ANALYSIS OF CONFLICTS AND DEVELOPMENT OF A POTENTIAL MANAGEMENT MECHANISM IN THE KENYAN FOREST SECTOR

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DECLARATION

I, Ogechi Grace Kemunto, declare that this thesis is my original work and has not been presented for a degree in any other university.

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This thesis has been submitted for examination with our approval as the university supervisors

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DEDICATION

To my late brother Fred, who believed in me and encouraged me to pursue my goals.

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LIST OF ABBREVIATIONS

CFA	Community Forest Association
FGDs	Focus Group Discussions
GDP	Gross Domestic Product
GoK	Government of Kenya
IUCN	International union for conservation of Nature
KEFRI	Kenya Forestry Research Institute
KFS	Kenya Forest Service
KFWG	Kenya Forest Working Group
KWS	Kenya Wildlife Service
MENR	Ministry of Environment and Natural Resources
MoU	Memorandum of Association
NGOs	Non-Governmental Institutions
NMK	National Museums of Kenya
PELIS	Plant Establishment for Sustainable Livelihoods
PFM	Participatory Forest Management
PFMP	Participatory forest management plan
REDD	Reducing emissions from Degradation and Deforestation
UNEP	United Nations Environment Programme
WRMA	Water Resources Management Authority

ABSTRACT

This study sought to assess the common types of forest resource-based conflicts in Kenya and develop a potential management framework. Forest resource-based conflicts are still rampant despite devolution of forest governance and recognition of participatory forest management in the constitution of Kenya, 2010 and the Forest act, 2005. The objectives of the study were to assess the types of forest resource-based conflicts, the existing management measures and their challenges as well as to determine possible management strategies. The study focused on three study areas, Kereita, Rumuruti and Kaptagat forests. A total of 242 semi-structured questionnaires were administered to forest adjacent community members, which were complimented with key informant interviews and Focus group discussions for a better understanding of the conflict issues. The main conflicts identified included, human-wildlife conflicts, conflicts over inadequate benefit sharing of forest resources and conflicts arising from the inadequate involvement of forest-adjacent communities in forest management and decision making. These conflicts mainly arose due to inequity in resource allocation, inadequate information sharing and perceived corruption in forest management. Forest sector stakeholders managed the conflicts mainly through community sensitization, mediation and arbitration. However, these strategies were not adequately practiced. The study concluded that a wide range of strategies are necessary in management of forest resource-based conflicts. The conflict management system requires active involvement of all forest actors in the formulation and implementation process to meet targets, consultation of parties, equitable resource allocation, balancing interests and capacity building of the weakest stakeholders to reduce power imbalances. Major recommendations arose from the study: KFS and the Ministry of

Environment and Natural Resources with support from other actors, must make use of the ongoing forest and wildlife policy reforms to integrate conflict management strategies; KFS should seek internal and external funding sources to strengthen forums for discussion and facilitate information sharing and forestry education; and The National government should focus building on empowering local leaders who have the potential to mediate in conflicts.

CHAPTER ONE: INTRODUCTION

1.1 Background of the research

Forest sector reforms are high on Kenya's development agenda (National Forest Policy, 2014). Since the introduction of Participatory Forest Management (Forests Act, 2005), there has been active involvement of international donors, the private sector, the civil society organizations, the local communities and county governments in forestry sector decision-making and resource management. These groups, together with Kenya Forest Service, are undertaking several projects to strengthen the governance process. Examples are the National Forest Programme (NFP), Miti Mingi Maisha Bora (MMMB), Green Zones Development Support Project (GZDSP), Rehabilitating the Mau Ecosystem Project, Farm Forestry and Reducing Emissions from Deforestation and Degradation plus (REDD+). Despite these efforts, forest resource-based conflicts are still increasing. This could be attributed to inadequate participation of strategic stakeholders in the conservation and management of forests (Mathu, 2007) and lack of a constructive conflict management mechanism which would foster good forest governance and sustainable forest management, for poverty alleviation and improvement of people's livelihoods (Ostrom 1999 & Yasmi 2007).

Conflicts are considered a typical way of life and is often necessary to the dynamics of change and stability in infrastructure, socio-political and economic set-ups (Adams *et al.,* 2003). Vuletic *et al.* (2009) pointed out possible useful outcomes of conflict situation, e.g.(a) problems are not being ignored, (b) conflicts can motivate both sides to better understand others point of view, (c) conflicts can result in better decisions and new ideas, (d) conflicts can bring closer people

belonging to the same group. A conflict should therefore not be considered as either positive or negative. The outcomes and the ways in which people respond to them are the determining factors (FAO, 2012). Conflict can have constructive and positive outcomes, depending on the way they are handled. Scholars have concluded that: Conflicts over natural resources have the potential to contribute to equality and equity in resource distribution (Derkyi, 2012) by helping to clarify and improve policies, laws, institutions and processes that regulate access to resources.

The management of protected forests in Kenya has been based on the idea that the forested areas are of primary importance to a nation and that they must be protected and shielded from people living adjacent to them (Ongugo *et al.,* undated).This is often achieved through the strict enforcement of rules to prevent illegal activities. In some cases open conflicts have occurred between communities and government officials which have resulted into losses of life and property (Ongugo *et al.,* undated). In Kenya, politics play a very significant role in the allocation of forest resources and is therefore a major cause of forest resource-related conflicts (Ole Tamooh, 2010). The devolved system of government is also likely to increase conflicts by increasing the number of stakeholders with divergent interests in the forest resource (Oksanen *et al.,* 2011).

Conflicts among stakeholders are perhaps the greatest challenge in management of forest resources in Kenya. According to the World Bank (2009), conflict management is one of the building blocks of forest governance, yet it has received little or no consideration in most of the ongoing governance processes in Kenya.

1.2 Statement of the research problem

Forest resource-based conflicts amongst forest sector stakeholders are still rampant despite devolution of forest governance in Kenya (Oksanen *et al.,* 2011). The Government of Kenya through Kenya Forest Service (KFS) is still unwilling to relinquish more power to Community Forest Associations (Ongugo *et al.,* undated). The law gives KFS the supreme mandate to oversee all Public Forests in the country (Forest Conservation and Management Bill, 2014). This is an underlying cause of conflict where forest adjacent communities perceive that forests are owned and managed by the government. The inadequate ownership of forest resources by forest adjacent communities is a contributing factor to the mismanagement and destruction of resources in the selected study sites of Kereita, Rumuruti and Kaptagat forests.

Community Forest Associations that were formed to include community members in forest management (Forest Act, 2005) are affected by leadership wrangles, dictatorial tendencies of leaders, nepotism in allocation of forest land for Plantation Establishment for Livelihood Improvement (PELIS), corruption among officials and failure of some members to contribute membership funds (Ongugo *et al.,* 2007). Forest adjacent community members in Kereita, Rumuruti and Kaptagat forests are still disgruntled about benefit sharing of forest resources despite existence of the Natural Resources (Benefit Sharing Act), 2014. The law is yet to be implemented in most forest reserves in Kenya.

Human Wildlife conflicts are still a cause for regressive development of forest–adjacent community members due to crop destruction by wildlife (FAO & IGF, 2008). For instance, monkeys and porcupines in Kereita, Rumuruti and Kaptagat forests destroy crops in farms;

Elephants in Rumuruti forest destroy fences, fill up trenches, destroy granaries and other farm structures and syke monkeys in Kaptagat forest destroy forest plantations. The syke monkeys may potentially cause significant economic losses from timber (FAO & IGF, 2008).

Illegal forest activities are also a major cause of conflict amongst forest sector stakeholders for instance over-grazing, illegal firewood collection, poaching of wildlife, logging, fence vandalism and charcoal burning (Ongugo *et al.*, 2008b). Strategies and measures adopted to resolve the conflicts so far have not succeeded in providing sufficient incentives and motivation to forest-sector stakeholders especially forest adjacent-communities. The involvement of all key stakeholders in decision-making is paramount in the success of any conflict management framework (Derkyi 2012). The study assesses the perceptions of key forest-sector stakeholders in relation to causes of conflicts, actors, impacts on livelihood and forest management, existing resolution measures and what they propose as the best management measures. The study mainly focuses on forest adjacent community members around Kereita, Rumuruti and Kaptagat forest stations.

1.3 Research Questions

1. What are the various types of forest resource-based conflicts?
2. What was undertaken by forest sector stakeholders to manage conflicts and were they successful?
3. What do conflict actors propose as the best management measures towards forming a forest resource-based conflict management model?

1.4 Broad Objective

To document a possible conflict management framework based on research and analysis of different types of forest resource-based conflicts

1.4.1 Specific Objectives

1. To assess the types of conflicts in the forest sector
2. To assess intervention measures taken by forest sector stakeholders to manage conflicts and their challenges
3. To assess possible conflict management strategies that can be applied at various levels for sustainable forest management

1.5 Justification

Forest resource related conflicts in Kenya have been persistent for a long period of time. Some of the efforts to resolve these conflicts were in form of change of legislation such as enactment of the Forest Act of 2005 which provides for participatory forest management and the constitution which provides for improved governance. However, there are still challenges of managing conflicts as a result of the involvement of several stakeholders and their different interests in forest resources. It is therefore necessary to establish a conflict management mechanism to promote peace and sustainable use of forest resources.

1.6 Scope and Limitations

Although this study gives a comprehensive analysis of conflicts in three study areas of Kenya, the study aims to give an overview of general forest resource-based conflicts in the Kenyan forest sector. It was however hoped that the information gathered would be generalized to represent other forests and forest sector stakeholders in the country.

A few limitations were encountered;

1. A challenge in getting the populations of forest adjacent community members at the time of the study. However, populations of the locations were useful in sampling.
2. A challenge in getting an adequate number of key informants in the interviews because of their busy schedules. None the less, those who were available contributed immensely to the issues relevant to the study.
3. In this social research, ethical considerations were observed. The respondents consent was needed to participate in the research. Moreover, they were informed that the study was strictly confidential and solely for study purposes.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter describes issues of conflicts common to forests in Kenya and the rest of Africa. The chapter describes the bio-physical and socio-economic setting of Kenyan forests, the assessment of forest ecology, key stakeholders as well as legal and policy issues that are useful in giving an in depth understanding of the nature of forest resource-based conflicts in Kenya. The chapter concludes by looking at options for management of the conflicts.

2.2 Defining conflict

The African Centre for the Constructive Resolution of Disputes (ACCORD, 2002) mainly defines a conflict as "a state of human interaction where there is disharmony or a perceived divergence of interests, needs or goals. It is perceived that interests, needs or goals cannot be achieved as a result of interference from the other party". Conflicts have existed in all cultures, religions, and societies since historical time (Walker & Daniels, 1997). In many African countries, forests can become areas of conflict since they are often found on contested land, surrounded by communities with varied interests and claimed simultaneously by different groups (Kaimowitz, 2003). In addition, the majority of forest-dwelling and forest dependent households suffer from poverty and resent outsiders who often reap most of the benefits from forest resources (Kaimowitz, 2003). In the past few years, forest management agencies world-wide have experienced increasing tensions and conflicts with the societies they are intended to serve (FAO, 2012). This is owed to the inability of the hierarchical approach of forest management to balance national goals with the need to respond adequately to the needs of local communities and

to the increasing expectations for participation and benefits that exist in many contemporary societies (FAO, 2012). Without local cooperation and public support, forest management agencies have had immense difficulty in achieving their mandates of sustaining forest ecosystems and increasing forest productivity (FAO, 2012).

2.3 Causes of forest resource-based conflicts

Due to the complexity of forest resource-based conflicts, there are usually many causes and many interconnected issues that make it difficult to pinpoint the key issues in the conflict scenarios. It is therefore difficult to solve them fully. The main driving factors of conflicts are power plays (Le Billon, 2001 & Marfo, 2006), competing and diverging interests and the needs of stakeholders (Warner 2000), the scarcity of environmental resources (Homer-Dixon, 1999 & Theisen, 2008), the resource curse (Le Billon, 2001), inequity in benefit sharing, the absence or inadequate consideration of conflict management in national policies (Tyler 1999 & Ohene-Gyan, 2004), vague policy directions, institutional failure, competition between different land uses, and poverty (Tyler, 1999; Ostrom, 1999 & Marfo, 2006). Forest adjacent communities have also continued to exert pressure on conservation areas due to population pressure and inadequate livelihood improving interventions in these areas (KWS, KFS, KFWG, UNEP and Rhino Ark, 2011). Other factors include tenure insecurity, greed, corruption and weak law enforcement (Contreras-Hermosilla, 2001 and Kaimowitz, 2003). There is also inadequate community information sharing and capacity building on forest laws Oksanen *et al.* (2011)

Concerns have been expressed in Kenya regarding corruption control within KFS, especially related to the pre-harvest inventories in the forest plantations, and plantation licensing (Oksanen

et al., 2011). The Kenyan law enforcement is equally weak, causing communities and law enforcers to conflict (Oksanen *et al.*, 2011). In Kenya, politics play a very significant role in the allocation of forest resources and is therefore a major cause of forest resource-based conflicts (Ole Tamooh, 2010). The political element of these conflicts is most clearly shown in the distribution of power between the national government and the local level community-based institutions like CFA's. Despite the move towards forest decentralization, the political system in Kenya has tended to retain exclusive management and benefit rights of natural forest resources. Thus, powers and agencies external to communities exercise resource management decision-making without regard to stakeholder interests and priorities.

The problem in conventional hierarchical governance is the state's over-emphasis on law enforcement and control, while overlooking the interactive component of the forest resource system and its inherent conflicts (Derkyi, 2012). The management of protected forests in Kenya has been based on the idea that the forested areas are of primary importance to a nation and that they must be protected and shielded from people living adjacent to them (Ongugo *et al*, undated). This is often achieved through the strict enforcement of rules to prevent illegal activities. Attempts to protect and conserve forest reserves through exclusion have often led to local people developing hostile attitudes towards forests and wildlife. In some cases, open conflicts have occurred between communities and government officials which have resulted into losses of life and property (Ongugo *et al*, undated). This situation will probably be improved with the upcoming National Forest Program and revision of the Forest Policy and Forest Bill.

2.4 Description of forests in Kenya

2.4.1 Forest Cover and contribution to the Gross Domestic Product (GDP)

FAO (2010) defines a forest as land with a tree canopy of more than 10 percent and area of more than 0.5 ha. Africa has vast areas under forests and tree resources. The forests and woodlands cover an area of about 23% of Africa's land area and about 17% of global land (Chidumayo *et al*., 2011). According to the World Bank (2015), Kenya's forests are currently estimated to cover 6.9 % of the country. The forests contribute around 3.6% of GDP, versus the 1.1% listed in the Kenyan national accounts (UNEP, 2012 & MMMB, 2013). The national accounts do not include items such as charcoal production and ecosystem services provided by forests such as climate regulation. In Kenya, like the rest of Africa, forests and woodlands are at the center of the socio-economic development, environmental protection and opportunities for poverty alleviation (Gichora *et al*., 2009 and Chidumayo *et al*., eds., 2011).

2.4.2 Forest Distribution

Closed canopy forests in Kenya occupy approximately 2 % of the total land area (1.24 million hectares) and plantation forest constitute 0.61 million hectares (World Bank, 2007). The distribution of these forests is skewed very heavily to the Central Montane Forest Region where 18% of the area is afforested and to the Coastal Forest Region where 9.9 % of the land surface is forest. According to the World Bank (2007), only 1.9 % of the Western Rainforest Region now contains forest because of population pressures, while the Dry Zone Forest Region is still lower at 0.4 %. Figure 1 shows the distribution of gazetted forests in Kenya.

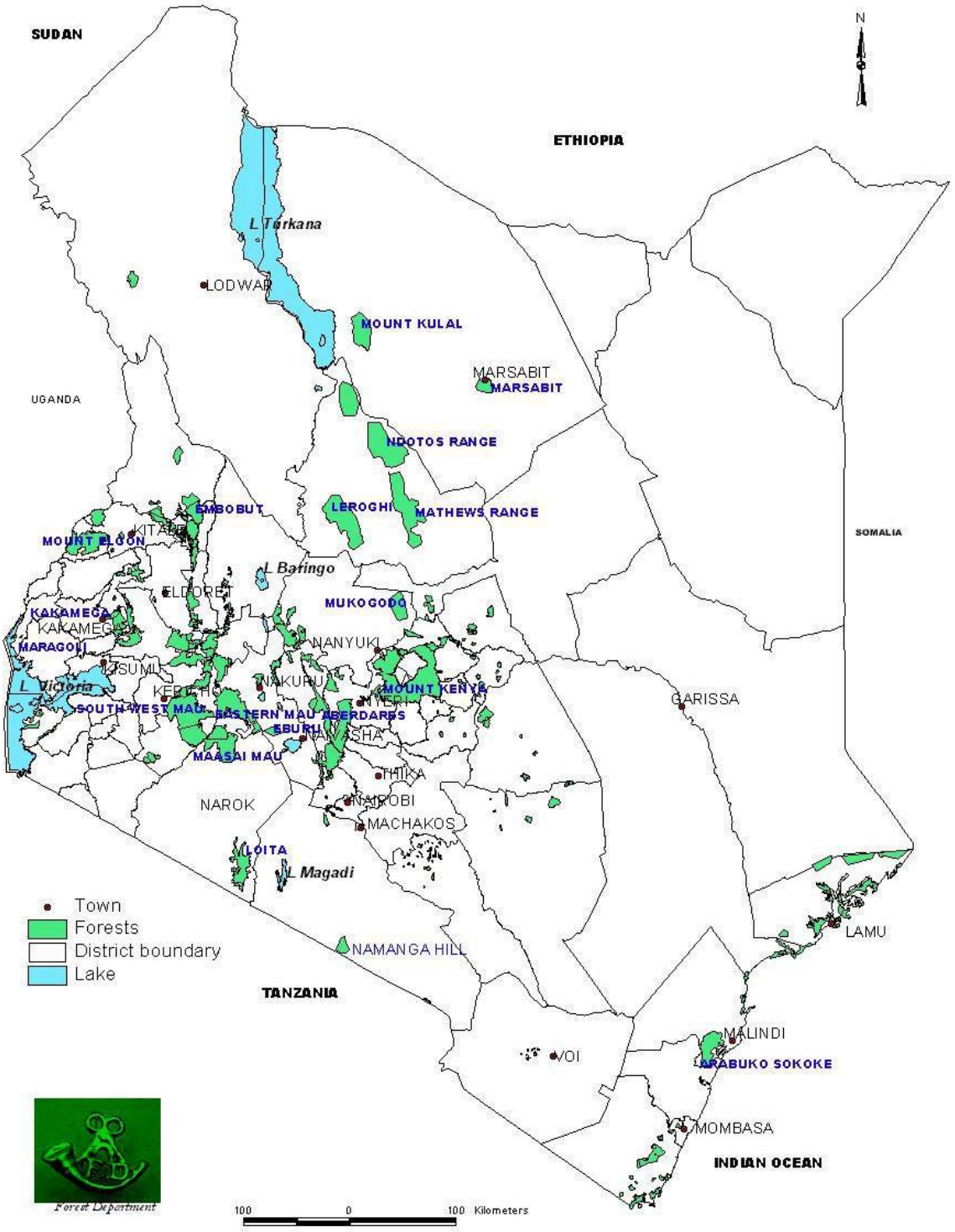

Figure 1: A map of the distribution of forests in Kenya

Source: GoK, 2007

2.4.3 Forest Products and Services

Forests in Kenya provide timber, firewood, water, plant and animal genetic materials for pharmaceutical and industrial purposes, honey, food and medicinal herbs. Forests also provide grazing, employment, recreation, wildlife habitat and tourism. Other indirect benefits include; carbon sequestration, biodiversity hotspots, nutrient cycling, water catchment and hydroelectric power generation (Gichora *et al*., 2009). Forests in Kenya are also conserved for their aesthetic and heritage value (Oksanen *et al*., 2011).

In Kenya, forest sector stakeholders mainly conflict over wood fuel and timber products. Over 80% of the population is dependent on wood fuel for their domestic energy needs. The demand for all timber products has continued to rise, resulting in significant increase in timber prices. Although the 'logging ban' of 2000 is no longer in force, no harvesting in natural forests takes place in Kenya. Harvesting of trees for the timber industry is only allowed in exotic plantations and on private farms. The ban was imposed because of poor forest governance that resulted in failure to replant harvested forests and illegal practices where wood was offered to non-licensed operators (Oksanen *et al*., 2011). However, the ban has been lifted to allow felling of mature trees (Kariuki, 2015).

2.5 Participatory Forest Management (PFM)

FAO (2012) defines participatory forestry as "processes and mechanisms that enable people who have a direct stake in forest resources to be part of decision-making in all aspects of forest management including policy formulation processes" In the attempt of increasing democratic decision-making and benefit sharing, a large number of countries have decentralized their forest

management to local institutions and local authorities. This is derived from the belief that local authorities can deliver more relevant services to their local people being physically closer (Larson *et al*., 2007). The local authorities can in this way establish participatory management, where communities govern their own resources. Kenya and other East African countries have adopted participatory forest management (Schreckenberg *et al.*, 2006). Rural communities in Kenya are increasingly being involved through joint forest management.

The trend of countries adopting PFM has occurred due to studies indicating that inclusion of communities is the best way to achieve forest and biodiversity conservation, sustainability, and enhancement of livelihoods for those dependent on the forest (Kallert *et al*., 2000; Mogoi *et al*., 2012; Jerneck and Olson, 2013). The underlying assumption behind PFM is that communities are motivated to conserve the forest if they can benefit from forest-based products and income, because of this vested interest (Warner, 1997).

According to Ota *et al.* (2012), a set of incentives are generally offered in PFM approaches so that the local people can be motivated to conduct forest protection and related activities. Incentives may be broadly classified as direct and indirect (Ota *et al.*, 2012). In the former, locals utilize forest resources directly for instance through the Plantation Establishment for Livelihood Improvement Schemes (PELIS) which allows regulated forest farming in plantations. Other direct incentives include equitable allocation of forest resources, ecotourism activities or other forms of Payment for environmental services (PES). Indirect incentives on the other hand are benefits derived from activities not related to forestry but have an indirect link for instance improvement in agricultural production and infrastructure development. Despite the importance

of indirect incentives, the direct incentives are key in forest management and conservation to enhance forest resources.

2.5.1 Joint Forest Management

Joint forest management is understood as an engagement between the state (in this case the KFS) and people organized into `communities' (in this case CFAs), with NGOs, where available, acting as the interface (Sundar, 2000). In Kenya, management of forests previously laid emphasis on protection through 'command and control' system with minimal participation of other stakeholders. Consequently, communities were alienated from the forest resources and participation in decision-making. Over time this created animosity between forest managers and forest adjacent communities**.** To address this, the government adopted Participatory Forest Management through engagement of local communities in joint forest management (Forests Act, 2005). This led to formation of community-based organizations which have come to be referred to as Community Forest Associations (National Forest Policy, 2014). However, few CFAs have signed a management agreement with KFS and the existing ones lack sufficient training and financial capacity to operate effectively (UN-REDD, 2013). This may hinder equitable benefit-sharing especially with regard to forest communities.

Although the Kenyan government has embraced participatory forest management, a comprehensive case study conducted from 12 forest sites in Kenya showed that the overall decision-making and revenue generated from the resources, is still channeled to the KFS (Mogoi *et al*., 2012). Forest adjacent communities need to benefit from resources derived from forests, in order to secure the sustainable management of the forests (Adam, 2012 & Mogoi *et al*., 2012).

2.6 Legislative Framework for management of forests in Kenya

Legislation over forest resources is widespread, as evidenced by various Acts (e.g. Forest Act Cap 385 and Wildlife Conservation and Management Act Cap 376) but administered without central co-ordination, by a wide range of public bodies and individuals (Kiragu, 2002). The government, through its institutions (Kenya Forest Service and Kenya Wildlife Service) has not been able to adequately enforce laws related to the protection of forests (Oksanen *et al*., 2011). The following are the main laws guiding forest management in Kenya;

2.6.1 Forests Act, 2005

The Forests Act (2005) which established the KFS in 2007 provides for the establishment, development and sustainable management, including conservation and rational utilization of forest resources for the socio-economic development of the country. It has brought a paradigm shift in forest management as it upholds the principles of public participation in natural resource management. This led to joint forest management by the Kenya Forest Service and Community Forest Associations.

2.6.2 The Constitution, 2010

The Constitution was promulgated to address governance issues in Kenya such as public participation, equity and human rights. The Constitution provides the framework for all future legislation, including land use and related issues for the forestry sector. Currently, all existing laws are being reviewed to conform to the provisions of the Constitution. The constitution provides national values and principles of good governance. These include: equitable benefit

sharing and devolution of power; the rule of law; democracy and participation of the people; equity; integrity; transparency and accountability; access to information; objectivity and impartiality in decision making. It obligates the Forest Administration to formulate a harmonized legal framework in line with its spirit and orientations (Oksanen *et al.,* 2011). Article 69 (1) partially states that, "The state shall; a) ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits; (b) encourage public participation in the management, protection and conservation of the environment;(c) protect genetic resources and biological diversity; (d) eliminate processes and activities that are likely to endanger the environment; and (e) utilize the environment and natural resources for the benefit of the people of Kenya".

2.6.3 Forest Conservation and Management Bill, 2014

The Forest Conservation and Management Bill (2014) has been enacted to be consistent with the Constitution. The act devolves some powers to the counties through the establishment of County Forest Conservation Committees. Article 21 (2) states that, "The functions of the county forest conservation committee among others shall be to; advise the County Government on the ideas, desires and opinions of the people within the county in all matters relating to the conservation and utilization of public and community forests within the county; monitor the implementation of this Act and other forest regulations within the county; ensure the fair distribution of benefits derived from resources in community forests and monitor the management of community forests in the county".

2.6.4 The National Forest Policy, 2014

The Forest Policy provides a framework for improved forest governance, resource allocation, partnerships and collaboration with the state and non-state stakeholders to enable the forest sector contribute in meeting the country's growth and poverty alleviation goals within a sustainable environment. The policy states that the government shall, "Coordinate and promote collaboration among relevant institutions in exercising their mandates, eliminate overlaps and conflicting roles in the various sectors related to forestry development and mainstream cross-cutting issues in the forest sector. The Government will also support non-state actors and local communities to undertake forest-related development activities and investments, promote stakeholders participation at all levels in forest sector planning, implementation and decision making, develop and implement strategies for forest resource conflict resolution and management, strengthen linkages between forest research, education, industry and management institutions, develop institutional framework and mechanisms for effective participation of stakeholders in forest management, develop and implement an equitable benefits sharing scheme in the forest sector as well as support communities, commercial tree growers and land owners to invest in forestry as a viable land use option, promote partnerships in afforestation and reforestation programmes on public, private and community lands, provide incentives to communities, commercial tree growers and landowners for forest management and conservation".

2.6.5 The Natural Resources (Benefit Sharing) Act, 2014

The Natural Resources (Benefit Sharing) Act (2014) has proposed establishment of a Benefit Sharing Authority to deal with all matters relating to benefit sharing of natural resources in Kenya. Article 6 (l) partially states that, "The Authority is mandated to; (a) coordinate the preparation of benefit sharing agreements between local communities and affected organizations (organizations engaging in exploitation of natural resources); (b) review, and where appropriate, determine the royalties payable by an affected organization engaged in natural resource exploitation; (c) identify counties that require to enter into a benefit sharing agreement for the commercial exploitation of natural resources within the counties; (d) oversee the administration of funds set aside for community projects identified or determined under any benefit sharing agreement; and (e) monitor the implementation of any benefit sharing agreement entered into between a county government and an affected organization."

2.7 Common conflicts issues associated with forest resources

(i) Human wildlife conflicts (HWC)

Ladan (2014) defines a human-wildlife conflict as any interaction between humans and wildlife that results in negative impacts on human, social, economic or cultural life, on the conservation of wildlife population, or on the environment. A human-wildlife conflict is thus any interaction between humans and wildlife which cause harm whether to the human, the wildlife or property. According to Gandiwa *et al.* (2013), human-wildlife conflicts can take various forms, including carnivores attacking and killing livestock or humans, species raiding crops, competition for game

and/or resources and retaliation killing. According to Ladan (2014), crop damage is the most widespread form of human-wildlife conflict across the African continent.

Many authors have stated that the main cause of HWC worldwide is the competition for space and resources between increasing human populations and wildlife (FAO.IGF, 2008). According to Jones (2006), "As human populations increase and encroach further into wildlife habitat, conflicts between humans and wildlife are set to increase in both frequency and geographic spread". This is echoed by FAO (2008). Distefano (2009) also states that population increase of wildlife as a result of conservation programmes can escalate conflicts.

According to Ladan (2014), wildlife attack humans as they encroach into their territories. In other areas, locals retaliate by shooting, poison or capture (Distefano, 2009). Such human-induced mortality of wildlife affects the population viability of some of the most endangered species and has broader environmental impacts on preservation of biodiversity and ecosystem stability (Distefano, 2009).

(ii) Conflicts arising from inadequate benefit sharing of forest resources

According to UK aid (2013), the concept of benefit-sharing refers to specific forms of social responsibility to direct returns from the exploitation of natural resources, be they monetary or non-monetary, to local communities. The concept ultimately empowers communities to share in the wealth created by actions directly affecting the resources they rely upon and essentially reaffirms their role in ensuring the sustainability of external economic interventions. In Kenya, like most developing countries, forests are mostly state or public forests, and timber production is generally undertaken by KFS or private companies holding leases or concessions. In such

cases, if the timber production rights, or at least part of the timber benefits are shared with local communities, this can be a strong incentive by directly persuading the locals' effort to protect the forests until trees can be harvested (Ota *et al.*, 2012).

According to Tarus (2013), community members in Kaptagat held demonstrations accusing KFS of selling trees to big companies without consideration to the locals who have been nurturing trees in the forest. Although the Natural Resources (Benefit Sharing) Act, 2014 and National Forest Policy, 2014 require concession agreements to include plans for benefit-sharing with local communities, this frequently fails to transpire. Many communities welcome logging operations if they can secure part of the benefits either as cash or as in-kind benefits. This has proven effective in countries like Indonesia, where plantations in East Kalimantan use benefit-sharing schemes to distribute compensation to local communities (USAID, 2005).

(iii) Conflicts arising from inadequate community involvement in forest management

In theory, decentralization is supposed to shift the balance of power and decision making from central and national levels to subnational and local levels. However, decentralization often remains incomplete, inadequately resourced and implemented as well as limited in scope and benefits (de Koning *et al.*, 2008). "The practice of PFM as is referred in Kenya has not been fully operationalized. In the implementation process, the contribution of communities is limited to protection and monitoring, with minimal decision-making power and limited access to the shared revenue accrued from the forest resources. In addition, forest user rights are not fully implemented according to the Forests Act of 2005 and communities still do not have access to

valuable forest products such as timber. The communities are therefore burdened with most of the work with little benefits from the forest", as stated by Mogoi *et al.,* 2012.

(iv) Conflicts within Community Forest Associations (CFAs)

A study by Ongugo *et al*. (2008a) pointed out several challenges faced by CFAs in Kenya which often lead to conflicts. They included; vested interests of CFA leaders, inadequate capacity building of CFA officials, corruption and elite capture of forest resources. According to Mogoi *et al.* (2012), the viability of CFAs is threatened by power struggles, leadership wrangles, and the splintering of groups.

(v) Inter-ethnic conflicts over forest resources

Nomadic herders mainly in the north of Kenya often move with their animals for grazing and watering in more conducive areas (e.g. Rumuruti forest). Conflicts arise between pastoralists and resident agro-pastoralists over resources mainly fodder and water (Dosu, 2011). The conflicts occur primarily during the dry season- the critical period for livestock when there is scarcity of fodder and water (Jones-Casey & Knox, 2011). During this period the nomadic pastoralists start to migrate towards areas with more abundant pasture and water resources (Jones-Casey & Knox, 2011). "In most cases, these conflicts stem from disputed access to and control over land and water resources" according to Dosu, 2011.

According to Kaimba *et al.* (2011), due to proliferation of small arms and commercialization of cattle rustling in recent years, there is an emergence of large-scale violent cattle raiding in Kenya. Pastoralist communities believe that cattle are an indicator of social standing and wealth.

The act of cattle raiding demonstrates a male youth's transition from adolescent to maturity. Subsequently, the significance of cattle to Nilotic peoples has historically placed them at the center of confrontations between communities. “Whenever scarcity of pasture and water or disease depleted a community's livestock, it often sought to replenish numbers through raiding/rustling”, as stated by Kaimba *et al.,* 2011.

2.8 Conflict management in the forest sector

“Conflict management refers to a variety of collaborative approaches that seek to reach a mutually acceptable resolution of issues in a conflict through a voluntary process”, Pendzich *et al.,* 1994. Conflict management supports the Vision 2030 and Constitutional principles and values of good governance, the rule of law, equitable resource allocation, economic sustainability, and poverty alleviation. Conflict management calls for participation of all concerned parties for consensual decision-making.

The government of Kenya for instance, has sought to implement participatory approaches to sustainable forest management. These approaches are equally relevant in conflict management. They include; development of sustainable livelihood options, fostering inter-sectorial coordination in the forest sector, improved efficiency in service delivery, increased public-private partnerships, forest-adjacent communities to receive direct and tangible benefits from their share of forest resources and persons with disabilities, youth and women to receive priority in project design and implementation.

2.8.1 Conflict management strategies

Conflict management approaches and coping strategies employed in forest resource management can be classified in three categories, namely; informal decision making by conflicting parties, informal third party decision making and legal, authoritative decision making as in Table 1.

Table 1: Conflict management strategies

Informal decision making by conflict parties	
Avoidance	Acting in ways that prevent public acknowledgement of conflicts.
Negotiation	Parties reach consensual agreements
Facilitation	The facilitator helps the parties come together, identify and resolve conflicting issues by themselves
Moderation	The moderator helps the parties come together to clarify and settle minor differences, with the parties still being able to resolve the problem by themselves.
Consultation	The consultant guides the process, working on the deeply rooted perceptions, attitudes, intentions and behaviors of the parties in order bring the parties to a mutual agreement.
Conciliation	This is a mixture of consultation and mediation. The conciliator helps the parties to negotiate while – whenever necessary – addressing internalized perceptions, attitudes, intentions and behavior with the objective of reducing prejudices and hostility.
Mediation	Mediation requires the parties to be willing to face each other and to find a compromise. The mediator follows a strict procedure, giving each party the opportunity to explain its perceptions and to express its feelings, forcing the other party to listen and finally moderating a discussion aimed at finding a solution with which both parties find acceptable. The mediator is impartial to the conflict issues and does not have the authority to impose a solution
Informal third party decision making	
Arbitration	The parties submit the conflict to a mutually agreeable third party who issues a non-binding decision. Arbitration follows strict rules. Unlike the moderator, however, the arbitrator needs to make direct suggestions on how to settle the conflict. He is more influential and powerful than moderators, tutors or mediators and has decision-making authority.
Legal (public) authoritative third-party decision making	
Adjudication	The final decision is taken by a powerful authority (e.g. a judge).
Coercion	Threatening or using force to impose a position.

Source: Derkyi, 2012

2.7.1.1 Dual Concern Theory

Several theories exist on conflict management strategies. However, they all tend to converge on the Dual Concern Theory (de Dreu *et al*., 2001). It argues that conflict management is a function of high or low concern for self, combined with high or low concern for others. The Dual Concern Theory is based on 5 conflict management strategies (Figure 2): forcing (threats and bluffs, persuasive arguments, and positional commitments); yielding (accepting and incorporating others will); avoiding (reducing the importance of the issues); problem-solving (an agreement that satisfies both own and others' aspirations) and compromising (an active search for middle ground). Figure 2 shows the orientation of the strategies in terms of high or low concern for self and others.

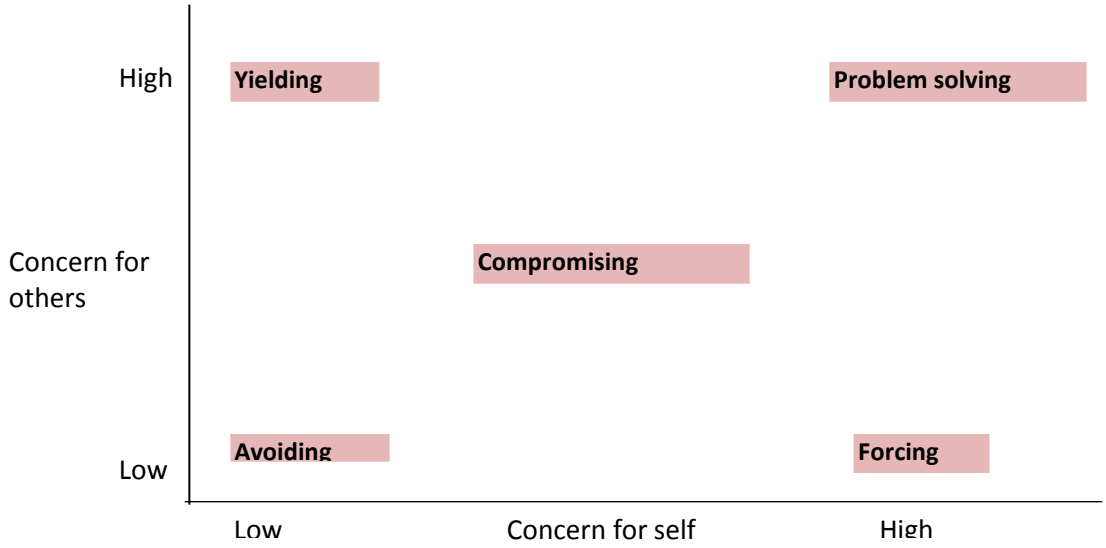

Figure 2: Theoretical representation of the five conflict management strategies as a function of concern for self and concern for others

(Source: de Dreu *et al.*, 2001)

2.9 Theoretical and Conceptual Frameworks

2.9.1 Theories of Forest resource-based conflicts

Some of the most outstanding theories of conflicts are the Neo-Malthusian Theory, Political ecology and the Environmental Framing Model (Derkyi, 2012). The study adopts the latter which analyses people's perceptions of conflict situations.

Environmental Framing Model

Conflicts are ignited by people's perceptions of situations (Derkyi, 2012). According to Gray, 2003, framing is the process of constructing and representing our interpretations of the world around us. Adams *et al.* (2003) claim that variances in knowledge, understanding, preconceptions and priorities among stakeholders provide a deeper meaning of why conflicts arise, but that they are often overlooked in conventional policy dialogue. Such knowledge allows stakeholders to define problems of resource-use in three areas: (i) knowledge of the practical context, (ii) knowledge of laws and institutions, and (iii) their beliefs, myths and ideas. A deeper understanding of these diverse frames creates opportunities for reaching consensus and/or compromise to facilitate conflict management. Buckles & Rusnak (1999) relate causes of conflict to characteristics intrinsic in natural resources. They are; 1. The interconnectedness of the space in which natural resources occur, as a result of which actions by one individual or group may generate effects for others, sometimes beyond the actual site in which resources are used; 2. The shared social space in which natural resources are embedded, with complex and unequal relations among a wide range of stakeholders with diverging interests in the same

resource; 3. Their increasing scarcity; 4. Their symbolic value related to a particular way of life, ethnic identity and gender or age roles (Derkyi, 2012).

2.9.2 Conceptual Framework

Conflict management is making progress by thinking about a conflict situation as unavoidable and ongoing and the management of these conflicts by incessant enhancement in areas of procedures, substance and relationships (Walker & Daniels, 1997). Progress may be developed in shared gains among stakeholders, learning, achieving agreements, laying foundations for further negotiation or fully resolving conflict. This study therefore focuses on conflict as an inevitable process that may or may not be totally resolved, but actions may be taken to minimize tension and keep the peace among Forest sector stakeholders in Kenya. Sustaining these actions enhances the acceptable situation for the total resolution of a forest resource-based conflict.

A functional conflict management model involves analyzing the different aspects of conflicts such as actors/Stakeholders and third parties in the conflict, the issues people fight about, dynamics/intensity of interaction, the conflict context and structural factors, causes of the conflicts and the options/strategies for dealing with them. All these aspects are well represented in the Conflict wheel (Mason and Rychard, 2005). The wheel symbolizes unity and movement. Once the various aspects have been examined separately, they will be united again to get the conflict analysis structure. The conflict wheel is represented in figure 3.

This study employs the conflict wheel model in analyzing forest resource-based conflicts by identifying the conflicts, the causes, actors, context, dynamics, existing resolution measures and the proposed management measures. These variables are useful in fulfilling the study objectives.

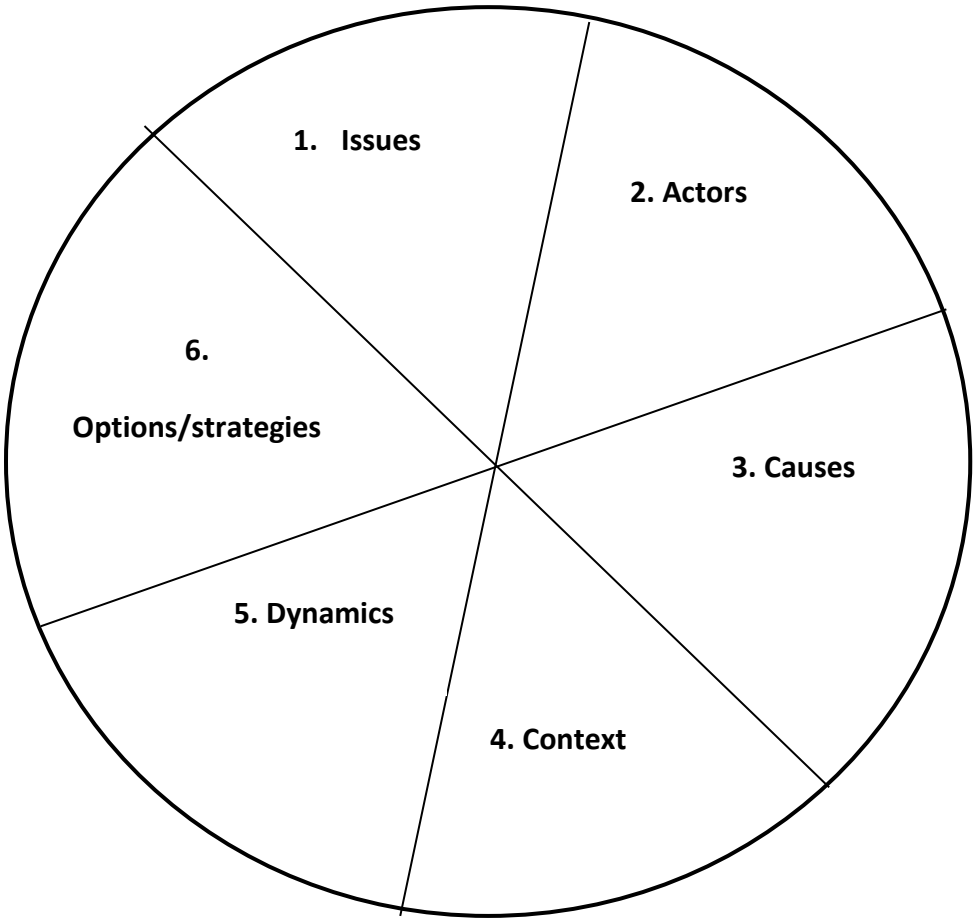

Figure 3: The conflict wheel

Source: Adapted from Mason and Rychard, 2005

CHAPTER THREE: STUDY AREAS

3.1 Location of the Study Areas

The study was conducted in Kereita, Rumuruti and Kaptagat forest stations in Kenya (Figure 5). Kereita forest is located on the lower part of the Aberdares forest, in the Central Conservancy. It is located in Lari sub-county of Kiambu at a distance of approximately 60 Km from Nairobi. The Nairobi-Nakuru Highway forms its western border while the Uplands forest forms the eastern border. The forest lies within the Upper Highland Zone at an altitude of 2500 m above sea level and coordinates of between $1^{o}03'$ and $1^{o}09'$ S and $36^{o}49'$ E. Kereita forest is surrounded by five locations, namely; Magina, Bathi, Nyanduma, Gatamaiyu and Kambaa.

Rumuruti Forest is located in Laikipia county between Salama, Siron, Mahianyu and Bodoni locations in Nyahururu sub-county and Lorian and Melwa Locations in Laikipia West sub-county. The forest is approximately 15 km to the north east of Nyahururu town. The forest stretches along the old Nyahururu-Rumuruti road and is an extension of the larger Aberdares ecosystem located within the Central Conservancy. The reserve borders Marmanet Forest Reserve to the South and lies between $36^{o}20'$ E and $00^{o}07'$ N (Rumuruti Forest Management Plan, 2015). Rumuruti forest on the other hand is surrounded by six locations namely; Melwa, Oljabet, Siron, Mahianyu, Lorian and Salama. Kaptagat Forest is part of the North Rift Conservancy. It is located in Elgeyo-Marakwet County in the Western part of Kenya, at a distance of approximately 55.4 Km from Eldoret town. The forest lies at an altitude of 2456 meters above sea level, at a latitude of 00^{o} 44' N and a longitude of 35^{o} 49' E (data obtained

from Kaptagat Forest Station). Kaptagat forest is surrounded by four villages, namely; Chepkorio/Flax, Cheptigit, Chesebet/Kaptagat area, and Masorta.

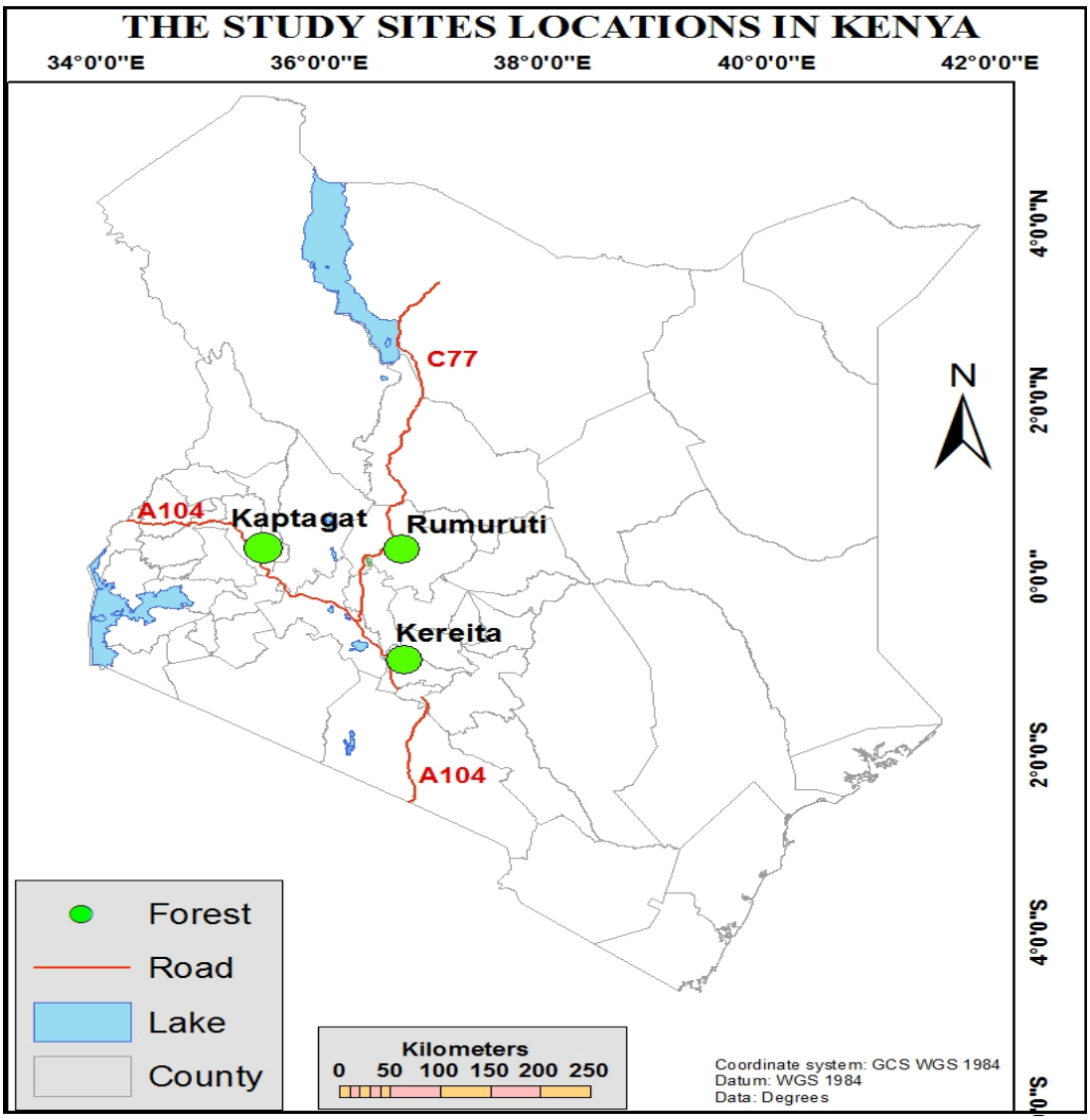

Figure 5: Location of study areas

(Source: Author, 2015)

3.2 Bio-physical characteristics of the study areas

(i) Forest coverage

Kereita forest covers a total of 4,720 hectares of which 75 % is indigenous forest, 8 % exotic forest and the rest being bamboo, shrub-land and some herbaceous croplands (KENVO, 2008). Rumuruti forest occupies an area of 6,217.8 hectares of which the indigenous zone covers 73.2 %, bush land 10.0%, grassland 15.0% and damaged plantations occupying 1.8% (Rumuruti Forest Management Plan, 2015). Kaptagat forest on the other hand covers a total of 5663.56 hectares of which indigenous trees occupy 42% (mainly through natural regeneration), plantations occupy 30%, grasslands occupy 0.5% and bush land occupies 27.5% (data obtained from Kaptagat Forest Station).

(ii) Climate

Temperatures in Kereita forest range from 20^{o}C in March and/or April to 12^{o}C in July or August. The mean annual rainfall is 1373 mm, towards Uplands forest. The area experiences two rainy seasons, i.e. long rains (March-May) and the short rains (October-November). The rainfall distribution pattern in the area is generally reliable and has a significant influence on the agro-economic activities in the area. Rumuruti forest on the other hand has a mean annual temperature range from 20^{o}C to 37^{o}C (Rumuruti Forest Management plan, 2015) and the mean annual rainfall is approximately 1,000 mm. The long rains fall between April and August while the short rains fall in November. The driest months are January and February (Rumuruti Forest Management Plan, 2015). The mean annual temperature in Kaptagat is 16^{o}C. The rainfall ranges annually between 400mm and 1,400mm.

(iii) Geology and soils

Geological information for Kereita forest indicates that volcanic activities of the Aberdare ranges greatly influenced the existing formation. This resulted in a series of lava flows that were eroded over the years to form rich volcanic soils. The soils are very fertile, well drained with dark-reddish brown coloration. The Rumuruti forest is characterized by shallow soils mainly of volcanic origin. In some areas, rock is very near the surface resulting in rock outcrops (Rumuruti Forest Management Plan, 2015). The soil in Kaptagat area is deep, with clay-enriched lower horizon.

Topography and Drainage

Kereita forest drainage pattern is characterized by several dissected ridges and valleys influenced by the relatively high altitude landform The forest is the main water tower for Kiambu County and one of Nairobi's water catchments. It is a source of rivers and streams, among them; Bathi, Gatamaiyu and Nyanduma. The rivers flow in a southeasterly direction to Nairobi River. The land in Rumuruti slopes eastwards towards Northern Laikipia- a semi-arid area. Rumuruti Forest is a catchment area and source of major streams originating from the Western side mainly flowing to the East towards the lower Rumuruti areas. The major one is Melwa (Kandorobo) river that drains into Ewaso Narok river, which crosses the forest from the South to the North East, while other small streams that are tributaries to Ewaso Narok river include, Beregenywe, Kiago and Kiahiti (Rumuruti Forest Management Plan, 2015). The forest has no water easement activities, except for water abstraction by a flower growing company known as Simba farm (also known as AAA Growers) for use in its horticulture greenhouses (Rumuruti Forest Management

Plan, 2015). Kaptagat forest is traversed by the main Kerio River which originates in the hills north of Lombus Forest and runs northwards to Lake Turkana. The Kerio and its tributaries are typically seasonal with high short durations flood flows and prolonged very low flow periods.

(vi) Wildlife

The Kereita forest is considered an important bird area (Kuria, 2009). About 138 species of birds have been recorded in both this forest and the Aberdares, of which 31 are endemic and 20 are considered rare. The forest provides habitat to the globally threatened Abbott's Starling *Cinnyricinclus femoralis* (Kuria, 2009) and a breeding ground for three near endemic species of butterflies, that is *Charaxes nandina, Neptis katama* and *Neptis kikuyuensis* (KENVO, 2008) Kereita forest also provides a habitat to a variety of other plants and animals. The tree species include; *Croton, Olea*, and *Prunus africana* families, as well as varieties of *Eucalyptus* species. The animals include; forest hogs, small antelopes, porcupines, bush-babies, and carnivores like mongoose, Sykes monkeys, Black and White Colobus Monkeys, leopards and elephants.

The Rumuruti forest is characterized by a rich diversity of plants and animal species. The plant species include; *Juniperus procera* (cider), *Olea Africana, Trichoclodus ellipticus, Podocarpus species*. In drier parts, *Tarchonanthus camphoratus* and *Euclea divinorum* prevail. A survey conducted in Rumuruti forest reveals that closed canopy forests are found along rivers. The survey also revealed that regeneration of certain plant species is suppressed by wildlife and livestock overstocking. The earliest plantations of *Eucalyptus species* were planted in Rumuruti Forest as far back as 1920s which were later cleared in 1980s. What remains of these plantations today are small coppices. The current policy direction by KFS on Rumuruti is to replace

plantations with indigenous trees. Rumuruti forest hosts a wide range of fauna; mammals like elephants, leopards, buffalo, hyenas, antelopes, wild pigs, porcupines, baboons, colobus and velvet monkeys, birds like guinea fowls, quails, cranes and eagles, reptiles like snakes and lizards, aquatic fauna and a variety of insects. The forest also forms a migration corridor for animals such as elephants and birds (Rumuruti Forest Management Plan, 2015).

Exotic plant species in Kaptagat forest include; Cypress, Eucalyptus and Pines. They are the main tree species in the forest. Indigenous tree species include; Bamboo, *Olea africana, Cyzigium sp. Prunus Africana, Abyssinica sp. Dombeya sp. Achira sp. and Techlea nobilis.* Wild animals include syke monkeys, colobus monkeys, gazelles, hares, hedge hogs, wildpigs, snakes and a variety of birds (Pers. Comm with the forester).

CHAPTER FOUR: MATERIALS AND METHODS

4.1 Introduction

This chapter provides an overview of the materials and methods adopted in data collection and analysis of major conflict issues in Kenya. The chapter describes the site selection criteria, details of the reconnaissance visit taken, sources of information used in the study and the methodology used to analyze the data obtained from the different sources. The chapter concludes with the data analysis techniques.

4.2 Site selection Criteria

The sampling framework was based on forest conservancies in Kenya (Figure 4). The administration of Kenya is through 9 conservancies namely; Western, Nyanza, Central, North Rift, South Rift, Ewaso North, North Eastern, Eastern and Coast. These conservancies are managed by the Forest Conservancy Committees (FCC) in collaboration with KFS, the private sector and the communities.

Two forest conservancies (Central and North rift conservancies) were selected based on extensive forest coverage, high population densities and presence of both indigenous and exotic commercial plantations. Three forest stations (Kereita, Rumuruti and Kaptagat) were sampled within these two conservancies based on the parameters listed in table 2.

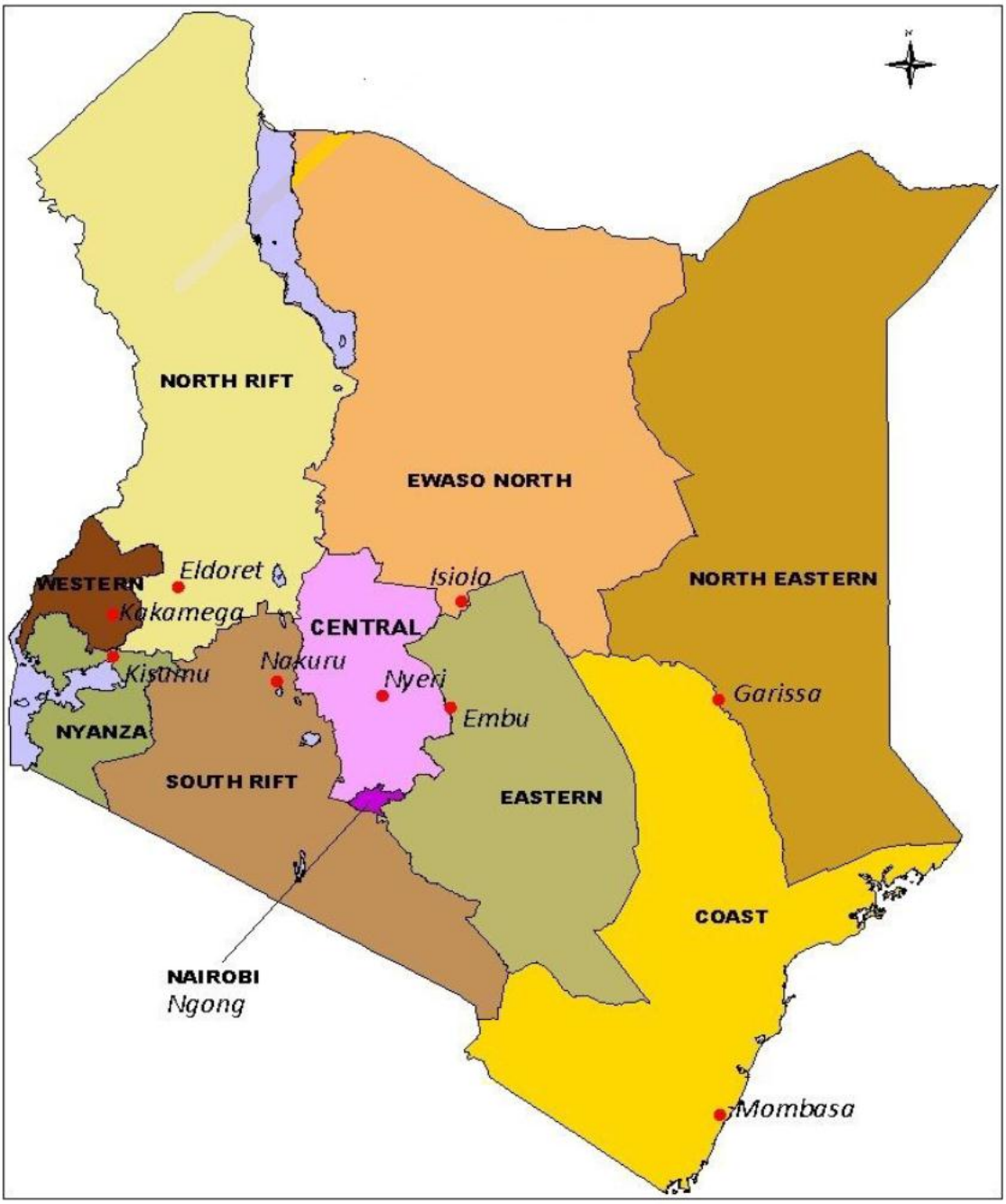

Figure 4: Kenya Forest conservancy map

Source: KFS, 2010

Table 2: Parameters used in the selection of study areas

Parameter		Kereita forest	Rumuruti forest	Kaptagat forest
History of forest conflicts		√	√	√
The presence of a well-established community forest association (CFA)		√	√	×
Ecological location (humid/semi-arid)	Humid	√	×	√
	Semi-arid	×	√	×
Forest type	Indigenous	×	√	×
	Mixed Forest (higher % indigenous forest)	√	×	×
	Mixed forest (higher % exotic plantation)	×	×	√
Presence of a participatory forest management plan (PFMP)		√	√	×
Presence of a forest management agreement		√	×	×

Key: √=Presence; ×= Absence

4.3 Reconnaissance

A pre-visit of one of the study sites (Kereita forest) was conducted to familiarize with the area; consult stakeholders; organize meetings and pre-test questionnaires. Phone contacts of key informants such as foresters, CFA leaders, and members of local environmental groups of the three forest stations were obtained from KFS and the Ministry of environment and natural resources (MENR). The individuals were contacted to plan the visits and get acquitted. The pre-visit of Kereita forest was conducted for three days prior to the actual study. In this study area, a total of 20 questionnaires were tested randomly amongst the forest adjacent community members living within 5Km from the forest. After this, changes were made to get the intended outputs. Contacts of key informants (District County Commissioner, chiefs and game rangers) were also

obtained from the forester and CFA leaders. These key informants were then contacted to make appointments for their interviews. On the final day of the reconnaissance visit, a suitable location was pre-selected to hold the FGDs which was agreed upon with key informants. Data collection began after two days, during which similar arrangements were made in other study areas (Rumuruti and Kaptagat) by telephone communication.

4.4 Data collection

A mixed method approach was adopted in collecting data and relating information from both primary and secondary sources. This involved literature study, semi-structured questionnaires, key informant interviews and focus group discussions. The focus of the study was the forest ecosystems and state (e.g. KFS) and non-state stakeholders (e.g. CFAs). The mixed approach was necessary in triangulation of results to get precise information.

4.5 Sampling

The populations of interest for this study were stakeholder involved in forest use and management in Kenya's forest ecosystems. Forest-fringe communities living within 3Km of the forest edge were sampled using questionnaires to represent dependence on the forest and membership in Community Forest Associations (CFA). A total of 242 respondents were sampled in the three study areas, of which 70, 94 and 78 were sampled in Kereita, Rumuruti and Kaptagat respectively. Gender equity was taken into consideration by ensuring that 39% of the respondents were women. The questionnaire respondents in each of the case study areas were selected systematically. In each sample location, the starting point was the house nearest to the forest station. From that home, a 5^{th} home was sampled in a clockwise manner, after which the

research assistant moved in a right angle to the next fifth house as demonstrated in figure 5. One household head, either husband or wife was interviewed.

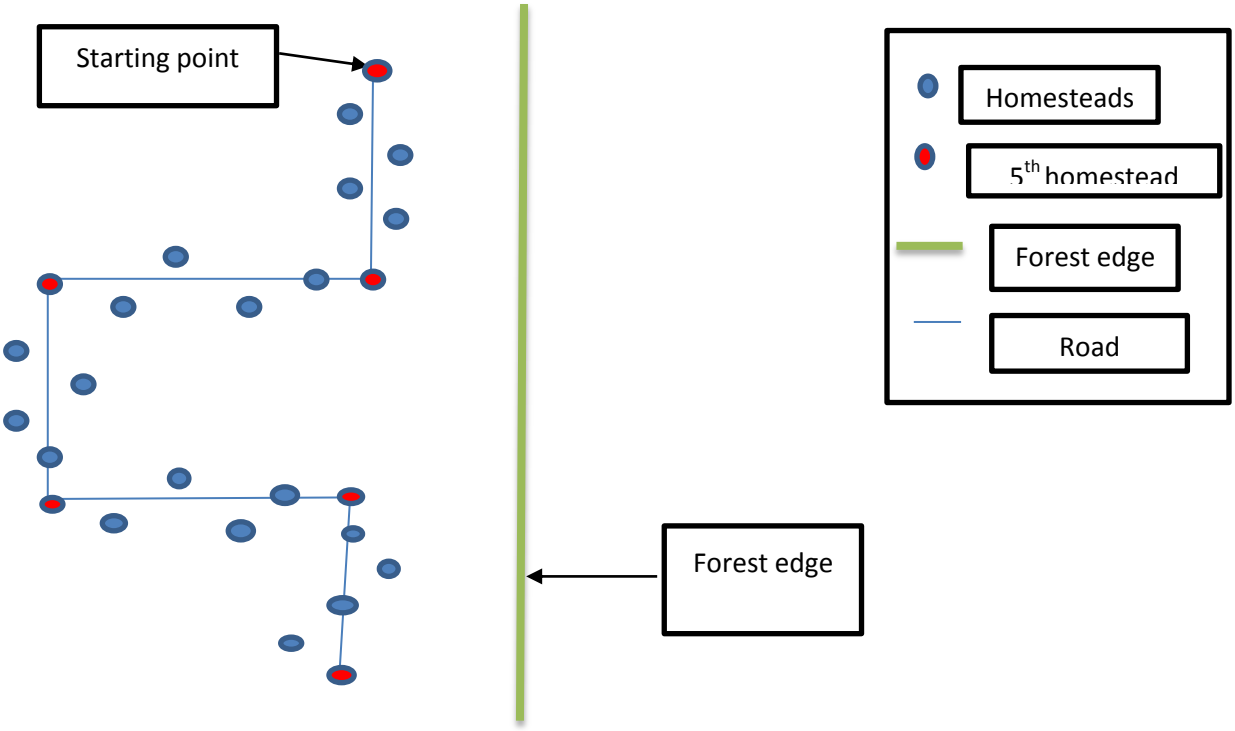

Figure 5: A representation of the sampling frame (Author, 2015)

4.6 Data Sources

(i) Secondary Data

Secondary data were obtained from literature study of published data sources from local, national and international levels. Most of these sources concern key stakeholders in the forest sector that conflict over forest resources (Table 7).

(ii) Primary Data

Primary data were collected from questionnaires, focus group discussion, and key informant interviews.

(i) Self-completion Questionnaires

The key stakeholders (forest-adjacent community members), were targeted for interviews using a semi-structured questionnaire to establish an overview of the conflicts in representative forest ecosystems of the country. The survey in each area was conducted with the support of 4 research assistants. The questions were a mix of one part response and multiple part responses. The data was collected between February and April, 2015. Appendix 1 shows the questionnaire administered to respondents. It was divided into 5 sections (General issues e.g. Household characteristics; Types of conflicts, actors and causes: General trends, intensity and impacts of conflicts; Existing management measures and their challenges and; Proposed conflict management measures). The questionnaire gathered the knowledge and perceptions on forest management and nature of conflicts.

(ii) Focus Group Discussions (FGDs)

Qualitative data was also obtained from focus group discussions with forest-adjacent community members. These individuals were pre-selected based on their level of forest dependence and awareness of conflicts related to forest resources in the study areas. These were individuals who had not participated in the questionnaire interviews. They included CFA and non-CFA members, local jobless youth and people consuming and trading in forest products. A venue for the FGD

was selected in each forest station with the assistance of a CFA member. A single FGD session was conducted in each study area. Ten respondents attended in each of the forest stations sampled. The aim of the FGD was to gain an in-depth understanding of conflict issues. A check list was prepared to guide the discussion (Appendix 2), which was informed by the questionnaire survey.

(iii) Key Informant Interviews (KII)

Interviews were held with key persons in the Kenyan forest sector such as the foresters, chiefs, District County Commissioners (DCC) and CFA leaders selected across the formal forest sector in the selected study sites. The purpose was to derive their perceptions and outlook on the conflict issues. Foresters also provided population census of the locations surrounding the selected study areas. The core enquiry was on the nature of conflicts associated with study forests, prevailing conflict management strategies, their challenges and potential management strategies. A guided check list was used to guide the discussions during the interviews. The checklist was similar to the one used for the focus group discussions.

4.7 Data Analysis

The data gathered during the survey was analyzed in several steps; questionnaire data was coded and entered into Statistical Package for Social Sciences (SPSS) for analysis, while graphs and tables were developed using Excel spreadsheets. Focus group meeting outputs and key informant interviews were analyzed along defined thematic areas and content analyzed to extract respondents' views.

CHAPTER FIVE: RESULTS AND DISCUSSION

5.1 Introduction

This chapter describes the characteristics and dimensions of major forest resource-based conflicts in the Kenyan forest sector. The thematic areas were clustered into the six dimensions of issues, actors, causes, context, dynamics and conflict management strategies following the structure of the Conflict wheel (Mason and Rychard, 2005). The conflict wheel is the analytical tool/conceptual framework for the study (Figure 3)**.** The information was then analyzed, synthesized and discussed according to the study objectives. To better understand the underlying factors influencing conflicts, data were obtained for the demographic and socio-economic characteristics of respondents as well as their perceptions of forest management.

5.1.1 Demographic characteristics of questionnaire respondents

A total of 242 questionnaires were administered to respondents living adjacent to the sampled areas. Out of the 5 villages around Kereita forest, Magina, Bathi and Kambaa were sampled, with populations of 5661, 7071 and 6436 respectively. Around Rumuruti forest, Oljabet, Siron, Mahianyu and Melwa were sampled (Table 3). They had populations of 3000, 5000, 4000 and 13000 people respectively. In Kaptagat, Chepkorio/flax and Chesebet/Kaptagat were sampled (Table 3). They had populations of 3237 and 1538 respectively.

Table 3: Distribution of questionnaire respondents

Study area	No. of respondents in the study sample	% of population respondents
Kereita (n=70)		
Magina	17	8
Bathi	18	9
Kambaa	21	10
Other locations mentioned in study area	14	7
Rumuruti (n=94)		
Oljabet	4	1
Siron	13	5
Mahianyu	29	10
Melwa	36	13
Other locations mentioned in study area	12	4
Kaptagat (n=78)		
Chepkorio	58	25
Chesebet	20	9
Other locations mentioned in study area	0	0
Total	**242**	**100**

The gender distribution of Kereita forest respondents was 41 males (58.8%) and 27 females (38.6%). Nearly half of the respondents (44.3%) were young (20-35yrs) married people (67.1%), with 57.2% having children, in the range of 1-4. These findings are consistent with studies by Kariara, 2009. Most of the respondents in Rumuruti area were also male (54.3%) and the dominant age range was 20-35 (44.3%). Majority were married (73.4%), with some (6.4%) having more than ten children. Like the previous sites, most of the respondents in Kaptagat were male (67.9%) and the majority (43.6%) were within the age range of 20-35 years. Many (75.6%) were married, with up to 10 children. Majority respondents were literate. Table 4 summarizes the respondents' demographic characteristics that include gender, age and marital status, number of children, literacy levels, income sources and range of monthly income.

Table 4: Demographic characteristics of respondents

Characteristic	Frequency (n)			Percentages (%)		
	Kereita (70)	Rumuruti (94)	Kaptagat (78)	Kereita	Rumuruti	Kaptagat
Gender						
Male	41	51	53	58.6	54.3	67.9
Female	27	43	25	38.6	45.7	32.1
No response	2	-	-	2.9	-	-
Age range						
<20	3	-	-	4.3	-	-
20-35	31	30	23	44.3	31.9	29.5
36-60	28	48	51	40	51	65.4
>60	5	16	3	7.1	17.0	3.8
No response	3	-	1	4.3	-	1.3
Marital status						
Married	47	69	59	67.1	73.4	75.6
Single	17	15	13	24.3	16	16.7
Other	4	10	5	5.7	10.7	6.4
No response	-	-	1	-	-	1.3
No. of children						
0	11	16	17	15.7	17	21.8
1-4	40	36	30	57.2	38.3	38.5
5-10	12	35	26	17.1	37.2	33.4
>10	-	6	-	-	6.4	-
No response	7	1	5	10	1.1	6.4
Education level						
Primary	12	18	8	17.1	19.1	10.3
Secondary	28	44	31	40	46.8	39.7
Tertiary institutes	37	29	37	47.4	30.9	47.4
No response	-	3	2	-	3.2	2.6
Income sources						
Mixed Farming	46	64	51	65.7	68.1	65.4
Livestock keeping	1	4	-	1.4	4.3	-
Informal employment	11	7	16	15.7	7.4	20.5
Formal Employment	9	18	8	3.9	19.2	10.2
No response	3	1	3	4.3	1.1	3.8
Range of monthly income						
<3000	7	44	6	10	46.8	7.7
≤3000-10000	19	35	32	27.1	37.2	41.0
10001-50000	43	10	39	61.4	10.6	50.0
>50001	-	3	-	-	3.2	-
No response	1	2	1	1.4	2.1	1.3

4.1.2 Livelihood issues

(i) Major sources of income

Majority of respondents in the three forest stations indicated that their major source of income was mixed farming (growing crops and keeping livestock) as evident in table 4. Respondents also showed a relatively diverse array of livelihood sources including formal employment (e.g. teaching) and informal employment (e.g. shop keeping, herding and driving). The range of monthly income for all respondents in the three study sites was majorly in the range of 10000-50000 (Table 4).

(ii) Nature of Land tenure

Majority of sample respondents indicated that their land tenure was private (Figure 6). The sizes of land were generally spread out with the greatest percentage owning 1-4 acres (Figure 7). Majority respondents in Kereita owned less than 1 acre whereas a population of Rumuruti respondents (7%) owned more than ten acres (Figure 7).

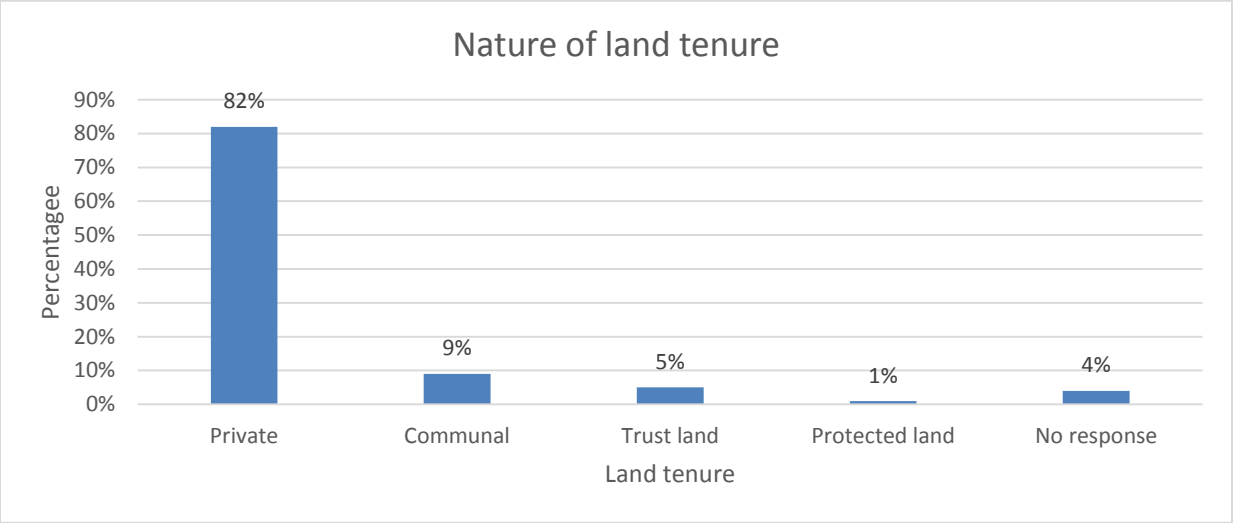

Figure 6: Nature of land tenure for respondents

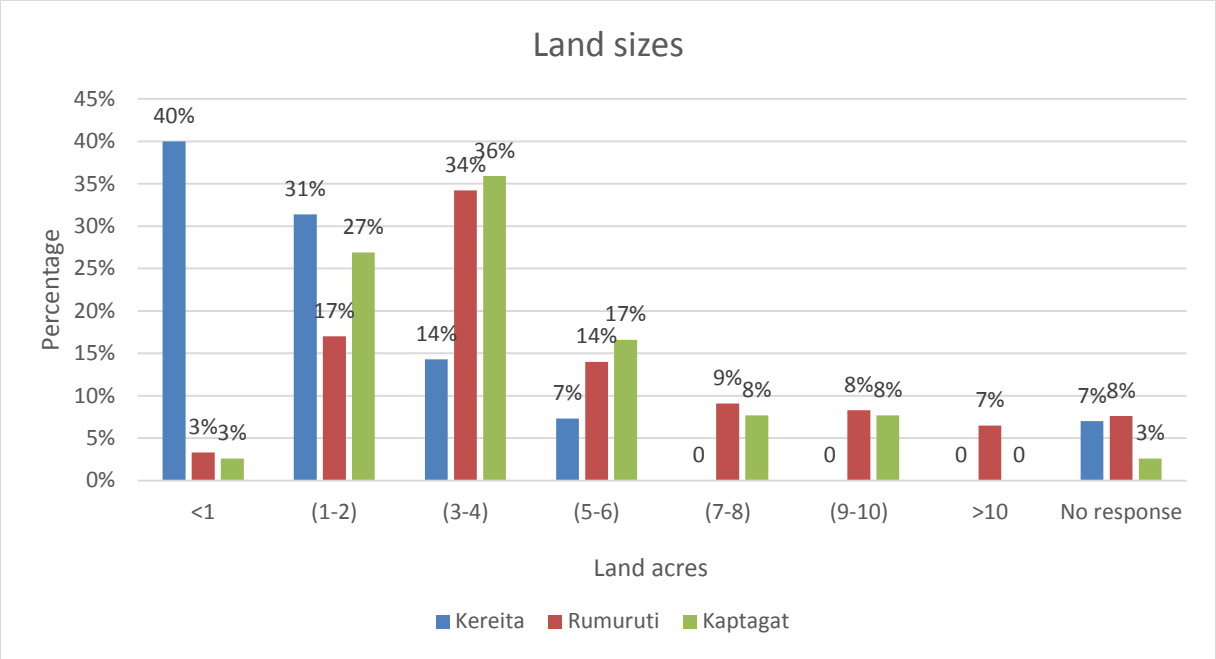

Figure 7: Land sizes of respondents

(iii) Land uses

Majority of the respondents in Kereita (64%) were mixed farmers keeping livestock and growing crops (Table 4). This is consistent with findings by Kariara, 2009. The major land use for Rumuruti forest respondents was also mixed farming. According to Mwita (2013), the area put under farming in the area around Rumuruti has been increasing and a contributing factor to this is the production of horticultural crops. Majority of the respondents in Kaptagat forest area were also mixed farmers (Table 4).

(iv) Energy and Water sources

Majority of sample respondents indicated that their main source of energy was firewood and they mainly sourced water from boreholes and rivers (Figure 8 & 9). Kereita respondents indicated

that they used electricity as a main source of energy. This may be attributed to the proximity to the capital city (Nairobi).

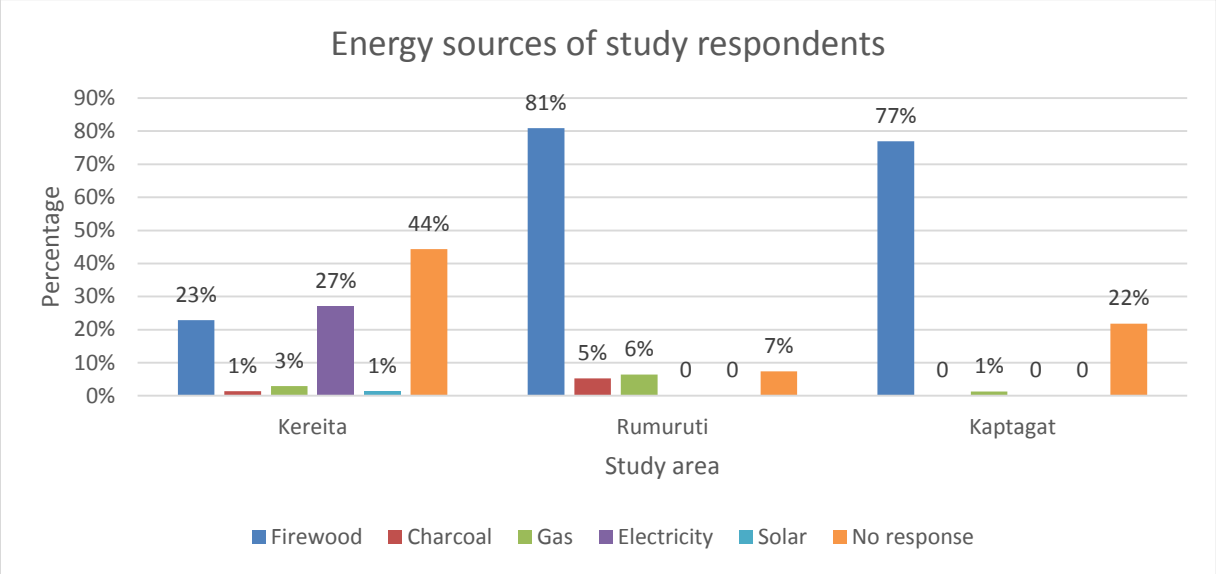

Figure 8: Energy sources for study respondents

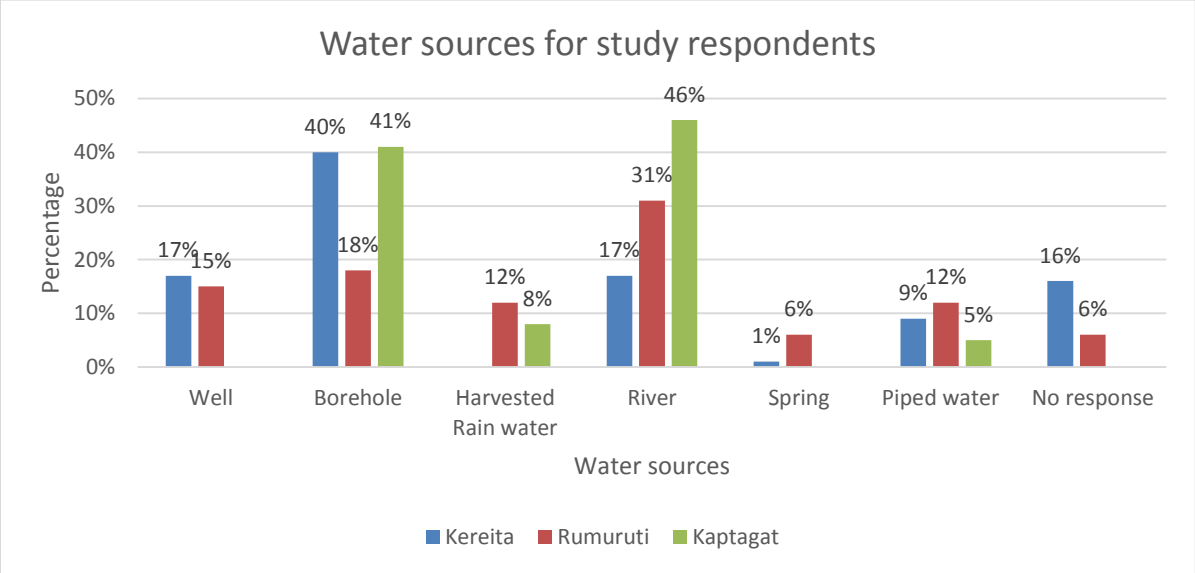

Figure 9: Major sources of water for the respondents

(i) Forest ownership and management

Majority of the respondents in the sampled forest stations indicated that the forests were owned and managed by KFS/ the government (Table 5). This may be attributed to the fact that decision-making rights, revenue collection and overall resource control and management rights are still vested in the Kenya Forestry Service as evidenced by Mogoi *et al.*, 2012. More than half of the respondents (62.9%) in Kereita were aware of an existing CFA. In Rumuruti, the majority (56.4%) were not aware of an existing CFA or did not respond to the question (Table 5). Less than half of the sample respondents were aware of an existing management plan or management agreement of the forests.

(ii) Resources accessed from the forests

Majority of the respondents mainly derived firewood from the forest (Figure 10). Firewood collection has been identified as the main cause of massive destruction of indigenous tree species in the forests. Other products significantly sourced from the forests included, timber (42%) and medicinal herbs (35%). Respondents also obtained products such as fruits, wild game and building materials while others accessed the forests for recreation (Figure 10). Kereita and Kaptagat respondents stated engaging in forest farming through the Plantation Establishment for livelihood Improvement System (PELIS).

Table 5: Forest management perceptions

Characteristic	Frequency (n)			Percentages (%)		
	Kereita (70)	Rumuruti (94)	Kaptagat (78)	Kereita	Rumuruti	Kaptagat
Forest owners						
KFS	66	4	38	94.3	4.3	48.7
Community	1	6	**2**	1.4	6.4	2.6
Government	-	81	24	-	86.2	30.8
Forester	-	3	-	-	3.2	-
County government	-	-	8	-	-	10.3
CFA	2	-	-	2.9	-	-
No response	1	-	6	1.4	-	7.7
Forest managers						
KFS	47	74	22	67.1	78.7	28.2
County Government	8	3	45	11.4	3.2	57.7
Forest guards	9	15	3	12.9	16.0	3.8
Community	2	-	2	2.9	-	2.6
No response	4	2	6	5.7	2.1	7.7
Awareness of an existing CFA						
Yes	44	41	73	62.9	43.6	93.6
No	26	38	5	37.1	40.4	6.4
No response	-	15	-	-	16.0	-
Existence of CFA management plan						
Yes	29	22	0	41.4	23.4	0
No	5	7	0	7.1	7.4	0
No response	36	65	0	51.4	69.1	0
Existence of CFA management agreement						
Yes	26	20	25	37.1	21.3	32.1
No	9	8	8	12.9	8.5	10.3
No response	35	66	45	50.0	70.2	57.7

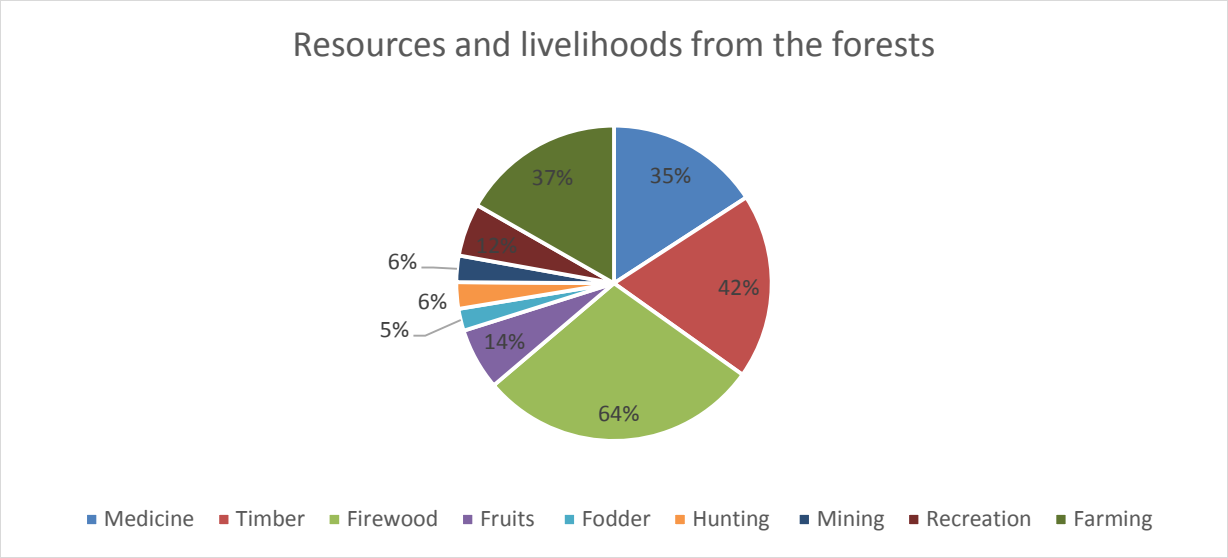

Figure 10: Resources and Livelihoods from the forests

5.2 Forest resource-based conflicts identified in the study

(a) Types of conflicts and the actors

Conflicts prevailing around the three forests (Kereita, Rumuruti and Kaptagat) included; Human-wildlife conflicts (HWC), conflicts related to inadequate benefit-sharing of forest resources, conflicts over illegal access of forest resources and others as shown in table 6 and Figure 11.

Table 6: Types of forest-resource based conflicts

Types of conflicts	%
Human Wildlife Conflicts	30%
Conflicts over inadequate benefit sharing of forest resources	27%
Conflicts over illegal access of forest resources	20%
Conflicts related to inadequate involvement in forest management and decision making	14%
Internal wrangles within Community Forest Associations (CFAs)	8%

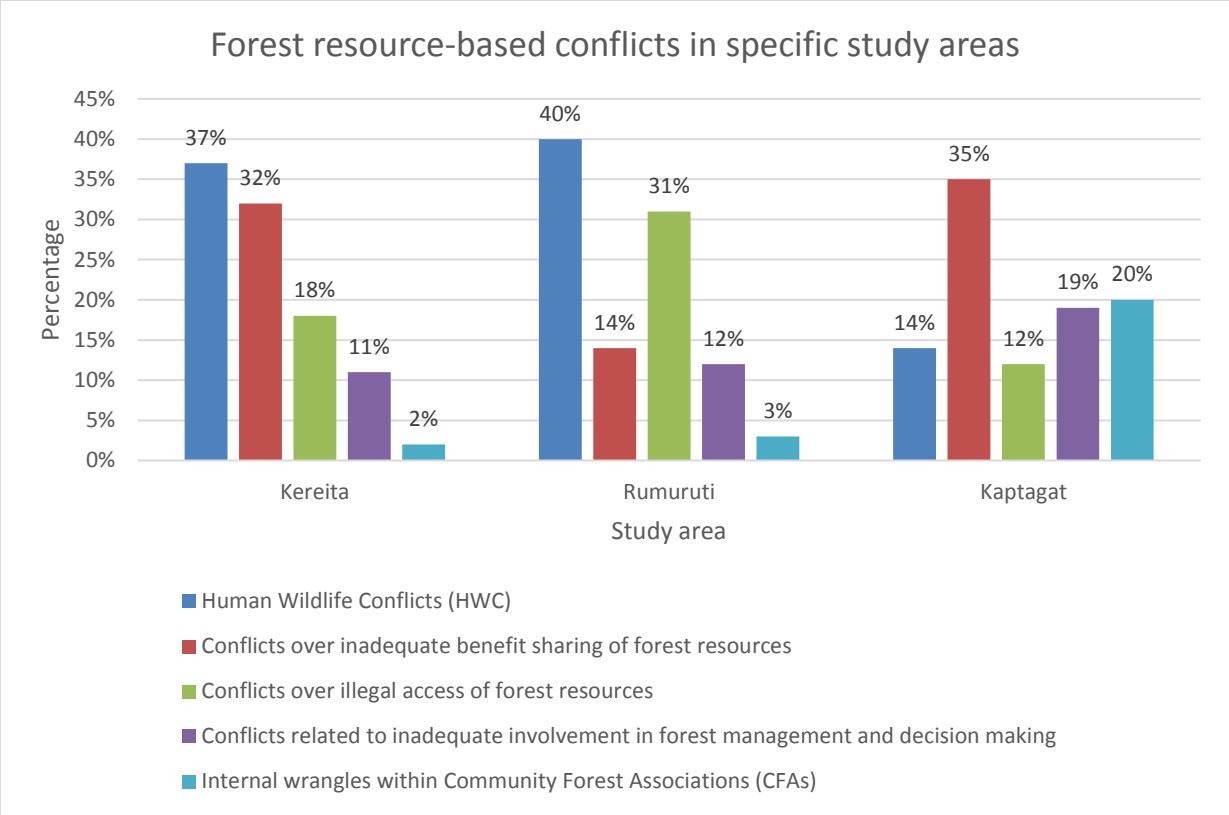

Figure 11: Forest resource-based conflicts in specific study areas

Review of forestry laws (National Forest policy, 2014; Wildlife Conservation and Management Act, 2013;The constitution, 2010; The National Museums and Heritage Act, 2006; Forest Act, 2005) and other studies done by Oksanen *et al*., 2011; IUCN, 1992; WRI, 1996; and Institute of Economic Affairs, 2010) revealed several stakeholders involved directly or indirectly in the conflicts. Their roles and responsibilities in forest management are discussed in table 7.

Table 7: Key forest sector stakeholders

KEY STAKEHOLDERS	ROLES AND RESPONSIBILITIES
National and County governments	County governments were created to devolve power to the local level to enhance participation in governance. The two tiers of government (National and County) provide an enabling environment for participation in forest management, effective extension services, forestry research and allocation of funds to the forestry sector.
Ministry of Environment and Natural Resources (MENR)	The mandate of the Ministry is governance for sustainable use of natural resources to secure livelihoods and economic prosperity. Among other functions, the ministry provides policy guidance to both KFS and KWS. The ministry has reviewed the Forest Bill and made recommendations to include benefit sharing of forest resources among stakeholders.
Kenya Forest Service (KFS)	KFS is a state corporation established to, "Conserve, develop and sustainably manage forest resources for Kenya's social-economic development". The main functions of KFS include; sustainably managing natural forests, increasing productivity of industrial forest plantations and enhancing efficiency in wood utilization, promoting farm forestry and commercial tree farming among others.
Community forest associations (CFA)	CFAs are community-oriented associations by forest-adjacent communities that enter into partnerships with KFS to manage forest resources in Kenya. Together they develop a management plan and an agreement of how they will co-manage.
Kenya Wildlife Service (KWS)	The KWS is a state agency with the mandate, "To conserve and manage wildlife in Kenya and to enforce related laws and regulations". Among other functions, KWS is involved in management of closed canopy forests gazetted as National parks and reserves. In 1991, KWS and the then Forest Department (replaced by KFS) signed a Memorandum of Understanding (MoU) for management of important biodiversity forest areas. With expiry of this MoU and devolution of government, there is bound to be conflict between these corporations on forest management.
Private entities with interest in the Forest Sector	The private sector has increasingly become important in forest management by increasing financial capital and efficiency in resource management. Private companies are interested in establishing commercial plantations and taking concessions on state plantations. They include; saw milling companies, tea industries and individual tree growers.
Forest dependent communities	Forest dependent communities are a group of users of forest land. They often rely on a forest for their livelihood, heritage or religion. The Forestry laws allow community participation in forest management through formation of CFA's.

Source: Author, 2015

(b) Causes of the conflicts

Cross-cutting causes of conflicts identified in the study include; inequity in resource allocation, inadequate information sharing and perceived corruption amongst others as indicated in figure 12.

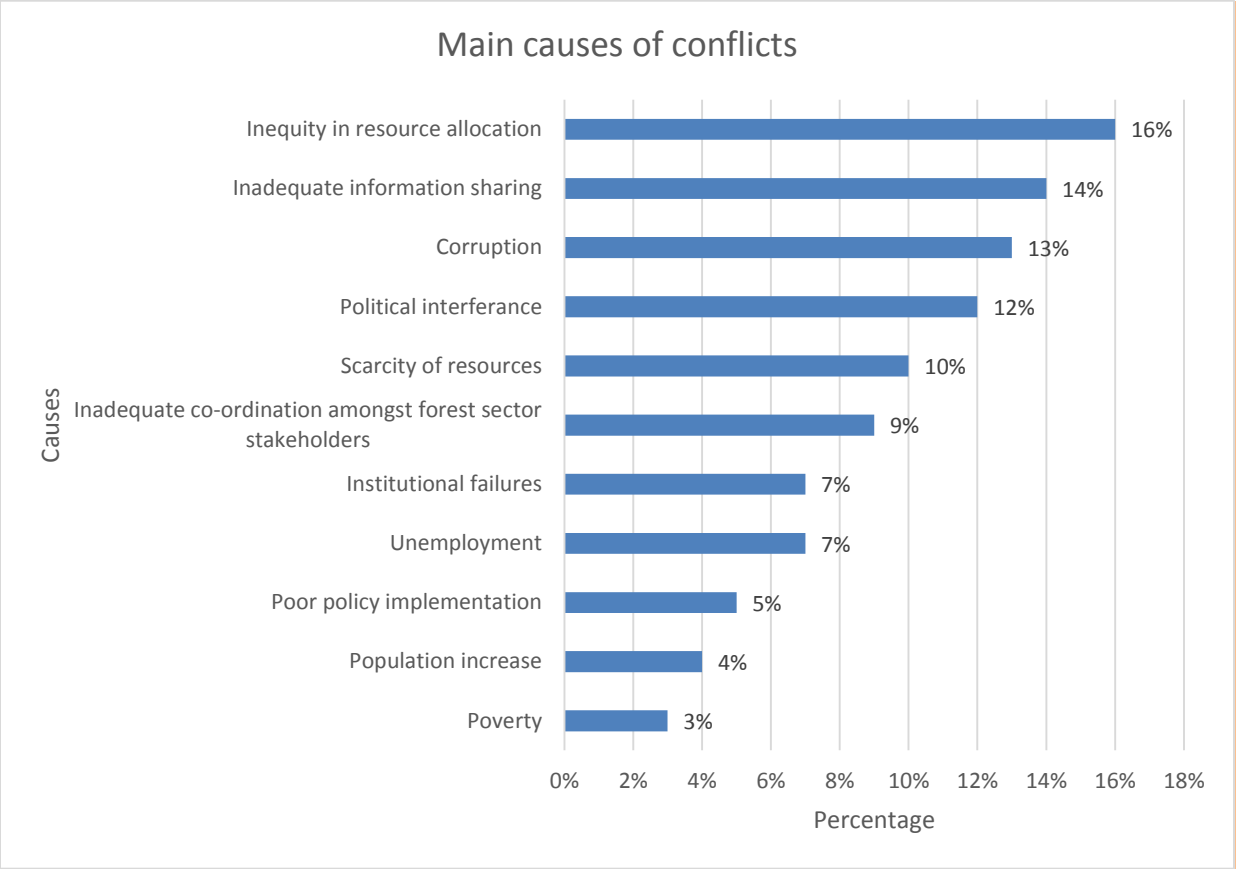

Figure 12: Main causes of forest resource-based conflicts

5.2.1 Human-Wildlife conflicts (HWC)

(i) Issues and actors

Study results indicated that HWC were prevalent in Kereita and Rumuruti (Figure 13). Review of literature (KENVO, 2008 and Rumuruti Forest Management plan, 2015) indicated that these

forests have a high population and variety of wild animals, owing to suitable habitats. Respondents in the two study areas indicated that there was crop damage in forest adjacent farms mainly from elephants, colobus monkeys and porcupines (Figure 14). The colobus monkeys

and porcupines could not be contained in the forest by the fence. In Kaptagat, the main problem animals were the syke monkeys destroying crops on forest farms (PELIS) and tree plantations by back-stripping. Bark-stripping of trees by syke monkeys has been observed in countries such as South Africa and Zimbabwe where they have caused massive economic losses from bark stripping of pines (FAO.IGF, 2008).

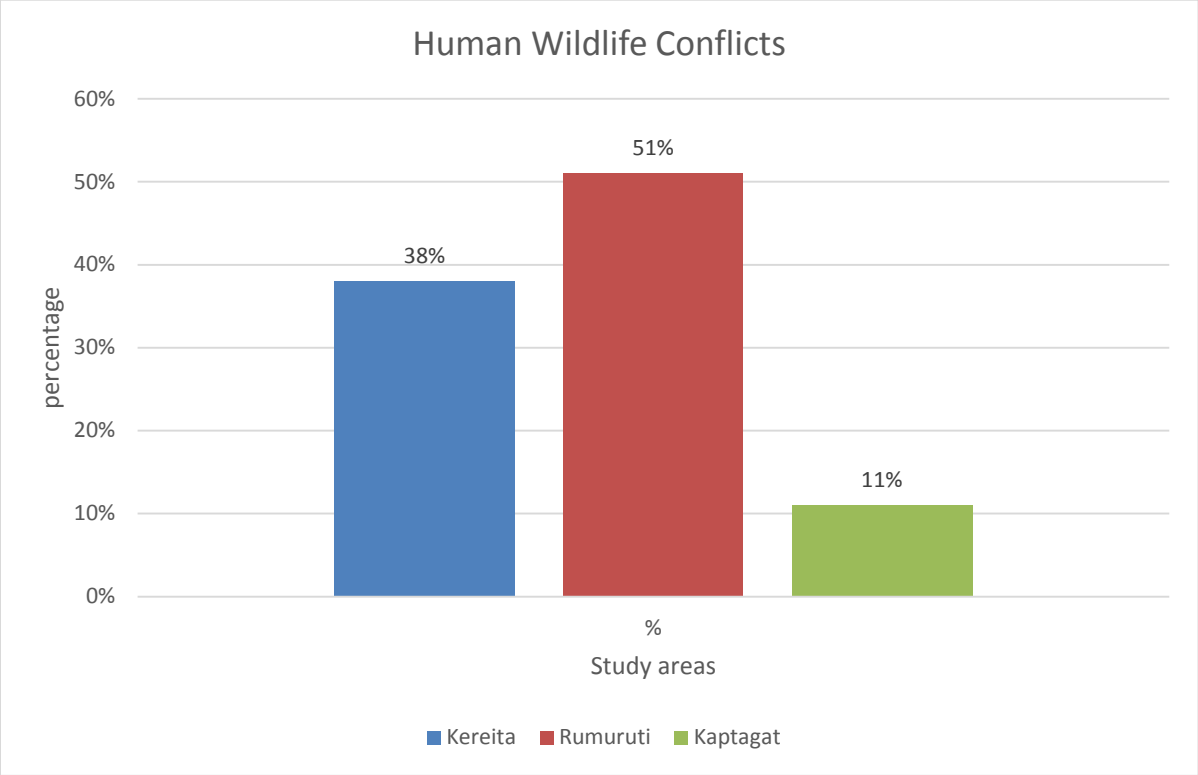

Figure 13: Human Wildlife Conflicts

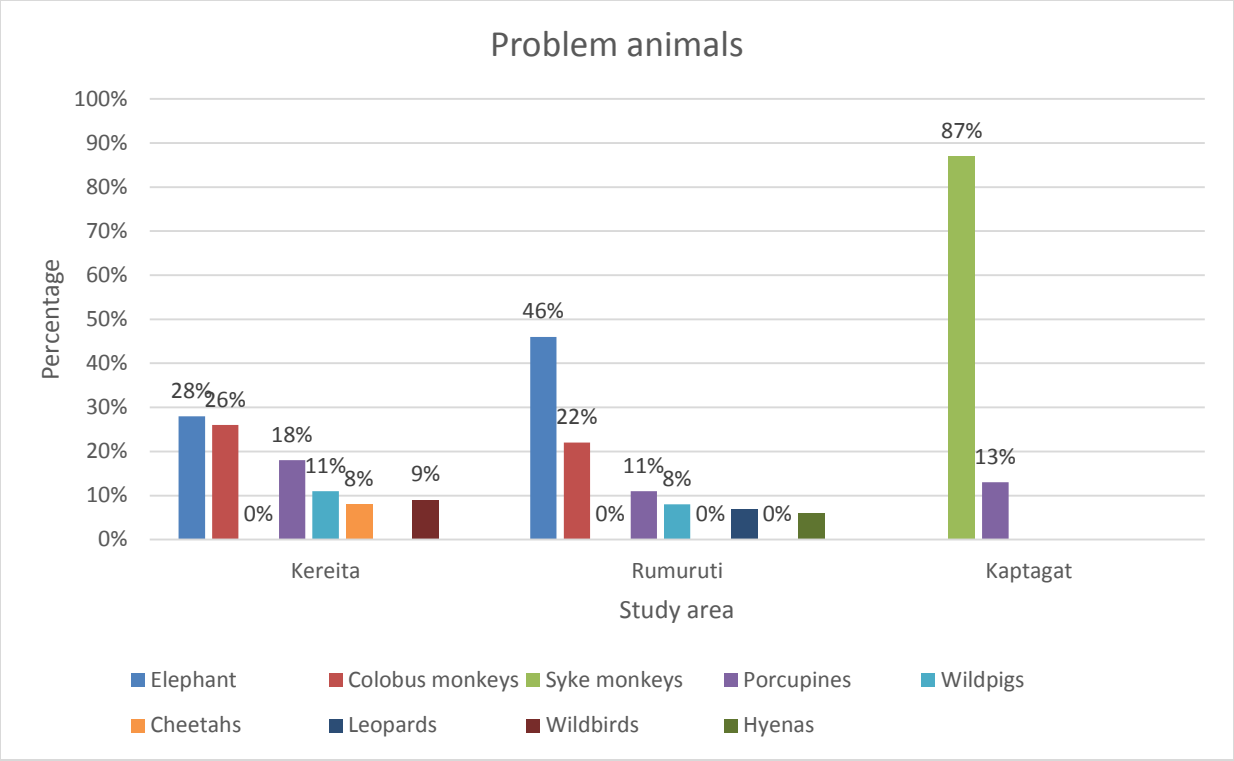

Figure 14: Problem animals causing Human Wildlife Conflicts

Respondents in Kereita also reported predation of livestock by cheetahs while in Rumuruti, leopards and hyenas were the main predators (Figure 14). Focus group discussion respondents in Kaptagat also stated that livestock were being killed by an unknown animal in the forest. Predation of livestock by wildlife has been experienced in other African countries. For instance, in Zimbabwe, many areas of agro-pastoralism adjacent to protected areas often face livestock depredation (Distefano, 2009).

The actors involved in human wildlife conflicts in Kereita forest included County government officials, KWS officials, Kijabe Environment Volunteers Organization (a community-based organization engaged in conservation programs in the forest), Rhino Ark (a charitable trust that helps to develop sustainable solutions to the challenges facing forest ecosystems) and farmers.

The actors in Rumuruti included; the County Government officials, KWS officials, Laikipia Wildlife Forum (an organization focusing on natural resources management) and farmers. The actors in Kaptagat forest included; the County government, KWS officials and farmers. In the three study sites; the KWS officials were the most common actors in the conflicts since they were confronted by the aforementioned actors in their efforts to ensure that human-wildlife conflicts were managed to meet forest conservation and management objectives. The KWS were called in to tackle problem animals and prescribe coping measures near the fences to deter wildlife from destroying crops.

(ii) Causes of HWC conflicts

The main causes of HWC identified in the study included; population increase of both people and wildlife, inadequate benefit-sharing from wildlife resources and lack of a proper fence to confine wildlife among others (Figure 15).

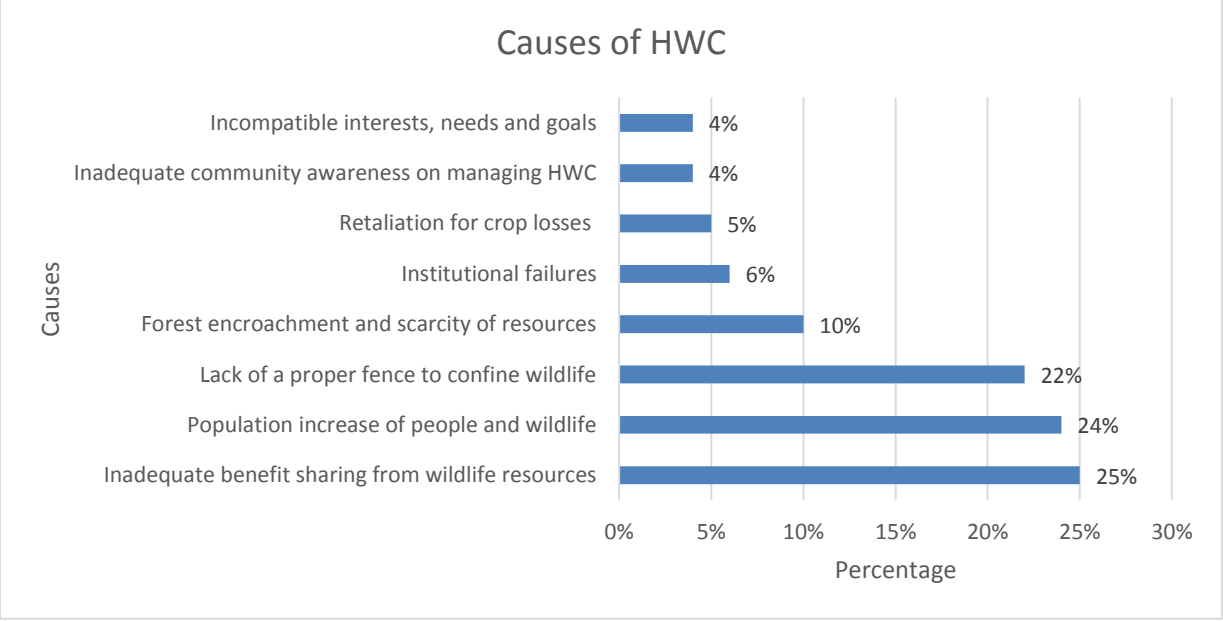

Figure 15: Causes of Human Wildlife conflicts

Although there was an electric fence around Kereita forest, locals still experienced human-wildlife conflicts. The fence could not deter the colobus monkeys and porcupines from accessing farms and destroying crops (Figure 14). Similar sentiments were shared by Rumuruti respondents. Also in Kereita, elephants destroyed crops in forest farms. Kaptagat respondents mainly complained about timber destruction by syke monkeys (Figure 14).

In the three study areas, community members indicated that they did not receive any tangible benefits from wildlife resources. To them, wildlife was not beneficial, only destructive to their crops. Some community members retaliated by consuming wildlife found on farms such as gazelles in Kereita and guinea fowls in Rumuruti. Inaction by KWS in dealing with problem animals also aggravated the Human wildlife conflicts. According to FGD respondents in Kereita, KFS officials did not translocate elephants from the plantation zone to the indigenous zone to allow locals conduct forest farming without constant encounters with wildlife, especially elephants. The officials also did not take any action in dealing with monkeys and porcupines in Kereita and Rumuruti, while in Kaptagat, the syke monkeys were rapidly increasing and no action had been taken by KWS in controlling their numbers.

5.2.2 Conflicts arising from the inadequate benefit sharing of timber as a resource

(i) Issues and actors

Issues of inadequate benefits sharing from timber as a resource were evident in Kereita and Kaptagat. The two forests are mixed with exotic timber plantations for commercial use. Respondents in Kereita and Kaptagat indicated that they were not receiving any benefits, even though companies were extracting timber from their land. Focus group discussion respondents

also indicated that locals had developed negative attitudes toward forest conservation because of few shared benefits.

Actors involved in these conflicts included KFS officials, local and external saw millers and forest adjacent community members. The community members were considered to be the main actors since they were the most vocal in the conflicts with the aforementioned stakeholders.

(ii) Causes of the conflicts over inadequate benefit sharing of timber as a forest resource

The main causes of timber benefit-sharing conflicts included; perceived injustices due to inadequate benefit-sharing from timber, perceived structural violence in the acquisition of timber harvesting tenders and inadequate information sharing regarding the timber harvesting process. Figure 16 shows the identified causes of the conflict.

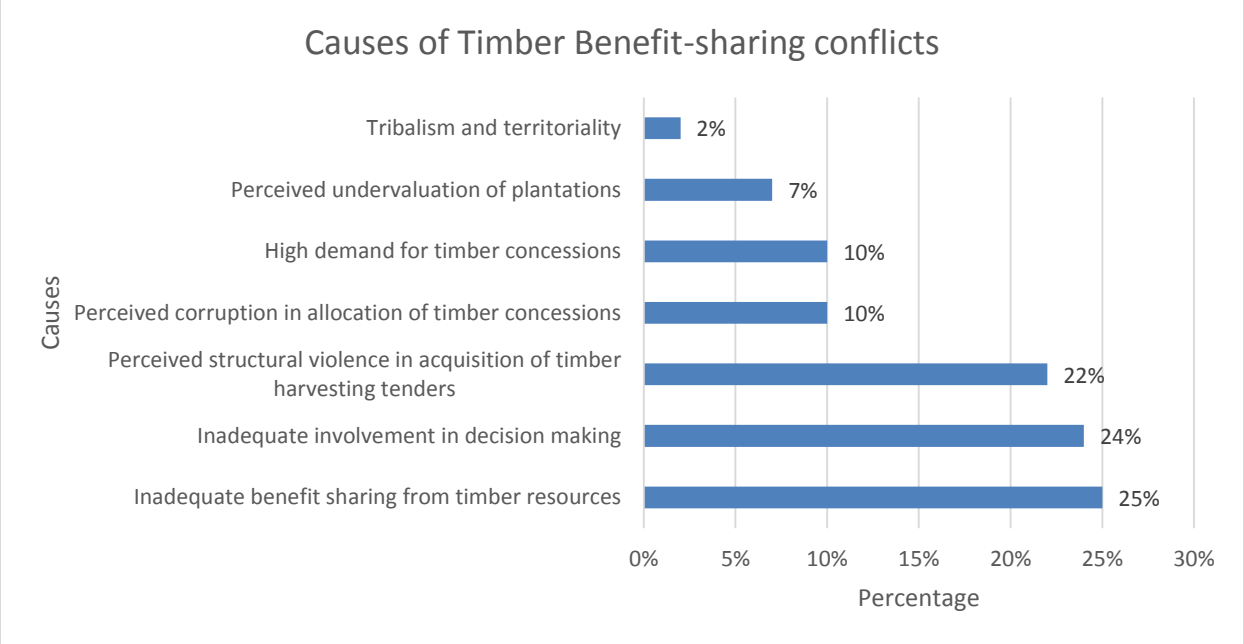

Figure 16: Causes of timber benefit-sharing conflicts

According to study respondents in Kereita and Kaptagat, outsiders were allowed to harvest timber they had not planted, conserved or nurtured. The locals were unable to access timber due to the complicated harvesting process. According to Kereita respondents, the harvesting process is structured to favor elites while Kaptagat respondents indicated that the process was designed to side-line them and prevent them from accessing the timber. A key informant in Kaptagat stated that, "The timber harvesting process is structured that majority of the people will not access the resources. For instance, it is a requirement for a saw miller to have band saws which are expensive but efficient yet majority of the locals can only afford the circular saws which are less efficient. Also, if you don't have timber treatment equipment you can't get a license to harvest poles. There are less than 50 individuals with this equipment".

According to focus group respondents, only few locals around Kaptagat, bought and read newspapers which announced the bidding for timber harvesting in Kenya. Therefore, uninformed locals felt that the process was secretive. Moreover, there was a perception in Kaptagat that plantations were being undervalued. The forester had attempted to clarify to them that during valuation of forest resources, the assessor measures volume and height, not the number of trees. However, a key informant indicated that undervaluation may occur by deliberate omission or faulty measuring equipment.

Focus group respondents in Kereita and Kaptagat indicated that some saw millers were being given timber harvesting tenders year in year out. New saw millers could not get the tenders. Respondents in Kaptagat also pointed out that powerful individuals like politicians could illegally access timber by using local saw millers to obtain timber harvesting permits. These unlawful dealings supposedly started with the top officials in KFS. One respondent claimed that

when an MP uses one local saw-miller too often to access timber and ignores the others, the ones who have been side-lined disclose these illegal dealings to locals who then become agitated and start demonstrations.

High demand for timber has also led to the conflict over inadequate benefit sharing from timber. Respondents in Kereita and Kaptagat indicated that timber trade was a lucrative business that they wanted to be a part of. They indicated that it was unfair for outsiders to harvest their resource. Tribalism and territoriality was also a part of this perceptions. According to a key informant in Kaptagat, whenever a concessionaire comes to collect timber from the Kaptagat forest, community members demanded to know where he/she was from and his/her ethnicity. They only wanted the tenders to be given to people from their community, not outsiders. They also assumed that a particular community is favored more in getting tenders than others. A key informant also stated that, "It is the interest of the locals that job opportunities like that of the forester are allocated to a local community member".

5.2.3 Conflicts over inadequate benefit-sharing of water from Kereita Forest

(i) Issues and actors

These conflicts were only evident in Kereita forest. This was the case because the cost of water in Kereita was relatively high owing to proximity of the forest to an urban area (Nairobi city). The cost of living was also higher compared to other study areas that were in a relatively rural setting.

Kereita forest respondents indicated that locals were disgruntled over inadequate benefit-sharing of water sourced from Kereita forest. The water was being piped by the Water Resource Management Authority (WRMA) and transported to Nairobi and other parts of the country. They felt that they had the right to benefit since they conserved the forest which is an important catchment for several rivers. Actors involved in the conflicts included the County government officials, WRMA officials and community members. Community members were considered the main actors.

(ii) Causes of the conflict over inadequate benefit sharing from water as a resource

The main cause of this conflict was lack of benefit-sharing arrangements between WRMA in charge of water distribution in the country and the forest-adjacent community members in Kereita forest. Respondents also claimed that the cost of water was too high and there was inadequate information regarding benefit sharing laws (Figure 17).

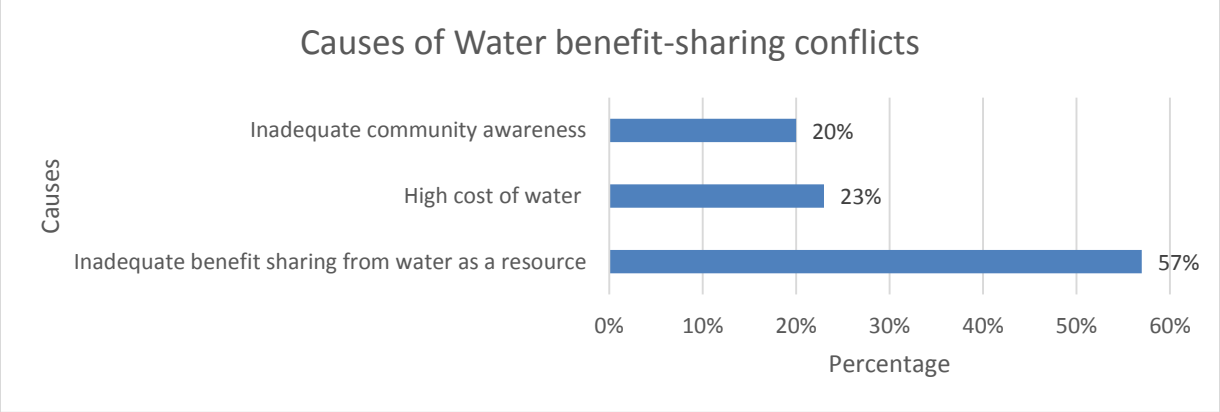

Figure 17: Causes of water-benefit sharing conflicts

5.2.4 Conflicts related to the inadequate involvement of community members in forest management and decision making

(i) Issues and actors

In all the three study areas, respondents indicated that they were not adequately involved in forest management and decision-making. This is evident in the low awareness level and the fact that majority of the respondents perceived that the forests were owned by the government (table 5). This indicates that despite involvement in forest management through CFAs, majority still felt side-lined in decision-making. The study results also showed that respondents in Kereita and Rumuruti forests were more informed on forest management issues compared to those in Kaptagat forest (Table 5). This may be the case because Kereita and Rumuruti CFAs were more advanced in terms of structure and both had management plans with KFS, which was not the case in Kaptagat. Respondents in Kereita and Kaptagat also complained that they were not consulted during the decision-making process when concession agreements were being negotiated.

Respondents in the three forest stations also indicated that the KFS officials were not adequately following the guidelines of participatory forest management plans in terms of inclusion of locals in forest management. The actors involved in the conflicts included; KFS officials and community members. The community members were considered as the main actors.

(ii) Causes of the conflicts related to the inadequate involvement of community members in forest management and decision making

Community members were not included in decision making and there was inadequate dissemination of information regarding management of the forests. Moreover, respondents in Rumuruti forest perceived that foresters were not adequately adhering to the guidelines of participatory forest management plans (PFMPs). Respondents stated that the foresters were still fully in charge of the forests and every decision made by the CFA had to be approved by the forester. Forest-adjacent community members also had high and immediate expectations regarding participatory forest management. However, most of their expectations were yet to be met. Such expectations included adequate involvement of CFA in forest management and decision making, and benefit sharing of all forest resources including timber. Figure 18 shows the identified causes of these conflicts.

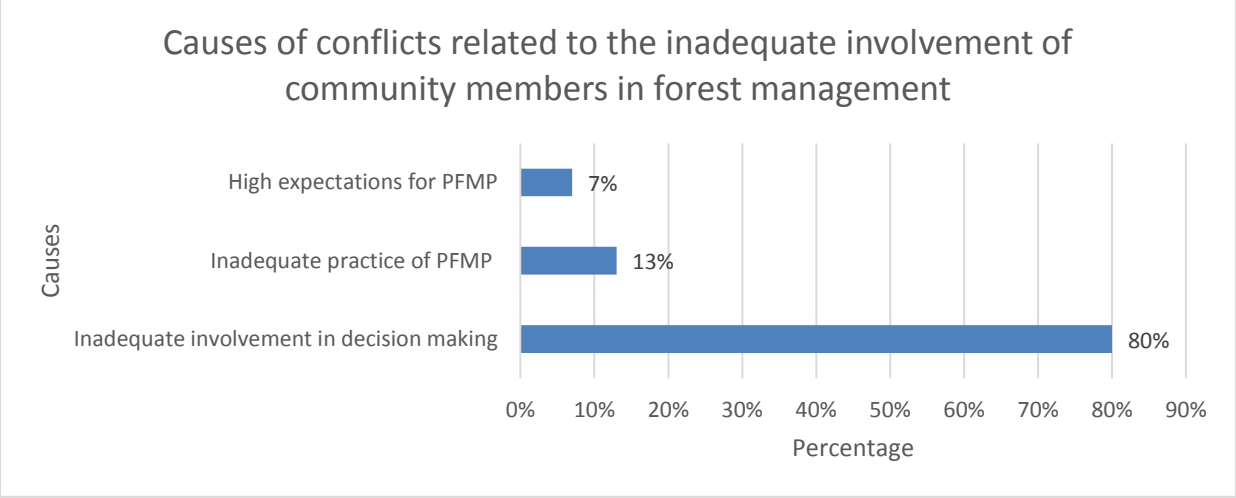

Figure 18: Causes of conflicts related to inadequate involvement of community members in forest management

5.2.5 Internal wrangles within Community Forest Associations (CFAs)

(i) Issues and actors

Respondents in the three forest stations stated that the government had attempted to involve the community members in forest management through CFAs. However, these associations had issues of mismanagement, leadership wrangles and inadequate capacity to perform their functions. These findings are consistent with the study by Ongugo *et al.,* 2008a. The actors involved in the conflicts included CFA members and CFA leaders. The leaders were the most common actors in these conflicts because they are the ones who were confronted with the aforementioned actors in their efforts to ensure that forest resources were well managed.

(ii) Causes of the conflicts

The main cause of the conflict was vested interests of CFA leaders and their monopoly in management of the CFAs. Figure 19 shows the causes of conflicts identified in the study. According to key informants in Kereita, CFA leaders from three different CFAs initially disagreed over which CFA would form a management plan with KFS. This was a violent conflict that started in 2002 and ended in 2009. The respondents pointed out that the conflict was mainly caused by the vested interests of the 3 CFA leaders. This conflict was however managed by formation of an umbrella CFA with the three leaders as chairman, treasurer and secretary.

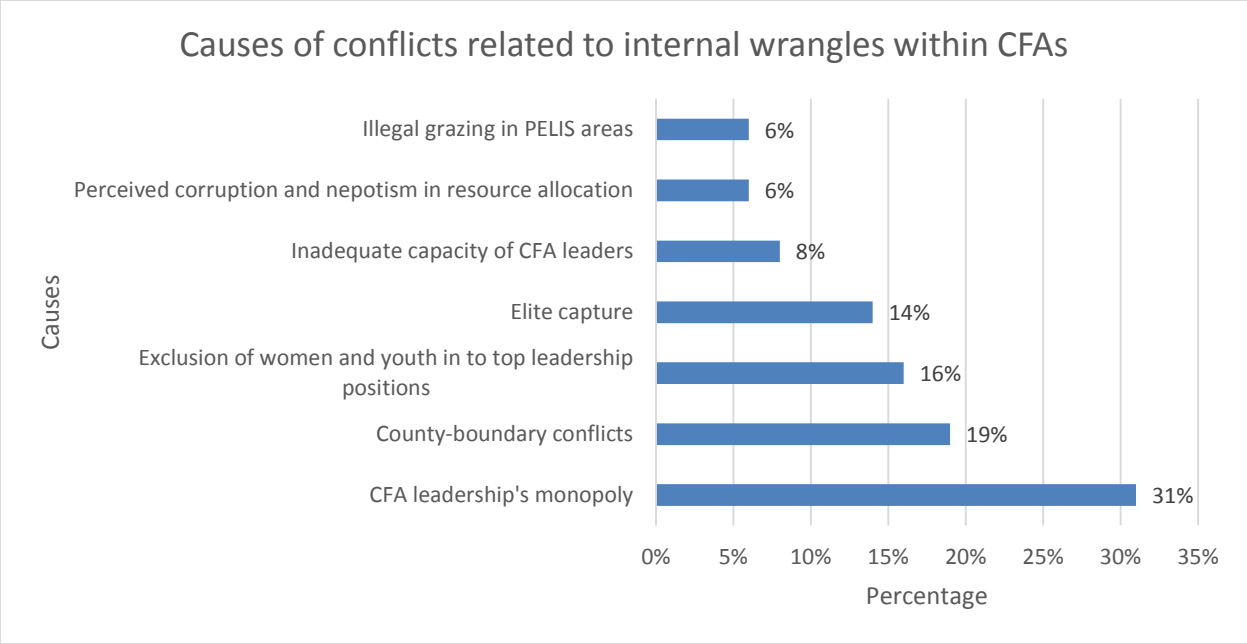

Figure 19: Causes of conflicts related to internal wrangles within CFAs

CFAs in Kaptagat had similar issues at the time of the study. Two CFAs were conflicting over supremacy. This conflict arose after formation of the County boundaries which positioned Kaptagat forest in Elgeyo-Marakwet County. Forest-adjacent community members in the neighbouring County of Uasin Gishu were therefore being prevented from vieying for top leadership positions of the proposed umbrella CFA and acquisition of forest products by fellow CFA members in Elgeyo Marakwet County. These findings are consistent with the study by De Koning *et al.* (2008). The study established that decentralization in forest management could lead to conflicts and exclusion of different groups.

Respondents in Kereita and Kaptagat also reported exclusion of women and youth in top leadership positions of the CFAs. Focus group discussion respondents in Kereita perceived that women were inadequately represented in top CFA positions owing to cultural and religious

beliefs, family duties and responsibilities, low self-esteem, inadequate support from fellow women and men as well as low literacy levels. This is consistent with the findings by de Koning *et al.,* 2008 that local forest management schemes and customary laws may exclude women, and youth from decision-making.

According to FGD respondents in Kaptagat, saw-millers could influence CFA voting as well as collude with politicians, the forester and forest guards to illegally harvest timber. This is consistent with findings by de Koning *et al.,* 2008. The study found that, there is a risk of forest resource grabbing by elites.

There was perceived corruption in the allocation of forest land for farming. Apparently, the CFA officials sometimes took bribes to allocate land and in Kaptagat, they invited their friends and relatives to come and ballot for the parcels of forest land. This included people residing further than the allowable 5Km of forest-adjacent area. In retaliation for this perceived injustices, some local herders intentionally grazed in PELIS areas in retaliation for not acquiring the land to farm. Abuse of power by public officials in allocation of forest farms has also been witnesses in Ghana's Taungya System (Agyeman *et al.,* 2003). According to FGD respondents in the three study areas, CFA leaders were not well equipped for their roles due to inadequate trainings and capacity building. Moreover, the lack of a set minimum literacy level for those vying for CFA leadership positions had not been set.

5.2.6 Conflicts over illegal access of forest resources

(i) Issues and actors

Respondents in the three forest stations indicated that there were conflicts between KFS and community members over illegal access of forest resources. Table 8 shows results of the FGDs. Actors involved in the conflicts included; KFS, KWS, the local administration and community members. The main actors were the community members who conflicted with all of the above-mentioned actors.

Table 8: Illegal forest activities in the study areas

Illegal forest activities	Kereita	Rumuruti	Kaptagat
Illegal logging	×	×	√
Tree poaching	√	√	√
Wildlife poaching	√	√	×
Destruction of trees by firewood collectors	√	√	√
Illegal firewood collection	√	√	√
Excessive collection of firewood for commercial purposes	×	√	√
Illegal charcoal burning in the forest	×	×	√
Fence vandalism	√	√	×
Forest arson	×	×	√
Accidental forest fires	×	√	√
Overgrazing	√	√	√
Illegal grazing	×	√	√
Waste disposal in the forest	×	×	√

Key: √=Presence; ×= Absence

Study results showed that forest product most sought after by forest adjacent community members was firewood (Figure 10). This is because firewood is still the cheapest and most easily accessible source of energy in the study areas. Excessive firewood collection was evident in Rumuruti and Kaptagat forests. In the latter, trade of firewood has become a booming business mainly practiced by women (Figure 20). This was a cause of conflict with KFS officials since

standing trees were being cut down by firewood collectors to reduce time spent looking for firewood in the forest.

Figure 20: A picture of firewood trade taken along the roadside in Kaptagat forest

Issues of over-grazing were prominent in Rumuruti owing to the annual migration of pastoralists into the area. This was also a major issue in Kaptagat where majority of the forest-adjacent community members were mixed farmers keeping large herds of cattle. Kereita forest also had issues of over-grazing in the forest, although to a lesser extent. The locals had small plots of land to fully engage in zero grazing. Cases of illegal grazing were also prominent in Rumuruti and Kaptagat forests. Cases of cattle rustling were also identified in Rumuruti and Kaptagat forests. According to FGD respondents, the two forests are surrounded by pastoralists who have a culture of cattle rustling.

According to FGD respondents in Kaptagat, illegal charcoal burning was practiced in Kaptagat forest (Figure 21). Key informants indicated that this is a source of livelihood for many people in the area. According to the respondents, charcoal burning was mainly carried out at night. This may highlight the importance of having a fence around a forest to reduce cases of illegal forest activities.

Figure 21: A picture taken in Kaptagat forest where charcoal burning has been practiced

According to study findings; cases of arson were evident in Kaptagat forest (Table 8). Focus Group Discussion respondents indicated that it was mainly caused by retaliation by community members for inadequate benefit-sharing of timber. The forest also lacked a fence around its perimeter which allowed easy access. Moreover, the forest has a high composition of exotic trees

which could easily catch fire. Cases of accidental fires were also prominent in Rumuruti and Kaptagat forests. The fires were mainly caused by traditional honey harvesting using fire.

The study also established that community members in forest adjacent centers around Kaptagat forest were dumping their wastes in the forest. Apparently they lacked proper waste disposal mechanisms or designated sites for waste disposal. They were mainly dumping near the road passing through the forest as indicated in Figure 22. This may signify the importance of the County Government mobilizing funds for construction of waste disposal sites.

Figure 22: Photographs taken in Kaptagat showing waste dumping (broken bottles and plastic paper bags)

(ii) Causes of the conflicts over illegal access of forest resources

According to key informants in the study areas, people engaged in those illegal activities mainly to get income for livelihood improvement and others in retaliation for perceived injustices in the management of those forests. Figure 23 shows the identified causes of conflicts.

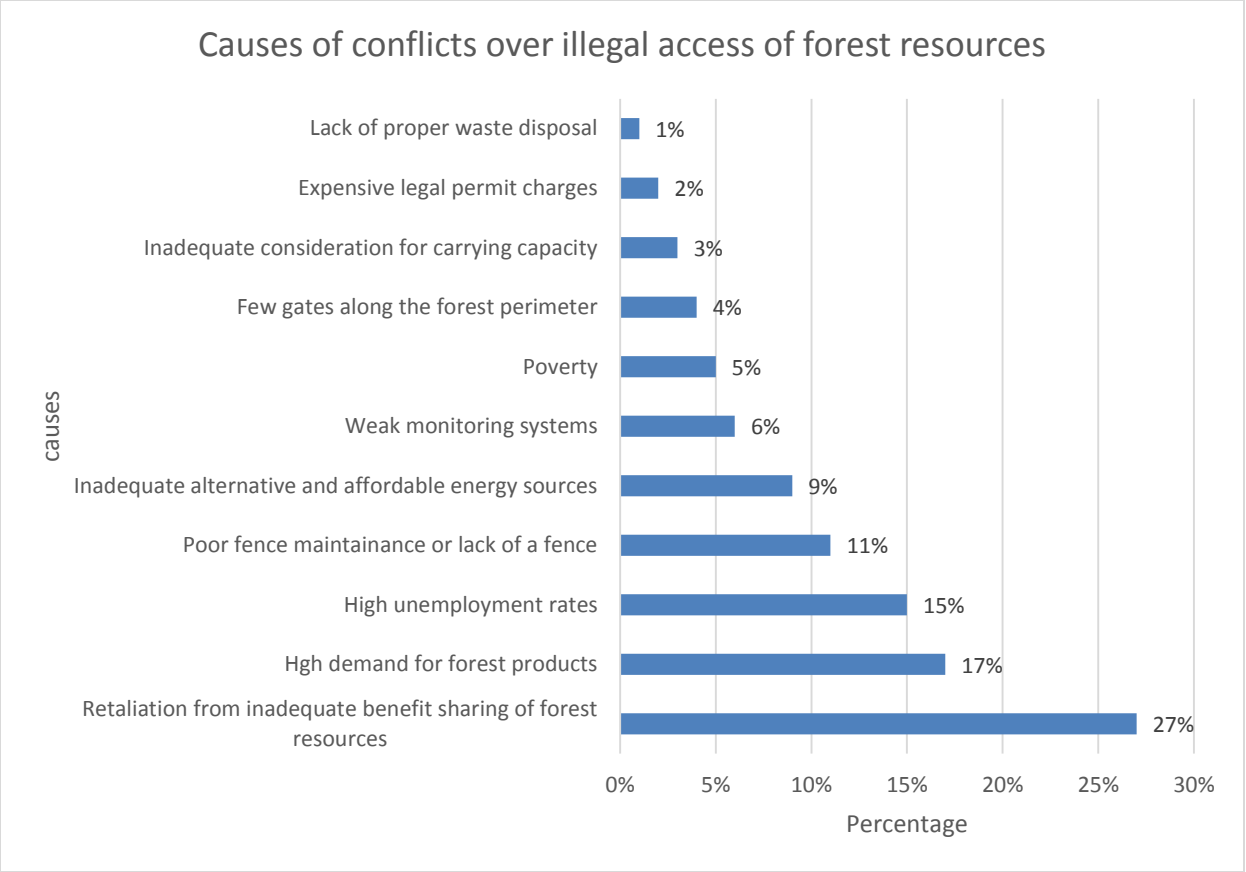

Figure 23: Causes of conflicts over illegal access of forest resources

The root cause of illegal activities was negative attitudes toward forest conservation because of few shared benefits (Figure 23). In Kereita and Rumuruti, locals engaged in illegal forest activities like hunting and tree poaching (Table 8) as a result of crop destruction by wildlife and inadequate benefit sharing from wildlife resources. In Kaptagat, community members started deliberate forest fires in retaliation for inadequate benefit sharing from timber, as distraction for police patrols and to get firewood and forest land for farming. In Kereita, locals vandalized the fence for easy access of forest resources mainly; fodder and firewood. They also used the wires from the fence to make hangers and clothing lines. Poles from the fence were used for construction of houses. Locals in Rumuruti mainly vandalized the fence to allow free movement

of livestock into the forest to graze. It was also in retaliation for inadequate involvement in the fencing project of the forest. This is consistent with findings by KWS, KFS, KFWG, UNEP and Rhino Ark (2011) report. According to the report, locals were inadequately involved in the fencing project with contributed in to the increased cases of illegal activities.

High demand for forest products especially firewood and charcoal also led to the illegal access of forest resources in the study areas (Figure 23). These are the primary sources of energy for many rural dwellers. Rumuruti FGD respondents indicated that poaching of wild animals was driven by the ready market and high demand for elephant trophies and game meat. The high rate of unemployment youth also contributed to the high crime rates in study areas (Figure 23).

According to Focus group discussions, the lack of a fence around Kaptagat and poor fence maintenance in Kereita and Kaptagat made it easy for people to illegally access forest resources. Weak monitoring of illegal activities was also identified as a major contributor to illegal forest activities (Figure 23). According to key informants, KFS had very few forest guards patrolling the forests. These findings are consistent with findings by KWS, KFS, KFWG, UNEP and Rhino Ark, 2011. The authors concluded that there was weak monitoring of illegal activities in most parts around the Aberdares fence (the fence surrounding Kereita and Rumuruti forests).

Study respondents perceived that KFS officials did not put much consideration into the carrying capacity of the forests (Figure 23). According to them, forest guards and foresters allowed excess herds to graze in the forest and also allowed excessive firewood collection. Respondents in Kaptagat also indicated that legal permit charges to access forest resources were too high for

them. A participant in the Kaptagat FGD asked, “Why should we have to pay so much money for a naturally occurring resource like grass?”

Having few gates along the forest perimeter was also pointed out as a cause of illegal forest access (Figure 23). This was due to the distance travelled, time and money consumed. In Kaptagat, community members had to travel long distances to get to the forest station to pay the permit charges. Kaptagat FGD respondents also indicated that locals illegally accessed the forest to dump their wastes in the forest because they lacked a proper waste disposal system (Figure 23).

5.2.7 Inter-community conflicts in Rumuruti area during the annual migration of pastoralists in the dry seasons

(i) Issues and actors

Focus group respondents indicated that majority of Rumuruti residents are agro-pastoralists, combining farming and livestock keeping at varying ratios. These ratios vary according to ethnic affiliation, tradition, season and availability of resources. The actors identified in the conflicts included; the County government officials, local administration, community leaders, pastoralists and resident community members. The pastoralists were considered the main actor who moved with their livestock into the Rumuruti forest annually during the dry season.

(ii) Causes of the conflicts

The main cause of the conflicts identified in the study was insecurity caused by the armed pastoralists during the annual migration (Figure 24). According to FGD respondents, during the dry periods when pastoralists migrated to Rumuruti area, there was a lot of insecurity since they

travelled with weapons. Key informants indicated that cattle raids in Rumuruti have been a source of communal violence for a long period of time. Respondents in the focus group discussions indicated that there were injuries to people and cattle rustling during the migration period.

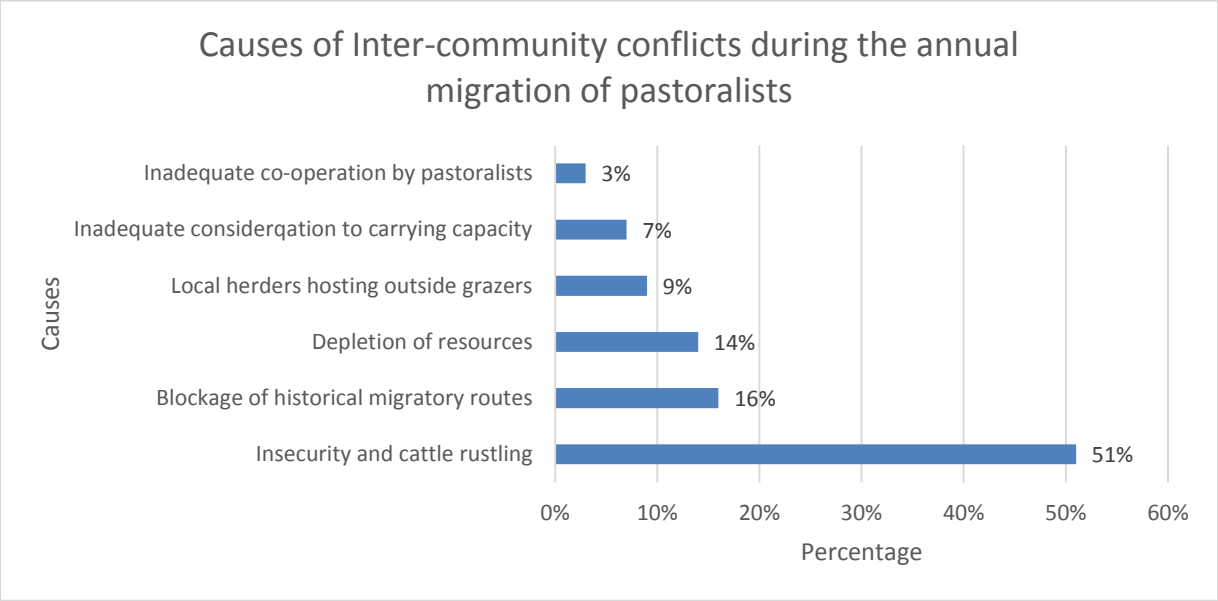

Figure 24: Causes of inter-ethnic conflicts during the annual migration of pastoralists

Laikipia area (on which Rumuruti forest is located) has been a migratory corridor for pastoralists during the dry season for years. However, blockage of this area due to urbanization brought about by increasing population and expansion of land under cultivation has increased conflicts between pastoralists and the settled dwellers in the Rumuruti area. These findings are consistent with the conclusions of the study by Jones-Casey & Knox, 2011.

According to the FGD respondents, migrating herders' animals competed with the local livestock for water and fodder. They also damaged fences around homes and destroyed crops in farms. Respondents indicated that local herders like kalenjins residing in the Rumuruti area were

hosting fellow tribes' men (Turgen community) during the dry season who also grazed their livestock in the forest. This was frowned upon by other locals who felt that the intruders were depleting their resources. According to respondents in Kaptagat, KFS officials were not keen on the carrying capacity of Rumuruti forest. The respondents perceived that large herds were allowed into the forest during the dry season to increase their revenue base. KFS and pastoralists also conflicted over payments for permits to graze in the forest. Often, the herders let the animals into the forest without paying for the entry permits or sometimes paying for less animals than they actually released in the forest.

(c) Conflict dynamics (Intensity and trends)

Focus group respondents rated the level of forest resource-based conflicts (high, moderate or low) over the years. The table 12 indicates their responses. The study findings show that forest-resource based conflicts have been on the rise over the years. This validates the study which aims to establish ways to manage these conflicts for sustainable development of the country.

Table 12: Perceived intensity and trend of the conflicts

Forest	1970-1979	1980-1989	1990-1999	2000-2009	2010-2015
Kaptagat	Low	High	Moderate	Moderate	Moderate
Kereita	Low	Low	Moderate	Moderate	Moderate
Rumuruti	Low	Low	Moderate	High	High

Source: Study findings, 2015

(d) Impacts of forest resource-based conflicts on livelihoods and forest management

The perceived impacts by FGD respondents are listed on the table 9.

Table 9: Impacts of the conflicts on livelihoods and forest management (FGD)

Impact on livelihoods	Impact on forest management
• Death/injuries to people and wildlife • Food insecurity • Loss of income • Loss of employment opportunities • Loss of property • High standards of living from accessing affordable timber through illegal tree harvesting • Loss of forest resources • Slow rate of development • Poverty • Low standards of living from loss of forest resources • Changing climate affecting crop planting cycles • Loss of ecological functions such as water provision • Cheap source of energy from illegal access of firewood • Environmental Pollution • Insecurity	• Loss of forest resources • Destruction of forest plantations • Loss of revenue from compensation and increased surveillance • Negative attitudes toward forest and wildlife conservation • Forest regeneration affected due to elephant tramping • Poor forest management due to inadequate public participation • Inadequate community participation • Forest degradation and soil erosion • Changing climate affects tree planting cycles • Death and migration of wild animals • Deforestation • Environmental pollution

Source: Study findings, 2015

5.3 Existing measures for conflict management and their challenges

The respondents mentioned several case-by-case approaches to conflict management. They were categorized based on the range of conflict management approaches modified from Derkyi, 2012 (see Chapter 2). However, some situations were dealt with by creating structures that limit contact with the opposing party.

(a) Existing management measures for Human Wildlife Conflicts (HWC)

Structures created to limit human contact with wildlife included electric fences and trenches. Buffer zones were also created as well as the use of guard dogs (Table 11). Avoidance strategy was adopted in Kaptagat, were locals perceived that KWS was not dealing with syke monkeys destroying timber and porcupines destroying crops in the three study areas. Negotiation mechanisms were also employed by KWS through compensation for injuries and death caused by wildlife as well as community sensitization in dealing with problem animals. Table 10 shows the identified management measures.

Table 10: Existing management measures for Human Wildlife Conflicts (HWC)

Existing management measures for HWC	Kereita	Rumuruti	Kaptagat
Electric fence	√	√	×
Trenches	×	√	×
Buffer zones	×	√	×
Use of guard dogs	×	×	√
Avoidance in dealing with problem animals	√	√	√
Compensations for injuries and death by KWS	×	√	×
Community sensitization by KWS	√	√	√

Key: √=Presence; ×= Absence

Kereita forest is surrounded by the Aberdare electric fence which covers most parts of the forest perimeter. Key informants stated that the fence had been effective to some extent in reducing forest resource-based conflicts. These findings are consistent with findings by KWS, KFS, KFWG, UNEP and Rhino Ark (2011). However, study findings have shown that conflicts still emerge where elephants trample on crops planted on forest land allocated for farming. Respondents also mentioned that the fence does not deter monkeys and porcupines from accessing farms and destroying crops. In Rumuruti, the County government of Laikipia was in

the process of erecting a solar fence at the time of the study. The respondents viewed this as a good initiative but felt that the fence would not be strong enough to deter elephants, monkeys and porcupines. Kaptagat forest lacked a fence around its perimeter and according to the respondents, there were no immediate plans to fence the forest.

The FGD respondents in Rumuruti indicated that the existing trench was not properly dug hence it was easily filled up through erosion. These findings are similar to studies by WWF (2005). According to the conclusions of that study, a trench should be deep and wide in breadth. Trenches can be used together with electric fences as in Rumuruti forest. These combination works with proper maintenance of both.

Respondents in Kaptagat used dogs to scare of syke monkeys from their PELIS farms (Table 10). They tied dogs in their farms and left them there overnight. This method of guarding was only effective to some degree. According to FGD respondents, overtime, the monkeys were able to access the farms, since they are intelligent animals. The use of guard dogs has been practiced in many parts of the world (FAO.IGF, 2008).

Respondents around Rumuruti forest stated that there were buffer zones in some parts of the forest (FGD). The challenge was the inadequate funding to properly compute the buffer zones. Buffer zones are ecotones separating farms and forest land. According to WWF (2005), buffer zonescan be effective when large and reinforced with repellants like chillies.

Kereita forest respondents stated that there were compensation schemes for injuries from wildlife although they were minimal and inconsistent. Respondents in Rumuruti forest had similar sentiments (FGD). However, the Rumuruti respondents mentioned that there were ongoing

compensation plans by the County Wildlife Conservation Committee to compensate also for crop damage by wildlife as required in the Wildlife Conservation and Management Act (2013). However, the committee was yet to start implementation of the law.

Respondents in Rumuruti indicated that although the locals had received sensitization on how to co-exist with wildlife, KWS lacked adequate funding to conduct the process successfully. There was also insufficient collaboration between KFS, KWS and the CFA. Moreover, community members expected financial reimbursement for attending sensitization meetings/barazas. Respondents in Kereita and Rumuruti forests stated that there were ongoing negotiations between KWS and other stakeholders regarding HWC management. However, resolutions were delayed and there was inadequate feed-backing and information sharing with the community.

(b) Existing conflict management measures for inadequate benefit-sharing conflicts

Conflicts related to benefit sharing of forest resources, especially timber were mainly dealt with through avoidance and mediation strategies (Table 11). According to a key informant in Kaptagat, locals reported issues of inadequate benefit sharing to the forester and the District County Commissioner (DCC) who addressed the issues by holding meetings (barazas) and promising to look into the matter. Other than reporting to their seniors, nothing else was done to solve the recurrent issue. However, in 2014 the government of Kenya embarked on policy review to incorporate benefit sharing of forest resources through the Natural Resources (Benefit Sharing) Bill, 2014.

Table 11: Existing conflict management measures for inadequate benefit sharing conflicts

Existing management measures for inadequate benefit sharing conflicts	Kereita	Rumuruti	Kaptagat
Avoidance	√	√	√
Mediation	√	√	√
Policy reforms	√	√	√

Key: √=Presence; ×= Absence

The law requires benefit sharing of all forest resources with forest-adjacent community members. Article 26 (l) of the law partially states, "The revenue collected shall be shared as follows- 20% shall be paid into a sovereign wealth fund established by the national government and 80% of the revenue collected shall be shared between the national government and the county governments in the ratio of 60% to the national government and 40% to the county governments. At least 40% revenue assigned to the county governments shall be assigned to local community projects and 60% of that revenue shall be utilized in the entire county". However, the implementation of this law had not taken effect at the time of the study.

Respondents in Kereita also stated that community members had formed Community Based Organizations (CBOs) and Water Resource Users Associations (WRUAs) to conserve the water from Kereita forest. However, they still did not benefit substantially from the resource.

(c) Management measures for internal wrangles within Community Forest Associations

The study found that CFA members resolved their internal issues through; negotiation, mediation and arbitration (Table 12). They also participated in CFA re-elections to remove incompetent leaders from office. These findings are consistent with conclusions of the study by Ongugo *et al.,* 2008a.

Table 12: Existing management measures for internal wrangles within CFAs

Existing conflict management measures	Kereita	Rumuruti	Kaptagat
Negotiation	√	√	√
Mediation	√	√	√
Arbitration	√	√	√
CFA re-elections	√	√	√

Key: √=Presence; ×= Absence

The Kenya Forest Working Group (KFWG) was instrumental in solving a long standing conflict in Kereita. Three CFAs were competing over supremacy and control of forest management. After mediation and arbitration by the KFWG, CFA leaders agreed to form an umbrella CFA which ended the conflict.

Respondents in the three study areas stated that they held CFA re-elections after every 5 years to vote in better qualified candidates for the leadership positions. However, the leaders often found ways beat the system and stay in office. For instance, having few members (supporters) participating in the elections or having other influential people like saw millers swaying the voters to their chosen leader as indicated in Kaptagat.

The foresters in the three forests stated indicated that they often intervened when there were conflicts amongst the CFA leaders. The foresters held meetings to negotiate and come up with amicable solutions to end the conflicts. A CFA official in Kereita stated that minor issues were solved by the CFA committee which had a constitution. However, CFA issues are often politicized and they become a challenge to solve.

(d) Existing management measures for conflicts related to illegal forest activities

People who were caught engaging in illegal activities were mainly dealt with by adjudication in a court of law. Other measures taken included arrests, fines and confiscation of tools/livestock by forest gurards, KFS extension programmes e.g. tree planting initiatives and Private entities providing employment opportunities for local youth. Table 13 sums up the identified existing measures for management of illegal forest activities.

Table 13: Existing management measures for conflicts over illegal access of forest resources

Existing management measures	Kereita	Rumuruti	Kaptagat
Adjudication	√	√	√
Avoidance through forest protection	√	√	√
Confiscation of tools/livestock	√	√	×
KFS extension programmes	√	√	√
Employment opportunities for local youth	×	√	×
Sensitization on the impacts of forest destruction	√	√	√

Key: √=Presence; ×= Absence

Respondents indicated that KFS guards confiscated people's machetes and ropes if caught collecting firewood illegally. In Kereita, they also arrested cattle found grazing in the forest illegally. The owners had to pay fines to have them released. In Rumuruti, the County government officials regularly inspected timber yards for hard wood sourced from the forests. Culprits were arrested and fined. Other illegal activities such as cattle rustling in Rumuruti were dealt with by the anti-stock theft unit of KWS. However, according to FGD respondents, officials were slow to respond and the victims had to fuel the KWS vehicles first before the officials could go after the cattle rustlers.

According to most respondents, arrests, fines and confiscation of tools was an effective deterrent measure to some extent. The FGD respondents in Rumuruti stated that community members risked jail-term since the gains from elephant tusks and trophies were high. However, under the new Wildlife (Conservation and Management) Act, 2014, poachers, will face penalties that are more severe to reduce loss of wildlife.

Respondents in the three study areas stated that the foresters and CFA officials held meetings/barazas to sensitize the community on impacts of forest destruction on the environment (Table 13). KFS guards and KWS rangers also regularly patrolled the forests and arrested offenders. However, the institutions were under-staffed and could not cover the expanse of the forests. Respondents in Kereita also stated that the CFA had two officials in each of the four forest blocks reporting illegal activities. Other community members also acted as whistle blowers reporting any illegal activities to the forester or the area chief.

In Rumuruti forest, the County government was in the process of erecting a solar fence. Although respondents felt that it was a good initiative, they preferred an electric fence which would have a higher voltage to deter elephants from their farms. Respondents in Rumuruti also stated that the County government of Laikipia was in the process of negotiating with the Laikipia wildlife forum to train and employ local youth to man the fence and guard against illegal forest activities. Respondents in Rumuruti and Kaptagat also stated that the KFS officials and community members united in putting out forest fires. There was also a fire tower in Rumuruti forest that indicated periods of the year with the greatest fires risks.

According to key informants in Kereita and Rumuruti, KFS had extension programmes for farm forestry and establishment of tree nurseries. This was intended to encourage tree planting in farms and reduce over-dependence on forest products. However, the staffing was also limited and could not cover all the villages.

Respondents in Rumuruti forest indicated that the AAA growers (A horticultural-based company) in the forest hired several youth from the community. This was instrumental in reducing forest destruction by unemployed youth who had no alternative sources of livelihood. The company's activities were on a 24 hour basis, therefore providing 24 hour security in the area they operate. According to respondents this has greatly reduced cattle rustling in the area.

(e) Existing management measures for conflicts related to over-grazing and cattle rustling during annual migration of pastoralists into Rumuruti forest

These conflicts were mainly solved by conciliation of conflicting groups by local leaders. The local leaders held meetings with pastoralists and locals to diffuse the conflicts and restore peace in the area. Foresters also indicated that they mediated in the conflicts. Table 14 summarizes the existing management measures for this conflict.

Table 14: Existing management measures for conflicts related to over-grazing and cattle rustling during annual migration of pastoralists into Rumuruti forest

Existing management measures	Rumuruti
Conciliation of conflicting communities	√
Community sensitization	√
Regulation of forest grazing	√
KFS extension programmes	√
Employment opportunities for local youth	√

Key: √=Presence; ×= Absence

According to key informants in Rumuruti forest, the forester and county officials in collaboration with the Rumuruti CFA were sensitizing community members and external grazers on the importance of considering the carrying capacity to reduce over-grazing in the forest. They also sensitized the community on the benefits of keeping more productive cattle breeds and reducing herd sizes during dry seasons. However, according to key informants, the topic of pastoralism needed to be addressed with caution to avoid escalation of the conflict since it was a cultural issue which was politicized.

The Forest Conservation Committee was in charge of making decisions on forest management. According to respondents in Rumuruti, the committee had plans to close the forest during specific times of the year to allow forest regeneration. However, extensive negotiations with local leaders had to be done to stop escalation of the conflict. According to a key respondent in Rumuruti, KFS sometimes liaised with internal security organs to control activities of pastoralists during the dry seasons. However, the collaboration was minimal and they needed participation of other stakeholders.

5.4 Proposed measures for management of forest resource-based conflicts

Study respondents made several cross-cutting suggestions for management of conflicts. They main proposals included benefit-sharing of forest resources, awareness creation and community sensitization. The proposed measures are summarised in table 15.

Table 15: Proposed measures for conflict management

Proposed measures for conflict management	%
Benefit sharing of forest resources	14%
Awareness creation and community sensitization	12%
Capacity building of all stakeholders	11%
A multi-sectorial approach in conflict management	10%
Increased stakeholder collaboration	9%
Policy implementation	9%
Mobilization of resources for management of conflicts	7%
Formation of multi-stakeholder committees to handle different conflicts	7%
Political good will	6%
Civic education for forest-adjacent community members	5%
Increased advocacy for farm forestry and other good practices	4%
Initial stakeholder involvement during project planning and implementation	4%
Women empowerment	1%
Exchange programmes for community members to learn how to manage conflicts	1%

(a) Proposed measures for management of Human Wildlife Conflicts

Respondents proposed creation of well-defined benefit sharing arrangements between forest adjacent communities and KWS to improve standards of living and promote good will toward forest conservation. Moreover, they proposed increased collaboration amongst forest sector stakeholders in mobilizing resources for the management of human-wildlife conflicts, as well as speedy implementation of the Wildlife Conservation and management Act (2013) that includes compensation for crop damage by wildlife. Proper fencing was also an important proposal to reduce encounters with wildlife. Moreover, respondents recommended translocation of elephants to reduce crop damage in Kereita and Rumuruti as well as Caging or culling of syke monkeys in Kaptagat to reduce tree destruction. The proposals are summarized in table 16.

Table 16: Proposed management measures for Human Wildlife Conflicts (HWC)

Proposed measures	Kereita	Rumuruti	Kaptagat
Benefit-sharing from wildlife resources	√	√	×
Well maintained electric fence	√	√	√
Stakeholder collaboration	√	×	×
Speedy resolution of conflicts by KWS and feed-backing	√	√	√
Buffer zones	√	√	×
Deep trenches	×	√	×
Adequate and timely compensation for crop destruction	√	√	×
Collaboration between the National and County governments in mobilizing funds for management of HWC	√	√	×
Removal of problem animals	√	√	√
Community sensitization to engage in farm forestry to reduce over-reliance on forest resources	√	√	√
Establishment of community wildlife conservancies	×	√	×
Community sensitization to stop habitat destruction	√	√	×
Forest rehabilitation and reforestation	√	√	×
Exchange programmes for locals	√	√	×

Key: √=Presence; ×= Absence

(b). Proposed management measures for conflicts over inadequate benefit sharing from timber as a resource

Respondents in Kereita and Kaptagat proposed that an exact percentage of forest gains should be channeled to the forest-adjacent communities in form of cash or through amenities like schools. They also proposed that the forest-fringe communities should be involved in the entire process of awarding timber concessions. The proposed measures are summarized in table 17.

Table 17: Proposed management measures for conflicts over inadequate benefit sharing from timber as a resource.

Proposed measures	Kereita	Rumuruti	Kaptagat
An exact percentage of gains from timber harvesting to go to the forest-adjacent communities	√	×	√
Information sharing and capacity building amongst all stakeholders	√	×	√
Consideration of poor locals in the competitive tendering process for timber harvesting	√	×	√
Community Forest Associations should be given portions of the planted forests to harvest and generate income	√	×	×
Saw millers to be proactive in reforestation and forest rehabilitation initiatives	×	×	√
Issuing of timber concessions at County level	×	×	√

Key: √=Presence; ×= Absence

(b) Proposed management measures for conflicts related to the inadequate involvement of community members in forest management

Respondents proposed involvement of forest-fringe community members in decision-making, which has solely been a prerogative of KFS. They also proposed information sharing through social media and local meetings/barazas to create awareness on community involvement in forestry. The proposals are summarized in table 18.

`Table 18: Proposed management measures for conflicts related to the inadequate involvement of community members in forest management

Proposed measures	Kereita	Rumuruti	Kaptagat
Involvement of forest adjacent communities in decision-making	√	×	√
Information sharing amongst all stakeholders	√	√	√
Awareness creation	√	√	√
Women empowerment	√	×	×

Key: √=Presence; ×= Absence

(c) Proposed management measures for internal wrangles within Community Forest Associations (CFAs)

Respondents indicated that the terms of office for CFA leaders should be reviewed to ensure that the elected leaders meet basic requirements such as minimum education level and training in forest conservation. According to FGD respondents, the CFA leaders should be paid like other employees to boost morale in forest management activities. The proposed measures are summarized in table 19.

Table 19: Proposed management measures for internal wrangles within Community Forest Associations (CFAs)

Proposed measures for management of conflicts over inadequate benefit sharing from timber	Kereita	Rumuruti	Kaptagat
Reviewing terms of office for election of CFA leaders	√	√	√
Free and fair elections	√	√	√
Wages for CFA leaders	×	√	√
Clear roles and responsibilities of CFA	√	√	√
Sensitization, training and capacity building of stakeholders	√	√	√
Networking and exchange visits	×	×	√
CFA to be given a greater mandate in forest management	√	√	√

Key: √=Presence; ×= Absence

(d) Proposed measures for management of conflicts resulted to illegal access of forest resources

Respondents proposed equitable benefit-sharing of forest resources to promote community good-will in forest conservation and discourage retaliation of locals by engaging in illegal forest activities. They also proposed active KFS and CFA involvement in sensitizations of communities through public meetings/barazas to encourage community forest ownership, farm forestry, use of

clean sources of energy (e.g. biogas and briquettes) and overall forest conservation. Respondents in Kaptagat proposed that KFS should employ messengers to take permits to them door to door since it was financially and time consuming to go to the forest station to pay for the permits to access forest resources. Close community co-operation with other forest sector stakeholders for instance having community policing groups to inform authorities of any illegal undertakings in the forest. The County government should provide designated dumping sites to stop the forest adjacent communities from dumping their wastes in the forest. Table 20 summarizes the proposals for management of these conflicts.

Table 20: Proposed management measures for conflicts over illegal access of forest resources

Proposed measures for management of conflicts over illegal access of forest resources	Kereita	Rumuruti	Kaptagat
Equitable benefit sharing of forest resources	√	√	√
Forest –based committees to be more pro-active in conflict resolution	×	√	×
Increased arrests and high penalties	√	√	√
Community sensitization on the benefits of forest conservation	√	√	√
Employment of messengers within KFS to take permits to locals to reduce transportation costs	×	×	√
Increasing alternative livelihood sources for forest adjacent communities	√	√	√
Proper fence maintenance	√	√	×
Increased forest surveillance	√	√	√
A multi-stakeholder approach	√	√	√
KFS regulation of the number of allowable permits	×	√	√
Decreasing permit charges	×	×	√
Aerial patrols	×	√	×
Provision of dumping sites for residents of forest adjacent centers	×	×	√
Fire control	×	√	√
Increasing the number of man-gates	√	√	×

Key: √=Presence; ×= Absence

(e) Proposed measures for management of inter-community conflicts in Rumuruti during the annual migration of pastoralists.

Respondents proposed that county officials and village elders should actively engage in sensitization of pastoralists to change attitudes and mindsets since this is a cultural issue. They should also be sensitized on other income sources to reduce over-reliance on their livestock. Moreover, capacity building of pastoralists should be done on pasture management and coping strategies in the dry season. In a conflict situation between pastoralists and local farmers, peace meetings should be held amongst their local leaders to curb insecurity and cattle rustling in the area especially during the dry season. The proposed measures are summarized in table 21.

Table 21: Proposed management measures for Inter-community conflicts in Rumuruti area during the annual migration of pastoralists in the dry seasons

Proposed measures for management of conflicts over illegal access of forest resources	Kereita	Rumuruti	Kaptagat
Intensive sensitization of pastoralists	×	√	×
Electric forest fencing	×	√	×
Law enforcement	×	√	×
Empowering local elders to mediate in conflict situations	×	√	×
Periodic closing of the forest to allow forest regeneration	×	√	×
A multi-sectorial and multi-stakeholder approach	×	√	×
County specific measures to regulate annual migration of pastoralists	×	√	×
Pastoralists to be offered aid during the dry seasons	×	√	×
Monitoring of pastoralists activities during their annual migration	×	√	×
Capacity building on best practices	×	√	×
Provision of alternative livelihood sources	×	√	×
Peace meetings with the DCC and other key leaders	×	√	×

Key: √=Presence; ×= Absence

5.5 CONFLICT MANAGEMENT FRAMEWORK

Table 22: A conflict management framework based on study findings and sample sizes

OVERALL GOAL: Management of forest conflicts								
OBJECTIVES	**KEY INDICATORS**	**MEANS OF VERIFICATION**	**BASELINE**	**TARGETS**			**RESPONSIBILITY**	**ASSUMPTIONS**
			2015	**2020**	**2025**	**2030**		
OBJECTIVE 1: Management of Human Wildlife Conflicts (HWC)	decrease in number of reported cases of HWC	▪ Findings of similar studies ▪ KWS assessment reports ▪ International organizations reports	Kereita-26 cases Rumuruti-38 cases Kaptagat-11 cases	Kereita-17 cases Rumuruti-25 cases Kaptagat-7 cases	Kereita-8 cases Rumuruti-12 cases Kaptagat-3 cases	Kereita- 0 cases Rumuruti-0 cases Kaptagat-0 cases	KWS, KFS, County Governments, community members and all stakeholders	-Limited political interference -Speedy policy/law implementation such as the Natural Resources (Benefit Sharing) Bill, 2014 -County governments actively take up their role in conflict management -KFS, KWS and CFA demonstrate leadership in capacity building and sensitization of locals -Full implementation of the constitution
OBJECTIVE 2: Management of conflicts over inadequate benefit sharing of forest resources	decrease in number of reported cases of conflicts over inadequate benefit sharing of forest resources	▪ Findings of similar studies ▪ KFS assessment reports ▪ International organizations reports	Kereita-22 cases Rumuruti-13 cases Kaptagat-27 cases	Kereita-15 cases Rumuruti-9 cases Kaptagat-18 cases	Kereita-8 cases Rumuruti-5 cases Kaptagat-9 cases	Kereita- 1 cases Rumuruti-1 cases Kaptagat-0 cases	KFS, County Governments, community members and all stakeholders	
OBJECTIVE 3: Management of conflicts over inadequate involvement of communities in and decision making	decrease in number of reported cases of conflicts over inadequate involvement of communities in decision making	▪ Findings of similar studies ▪ KFS assessment reports ▪ International organizations reports	Kereita-8 cases Rumuruti-11 cases Kaptagat-15 cases	Kereita-5 cases Rumuruti-7 cases Kaptagat-10 cases	Kereita-2 cases Rumuruti-3 cases Kaptagat-5 cases	Kereita- 0 cases Rumuruti-0 cases Kaptagat-0 cases	KFS, County Governments, community members and all stakeholders	
OBJECTIVE 4: Management of conflicts over illegal access of forest resources	decrease in number of reported cases of conflicts over illegal access of forest resources	▪ Findings of similar studies ▪ KFS assessment reports ▪ International organizations reports	Kereita-13 cases Rumuruti-29 cases Kaptagat-9 cases	Kereita-9 cases Rumuruti-19 cases Kaptagat-6 cases	Kereita-5 cases Rumuruti-9 cases Kaptagat-3 cases	Kereita- 1 cases Rumuruti-0 cases Kaptagat-0 cases	KFS, County Governments, community members and all stakeholders	
OBJECTIVE 5: Management internal wrangles within Community Forest Associations (CFAs)	decrease in number of reported cases of internal wrangles within Community Forest Associations (CFAs)	Findings of similar studies KFS assessment reports International organizations reports	Kereita-3 cases Rumuruti-3 cases Kaptagat-16 cases	Kereita-1 cases Rumuruti-1 cases Kaptagat-4 cases	Kereita-0 cases Rumuruti-0 cases Kaptagat-1 cases	Kereita-0 cases Rumuruti-0 cases Kaptagat-0 cases	KFS, County Governments, CFA leaders, community members and all stakeholders	

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The chapter presents the main conclusions and recommendations of this study. Areas for further research are also given.

6.2 Conclusions

This study has shown that conflicts arise mainly due to divergent interests and policy and institutional failures. Single tactics in conflict management can hardly address the full range of conflict scenarios. Several solutions are therefore required to address conflict because of the multi-faceted dimensions of conflict. Proactive actions are necessary such as introduction of an effective conflict management system that is well represented by all stakeholders. This conflict management strategies should be incorporated in the National Forest Programme and implemented with support of other actors.

Conflict management and law enforcement only thrive in an accountable, transparent, responsive and inclusive governance context. In addition, such a conflict management system should encompass a stepwise approach in which negotiation is priority, legal proceedings are the last resort. Conflicts can be avoided if all stakeholders are involved in decision-making and equitable resource sharing. Moreover, there should be capacity building of forest adjacent communities to empower them and reduce power imbalances.

6.3 Recommendations

At national level

1. KFS and the Ministry of Environment and Natural Resources with support from other actors, must make use of the ongoing forest and wildlife policy reforms to integrate conflict management strategies.
2. KFS should seek funding from within and outside the country to strengthen forums for discussion and facilitate information sharing and forestry education.
3. The National government should focus building on empowering local leaders who have the potential to mediate in conflicts.
4. The National government should endeavor to create more job opportunities for forest-adjacent youth to reduce illegal forest access.
5. The National Government should ensure increased community involvement and local empowerment in forest management and decision making.
6. The National Government must set up effective and efficient monitoring systems to exert compliance and to reduce corruption in the forest sector.

(A) At County level

The County officials should make an effort to:

1. Adopt a multi-sectorial approach in sustainable community management of forest resources.

2. Strengthen County forestry forums that have the potential to root out conflicts before they manifest.
3. Facilitate training and capacity building in conflict management and law enforcement for KFS officials and CFA leaders.
4. Promote renewable energy use to reduce over-reliance on fuel wood.

(B) At forest station level

The foresters should make an effort to:

1. Have a coordinated approach in forest management to effectively monitor and address issues promptly.
2. Source funds locally and internationally to effectively implement laws and policies.
3. Intensify forestry education for local communities and timber contractors.
4. Actively engage in mediation or arbitration of forest conflicts.
5. Employ local youth to man the fence and guard against illegal forest activities.

(C) At community level

The KFS, CFA and other stakeholders should;

1. Create more awareness, training and capacity building of forest adjacent community members in conflict resolution, innovative techniques and understanding forestry laws.
2. Encourage community policing of the forests and reporting forest crimes
3. Institutionalize a local conflict management structure e.g. a committee that is well represented to settle conflicts.

4. Institutionalize annual stakeholder dialogues between stakeholders (KFS officials, County officials, timber contractors and forest-adjacent community members).
5. The KFS and other stakeholders (e.g. the timber contractors) should create economic opportunities for forest fringe communities.

Areas for further research

It is recommended that for a better understanding of forest conflicts, there are some areas that require further investigation. They include;

1. The relationship between prevalence of conflicts and degradation of forest ecosystems.

2. Understanding how conflicts in Kenya benefit politicians and other elites such as saw millers.

3. The role played by County governments in managing forest conflicts.

4. The impacts of corruption on hierarchical dimensions of conflicts.

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APPENDICES

Appendix 1

Questionnaire

Introduction of the survey

I am Grace Kemunto, a 2nd year master's student from University of Nairobi studying MSc. Environmental Governance. The title of my research work is, **"ANALYSIS OF CONFLICTS AND DEVELOPMENT OF A POTENTIAL MANAGEMENT MECHANISM IN THE FOREST SECTOR: A CASE STUDY OF KENYA**". This study aims to contribute to the framework for management of conflicts arising from the dissatisfaction of forest sector stakeholders in the country. Increased cases of conflicts among stakeholders have been identified as major threats to the sustainable management and use of forest resources in Kenya.

I am currently collecting data on the subject and I would appreciate your assistance in providing me with information that could benefit you as a resource user and advance knowledge in this important area of study. The information gathered will be kept private and confidential. Thank you for your participation.

SECTION A: GENERAL INFORMATION

Date……..

Household characteristics

Location…….Ward…….

Sub-County ……County…….

1. Female (1) Male (2) (tick)
2. Age range: <20, 20-35, 36-45, 45-60, >60 (tick)
3. Marital status: Married (1) Divorced (2) Single (3) widowed (4) polygamous (5) (tick)
4. Number of children 0 (1) 1-4 (2) 5-10 (3) >10 (4) No response (5) (tick)
5. Educational level: Primary (1) Secondary (2) Tertiary institutes (specify) (3) (tick)……

Livelihood issues

6. Major sources of income (specify)……..

7. What is the range of your monthly income?

(1) ≤ 3,000 (2) 3,001-10,000 (3) 10,001-50,000 (4) >50,000

8. What is the nature of your land tenure?

   (1)Private (2) Communal (3) Trust land (4) Protected area) (tick)

9. What is the size of your farm? (Acres)……

10. What do you use for your domestic energy? .....

11. What are your water sources? .....

Forest management

12. Who owns the forest? ……

13. Who is responsible for its management? (a) Central Government through KFS (b) County Government (c) forest guards (d) communal (e) Not aware (tick)

14. A) Are you aware of an existing Community Forest Association (CFA)? Yes/No (tick)

    C) Does the CFA have a management plan? Yes/ No (tick)

    F) Is there a management agreement? Yes/ No (tick)

15. How do you utilize forest resources? (tick all applicable) (a) medicine (b) timber (c) firewood (d) fruits (e) fodder (f) hunting (g) mining eg sand, clay (h) recreation (i)farming (f) others

    specify……

SECTION B: TYPES, ACTORS AND CAUSES OF CONFLICTS

1. List the types of conflicts in the area, who is involved and what are the causes of these conflicts. (elaborate causes)

Types of conflict	Actors	Causes

SECTION C: EXTENT AND TRENDS OF CONFLICTS

1. Rank the different types of conflict in terms of the impact livelihoods and on forest management.

Impact on livelihood	Impact on forest management

2. What are the trends of conflicts with time and what is the intensity?

INTENSITY(high, moderate, low)				
1970-1979	1980-1989	1990-1999	2000-2009	2010-2015

SECTION D: EXISTING CONFLICT MANAGEMENT MEASURES AND THEIR CHALLENGES

1. List the existing measures for forest conflict management in the area and their challenges

Type of conflict	Existing management measure	Challenges

SECTION E: PROPOSED CONFLICT MANAGEMENT STRATEGIES

D) What do you propose as the best conflict management measures of these conflicts?

Types of conflict	Proposed management measures

Appendix 2

Key informant interviews and focus group discussion questions

Introduction

I am Grace Kemunto, a 2nd year master's student from University of Nairobi studying MSc. Environmental Governance. The title of my research work is, **"ANALYSIS OF CONFLICTS AND DEVELOPMENT OF A POTENTIAL MANAGEMENT MECHANISM IN THE FOREST SECTOR: A CASE STUDY OF KENYA**". This study aims to contribute to the framework for management of conflicts arising from the dissatisfaction of forest sector stakeholders in the country. Increased cases of conflicts among stakeholders have been identified as major threats to the sustainable management and use of forest resources in Kenya.

I am currently collecting data on the subject and I would appreciate your assistance in providing me with information that could benefit you as a resource user and advance knowledge in this important area of study. The information gathered will be kept private and confidential. Thank you for your participation.

Date: …….

1. **QUESTIONS**

1. What are the main types of forest resource-based conflicts experienced in this area?
2. What are the causes?
3. Who are the actors in the conflict situation and who are the main actors?
4. What are the trends?

	1970-1979	1980-1989	1990-1999	2000-2009	2010-to date
Types of conflict					

5. What are the socio-economic impacts of the conflicts on people's livelihoods?
6. What are the existing strategies of managing forest resource-based conflicts?
7. What are the prevailing challenges to these strategies?
8. Specifically indicate ways in which conflicts over forest resources could be managed constructively.