household well-being (objective 5)

29 What do you consider to be physical and economic effects (gain or losses) of resources conflict at your household?

S/No.	Determinants of household's conflict coping strategies	Loss of	Gain of
1	Yield		
2	Household resources		
3	Social support		
4	Stored products		
5	Job status		
6	Self-esteem		
7	Income		
8	Family/personal health		
9	Knowledge		
10	Quality of life		

30 What are the physical effects associated with resource conflicts between farmers and pastoralists in your area?

S/No.	Household security threats as a result of resource use conflicts	1=Yes	2=No
1	Home destruction		
2	Bodily injuries (self)		
3	Bodily injury (household member)		
4	Death of the HH member		

31 What do you consider to be socio-psychological effects of resource conflicts at your household?

S/No.	Household security threats as a result of resource use conflicts	1=Yes	2=No
1	Marital dissatisfaction		
2	Declining quality of children education		
3	Physical exhaustion		
4	Sleepless nights		
5	Reduced interest on family matters		
6	Anger/anxiety/ emotional exhaustion		
7	Reduction of food quality and quantity		
8	Complaints at home		
9	Farm/job abandonment		
10	Staying more away from home		

Thank you for your cooperation

Appendix 2: A Guide for Life Histories

1. Birth and family origin, e.g. How would you describe your parents?
2. Cultural settings and traditions, e.g. Were your family different from other families in the neighbor-hood?
3. Social factors, e.g. What were some of your struggles as a child?
4. Education, e.g. What are your best memories of school?
5. Love and work, e.g. How did you end up in the type of work you do or did?
6. Historical events or periods, e.g. Do you remember what you were doing on any of the really important days in our history?
7. Retirement, e.g. what is the worst part of being retired?
8. Inner life and spiritual awareness, e.g. what are the stresses of being an adult?
9. Major life themes, e.g. what are the crucial decisions in your life?
10. The vision of the future, e.g. Is your life fulfilled yet?
11. Closure questions, e.g. Do you feel that you have given a fair picture of yourself?

Thank you for your cooperation

Appendix 3: Checklist for Key Informant Interviews

1. Major economic activities in the area
2. Policy issues guiding land matters in rural areas
3. The trends of resource use conflicts in terms of actors and types of existing conflicts, and their perceived causes: The current situation vis-à-vis the situations 5 and 10 years ago.
4. Role of governance in resource use conflicts in the area (actors power relations, corruption, transparency and participation on land matters)
5. Groups of people who are more vulnerable to resource use conflicts in the area (children, women, men, aged, people with special needs, youth, household head, landless, the rich, poor households)
6. Determinants of food and nutrition security among urban households that are vulnerable to food insecurity
7. Coping strategies against resource use conflicts in the area
8. Effects of resource use conflicts in the area(loss of property in number, lost of life, etc)
9. The role of NGOs, CBOs, and FBOs (if any) in resource use conflicts
10. Household ability to cope with resource use conflict in the area
11. Strategies to improve resource use conflict in the area by the government, NGOs, CBOs, FBOs, and the community members.

Thank you for your cooperation

Appendix 4: A Focus Group Discussion Guide

(1) General Awareness of Resource use Conflicts, Farmers, Pastoralists and Household Well-Being

(2) Meanings of resource use conflicts, farmers, pastoralists and household well-being according to the discussants' understanding

(3) Criteria indicating that resource use conflicts exist in the area of residence of the discussants

(4). Forms and Causes Resource Use Conflicts

- i. Common types of conflicts in the area
- ii. Common forms and the frequency with which they occur and their main sources
- iii. Which time of the year are these conflicts common in the area?
- iv. Factors influencing resource use conflicts in the area
- v. Major key actors in resource use conflicts in the area
- vi. Migration of different livelihood groups to the area and role in fueling conflicts

(5). Governance and Resource Use Conflicts

- i. Meaning of good governance according to the discussant
- ii. General view of existing governance on land-related matters (policies, law enforcement)
- iii. Attributes of good governance according to the discussant
- iv. Participation of community members (men/women, old/youth, poor/rich, vulnerable groups on land-related matters i.e. distribution)
- v. Describe the decision-making process on land allocation to the different user group (transparency)
- vi. How much do you pay in order to secure a piece of land in the area
- vii. If you pay then to whom do you give the money
- viii. After making payments are given an official receipt
- ix. Have ever been asked to give a bribe so that you can secure a piece of land?
- x. Are there issues of double allocations with regard to farming plots
- xi. Who are given first priority on land (farmers/pastoralists)

(6) Strategies for Coping with Resource Use Conflicts

- i. Steps that are normally used by households when conflicts occur in the village
- ii. Since the year 2000 conflicts have recurred in the area how have been able to manage the situation

(7) Trends in Resource Use Conflicts in the Area

- i. How the situation of resource conflict was 5 years ago vis-à-vis the current situation
- ii. How the situation of resource conflict was 10 years ago vis-à-vis the current situation

- iii. How the situation of resource conflict was 5 years ago vis-à-vis 10 years ago
- iv. Nature of resource use conflicts in the past

(8) Assets Ownership

- i. Assets owned mostly
- ii. Motives for owning land/livestock
- iii. Production system used in crop/animal production
- iv. Effects of conflicts on the household over the previous 12 months
- v. Health facilities in the area, type of facilities, proximity by most households and services they provide
- vi. Discussants views on health services in terms of facilities, services, supplies, personnel, maternal and child health services
- vii. Local organizations/groups in this community which contribute conflict management
- viii. Availability and access (physical/distance, quality) of drinking water in the community
- ix. Source of water for domestic use
- x. Types of toilets in the area. (Probe if all the households have toilets)
- xi. Availability and accessibility of key services
- xii. Majority of the people in this village own houses
- xiii. Material mostly used to construct the floor/roof/walls

Service	Type	Distance (km)		
Water				
Health				
Primary school				

(9) Personal Security

- 1. Describe any loss of property/life in the area
- 2. Trauma due to loss of relative/neighbour/friend etc.
- 3. Explain the existing caused by natural resource use conflicts in the area
- 4. Comment generally about the happiness of community members.
- 5. General well-being of the households in the area

Thanks a lot for your co-operation

Appendix 5: Sample size determination formula

$$n = \frac{Z^2 pqN}{e^2(N-1) + Z_{\alpha/2}^2 pq} \dots\dots\dots (i) \text{ (Kothari, 2004)}$$

Where: n is the sample size for the finite population. N: size of the Universe population of the community being studied. P: population reliability (or frequency estimated for a sample size (n), where P is 0.5 which is taken for all developing countries population and p+q=1, e: Margin of error considered is 5% for this study $Z_{\alpha/2}$: Normal reduced variable at 0.05 level of significance Z is 1.96 According to the above formula, the sample size for all two Districts Kilosa and Kiteto were expected to be:

$$n = \frac{(1.96)^2 \times 0.5 \times 0.5 \times 84336}{0.05^2 \times (84336 - 1) + [(1.96)^2 \times 0.5 \times 0.5]} = 382 \text{ individuals}$$

$$n = \frac{N(\text{ward}) \times n(\text{allwards})}{N(\text{allwards})} \dots\dots\dots (ii) \text{ (Kothari, 2004)}$$

Where; n = is the sample size at ward level (?), $N(\text{ward})$ = is the individual number at ward level [(Kilosa=45687)) (Kiteto=38649)] $n(\text{allwards})$ = the sample size of the study wards (382). $N(\text{allwards})$ = is the individuals' number of all wards through which the survey was conducted (84336).

Appendix 6: A Map of the study areas

