

**AN ANALYSIS OF LOCAL DYNAMICS IN CONFLICTS OVER USE OF NATURAL
RESOURCES IN THE TANA DELTA REGION, TANA RIVER COUNTY, KENYA**

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Department of Geography and Environmental Studies

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DECLARATION

This research project report is my own original work and has not been presented for examination at any other university or institution.

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DEDICATION

To my late Grandparents whom I wish hadlived to see this day.

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LIST OF ABBREVIATIONS

CBNRM:	Community-Based Natural Resource Management
Cocoon:	Conflict and Cooperation Over Natural Resources
CPRs:	Common Property Resources
DRC:	Democratic Republic of Congo
DRC:	Democratic Republic of Congo
GDP:	Gross Domestic Product
IUCN:	International Union for the Conservation of Nature
NGOs:	Non-Government Organizations
NGOs:	Non-Government Organizations
NRM:	Natural Resource Management
NWC:	Nairobi Water Company
OPEC:	Organization of Petroleum Exporting Countries
UK:	United Kingdom
UN:	United Nations
UNEP:	United Nations Environmental Programme
USA:	United States of America

ABSTRACT

Tana Delta is a vast but underdeveloped region that lies along the Kenyan Coast. Poverty rates for 2012 stood at 70% and infrastructure of any kind is very limited or virtually non-existent (Ministry of Agriculture, 2013). The Tana Delta is home to numerous ethnic groups including Somali, Orma, Pokomo, Wardei, Wailwana, Watha Luo, Giriama and Swahili people amongst others. The dominant tribes are the Orma and Pokomo, which constitute ---% of the delta population (WE NEED A SOURCE). For many years, conflicts and cooperation over use of resources have characterized tense relationships among ethnic groups, competing land use types, and between local communities and investors.

This study aimed at assessing the extent to which existing utilization of natural resources in the Tana Delta region fueled violent and non-violent conflict during the period 2012 to 2014 and the impact that such conflicts had on livelihoods and development in the delta region. Specifically, the study addressed three objectives: 1) to identify actors involved in conflict and determine the role each actor played in the conflict situation; 2) to determine strategies used by local communities in the Delta Region to manage and resolve natural resource conflicts and the challenges experienced while implementing such strategies; 3) to assess the long- and short-term impacts of long-running resource conflicts on livelihoods and development of the area. This study used a cross-section research design that employed a questionnaire to collect data from a stratified sample of 384 household heads in all the 35 sub locations in Tana Delta region (geographically equivalent to Tana Delta Sub-county of Tana River County) from a total population of 18,790 household heads (KNBS, 2009). A field observation guide was used to ground-truth data. Data analysis employed measures of relationship such as correlation analysis. The study tested the hypothesis that Regardless of abundance or scarcity of resources, the Pokomo-Orma conflict will persist in spite of perception.

The study findings showed that neither natural resources scarcity nor abundance of natural resources influenced conflict in Tana Delta. Instead governance issues and cultural values that different communities attached to various natural resources were the main causes of conflict. In particular, governance issues and value conflicts underlie a lack of mutual understanding on how to share available natural resources like Tana Delta wetlands often generates conflict. Approaches embedded in local tribal customs were most effective in conflict resolution and peacemaking. The impact of resource conflict in the region is negative. The main actors in the resource conflict situations included government organizations, traditional customary

institutions, civil society, and private sector. The study concluded that ---. The study recommends that a lasting solution should be achieved through government and NGO intervention in irrigating the dry areas during the dry season to ensure that the wetlands will no longer be on high demand.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

All over the world, natural resources such as water, land and forests play a central role in sustaining people's livelihoods and economies. However, type, availability and use of such resources often vary greatly within and between places and communities. These variations may become a source of conflict due to competing uses and users and due to spatial and temporal variations in resource availability (Elhadary & Samat, 2011). This study is part of a wider research project named Conflict and Cooperation Over Natural Resources (CoCooN) in developing countries, whose purpose was to explore the dynamics of conflicts and cooperation and generate evidence-based (policy) interventions and practices in order for natural resources to contribute to sustainable development and poverty reduction efforts (WE NEED A SOURCE e.g. CoCooN project document).

Conflicts over natural resources arise when parties disagree about the ownership, management, allocation, utilization and protection of natural resources and associated ecosystems (WE NEED A SOURCE). The visible drivers of conflicts of use of natural resources include political exclusion, ethnic tensions and poor governance. Conflict becomes challenging when societal institutions and mechanisms for resolving and managing conflict break down, leading to violence. Societies with fragile political systems, weak institutions and divisive social relations can be drawn into conflict circles and violence. Cumulative grievances over their governance and transboundary nature or scarcity of renewable resources, can drive, compound or reinforce existing stress factors and play a fundamental role in the decision to resort to violence (Leauthaud *et al.*, 2013).

In all conflict situations the state is an interested party because the state controls political, judicial and institutional dimensions that manage natural resources and resolution and mitigation of such conflicts. However the state may want to uphold certain political alliances to remain in power so as to perpetuate state influence or promote conservation objectives. Also, differences in age, gender, and ethnicity may inform the use of natural resources,

bringing to the fore cultural and social dimensions of conflict (Oladele&Oladele, 2011) regarding ownership, access, and distribution of revenues and environmental costs¹.

Natural resources have been an integral part of many conflicts in developing countries especially Africa because of the continent's dependence on natural resources for livelihoods. This has been attributed to a range of reasons such as weak state, corruption that uses revenues from natural resources into for personal enrichment and building political support and environmental deterioration. As *Opiyo et al.*, (2012) put it, natural resources become sources of discontent and rebellion against governments or a source of struggles to control politics and wealth. In addition to discontent and rebellion, the ensuing struggles the small elites may use already acquired power to capture more resources thereby reinforcing control over both the state and resources and divert these from the broader development of the country

Natural resources management is an area prone to a wide variety of rapidly changing development pressures that become a source of disputes and conflict. These pressures are exerted on groups and individuals in a number of ways which include the commercialization of common property resources (CPRs), introduction of new technologies, and involvement of rural communities in conservation and privatization of rural public services (Varisco, 2010). The other pressures arise from government policies supportive of community-based natural resource management (CBNRM), growing consumerism and a general decline in the terms-of-trade for agricultural produce. Since disputes and conflicts that arise from such a factor are not avoidable, development models that recognize conflict as a potential hindrance to sustainable development, manage adverse excesses and transform the residuals of development into a positive force will be examined in the present study. The rising interests from governments, donors and non-government organizations (NGOs) regarding natural resource projects is developing within three distinctive areas of international development, namely, poverty reduction, peace-building, and biodiversity conservation (*Opiyo et al.*, 2012).

¹Oli Brown and Michael Keating. 2015. Addressing Natural Resource Conflicts Working Towards More Effective Resolution of National and Sub-National Resource Disputes. Research Paper Energy, Environment and Resources | June 2015

Just as natural resources are a source of conflict, they are also a source of cooperation and peace (United States Institute of Peace, 2007). Reduction or avoidance of conflicts over natural resources especially through stakeholder participation is a major aspect of sustainable development. Participatory natural resource management may ensure that the people's unique needs are understood and addressed. Although granting greater voice to the people is not essentially a conflict-free activity as it raises the likelihood of new tensions between excluded groups and project beneficiaries it makes poorer groups economically more secure and lessens intergroup tensions. Natural resource-based poverty reduction projects in the Tana Delta are possibly vulnerable to such tensions. Distribution of revenues from conservation increases the value of conservation to people in the grassroots.

An emphasis on reducing the dependency of local communities on natural resources, continuing dominance of conservation goals over the livelihood needs, lack of community participation in planning, and limited revenue flows from use of natural resources will likely aggravate conflicts.

Over a period of 60 years, 40 percent of civil wars in Africa can be traced to ownership, access and use of natural resources (WE NEED A SOURCE). In the Tana Delta region where there is multi-ethnic inhabitants consisting of Somali, Orma, Pokomo, Wardei, Wailwana (formerly Malakote), Watha Luo, Giriama and Swahili people amongst many others, competition over ownership and access to natural resources has been growing over time recurrently culminating into armed violence that often leads to death. The predominant tribes are the Orma and Pokomo who wield control over natural resources and political power in a space that has minimum state presence. The Orma are largely pastoralists while the Pokomo practice cultivation making land, pasture, and water the main influencers of inter-ethnic conflict. The Pokomo cultivators desire a land tenure system in which land is adjudicated and given to individual freeholders while the Orma range herders believe in communal land tenure and have vehemently opposed adjudication. Besides natural resources, the Pokomo and Orma are perennial rivals over control of political power in the delta region. In recent years, Lamu Port Development (a LAPSSSET project), acquisition of land by multinational corporations, and a new devolved system of governance occasioned by the 2010 Constitution have become external factors that have added new dimensions to a complex conflict situation in the area.

Conflicts and disputes over use of natural resources are complex. The conflicts should be regarded in the perspective of a new development pressures, multifaceted web of demographic change, sensitive natural environments, structural economic and legal inequalities, ethnic and personal differences, multiple interests of various groups, individuals organizations and individuals from both outside and inside rural communities.

1.2 Statement of the Research Problem

Several arguments have been fronted to explain the Pokomo-Orma conflict without much empirical evidence. To what extent cultivation and range pastoralism are incapable of co-existing in the Tana Delta geography (Ng'weno, 2008) or that high poverty rates and or lack of income and employment as well as persistence in traditional economies (lack of modernity) in the area have turned the two tribes against each other (Leauthaud *et al.*, 2013 or that rapid population growth has reduced space to cultivate crops and graze animals are some of the plausible arguments. In all these respects the search for space by one tribe has been perceived as a threat by the other tribe (Kyama, 2012; Boone, 2012). The identification, roles of each actor will be assessed in the present study.

There are many other arguments but most or all seem to revolve around the thinking that the two tribes fight because the Pokomo lay claim to land for cultivation while the Orma want unhindered access to water and pasturelands to prosper their range herding economy. Ownership and access are two complementary natural resources management strategies. Whether these arguments constitute an accurate and comprehensive interpretation of this perennial conflict is still arguable especially because efforts to resolve conflict based on these arguments seem to have failed and the two tribes continue to fight, kill and displace each another. The present study will desegregate the evidence of each possible cause and identify the factors and or drivers of natural resource use conflict in Tana Delta region.

Regardless of the levels of abundance or scarcity of natural resources a permanent peace has not been possible in the Tana Delta region. Solutions to such conflicts should therefore derive from the thinking that abundance of natural resources present opportunities for peace and economic growth while scarcity will generate competition and conflict. How then can we identify these opportunities for peace and economic growth and the challenges that come with scarcity? Specifically, this study will explore and analyze drivers of natural resource-based conflicts with a view of identifying opportunities for cooperation and mutual benefit.

Natural resources and environment play vital roles in economic development through sustainable livelihoods. However, it is the environment that suffers great damage during violent conflict. Resources may be targeted for damaged or destruction but displacement of populations into less favorable environments where the struggle to survive vitiates the resource base; and, the interruptions of institutions that are able to manage natural resources all lead to gross environmental degradation.

The correlation between conflict and natural resources has received much attention from scholars and practitioners. Where natural resources have been a significant driver of conflict, they need to be handled as a crucial element of peace building. The present study sets this vital stage to ensure a return to long-term stability and peace.

Enhancing governance on natural resource and addressing ownership of land and control or increasing state presence or both may be inadequate to keep the peace or reconcile the Oromas and Pokomos. Instead these have nurtured an environment afflicted by conflict and unsustainable development and perpetuating poverty. The present study will identify strategies that local communities apply to resolve natural resource-based conflicts, challenges experienced by such strategies, and how such challenges can be turned into opportunities.

In summary, conflicts and disputes over natural resources should be regarded in the perspective of a multifaceted web of demographic change, new development pressures, legal and legal and structural economic inequalities, ethnic and personal differences, sensitive natural environments, and the multiple interests of different groups, individuals and organizations from both outside and inside rural communities. The study also analyzed the short-term and long-term impacts of the Pokomo-Orma long-running conflicts, and suggest approaches that stakeholders adopt to deliver a permanent solution to violence over natural resources. The study findings will inform national and county policy on management of natural resources and community conflicts arising from access and use of natural resources as well as generate new discourses for academia in the area of resource conflicts.

1.4 Objective of the Study

The aim of the research study was to explore the Pokomo-Orma conflict situation in the Tana Delta Region that could be as a result of land ownership and access to natural resources. The study attempted a solution based approach on new perspectives to the causes of the perennial conflict.

1.4.1 Specific Objectives

The specific objectives of this study were to:

- (i) Identify internal and external actors involved in the conflict and characterize their roles;
- (ii) Analyze the drivers of natural resource-based conflicts with a view to identifying opportunities for cooperation and mutual benefit;
- (iii) Identify strategies that local communities apply to resolve natural resource-based conflicts, challenges experienced by such strategies, and how such challenges can be turned into opportunities, and;
- (iv) Analyze short-term and long-term social and economic impacts of the pokomo-Orma conflict.

1.3 Research Questions

Therefore, this study sought to answer the following questions:

- (i) Who are the actors (both internal and external) involved in the conflict and characterize their roles?
- (ii) What are the drivers of natural resource-based conflicts and related opportunities for cooperation and mutual benefit?
- (iii) What strategies do local communities apply to resolve natural resource-based conflicts, challenges experienced by such strategies, and how such challenges can be turned into opportunities?
- (iv) What are the short-term and long-term social and economic impacts of the pokomo-Orma conflict?

1.4.2 Hypothesis of the Study

1. H₀: Regardless of abundance or scarcity of resources, the Pokomo-Orma conflict will persist in spite of perception.
2. H₁: Perceptions of abundance or scarcity do not make a difference to the Pokomo-Orma conflict situation.

1.5 Justification of the Study

Most conflicts in Africa are often attributed to competition over natural resources. In Kenya, Tana Delta Region was selected because the conflict over natural resources has been long dating back to the 17th Century when first settlements happened along the Tana River (Hunink *et al.*, 2013). The scale of conflict may vary from time to time but the most serious fights have been between the two dominant tribes in the Tana Delta – Pokomo and Orma. The resolution of this conflict has defied many arguments and the conflict remains unabated to date.

CocooN has projects in various developing countries including Bolivia, Columbia, Peru, Ghana, Ethiopia, Palestine, Yemen, Columbia, Brazil and Ecuador. In Amazon CocooN has a project on small scale gold mining. In Ghana and Ethiopia CocooN has a project on industrial biofuel plantations. In Columbia and Brazil river basins CocooN has a project on land-use change. In Bolivia and Ecuador, CocooN focuses on nationalization and best management of natural executive resources (CocooN, 2012). In Kenya, CocooN has projects in various parts of the country that include the Turkana basin, Athi Basin, Tana river basin and EwasoNg'iro North basin. In the Turkana basin, CocooNai is to protect Lake Turkana. In EwasoNg'iro North basin, CocooN has joined efforts with Egerton University to protect the water resource (river) and the land around the basin. In Athi basin, CocooN focus is protecting the water resources such as wells that have been drying over the years. In Tana river, CocooN focus is in stopping the natural resource based conflict in the region. The conflict is a result of natural resources like water and land. The CocooN projects are expected to reduce the depletion of water resources and reduction of natural resource based conflicts in the mentioned regions (CocooN, 2012). The CocooN project noted that Tana Delta in Kenya remains a conflict hotspot area due to long –running perennial conflicts between a diverse group of stakeholders, but notably the indigenous farming community and nomadic pastoralist. The nature of the conflict is also that many parastatals, private companies, and nature conservation organizations have put claims to land and water resources in this area adding to the complexity and discontent.

Previous efforts to resolve the natural resources conflict failed to yield any long lasting solution. Consequently, this study was to explore the Pokomo-Orma conflict to understand its drivers and identify opportunities for managing this conflict in a way that makes the two communities to co-exist, cooperate and derive mutual benefit from the delta's natural

resources. Determining the main actors in the conflict and their roles and identifying opportunities for cooperation and mutual benefit will lead to sustainable peace in the region. The findings of the study are of great importance to policy makers, community members and academicians.

The present study provides a base upon which other studies can be conducted in other parts of the country on natural resources related conflicts and how they can be minimized. In adding information to the body of knowledge on conflicts over natural resources, both short-term and long-term social and economic impacts of the Pokomo-Orma conflict and various strategies that local communities can apply to resolve natural resource-based conflicts.

1.6 Scope and Limitation

This study was carried out in the administrative divisions of Garsen, Tarassa and Kipini of Tana Delta Sub-County in Tana River County. It focused on the drivers of the Pokomo-Orma conflict and local strategies used to resolve the conflict as well as social and economic impacts the long-running conflict. In this particular study, opportunities for cooperation and mutual benefit, rather than violence, were explored with a view of gaining new insights on how best the conflict could be managed.

There were security issues during the data collection process as a result of ethnic clashes among tribes living in Tana Delta region. There were also suspicions between various ethnic groups and some household heads felt as if they were being investigated. However, the researcher recruited 2 research assistants from the local communities who gave guidance during the data collection process.

In relation to methodological challenges, the community in Tana Delta region has low levels of literacy and hence most of them could not read and write. In cases where the household heads could not read and write, the researcher read and interpreted the questions for them.

CHAPTER TWO

2.0 THE TANA DELTA REGION

2.1 The Tana Delta

The Delta covers 130,000 hectares in total and is one of the largest in Kenya and most significant freshwater wetlands. It's vast vegetation and patchworks include savannah, agricultural farms, forests, mangrove swamps, beaches, lakes, and the Tana River itself (Leauthaud *et al.*, 2013).

The Tana Delta hosts about 97,000 individuals who include pastoralists, agriculturalists and fishermen. The pastoralists depend on grassland and water for their livestock. Agriculturalists grow rice among other crops in the flood plain edges and perennial crops along the river banks. On the other hand, there are fishermen from diverse ethnic groups that fish along the water courses and in the delta lakes. Over the years, demand for land has been increasing in Tana Delta to both international and national investors. Currently the land is being used for large scale farming of irrigated food and for biofuel crops to meet the demand for global renewable energy (Oludheet *et al.*, 2013).

2.2 Location and size

The Tana Delta is a region located in Tana River Sub-County, Tana River County of the large coast region in Kenya. The Tana River covers an area of 38,782 Km² and has a projected population of 232, 488 people. Its name came from the largest river in Kenya, which drains the eastern and northern part of the Sub-County and drains into the Indian Ocean. The capital and largest town in Tana River County is Hola, also known as Galole (Oludhe *et al.*, 2013).

The delta is formed by the Tana River and covers an area of 16,013km² and hosts a population of over 100,000. It covers the broad delta from where the Tana River touches the Indian Ocean, to the Tsavo National Park plains on the east, and the semi-desertenvirons towards the north in the direction of Somalia and North-Eastern Kenya (Leauthaud *et al.*, 2013).



Figure 2.1: Map of Kenya showing Tana Delta region

2.3 Topography and climate

The Tana River Sub-County has its main physical feature as the undulant plain which is interjected in a few places by low hills. The main hills are Bilbil in Bura, Minjili in Madogo and Garsen Division. The altitude of the region ranges between 0-200m above the sea level. This river stretches for approximately 500 km. of the Sub-County crossing it from Tharaka Sub-County in the North and to the South, the Indian Ocean. The extensive delta established by the river has most of its land covered by wetlands, which present a great agricultural potential. About 82.2 % of the region's population is dependent on agriculture and livestock. It offers grazing area during the dry season and is a chief attraction for tourists. The water is utilized to irrigate maize, banana, rice, soya-beans and mangoes. Agro-forestry and fishing are also vital activities in the area (Muoria *et al.*, 2003).

2.4 Biodiversity

With regard to *Flora*, the delta supports numerous animal and plant species and is home to vanishing marine turtles, dying out Basra Reed Warbler (*Acrocephalus griseldis*) and the Near Threatened restricted-range Malindi Pipit (*Anthus melindae*) (Oludhe *et al.*, 2013). The wetlands, including offshore islets and the coastline, sometimes hold outstanding concentrations of water birds. On the International scene, vital populations have been observed and recorded here for not less than 22 species, a fact that makes the delta one of the main waterbird conservation destinations in the country. This particular Tana delta further supports colonial waterbirds, which are one of the very few breeding sites in the world for them, for in Kenya and other conservation sensitive and significant flora and fauna. The seasons in this area dictate the way local people live, forcing them to adapt to the consistent floods that help in retaining the fertility of the area throughout the year (Leauthaud *et al.*, 2013). However, this particular site is under threat owing to the anticipated agricultural conversion and consequently there is need to carry out sufficient research to mitigate this and to come up with ways of merging the conservation and desired development (Ng'weno, 2008).

2.4.1 Habitat and Vegetation

The Tana delta region is composed of the following types of habitat: floodplain grasslands, wetland areas of open water, coastal dune habitat, Riverine/floodplain, mangrove thickets, bush land association included areas of bush land thickets found in old dunes and levee in

Ngao area. The Delta narrows and joins the Tana River flood plain towards the north of the study area which stretches up to North Garissa. Down Garsen, the Delta stretches and borders the Indian Ocean along a 50km coastline stretching to MtoKilifi from Kipini in the south. These habitat types cover a total area of over 1,279km² where majority of the land is composed of floodplain grasslands. These floodplain habitats are mostly concentrated towards the lower Delta. Additionally, bush links are more common between Ngao and Garsen, this area having greater portion of elevated ground built from old levee land than the other parts of the delta (Ng'weno, 2008).

Wooded bush land thicket are evident in wider parts of the elevated ground formed from old dune systems. The sections of Delta with bigger depressions are demonstrated by the degree larger bodies of open water and swampy grounds. Floodplain grassland constitute most of the land area in the Delta and it covers up to 67,000 ha (which is equivalent to 52% of the Delta). These grasslands are a vital natural resource and is used by the Somali and Orma cattle to graze their cattle. Bush land associations constitute the second most extensive land covering a percentage of 1.7% which is equivalent to area of 2,066ha of the Delta. These habitats are also vital and are composed of relatively dry land lower chances flood risk and these are the main habitats currently occupied by manhood on a permanent basis. They also constitute a vital refuge from floodwaters and are used by domestic livestock during flood seasons (Muoria *et al.*, 2003).

2.5 Soils, Geology and hydrogeology

Raised old sea level terraces cover the largest part of the Coastal Plain geomorphology is. Most of the modern shore configuration in the coastal environment lie between 0-5m and the 5-15m complexes of sea level. Soils are a feature of alluvial deposits formed as a result of the hydrological processes of the rivers. The 1 types of soil are deep, well drained cracking vertisols and fluvisols.

The Tana Delta floodplain is composed of chromic Vertisols such as silt clay with no alkalinity or salinity. In the meander, taking into perspective the new and older river courses, the soils are often stratified, yellowish-brown and sand to clay rich enriched with micas. The variability of the sub-soil is composed of the firm clay while that of the top soil ranges from sand to clay. Therefore, there is slight variation in the Infiltration in such soils with a slower rate being realized in areas where the topsoil constitute majority of the top soil and faster in

regions where the topsoil is made of sand. Such soils are found in the region between Langola Simba and Abarfarda River, where there exists flat to gently undulating topography (Oludheet *et al.*, 2013).

Two main physiographic units are found in the Tana Delta flood plain in the Marenbo-Garsen area consists of wide river basin lands and river levee lands. The actual river levee land lies above the current flooding level. There is a flat macro-relief is flat but there exist meso-relief variations of 0.1 m or shorter distances of around 20-50 m. The soils constitute micaceous which implies to very fine sands to loams to a larger depth (Republic of Kenya, 2002).

2.6.1 Hydrography

Peak flows follow the bi-modal pattern of rainfall in Kenya, typically during the short and long rainy seasons. The lower and mid catchment of the river is mostly semi-arid and the main livelihood type is livestock keeping. Subsistence farming is practiced along the river borders (Jacobs *et al.*, 2007). In the past few years, in the upper basins five major reservoirs have been built which have meaningfully improved the hydrological regime of the river, with a 20% decrease of the peak flow in May (Leauthaud *et al.*, 2013).

2.6 Drainage

The Tana Delta ability to retain water enables a sustainable discharge and recharge of water into the Indian Ocean. The obstructed drainage system of the Tana Delta allows water to be retained in one place for a long time to maximize infiltration, enhancing recharge of Indian Ocean and aquifers and groundwater (Jacobs *et al.*, 2007).

The drainage system of the Tana Delta is based on Tana river and its sources. Tana river originates from the Mount Kenya and Aberdares with several perennial tributaries that include, Chania, Thiba, Mutonga, Maragwa, Ura, Thika, Ena, Kazita, Amboni, Nairobi, Ragati and Gura and ephemeral tributaries include LagaKokani and Tiva. The discharge of Tana river ranges from annual maximum of above 1000m³/s to as low as 20 m³/sec. The average annual flow is approximately 151 m³/sec. Flooding commences at Garsen when the bank-full stage is reached at 300 m³/sec (Abshir, 2012).

2.7 History, people and culture

The Tana Delta is multi-ethnic, comprising Somali, Orma, Pokomo, Wardei, Wailwana, Watha Luo, Giriama and Swahili people amongst others. The dominant tribes are the Orma and Pokomo. These different cultures, languages and lifestyles emanating from the diverse delta tribes, create one of a kind diversity that can enhance life for all in the delta. Regrettably, the rural communities' ignorance is manipulated; this diversity has very often been used as a tool to create suspicion, fear and disrespect, ultimately dividing and to destroying the community.

Diverse perceptions of ownership rights and land use between Pokomo farmers and Orma pastoralists partially emanate from ethnic group self-understandings. While the Orma are classified into the broader ethnic ancestry of Cushitic-speaking communities, the Pokomo tribe is to be found in the broader ethnic ancestry of Bantu-speakers (Ajulu, 2002). According to the Orma, land is a resource that should be accessible and shared by all in conformity to their common systems of land management. This perception of land ownership coincides with their perception on livelihood of semi nomadic pastoralism. On the contrary, Pokomo claim that being a Pokomo implies that one has to own the land one lives on, which in turn conforms to their sedentary farming livelihood (Matuszeski & Schneider, 2006).

Regarding Tana Delta, the controversial narratives of Pokomo and Orma pertaining to their settlement in the area seem to be of special significance. Consistent with the Pokomo side, their group is originated from an area named Shungwaya, which is understood to be located in modern day Somalia and they journeyed to the lower Tana River region many centuries ago and were the first to settle along the river (Weidman & Ketil, 2010). However, the Orma are believed to have arrived later under the auspices of Pokomo elders. On the word of this narrative, the Orma were involved in conflicts with pastoralist tribes in Somali and were chased away to the south. Two Pokomo elders is said aided them in crossing the Tana with their canoes and consequently protected them from the Somalis that were following them (Weidman & Ketil 2010). The Orma side of story regarding settlement along Tana River is opposed to this representation. The Orma claim they were the very first to arrive in the lower Tana River area with a small hunter and gatherer community of the Waata during these migrations of Oromo groups. Later on the Pokomo community arrived and was welcomed in a friendly manner by the Orma, who had set aside some areas near the Tana River when the

Pokomo expressed their wish to stay and to practice a farming livelihood (Matuszeski& Schneider, 2006).

On the background of these contrasting group accounts of settlement in the area being studied both communities claim to have been the first to arrive so as to reinforce their specific understandings of land access rights and ownership (Weidman & Ketil, 2010). Interestingly, these group narratives paint the respective other as a community at first being in the need of help, which certainly evoke feelings of supremacy over the other community.

Ethnic group making processes in view of the conflicting views on which rules were to apply with regard to resource distribution and land ownership solicited additional dynamics as the ethnic identities experienced physical separation. Orma who were living in areas dominated by the Pokomo moved and the Pokomo moved in areas dominated by the Orma as well in order to evade disadvantageous land use rights for the own livelihood recognized by the respective majority (Ajulu, 2002). This separation was further fortified under colonial rule on account of preventing local conflicts so as to stabilize the country and to avert unrest. Therefore the area's locality was subjugated by pastoralists and their arrangements on communal land tenure, while the riverbanks were settled densely by farmers residing along to their communal understanding of land ownership (Matuszeski& Schneider, 2006). As the former section has indicated, this alienation positively conforms to the respective needs of each livelihood and the respective adaptation approaches to the environmental surroundings (Ajulu, 2002).

2.8 Climate and Rainfall

Rainfall is erratic, bimodal and low with mean annual ranging between 300 and 500mm. Short rains are experienced between the months of October and November while long rains occur between the months of April and May. The annual average temperatures are around 30°C and there are humid conditions along the coast (Leauthaud *et al.*, 2013). With the rains being erratic, particularly in the hinterland, the Sub-County faces drought almost every year. The coastline is wetter than the hinterland. Annually, the coastal region receives up to 1,200mm of rain though it fluctuates and is exceedingly unreliable. The higher rainfall regions at the coast cultivate cash crops while the dry climate hinterland can only maintain pastoralism. Consequently, the Sub-County is dry with temperatures averaging 30° C in most of the season (Oludheet *et al.*, 2013).

2.9 Economy and land use

The delta is rich in natural resources and human potential, including water land, wildlife and pristine natural environment. Ironically, it is one of the poorest counties in Kenya with well over 70 per cent of the population living below the poverty line. Today, the delta is gradually becoming the target of corporations operating nationally and internationally looking for large tracts of land to develop food-for-export using the plantation style or to establish biofuel projects. Recently, the delta has also endeared natural and gas oil exploratory activities (Terer, Ndiritu & Gichuki, 2004).

Most of the people in this Sub-County derive their livelihoods from the river and the land, through subsistence farming, pastoralism, fishing, agro-pastoralism and hunting in its native forests. These people's entire livelihoods will be affected directly by any development undertaken in future in the delta. Therefore, they must be facilitated to participate in an informed way in the development process entirely. If this does not happen, the next generation including the current one risk becoming disenfranchised, marginalized or even displaced, all in the name of 'development' (Boone, 2012).

The Tana basin's water is utilized for electricity generation by five major hydropower stations in Tana River. The stations are run by KenGen (Kenya Electricity Generating Company Limited) and together they provide on average 40 to 64% of the national demand for electricity. Another large constituent of water use in Tana Basin is the municipal water demand is. Nairobi, for instance, obtains 70 to 80 % of its drinking water from Ndakaini reservoir and at times from Ruiru and Sasumua reservoirs. The water distribution and abstraction is operated and managed by NWC (Nairobi Water Company). Irrigation schemes that are medium-sized are the third large water use covering about 68,700 hectares (Hunink *et al.*, 2013).

Tana Catchment Area, as well, boasts of numerous gazetted and protected areas. This includes eight Game Reserves and four National Parks, the major ones being the Mt. Kenya Forest, Aberdare Ranges, Meru National Park, Tana River Primate Reserve and the Tsavo East National Park. Ecosystem management in these natural landscapes is equally vital. In Tsavo East National Park the preservation of drinking water ponds is imperative to safeguard wildlife and to maintain them within the boundaries of the Park (Ng'weno, 2008).

Several cattle ranches have been established for the purposes of fostering development within the study area. Six of these are within Tana Delta Sub-County and two ranches fall in both Sub-Countys of Tana delta and LamuSub-County). Majority of the ranches are found in segments with small cattle densities across the year or complete absence of livestock. Only four of the ranches occupy any significant portion of the Tana Delta. Approximately 40% of the study population is considered as ranching land, only three ranches have so far undergone some development (Terer, Ndiritu&Gichuki, 2004). These three Witu, Nyangoro and Nairobi ranches and IdasaGodana Ranch, have a total land area of 80,000ha and at a 6.7 heads of cattle/ha estimated carrying capacity of 14,100 cattle. However, currently the return on the three ranches cover approximately 4,000 which is equivalent to 2% of the total cattle found in the area. Ranches help in the provision of water for stock on annual basis and acquisition of credit. High incidences of trypanosomiasis and diseases include affecting livestock include Anthrax, Rinderpest, Contagious Bovine Pleuropneumonia , Foot and Mouth Disease and East Coast Fever, (Hunink et al., 2013).

2.9.1 Economic Activities

Livestock keeping and agriculture are the most vital economic activities in the Sub-County contributing on average to 82.2% of the total household income. Pastoralists graze their cattle during the dry season in the Delta. Pastoralists travel from as far as Mandera, Garissa and Wajir, to graze their cattle in the delta during dry season. The value of the to the pastoral economy is more essential during severe drought when livestock mainly depend on the delta leading to overgrazing (Leauthaudet *al.*, 2013).

Table 2.1: Main economic activities in the Tana Delta

Occupation type	Percentage of the population
Herdsman (pastoralists)	38.9
Keeping livestock	8.3
Businessman/women	1.7
Farming and livestock	8.9
Farming	35.6
Employed	6.7
TOTAL	100

Source: Ministry of land (2012)

2.10 Theoretical framework of the study

2.10.1 Tragedy of the commons

This tragedy of the commons theory reviews the relationship between herdsman, pasture and farmers. Consider a pasture accessible to all individuals in a society. As expected, each herdsman will strive to maintain as many cattle as possible on the commons. Such an arrangement is feasible for a limited time duration in which poaching, tribal wars and disease keep the population of both animals and man well below the land's carrying capacity (Mwangi, 2012). Eventually, however, a day of reckoning comes, whereby the long-desired goal of stability in the society becomes a reality. At this instant, the intrinsic logic of the commons ruthlessly generates tragedy. Each pastoralist is locked into a system that forces them to increase their herd without limit. Ruin is the endpoint towards which all people rush, each chasing after their own interests in a society that rely on the freedom of the commons. Freedom in a commons brings ruin to all (Wohlerset *al.*, 2014).

This perception still has a strong hold, and the scenario is nowadays extended to demonstrate how dryland areas that are exposed to resource scarcity and drought will suffer from conflict, as pastoralists and farmers will not only degrade the resources, but also ultimately engage in conflict to protect access to them (Ohkawa, Shinkai& Okamura, 2012).

2.10.2 Theory of Resource Scarcity (Malthusian Theory)

The theory of resource scarcity is concerned with eco-violence existing in pastoral areas. This theory holds that in such areas, conflicts are primarily caused by the community members' competition over scarce natural resources. In other instances, drought is also a trigger. This is because it plays a vital role in resource depletion (Basedau&Pierskalla, 2014). Nevertheless, this theory has been challenged by other authors because in some situations, conflict actually coincides with periods of resource abundance. These disputing views point to nondeterministic linkage between conflicts and resource availability and, therefore, the intricacy of pastoral conflicts (Alao&Olonisakin, 2000).

This theory points out that conflicts in pastoral areas emanate from a myriad of economic, socio-cultural and political factors that underpin one another by limiting the availability of, exhausting and reducing access to natural resource base (Ajulu, 2002). In addition, competition for scarce natural resources caused by exacerbated weak local institutions and frequent droughts, political incitements, proliferation of small firearms, unclear property right regimes and cattle-raiding, is considered central to the violent conflicts observed in areas afflicted by pastoral conflicts in Kenya.

2.10.3 Theory of Resource Abundance

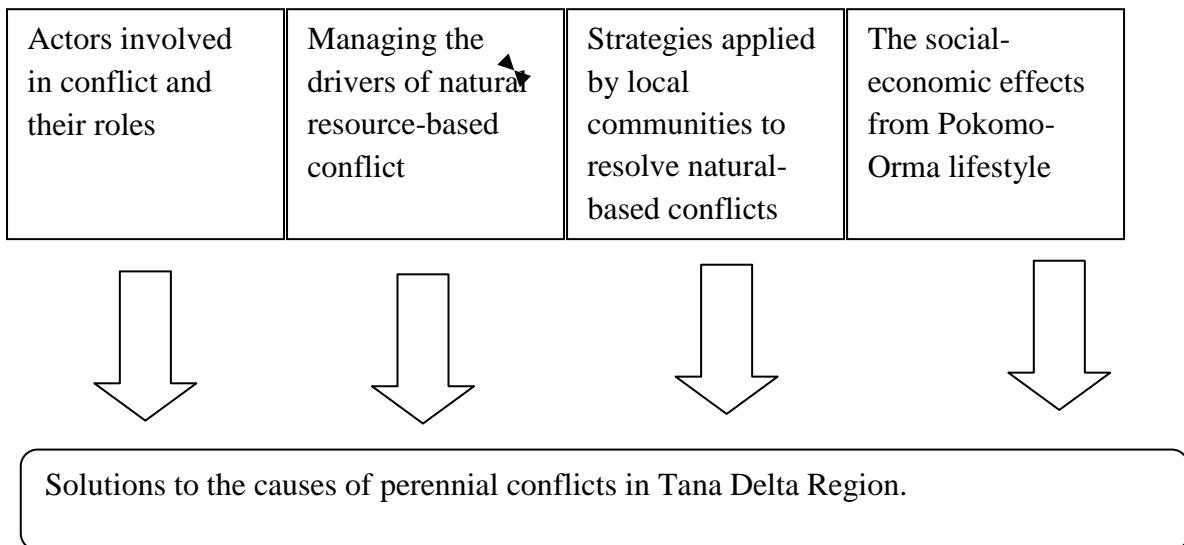
The notion that natural resources are more of an economic curse than a benefit began has been witnessed since the 1980s. The concept of resource curse thesis was formulated by Richard Auty in 1993 to how nations endowed with natural resources were unable to utilize their wealth to improve their economies making them more worse off than those with little resource endowment. Many studies, including those by Andrew Warner and Jeffrey have shown that an association exists between the abundance of natural resources and poor economic growth (Johnson &Seip, 2008).

It is expected that countries with large natural resource endowments accrue more benefits and have good growth prospects than the poor ones . However, this is not exactly the case in many countries around the world. Between the year 1960 and 1990 the per capita incomes of resource poor nations grew by two or three times faster than the per capita income of resource endowments countries, and the growth gap rates seem to increase as the years move. Currently, Indonesia's per capita income is four times greater than that of Nigeria. A trend exists between Botswana and Sierra Leone in that both are have huge diamond endowment

with Botswana recording an annual average economic growth of 8.7% over the past thirty years as Sierra Leone engaged in civil strife. In Norway, where large oil deposits were identified in the in the seventies, was unable to evade the consequences of the Dutch Disease. Additionally,, Norway significantly increased its GDP per capita leaving its neighbors behind (Basedau& Lay, 2009).

Finally, the theory of resource scarcity was considered the best to use for the study since it talks about existence of eco-violence existing in pastoral areas due to drought and fight for resources among existing communities. This is a replica of the Tana Delta region.

2.11.0 Conceptual framework



CHAPTER THREE

3.0 LITERATURE REVIEW

3.1 Global context

In an anarchistic global infrastructure of countries, the bulk of conflicts between them are largely triggered by incongruities in ideology, religion, ethnicity or even suppression against violence. The underlying cause is centered on the control and acquisition of resources, and their resultant connections to political and economic international power. Every so often, these resource conflicts are parodied to be caused by the aforementioned qualities, but it is now an established fact that resource acquisition is now a decisive component of military conflict and geostrategic planning, and that such wars were driven by the need to have access to the particular resources involved. These resources include things such as land, oil, timber, water, natural gas and minerals such as silver, gold and diamonds (Kachikwu, 2004).

According to the United Nations Security Council, there are many and varied resource conflicts globally available to discuss. They include domestic conflicts, territorial disputes and interstate conflicts. Additionally, in today's global resource conflicts, the resources involved are also diverse ranging from diamonds, to petroleum to gold (Basedau&Pierskalla, 2014). The instances of global resource conflicts imminent are not the only ones meriting the focus of Security Council; they are simply the most pressing in the international relations perception today (The UN Security Council Website, 2011).

Nations with the highest consumption levels of land as a resource include those in Europe. These countries are increasingly using land from the other parts of the world , which creates direct competition with the local land needs (Valencia, 2001). The availability of land is also being affected by climate change –sea levels are rising , floods and droughts are increasing the instability of agricultural lands and deserts are expanding in many countries. About 40% of the land that Europe uses annually is sourced from other countries. The nations with the highest land imports include UK with about 23 million ha and Germany with 26 million ha (Steele, 2003).

Nations in the East and Southeast Asian region share common borders which leads to sharing of resources like water. This has led to tensions and conflicts arising from resource sharing.

Some of these conflicts result from resources over exploitation, pollution and building of barriers. Some countries also dispute the control of maritime territories like coral cays, reefs and islands. Apart from natural gas and oil, the East and Southeast Asian region is rich in fisheries. The over-exploitation of fishing resources has led to a reduction of traditional fishing grounds across the region and hence more pressure is currently being exerted on resources in South East China sea (Haflendorn, 2000).

3.2 African context

Natural resources have been established to have a crucial role in the conflicts that have afflicted several African nations over the last few years, both fuelling and motivating armed conflicts. Revenues obtained from the exploitation of Africa's natural resources are not only being used for maintaining armies but also for building political support and personal enrichment of influential individuals. Consequently, they can become hindrances to peace and development as leaders of armed groups engage in exploitation are averse to giving up authority over such resources. In cases where conflict gives way to a delicate peace, authority over natural resources and their incomes time and again is in the hands of a small elite group. It is never used for extensive development of the whole country.

Basedau and Pierskalla (2014), established that many lower middle-income and low-income economies, particularly those displaying stagnant or low rates of growth, are highly resource-dependent. These economies depend chiefly on direct exploitation of their natural resources through primary industries such as forestry, agriculture and fishing. In addition, over 50% or more of the export earnings in these countries comes from a few primary commodities. These economies lean towards many international debts experience radical land use changes, particularly conversion of forest land to agriculture, besides the problems of low agricultural productivity, population carrying capacity constraints and land degradation, and. A recent analysis on cross-country basis by Alao & Olonisakin (2000) confirms that countries that have a high ratio of natural resource exports to GDP are more likely to have a lower rate of growth than countries that are comparatively resource poor.

The principal causes of resource conflict are the policy choices that have been implemented by the state over time, the inadequacies of institutional structures for prevention or conflict resolution and poverty. Therefore resource based conflicts should be perceived from the perspective of policy and governance. Agencies that are concerned with National policy

making tend to marginalize specific livelihoods which lead to aggravated conflicts within such households through alienation or neglect of resources for utilization on other things, specifically agricultural use (Boone, 2012).

3.2.1 The Sudan Resource Based Conflict

In the Sudan, pastoralism and agriculture are the main source of livelihood. As a result, it is inescapable that people will compete over resources (land, pastures and water). Traditionally, there was conflict over the use of resources even among the pastoralists and farmers and even amongst the pastoralists (Le Billon, 2010).

Land allocation or ownership also steers conflicts. Different policies related to land use have triggered conflicts and resource competition. Customary laws were formulated and implemented in 1970, under which the government became the sole owner of all land, available to individuals only through issue of leases. The manner in which the system operated however led to many negative factors such as corruption and bureaucratic tendencies (Moyo, 2005).

In a broader context, globalization has also contributed to Sudan's resource based conflicts. Market forces and global operate differently. Due to war in Sudan, many investors have not been willing to engage in oil business with Sudan (Le Billon, 2010). The expansion of oil production and export enabled the Sudanese government to purchase Czech tanks, purchase Polish Chinese howitzers, assorted military hardware and Russian Mig fighter jets from other nations.

Therefore, a direct association exists between the prolongation, proliferation and escalation of conflicts in Sudan and global markets forces. This it is evident that oil companies gain higher financial profits from the multinational companies such as the European and Sudanese Friendship Council that liaises with pariah state with the aim of enhancing its image and overcoming the challenges (Alao&Olonisakin, 2000).

3.2.2 Democratic Republic of Congo (DRC) Resource Based Conflict

Globalization has continued to instigate resource based conflicts in Africa. In Democratic Republic of Congo (DRC), the utilization of minerals particularly in the rich provinces of Kasai (diamonds), Katanga (cobalt and copper), Kivu and Oriental (diamonds, gold and

coltan as well as agricultural output – is an enduring testimony to the prevailing global factor of conflicts in DRC(Maystadt *et al.*, 2014).

The forests in Congo have also instigated conflict. In these forests, multinational companies have neglected the demographic pressures and the rights of people. The Congo basin forests is faced with threats while the economic and the locals' cultural life is ignored (Shabazz, 2009).

3.2.3 Rwanda

Rwanda also has also struggled with misunderstandings between the customary and statutory land rights, this is due to the many changes in the holders of state power and waves of genocide. Consequently, ownership of property reflects the shaky power rivalry between the two prominent ethnic groups.. At present, many ownership disagreements which can be dated back to previous years which are classified as either the 'new caseload' or the 'old case load' subject to the duration in which it occurred . Hintjens, 2006).

3.2.4 Zimbabwe Resource Based Conflict

Zimbabwe suffers from water scarcity. The population has been granted with elusive and limited users rights which are rendered through a permit system. This permit system avails water to individuals for secondary use i.e. for agricultural activities and mining. This implies that water is not considered as a social commodity as in many countries. It is an economic commodity that people must pay for to use and access– particularly for secondary use (Alao&Olonisakin,2000). The new requirements in this particular nation has categorized water as an economic good which has established conflict between the population and the state. (Moyo, 2005).

3.2.5 Zambia

In Zambia, natural resources are considered to be a major component of the economy. Therefore, the poor people ability to achieve their visions depends entirely on institutional structures which dictate the access and management of resources. Along the Lake Kariba shores in Zambia, residents compete over tourism, commercial aquaculture and fishing. to exuberate conflict multi-stakeholder dialogue was used to develop agreements with investors and increased accountability traditional leaders and state agencies , thus creating a higher

influence of the communities over their futures through aquatic resource governance improvements (Madzudzo *et al.*, 2014).

3.2.6 Sierra Leone

For a long time inequitable natural resource wealth division has been a key driver of a long civil war in Sierra Leone. Diamond as well as other minerals are used to fund combatants. Even though efforts have been made to end the war the impact of the conflict is still evident as shown by rural marginalization and youth unemployment. Concessions of minerals covers about 80% of the country and approximately 10 percent of the total arable land is under contract or negotiation for industrial agriculture. Forests in Sierra Leone are threatened by logging and slash, burn agriculture, encroachment and charcoal. Natural resource sector management is closely tied to stability and peace, rural integration, improved governance and economic development (UNEP, 2012).

3.3 Kenyan context

Resource-based conflict are common in Kenya. In Northern Eastern Kenya, Gakuria (2013) indicates that factors such as economic and political marginalization, active resistance by pastoralist communities to assimilation, resource depletion and demographic changes, and the growing availability of small arms and light weapons are among the major factors causing conflicts in the region. The long term and short term impact of resource based conflict include reduced livestock and crop yields, increased casualties, human displacement and property destruction. Just like in Tana Delta, the north eastern region of Kenya has been experiencing conflicts over natural resources like water.

Boran, Garri and Gabra pastoralists in most parts of southern Ethiopia and northern Kenya and have for long depended relied on proper utilization of natural resources to use land resources in the best way possible and sustain the productivity of livestock. Proper management of herd movements plays a fundamental role in rangeland management, with some parts being suitable for use during the wet and dry season. Most parts of the rangeland constitutes communally owned economic resource which is used by different clans and ethnic groups inhabiting the area. They have formed an institutional system that constitutes both primary and secondary rights of access with negotiation principles among various pastoralist groups to regulate the sharing of pasture and water. This communal institutional framework regulates the mobility of livestock across the international border, provides a framework for

managing disputes and conflict and maintains and restores collaboration among clans and ethnic groups (Pavanello & Levine, 2011).

In spite of its vast natural resources potential and wealth, Tana River Sub-County is illogically home to some of the poorest Kenyans (Republic of Kenya, 2002). The Sub-County is endowed with numerous water sources, pastures, vast tracts of land, livestock, fish, forests, minerals and wildlife. There are neither big commercial enterprises nor major industrial activities in the Sub-County. The key impediments to socioeconomic development in the Sub-County include insecurity, ethnic conflicts over land use and famine, control a degraded or underdeveloped resource base and frequency of droughts. The pastoral communities (which include the Wardei and Orma) have not peacefully coexisted with farming communities such as the Pokomo. Other factors include a poor leadership, fragile ecosystem and long years of government unresponsiveness in the development of the Sub-County (Leauthaud *et al.*, 2013).

Co-existence between the communities in the delta is troubled, at times leading to violence. An investigation into the grounds for a series of tribal conflicts in 2000-1 between the Wardei-Orma and Pokomo helps us to understand the role of access rights and property rights to the resources underlying them. In the delta, property rights are often overlapping and complex, with concurrent systems of public, private and common land and different rights to access, usufruct, freehold and leasehold. Land in the delta is largely trust land, whereby it is held in trust. Further, the land is administered by the Sub-County council for the community. This trust land may be reserved for purposes considered to be of use to the residents, or transferred to the government. Yet there are many instances where this “trust” is neglected (Ajulu, 2002).

Orma wells are possessed and owned by the individual who first dug it and their patrilineal descendants (Weidman & Ketil 2010). Although the Pokomo laid claim to the land that is along the riverbanks to undertake agriculture, the Orma stake their claim over the waters of the river. Violence erupts whenever the Orma try to access the river for water for their cattle, time and again grazing and trampling in the Pokomo farms in the process. Some theorists on property rights hold that definite property rights should decrease conflict by establishing shared expectations and through the establishment of markets for damages. However, in reality, property rights are not easily “defined definitely”. Socio-environmental conflicts are in most cases triggered by property rights. In the circumstance of property rights to water,

when an expectation is fixed and comes up against a changing resource, that in itself can be a cause of conflict (Kyama, 2012).

This explains why rights of access to water are more often than not vague and based on ideologies that are open to negotiation rather than definite rules. The effort to solemnize rights that were previous customary rights therefore can be a cause of conflict in itself. Thus one of the causes for the eruption of inter-tribal conflict in the Delta in 2000-01 was connected to the activities of the Land Adjudication Commission (Kyama, 2012). This commission began in 2000 to facilitate a liberal land policy based on individual ownership. This particular policy generated a sharp split between the Orma/Wardei and the Pokomo. The Orma/Wardei accused the Government of stimulating ethnic conflict when they imposed a liberal land tenure system on an area where land is communally owned without satisfactory consultation. Adding fuel to the fire, the year was also dry one. Many rendered homeless and over 100 people lay dead, after the clashes (Boone, 2012).

Their irreconcilable lifestyles saw the pastoralists and the peasant farmers engage in perennial conflict over use and ownership of land, water and pasture resources. The Pokomo lay claim on the land along the river while the Orma lay claim on the waters of the river as it is a source of their livestock's water point (Ng'weno, 2008).

There were 3 major irrigation schemes (Tana Delta, Bura and Hola irrigation projects) in the county in the 1980s, which largely affected the lifestyle of the local people with regard to employment and source of income. Low instances of conflict were identified then since people were busy with their activities (Leauthaudet *al.*, 2013).

However, since the collapse of these schemes the poverty rate has risen to alarming levels thus triggering conflicts in the Sub-County. This forced the pastoral communities to revert to their initial source of livelihood which was nomadic pastoralists while the farmers mainly the Pokomos began practicing small scale subsistence farming on the shores of the Tana River from the Northern Mbalambala to Kipini (Leauthaudet *al.*, 2013).

The largest priority for pastoralists is access to water whereas farmers are more concerned with the availability of water. Therefore, these conflicts can be predicted and prevented upon the implementation of proper conflict resolution mechanisms. This therefore allows for express understanding and manifestation of conflict over natural resources (Huninket *al.*, 2013).

Additionally, conflicts in the Sub-County have been triggered by unresponsive land regimes and adjudication. The land adjudication programme has been introduced in the Sub-County by the government in order to promote productive land use. This was undertaken through sub division and allocation of farms to individuals as private property owners. It was clear that this process was not successful among pastoralists as they had the perception that would affect their movement and thus they have always opposed the policy (Boone, 2012).

Over the past recent years, conflicts over resources have led to in between farmers against and pastoralists and between investors and communities. The prevalence of among these groups demonstrates failure by government institutions attend land use conflicts in the Tana Delta which has led to tensions and attacks which left more than 200 peoples mainly women and children to lose their lifes and more than 36,000 people displaced in the 2012 conflict.

Therefore, a holistic assessment of available natural resources and how they bring about conflict in Tana Delta has to be undertaken to avert the negative impact of resource based conflict on livelihoods and development. Critically assessing the interaction between natural resource and conflict will also aid in understanding what resources are under pressure thus agitate for its conservation to avert resource degradation due to “ resource rush”. Regrettably, the rural communities’ ignorance is manipulated; this diversity has very often been used as a tool to create suspicion, fear and disrespect, ultimately dividing and to destroying the community

CHAPTER FOUR

4.0 RESEARCH METHODOLOGY

4.1 Study Design

This research study used a cross-section research design. In this design data was collected on the population at a single point in time to establish the relationship between the predictor variables (independent variable) and the outcome variable (dependent variable). In practice, cross section study design is both descriptive and analytical (Gomm, 2008).

In this study, cross sectional design was the best as data was collected at a single point in time. In addition, the descriptive aspect of the design was used to establish the frequency and distribution of conflict in Tana Delta. Further, the analytical part of the design was used to establish the association between the resources and the conflict. According to Babbie (2009) in a cross sectional study the sample size should be large enough and representative. This was achieved by making sure that the study involves participants from all locations in Tana Delta.

4.2 Population and sample

4.2.1 Target Population

Tana Delta Sub-County is one of the 3 Sub-County's in Tana River County. The target population for the study consisted of 96,664 people and 18,790 households predominantly of the Pokomo, Orma and Wardei communities (Oludheet *al.*, 2013). The unit of measurement was the household-heads and sub chiefs in all the 35 sub locations in Tana Delta Sub-County. Table 4.1 presents administrative units in the Tana Delta Sub-County and their respective populations.

Table 4.1: Population Based on Division and Sub-location

Division	Location	Sub-location	Population	Households
Garsen	Assa	Assa	482	97
Garsen	Ndera	Baomo	2570	505
Garsen	Mwina	Benderani	2283	396
Garsen	Bilisa	Chira	2246	461
Garsen	Shirikisho	Dalu	2494	442
Garsen	Galili	Danisa	1820	332
Garsen	Galili	Dumi	2614	494
Garsen	Galili	Galili	5187	975
Garsen	Bilisa	Garsen	6887	1438
Garsen	Shirikisho	Idsowe	3014	619
Garsen	Assa	Kone	1050	214
Garsen	Mwina	Mikameni	1831	349
Garsen	Ndera	Mnazini	3852	751
Garsen	Assa	Onjira	51	16
Garsen	Mwina	Sera	2224	455
Garsen	Salama	Wema	4741	911
Kipini	Kilelengwani	Kau	3745	746
Kipini	Kilelengwani	Kilelengwani	2619	443
Kipini	Kipini	Kipini	4173	801
Kipini	Kipini	Matangeni	7202	1364
Kipini	Ozi	Mpeketoni	652	140
Kipini	Ozi	Ozi	1186	249
Tarasaa	Chara	ChamwanaMuma	3313	578
Tarasaa	Ngao	Golbanti	810	166
Tarasaa	Wachuoda	Handaraku	4316	812
Tarasaa	Konemansa	Kikomo	1410	277
Tarasaa	Kipao	Kipao	4260	825
Tarasaa	WachuOda	Kurawa	4741	1017
Tarasaa	Ngao	Ngao	2168	440
Tarasaa	Wachuoda	Oda	4699	924

Tarasaa	Konemansa	Odole	2484	497
Tarasaa	Kipao	Ongonyo	971	172
Tarasaa	Chara	Semi Karo	1735	314
Tarasaa	Ngao	Tarasaa	2834	570
Tsavo East Park	Tsavo East Park	Tsavo East Park	0	0
Total			96,664	18,790

Source: KNBS (2009)

4.2.2 Sampling procedure

Sampling refers to the selection of a given number of items from a stipulated population to represent the entire population (Orodho 2002). It is however agreed that the larger the sample, the smaller the sampling error.

The researcher employed purposive sampling to select areas that prone to Tana Delta conflicts. Purposive sampling was a subjective attempt by the researcher to obtain a sample that appeal to representative of the target population

4.2.3 Sample size Determination

This study used Kothari (2004) sample size determination formula;

$$N = Z^2 pq / d^2$$

Where:

N is the population sample,

Z is the standard normal deviate(1.96 for a 95% confidence level)

p = is the proportion of the population having the characteristics being measured (if proportion is unknown, set $p=0.50$, which is the maximum variability)

q is the proportion of the population that does not have the characteristics (i.e $1-p$)

d is the level of accuracy desired, or sampling error (often set at 0.05)

$$N = 1.962 * 1.962 \times 0.5 \times 0.5 / 0.05 * 0.05 = 384 \text{ households}$$

The sample size of this study was 384 household heads and 35 chiefs and other 7 key informants.

4.2.4 Selection of the sample

The study used purposive sampling to select the sub-chiefs for key informant interviews. A purposive sample, is a sample selected based on the knowledge of a population and the purpose of the study (Kothari, 2004). The researcher believes that the sub-chiefs have got the information required in relation to the role of resources in conflict in Tana Delta Sub-County.

On the other hand, stratified random sampling was used to select household heads. Stratified random sampling is defined as a method of sampling involving grouping of a population into smaller categories known as strata. The strata in this study comprised of all the 35 sub locations in Tana Delta Sub-County. According to Kothari (2004) strata should be formed on the basis of the members shared characteristics or attributes. Proportionate stratification was used to select the sample size per sub-location. In proportionate stratification, a random sample from each stratum is taken in a number proportional to the stratum's size when compared to the population. These strata subsets are then pooled to form a random sample.

The sample size in each of the strata was determined by use of the following formula;

$$n_h = (N_h / N) * n$$

where;

n_h is the sample size for stratum h ,

N_h is the stratum h population size,

N is total population size,

and n is total sample size.

simple random sampling was then used to select households in each of the households per sub-location

Table 4.2: Sample Size

Division	Location	Sub-location	Households	Sample Size ()
Garsen	Assa	Assa	97	2
Garsen	Ndera	Baomo	505	10
Garsen	Mwina	Benderani	396	8
Garsen	Bilisa	Chira	461	9
Garsen	Shirikisho	Dalu	442	9
Garsen	Galili	Danisa	332	7
Garsen	Galili	Dumi	494	10
Garsen	Galili	Galili	975	20
Garsen	Bilisa	Garsen	1438	29
Garsen	Shirikisho	Idsowe	619	13
Garsen	Assa	Kone	214	4
Garsen	Mwina	Mikameni	349	7
Garsen	Ndera	Mnazini	751	15
Garsen	Assa	Onjira	16	0
Garsen	Mwina	Sera	455	9
Garsen	Salama	Wema	911	19
Kipini	Kilelengwani	Kau	746	15
Kipini	Kilelengwani	Kilelengwani	443	9
Kipini	Kipini	Kipini	801	16
Kipini	Kipini	Matangeni	1364	28
Kipini	Ozi	Mpeketoni	140	3
Kipini	Ozi	Ozi	249	5
Tarasaa	Chara	ChamwanaMuma	578	12
Tarasaa	Ngao	Golbanti	166	3
Tarasaa	Wachuoda	Handaraku	812	17
Tarasaa	Konemansa	Kikomo	277	6
Tarasaa	Kipao	Kipao	825	17
Tarasaa	Wachuoda	Kurawa	1017	21
Tarasaa	Ngao	Ngao	440	9

Tarasaa	Wachuoda	Oda	924	19
Tarasaa	Konemansa	Odole	497	10
Tarasaa	Kipao	Ongonyo	172	4
Tarasaa	Chara	Semi Karo	314	6
Tarasaa	Ngao	Tarasaa	570	12
Tsavo East Park	Tsavo East Park	Tsavo East Park	0	0
Total			18790	384

Source: Authors Computation

4.3 Methods of data collection

This study made use of primary data only. Babbie (2009) identifies data collection methods for primary data as: self-administered questionnaires, structured and semi-structured (telephone and personal interviews), observations, mailed questionnaires, and focus group discussions. This study made use of structured interviews, key informant interviews schedules and observations.

4.3.1 Semi-structured interviews

This study used a semi-structured interview schedule to capture data from house-hold heads. The interview schedule had both closed and open ended questions. To capture specific type of questions, Closed ended questions were used (such as Likert scales and Yes or No) while regarding the open ended questions, the respondents responded to questions based on their opinion. The structured questions were utilized to cut on costs, facilitate an easier analysis and save time; the use of unstructured questions enabled the respondents to give personal responses without restrictions . With unstructured questions, a respondent's response gives an insight to his or her feelings, background, hidden motivation, interests and decisions. Since some of the household heads could not read and write the researcher administered the interview to the respondent by reading the questions to the household heads and writing down the responses.

4.3.2 Key Informant Interviews

According to Cooper and Schindler (2003), key informant interviews are in-depth interviews conducted with individuals who have information on what is going on within a community. The main purpose of key informant interviews is to obtain information from various community leaders, including professionals and community leaders, who have firsthand information about a community. In this study the key informants were Sub-County agriculture officer, Sub-County lands officer, Sub-County agriculture officer, Sub-County development officer, Tana judiciary magistrate, local NGO- Tana Pastoralist Forum and Nature Kenya. This is because their particular understanding and knowledge can provide an insight on the nature of the conflict in Tana Delta and the role of resources in the conflict. The key informant interviews were administered by the researcher by use of face-to face interviews.

4.3.3 Observations

Observation is a data collection method where the researcher watches and records the situation of interest, actions, facts and behaviors (Gomm, 2008). In this study, the researcher used an observation guide to observe the various types of resources in Tana Delta. The researcher also observed the way the community members relate in Tana Delta in terms of behavior and actions. The observation guide comprised of emotions in conversations, the presence of burnt houses, settlements along the natural resources and deep scars on the respondents and other community members.

4.4 Pilot Test

The weakness in instrumentation and design were ascertained through undertaking a pilot test. The pilot test provided a proxy data for choosing a probability sample. The validity of the research instruments were tested using content validity. This measures the degree to which the collected data represents certain contents of individual factors. The research instruments were pre-tested to identify any awkward and offensive questions before being administered. Experts were also consulted to ascertain research instruments' validity in the area of study i.e. the supervisors.

The questionnaire was further pre-tested to ascertain its reliability by selecting sample from the target population which did not participate in the actual data collection. An internal consistency technique was utilized using Cronbach's Alpha. The alpha value stretches

between 0 and 1 with reliability rising as the value increases. Coefficient of 0.6-0.7 is the conventional rate which shows the acceptable reliability and 0.8 or more shows good reliability (Gomm, 2008).

4.5 Methods of data analysis and interpretation

This study collected both qualitative and quantitative data. The collected quantitative data were first cleaned of any errors, then coded and entered into the SPSS software version 20. Descriptive statistics were used to explore, display and examine the quantitative data for meaningful descriptions, patterns and relationships. The descriptive statistics made it possible for the researcher to confidently describe distribution of measurements and describe, summarize and data. In addition, the study used correlation analysis to establish whether there is a relationship between resources and conflict in Tana Delta. Further, chi-square was used to test the hypothesis of the study. The results from all quantitative data were then presented by use of bar charts, pie charts and graphs.

On the other hand, qualitative data was analyzed using content analysis, ie data collected from open ended questions, key informant interviews and observations. Results from content analysis was presented in a prose form.

CHAPTER FIVE

5.0 RESULTS AND DISCUSSIONS

5.1 Introduction

This chapter presents the results and discussion of the findings/results. The purpose of this study was to investigate how the existing natural resources in Tana Delta region fuel violent and non-violent conflict and what impact does it have on livelihoods and in fostering development in the region. The study also sought to assess how the available natural resources are causing conflict in Tana Delta region; to list and identify the actors involved in conflict and determine what role they play; to determine the strategies used by the local community in the region to manage and resolve natural resource conflict and what are the challenges involved in these effective implementation of these strategies and to assess long and short term impacts of the long-running resource conflict on livelihoods and development in the area.

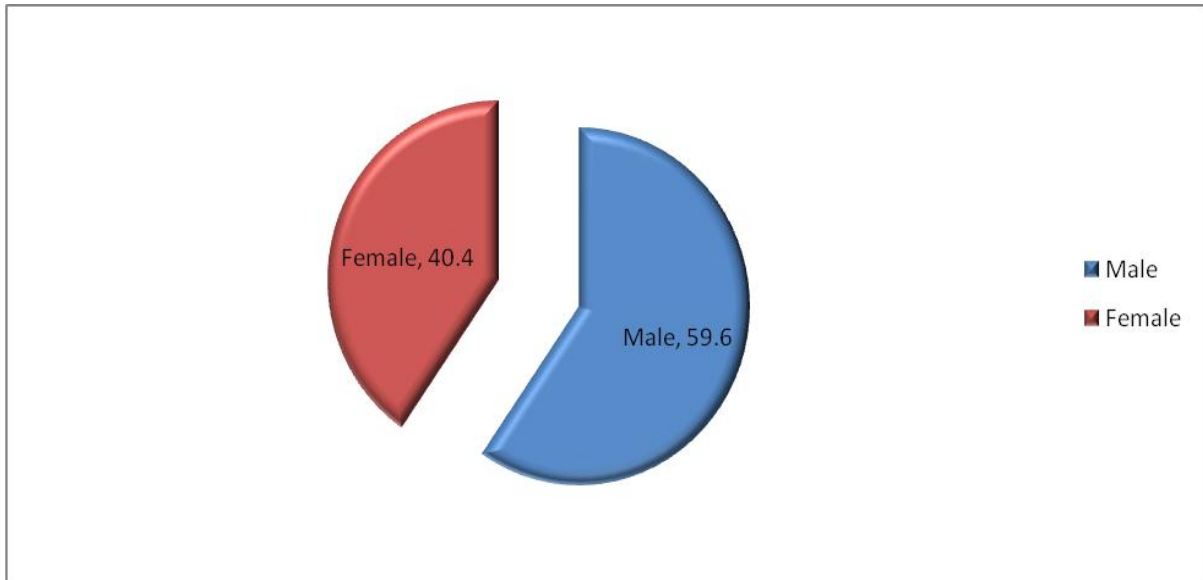
5.1.1 Response Rate

The sample size of this study was 384 household heads. The study response rate for this study was 302 making up a 78.64%. The rest (21.36%) of the interview schedules were either having several unanswered questions or were having inconsistent responses. This correlates with Kothari (2004) argument that a response rate of 50% is sufficient for analysis and reporting; a response rate of 60% is good while a response rate of 70% and over is excellent.

5.2 Characteristics of the household sample

5.2.1 Household sample on gender segregation

The community members were asked to indicate their gender. The results are presented in figure 5.1.



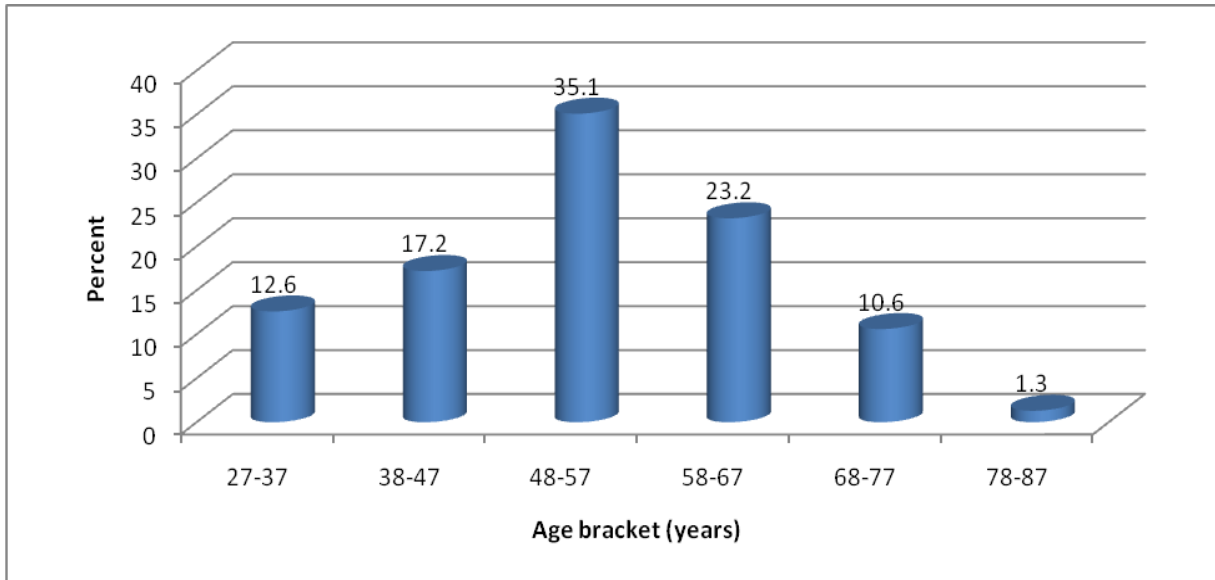
Source: Authors Computation

Figure 5.1: Gender

According to the figure 5.1, 59.6% of the community members were male while 40.4% were female. This implies that the males were more accessible than females to take part in the activities of the community because female have been so much socialized and confined to household chores and other activities surrounding the house. This also suggests how male dominated the community as males were always in forefront in dealing with the community issues. Further, male are seen as key decision makers within the community and this shows how unequal males and females relations are when it comes to community affairs.

5.2.2 Age

The community members were also asked to indicate their age. The results were as shown below.



Source: Authors Computation

Figure 5.2: Age

From the figure 5.2, 35.1% of the community members indicated that they were aged between 48 and 57 years, 23.2% indicated they were aged between 58 and 67 years, 17.2% indicated they were aged between 38 and 47 years, 12.6% indicated they were aged between 27 and 37 years, 10.6% indicated they were aged between 68 and 77 years while 1.3% indicated they were aged between 78 and 87 years.

5.2.3 Marital Status

The community members were further requested to indicate their marital status. Their responses were as shown in the table 5.1.

Table 5.1: Marital Status of Community Members

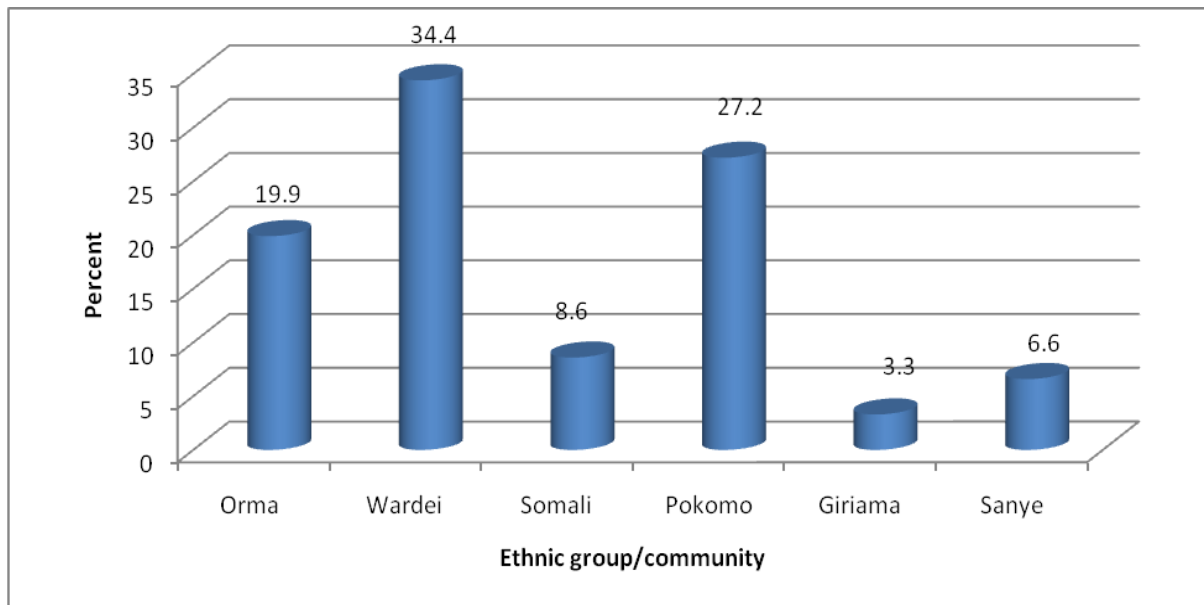
	Frequency	Percent
Single	32	10.6
Married monogamous	116	38.4
Married polygamous	72	23.8
Divorced/Separated	56	18.5
Widowed	26	8.6
Total	302	100.0

Source: Authors Computation

According to the findings, 38.4% of the community members indicated that they were married in a monogamous marriage, 23.8% indicated that they were married in a polygamous marriage, 18.5% of the community members indicated they were divorced or separated, 10.6% indicated they were single while 8.6% indicated they were widowed. This shows that most of the community members were married in a monogamous marriage.

5.2.4 Ethnic Group

Additionally, the community members were asked to indicate their ethnic group or community. The findings are as shown in Figure 5.3.



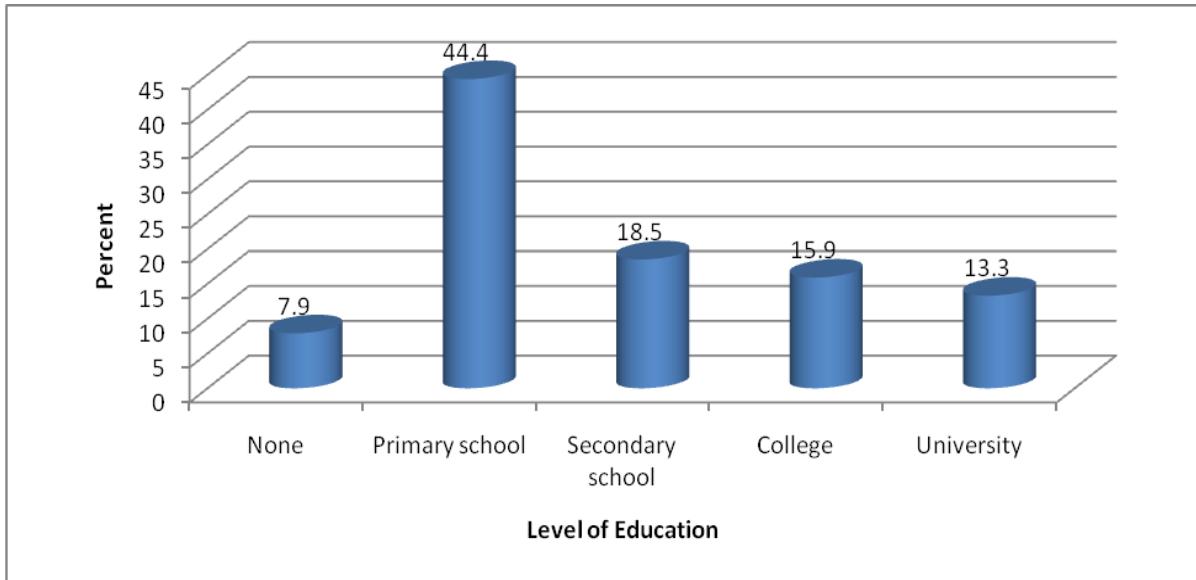
Source: Authors Computation

Figure 5.3: Ethnic Group

From the findings, 34.4% of the community members indicated they belonged to the Wardei community, 27.2% indicated they belonged to the Pokomo community, 19.9% indicated they belonged to the Orma community, 8.6% indicated they belonged to the Somali community, 6.6% indicated they belonged to the Sanye community whereas 3.3% indicated they belonged to the Giriama community. This clearly indicates that majority of the community members belonged to the Wardei, Pokomo and Orma communities.

5.2.5 Education level

The community members were also requested to indicate their highest level of education. The findings were as shown in the figure 5.4.



Source: Authors Computation

Figure 5.4: Education level

From the findings, 44.4% of the community members involved in this study indicated that they had primary education, 18.5% indicated they had secondary education, 15.9% indicated they had college, 13.3% indicated they had university education while 7.9% indicated they did not have any formal education. Therefore, most of the community members had primary education.

5.2.6 Occupation

The community members were further requested to indicate their main source of income or occupation. The findings were as shown in Figure 5.2.

Table 5.2: Occupation of the community members

	Frequency	Percent
Livestock Keeping	88	29.1
Farming	116	38.4
Fishing	18	6.0
Hunting/gathering	8	2.6
Business	40	13.2
Employed	32	10.6
Total	302	100.0

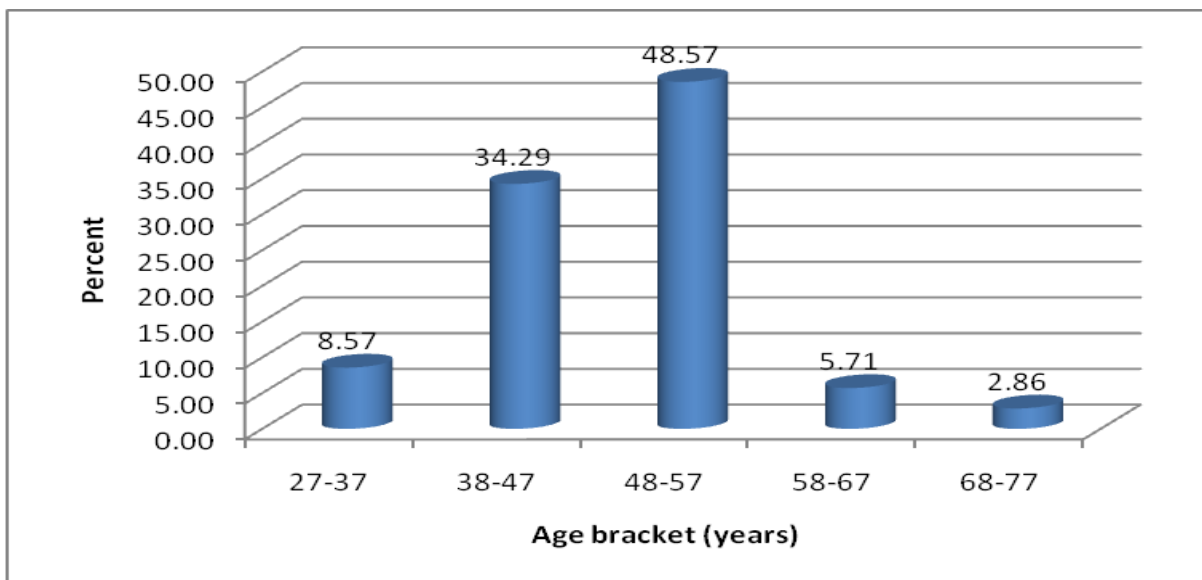
Source: Authors Computation

According to the findings shown in the table 5.2, 38.4% of the community members indicated their occupation was farming, 29.1% of the community members indicated their occupation was livestock keeping, 13.2% of the community members indicated their occupation was business, 10.6% of the community members indicated that their occupation was employment, 6% of the community members indicated that their occupation was fishing while 2.6% of the community members indicated that their occupation was hunting and/or gathering. This shows that most of the community members were farmers and livestock keepers.

5.3 The sub-chiefs

5.3.1 Age Bracket of the Sub-Chiefs

The sub-chiefs were asked to indicate their age bracket. The results were as presented in figure 4.1.



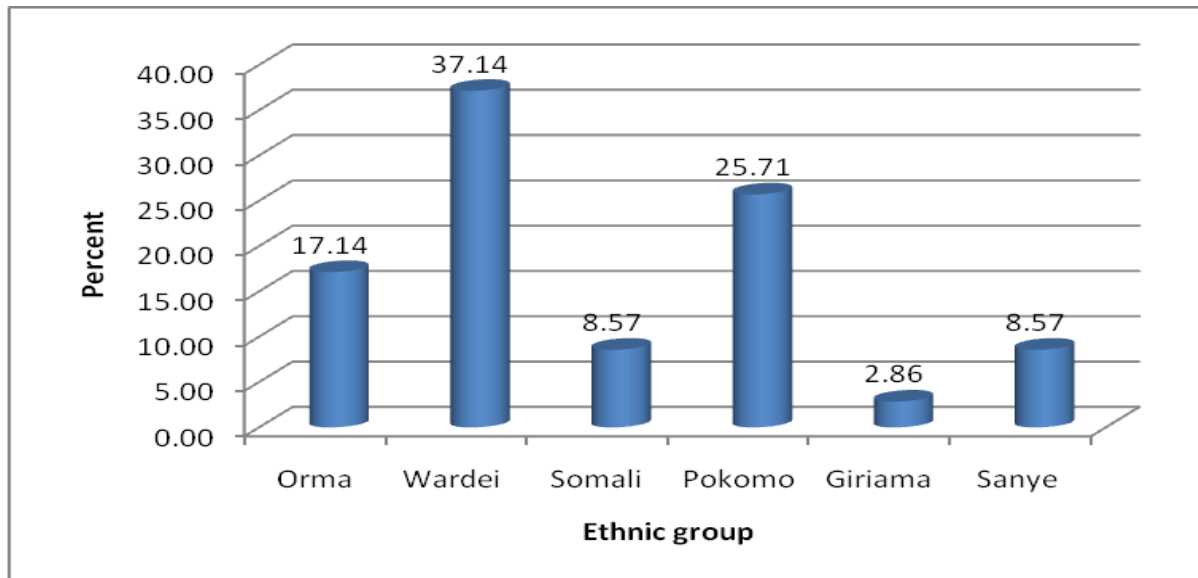
Source: Authors Computation

Figure 4.1: Age Bracket of the Sub-Chiefs

From the findings, 48.57% of the sub-chiefs indicated that they were aged between 48 and 57 years, 34.29% indicated that they were aged between 38 and 47 years, 8.57% indicated that they were aged between 27 and 37 years, 5.71% indicated that they were aged between 58 and 67 years and 2.86% indicated that they were aged between 68 and 77 years. This shows that most of the sub-chiefs were aged between 48 and 57 years.

5.3.2 Sub-Chiefs' Ethnic Group

The sub-chiefs were also requested to indicate their ethnic groups. The findings were as presented in the figure below.



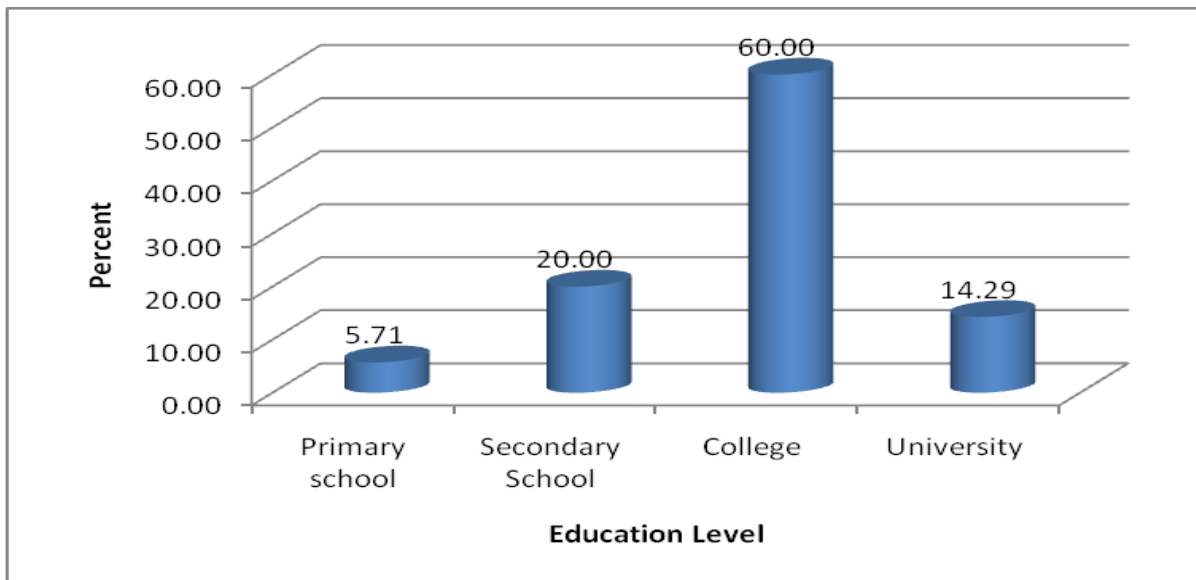
Source: Authors Computation

Figure 4.2: Sub-Chiefs' Ethnic Group

From the findings, 37.14% of the sub-chiefs indicated that they were Wardei, 25.71% indicated that they were Pokomo, 17.14% indicated that they were Orma, 8.57% indicated that they were Sanye and the same percent indicated that they were Somali and 2.86% indicated that they were Giriama. This shows that most of the sub-chiefs in Tana delta were from Wardei and Pokomo communities.

5.3.3 Sub-Chiefs' Education Level

The sub-chiefs were asked to indicate their level of education. The findings are shown in Figure 4.3.



Source: Authors Computation

Figure 4.3: Sub-Chiefs' Education Level

According to the findings, 60% of the sub-chiefs indicated that they had college education, 20% indicated that they had secondary education, 14.29% indicated that they had university education and 5.71% indicated that they had primary school education. These findings show that most of the sub-chiefs had college education.

5.4 Actors involved in conflict and to the their Role

The first objective of the study was to identify actors (both internal and external) involved in the conflict and characterize their roles.

5.4.1 Actors involved in conflict

The interviewees were requested to indicate the main actors in any conflicts that affected their community the last time there was a conflict. They mentioned the following: Government of Kenya, Nature Kenya- Tana peace committee, IRD, MUHURI/ KNHR, Tana pastoralists Forum, Kenya Red Cross, Politicians- (fuel conflict by giving out resources, food and money), Non-Government Organization, K.N.H.R, locals- warning communities, Nature Kenya, Kenya National Human Right, Militia- MRC (who claim that the land belongs to Pokomo), TARDA, IRD, Cocoon Judiciary (Garsen Law Court), IRD- KENWEB, Conversation bodies, National Museums of Kenya, Ministry of Agriculture and the Research Institute e.g. ICIPE.

The interviewees were further requested to indicate whether there were any conflict hotspots in the area. They indicated that there were and they named areas in the Tana Delta especially the wetlands. They explained that it was because of the resources available there especially during the dry spell that conflict tend to be high than the wet season. This was attributed within the frame of declining pastures, water and grazing land due to ecological calamities such as famine and drought and as a result influence of livestock from Northern Counties. Specifically, the hotspots are: Kilelengwani Village in Kipini Division, Riketa, in Kipini Division, Chara Village Tarasaa Division, Ozi, Tarasaa Division and KipaoTarasaa Division.

5.4.2 Main actors in the conflict in the Tana Delta region

The community members were further asked to indicate the main actors in the conflict in the Tana Delta region. The findings are shown in Table 5.5.

Table 5.3: Main actors in the conflict in the Tana Delta region

	Frequency		Percent	
	Yes	No	Yes	No
Militias	200	102	66.2	33.8
Bandits (shifas)	142	160	47.0	53.0
Politicians	262	40	86.8	13.2
Government officials	250	52	82.8	17.2
Clan elders	228	74	75.5	24.5
NGOs	240	62	79.5	20.5

Source: Authors Computation

From the findings, 66.2% of the community members indicated that the militias were the main actors, 53% of the community members indicated that the bandits were the main actors, 86.8% of the community members indicated that the politicians were the main actors, 82.8% of the community members indicated that the government officials were the main actors, 75.5% of the community members indicated that the clan elders were the main actors while 79.5% of the community members indicated that NGOs were the main actors. This shows that most of the community members indicated that militias, bandits, politicians, government officials, clan elders and NGOs were the main actors in the conflict in the Tana Delta region.

5.5 Drivers of Natural Resource-Based Conflicts in Tana Delta Region

The second objective of the study was to analyze drivers of natural resource-based conflicts with a view of identifying opportunities for cooperation and mutual benefit.

5.5.1 The Use of Natural Resources in the Region

The community members were also asked to indicate the statement that characterizes the use of natural resources in the region best. The table below shows the findings as they obtained.

Table 5.4: The Use of Natural Resources in the Region

Resources	Without conflicts (%)	Some conflicts (%)	Frequent conflicts (%)	Total
Water	2.6	34.4	62.9	100
Land (shamba)	2.6	36.4	60.9	100
Land (pasture)	4.0	32.5	63.6	100
Forest/wood	6.6	21.9	71.5	100
Fisheries	45.0	47.7	7.3	100
Wildlife	27.2	38.4	34.4	100

Source: Authors Computation

According to the findings, 62.9% of the community members indicated that the use of water was characterized by frequent conflicts in the region, 60.9% of the community members indicated that the use of land (shamba) was characterized by frequent conflicts in the region, 63.6% % of the community members indicated that the use of land (pasture) was characterized by frequent conflicts in the region, 71.5% % of the community members indicated that the use of forest/wood was characterized by frequent conflicts in the region, 47.7% of the community members indicated that the use of fisheries was characterized by some conflicts in the region whereas 38.4% of the community members indicated that the use of wildlife was characterized by some conflicts in the region. Therefore, most of the community members indicated that the use of water, land (shamba), land (pasture) and forest/wood was characterized by frequent conflicts in the region. Additionally, most of the community members indicated that the use of fisheries and wildlife was characterized by some conflict in the region.

5.5.2 Increase in conflict

The community members were also requested to indicate the type of conflict that had been increasing over the years. The findings are as shown in Table 5.4.

Table 5.5: Increase in conflict

	Frequency	Percent
Intra-group	8	2.6
Inter-group	130	43.0
Group-government	54	17.9
Group-private business	38	12.6
Human-wildlife	72	23.8
Total	302	100.0

Source: Authors Computation

According to the findings, 43.0% of the community members indicated that inter-group conflict had been increasing over the years, 23.8% of the community members indicated that human-wildlife conflict had been increasing over the years, 17.9% of the community members indicated that group-government conflict 2.6% of the community members indicated that intra-group conflict had been increasing over the years while 12.6% of the community members indicated that group-private business conflict had been increasing over the years. Clearly, most of the community members indicated that inter-group conflict had been increasing over the years.

5.5.3 Causes of conflict in Tana Delta Region

The community members were further requested to indicate how natural resources caused conflict in the region. They indicated that the main cause of conflict is land and this is because of conflicting land use practiced in the Delta whereby some pastoralist believed in communal land system while the farmers advocate for land adjudication on cases of liberal/idea of individual free hold.

On the other hand, the interviewees also indicated that politics were also a cause of conflict in the region. They explained that conflict of 2012 in Tana Delta was not a tribal clash but election violence. This was as a result of all pastoralists' uniting to vote in a common

agreement. Thus, the meaning formation of “LATTU” meaning "let all the pastoralists unite and vote their people because they have not been in power for 10 years". They argued that when pastoralists were in power it meant they could access and use resource as they wish. Another political reason was that local MPs wanted to get pastoralists out of Tana Delta Sub-County as they contribute a lot to the economy. Additionally, the interviewees indicated that the other trigger was lack of access to river as Pokomo community tends to encroach river banks/ river line land hence hindering livestock access to the river.

5.6 Strategies used in the region to manage natural resource conflict

The third objective of the study was to identify strategies that local communities apply to resolve natural resource-based conflicts, challenges experienced by such strategies, and how such challenges can be turned into opportunities.

5.6.1 Effectiveness of institutions in resolving conflict

The community members were also asked to indicate how effective the various body institutions have been in resolving conflicts in the past. The results were as tabled below.

Table 5.6: Effectiveness of institutions in resolving conflict

Institutions	Not effective	Effective	Very effective	Total
Traditional Peace Committee	24.5	44.4	31.1	100.0
Government (e.g. police)	27.8	43.7	28.5	100.0
Government institutions	24.5	39.1	36.4	100.0
Religious organizations	24.5	54.3	21.2	100.0
NGOs (local/international)	41.1	45.7	13.2	100.0

Source: Authors Computation

According to the findings shown in table 5.6, 44.4% of the community members indicated that the Traditional Peace Committee was effective in resolving conflict in the past, 43.7% of the community members indicated that the Government (e.g. police) was effective in resolving conflict in the past while 39.1% of the community members indicated that the Government institutions were effective in resolving conflict in the past. Additionally, 54.3% of the community members indicated that the Religious organizations were effective in

resolving conflict in the past while 45.7% of the community members indicated that the NGOs (local/international) were effective in resolving conflict in the past. Therefore, majority of the community members indicated that Traditional Peace Committee, the Government (e.g. police), Government institutions, Religious organizations and NGOs (local/international) were effective in resolving conflict in the past.

5.6.2 Governmental strategies in preventing the occurrence of conflicts

Additionally, the community members were asked to indicate whether the following governmental strategies would be effective in preventing the occurrence of conflicts in general. The findings were as shown below.

Table 5.7: Governmental strategies in preventing the occurrence of conflicts

Strategies	Frequency		Percent	
	Yes	No	Yes	No
Gazette the (contested part of) basin as a conservation area managed by KWS	256	46	84.8	15.2
Gazette the (contested part of) basin as community land	246	56	81.5	18.5
Gazette the (contested part of) basin as a private land	210	92	69.5	30.5
Start joint economic activities of women/youth groups (e.g pastoralists and cultivators)	228	74	75.5	24.5
Disarm warriors	196	106	64.9	35.1
Education	204	98	67.5	32.5
Promotion of non-natural resource based employment	256	46	84.8	15.2

Source: Authors Computation

From the findings of tabled 5.7, 84.8% of the community members indicated that gazetting the (contested part of) basin as a conservation area managed by KWS would be effective in preventing the occurrence of conflicts in general. Further, 81.5% of the community members indicated that gazetting the (contested part of) the basin as community land would be effective in preventing the occurrence of conflicts in general. Also, 69.5% of the community members indicated that gazetting the (contested part of) basin as a private land would be effective in preventing the occurrence of conflicts in general. Additionally, 75.5% of the community members indicated that starting joint economic activities of women/youth groups (e.g pastoralists and cultivators) would be effective in preventing the occurrence of conflicts

in general. Also, 64.9% of the community members indicated that disarming warriors would be effective in preventing the occurrence of conflicts in general.

Further, 67.5% of the community members indicated that education would be effective in preventing the occurrence of conflicts in general. Lastly, 84.8% of the community members indicated that promotion of non-natural resource based employment would be effective in preventing the occurrence of conflicts in general. Therefore, most of the community members indicated that gazettement of the contested part of basin as a conservation area managed by KWS, part of the basin as community land, part of the basin as a private land, starting joint economic activities of women/youth groups (e.g. pastoralists and cultivators), disarming warriors, education and that promotion of non-natural resource based employment would be effective in preventing the occurrence of conflicts in general.

5.6.3 Strategies addressing conflict related to natural resources

The community members were also requested to indicate how effective the stated strategies were in addressing conflict related to natural resources. The findings were as shown in table 5.8.

Table 5.8: Strategies addressing conflict related to natural resources

Natural resource	Strategy	Not effective	Effective	Very effective	Total
Land	Introduce better/other breeds of animals	6.0	32.5	61.6	100.0
	Upgrade dry season grazing areas	10.6	25.8	63.6	100.0
	Fodder provision in dry season (feedlots)	14.6	29.8	55.6	100.0
	Land tenure change	14.6	29.8	55.6	100.0
	Farming land redistribution	4.6	33.8	61.6	100.0
	Improve seeds	4.0	32.5	63.6	100.0
Water	Increase use of roof water harvesting	4.6	33.1	62.3	100.0
	Increase number of boreholes	2.6	31.1	66.2	100.0
	Control upstream water extraction and pollution	2.6	27.2	70.2	100.0
Forest	Stop cutting trees	6.0	27.2	66.9	100.0
	Reforestation of riverine area	7.9	30.5	61.6	100.0
	Provide alternative sources of energy for firewood	6.0	35.8	58.3	100.0
Fisheries	Adapt fish extraction to sustainable level	2.6	25.8	71.5	100.0
	Promote pond fish	2.6	29.1	68.2	100.0
	Upgrade/protect breeding grounds	4.0	30.5	65.6	100.0
	Re-stocking water sources with fish	4.0	33.1	62.9	100.0
Wildlife	Keep wildlife in sustainable numbers	6.0	26.5	67.5	100.0
	Implement wildlife damage compensation programmes	4.0	27.2	68.9	100.0
	Start genuine community based tourism projects	6.6	23.8	69.5	100.0

Source: Authors Computation

According to the findings in table 5.8 with regard to land, 61.6% of the community members indicated that introducing better/other breeds of animals would be very effective in addressing conflict related to land resources, 63.6% of the community members indicated that upgrading dry season grazing areas would be very effective, 55.6% of the community

members indicated that fodder provision in dry season (feedlots) would be very effective, 61.6% of the community members indicated that farming land redistribution would be very effective while 63.6% of the community members indicated that improving seeds would be very effective in addressing conflict related to natural resources. This shows that majority of the community members agreed that upgrading dry season grazing areas, fodder provision in dry season (feedlots) and improving seeds would be very effective in addressing conflict related to land resources.

With regard to water resources, 62.3% of the community members indicated that increasing use of roof water harvesting would be very effective, 66.2% of the community members indicated that increasing the number of boreholes would be very effective while 70.2% of the community members indicated that controlling upstream water extraction and pollution would be very effective in addressing conflict related to water resources. This shows that most of the community members indicated that increasing use of roof water harvesting, increasing the number of boreholes and controlling upstream water extraction and pollution would be very effective in addressing conflict related to water resources.

With regard to forest resources, 66.9% of the community members indicated that stopping the act of cutting trees would be very effective, 61.6% of the community members indicated that reforestation of riverine area would be very effective while 58.3% of the community members indicated that providing alternative sources of energy for firewood would be very effective in addressing conflict related to forest resources. This shows that most of the community members indicated that stopping the act of cutting trees, reforestation of riverine area and providing alternative sources of energy for firewood would be very effective in addressing conflict related to forest resources.

With regard to fisheries resources, 71.5% of the community members indicated that adapting fish extraction to sustainable level would be very effective, 68.2% of the community members indicating that promoting fish pond would be very effective, 65.6% of the community members indicated that upgrading or protecting breeding grounds would also be very effective while 62.9% of the community members indicated that re-stocking water sources with fish would be very effective in addressing the conflict related to fisheries resources. This shows that most of the community members indicated that adapting fish extraction to sustainable level, upgrading or protecting breeding grounds and re-stocking

water sources with fish would be very effective in addressing the conflict related to fisheries resources.

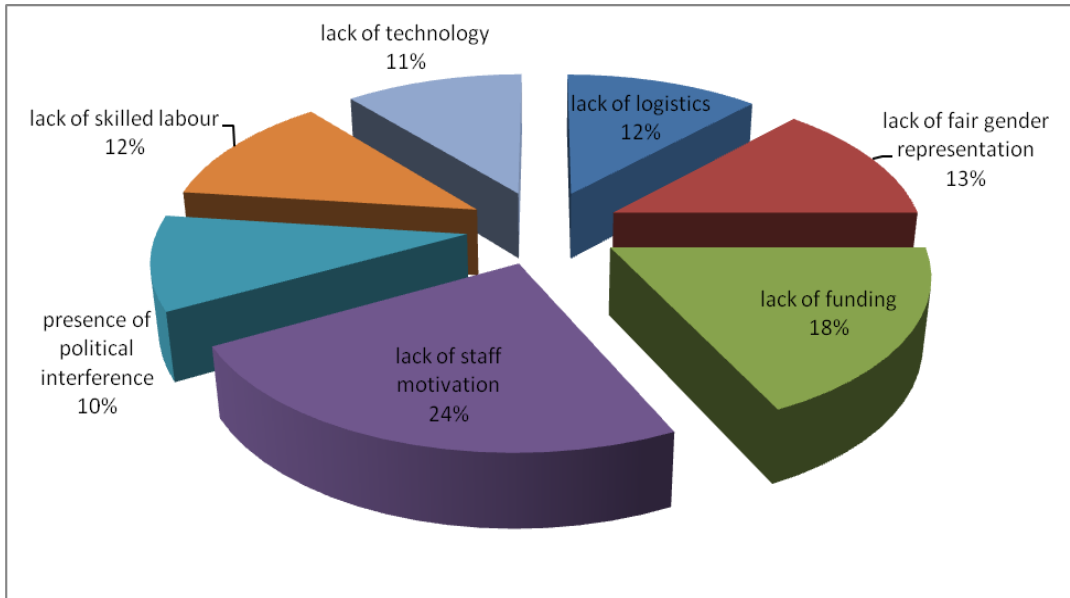
With regard to wildlife, 67.5% of the community members indicated that keeping wildlife in sustainable numbers would be very effective, 68.9% of the community members indicated that implementing wildlife damage compensation programmes would be very effective, 69.5% of the community members indicated that starting genuine community based tourism projects would also be very effective in addressing the conflict related to wildlife resources. This shows that most of the community members indicated that keeping wildlife in sustainable numbers, implementing wildlife damage compensation programmes and starting genuine community based tourism projects would also be very effective in addressing the conflict related to wildlife resources.

5.6.4 Methods of resolving conflict

The interviewees were asked to indicate the methods that they used to solve conflict. They indicated the following: through council elders in the village level (the Orma council of elders), Taza peace committee at the division level, the Maslah law court and through the Kenya police. Some interviewees also indicated that they solved through the judiciary and Tana Delta Committee. However, some interviewees indicated that they did not use the police to solve conflicts for fear of being taken to jail.

5.6.5 Challenges involved in the effective implementation of the strategies

The interviewees were requested to indicate the challenges involved in the effective implementation of the strategies stated above.



Source: Authors Computation

Figure 5.5: Challenges involved in the effective implementation of the strategies

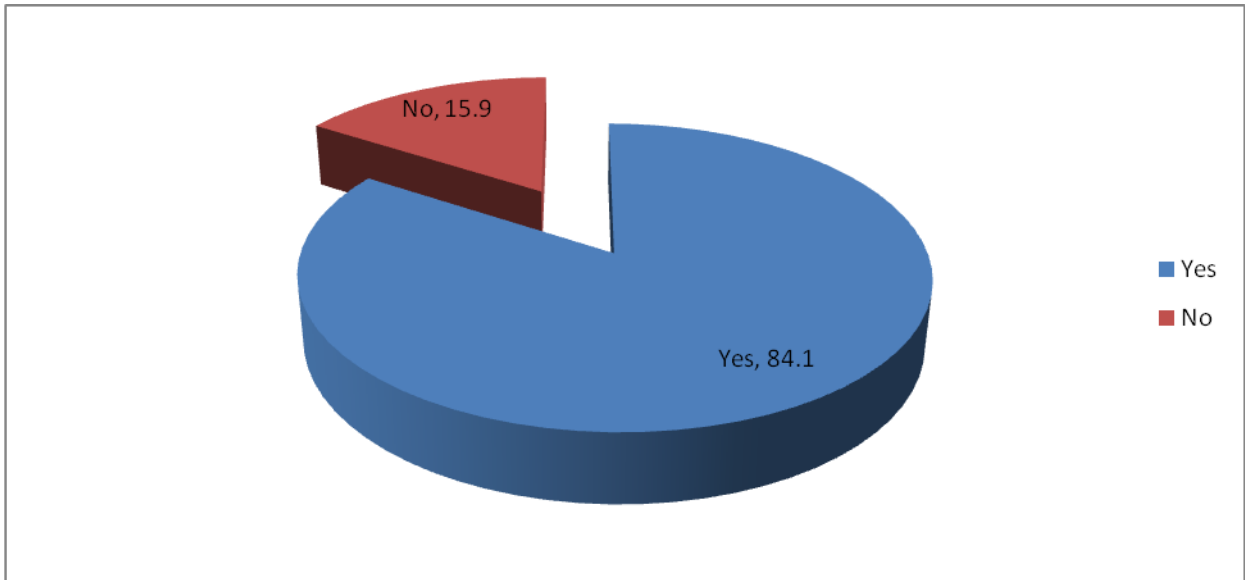
Interviewees indicated that the challenges include lack of logistics e.g. vehicles (12%), lack of skilled labour (12%), lack of technology (11%), lack of fair gender representation (13%) lack of funding (18%), lack of staff motivation (24%) and presence of political interference (10%). They also indicated that the economic and religious differences between the communities pose a challenge too. In addition, they also indicated that lack of youth inclusion in the process also was a challenge in itself. The interviewees also indicated lack of government support, lack of donor funding, the formal system taking a lot of time to be completed, high costs of hiring a lawyer and biasness in the whole process.

5.7 Long and short term impacts of the long–running resource conflict

The forth objective of the study was to analyze short-term and long-term social and economic impacts of the Pokomo-Orma conflict.

5.7.1 Injuries and loss of life

The community members were requested to indicate whether any member of their families was injured or died out of the conflict in the region. The results were as below.



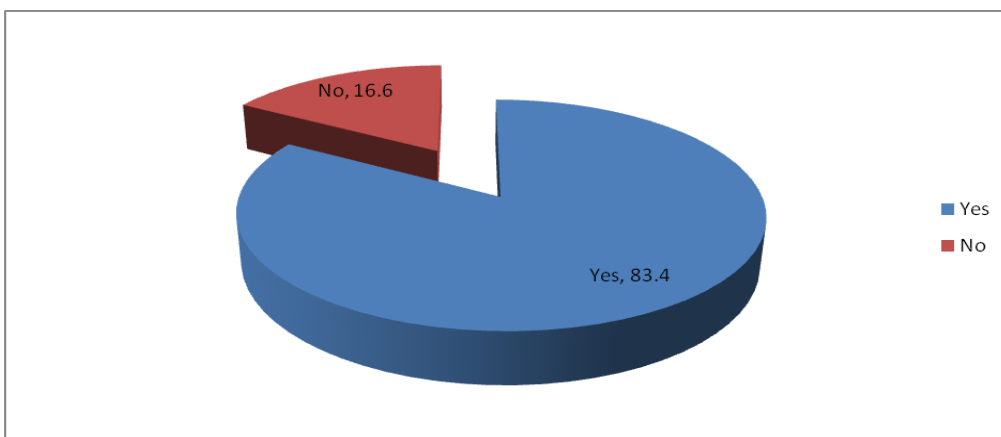
Source: Authors Computation

Figure 5.6: Injuries and loss of life

According to the findings, 84.1% of the community members indicated that members of their families were injured or died out of the conflict in the region while 15.9% of the community members indicated that none of their family members were injured or died out of the conflict in the region. Therefore, most of the community members indicated that members of their families was injured or died out of the conflict in the region.

5.7.2 Livestock, granary stock or property loss to raids due to conflicts

The community members were also asked to indicate whether they had lost any livestock, granary stock or property to raids or conflict. Their responses were as shown in the figure below.



Source: Authors Computation

Figure 5.7: Livestock, granary stock or property loss to raids due to conflicts

According to the findings, 83.5% of the community members indicated that they had lost any livestock, granary stock or property to raids or conflict while 16.6% indicated that they had not. This shows that most of the community members indicated that they had lost any livestock, granary stock or property to raids or conflict.

5.7.3 Losses incurred

As a follow up question, the community members that answered affirmatively indicated that they lost granaries, livestock and properties due to conflict were requested to indicate how much they had lost due to raids or conflict. They responded as shown in table 5.9.

Table 5.9: Losses incurred

	Frequency	Percent
1-10 animals	60	19.9
11-50 animals	72	23.8
More than 50 animals	68	22.5
Granary stocks	72	23.8
Movable Property	30	9.9
Total	302	100.0

Source: Authors Computation

According to the findings, 23.8% of the community members indicated that they lost 11 to 50 animals while the same percentage indicated that they lost granary stocks. Further, 22.5% of the community members indicated that they lost more than 5 animals, 19.9% indicated they lost q to 10 animals while 9.9% indicated that they lost movable property. This can be used to infer that most of the community members lost 11 to 50 animals and granary stocks due to raids or conflict.

5.6.4 Loss of access

The community members were further requested to indicate whether they had lost access to the following as a result of rids or conflict. The findings were as shown in table 5.10.

Table 5.10: Loss of access

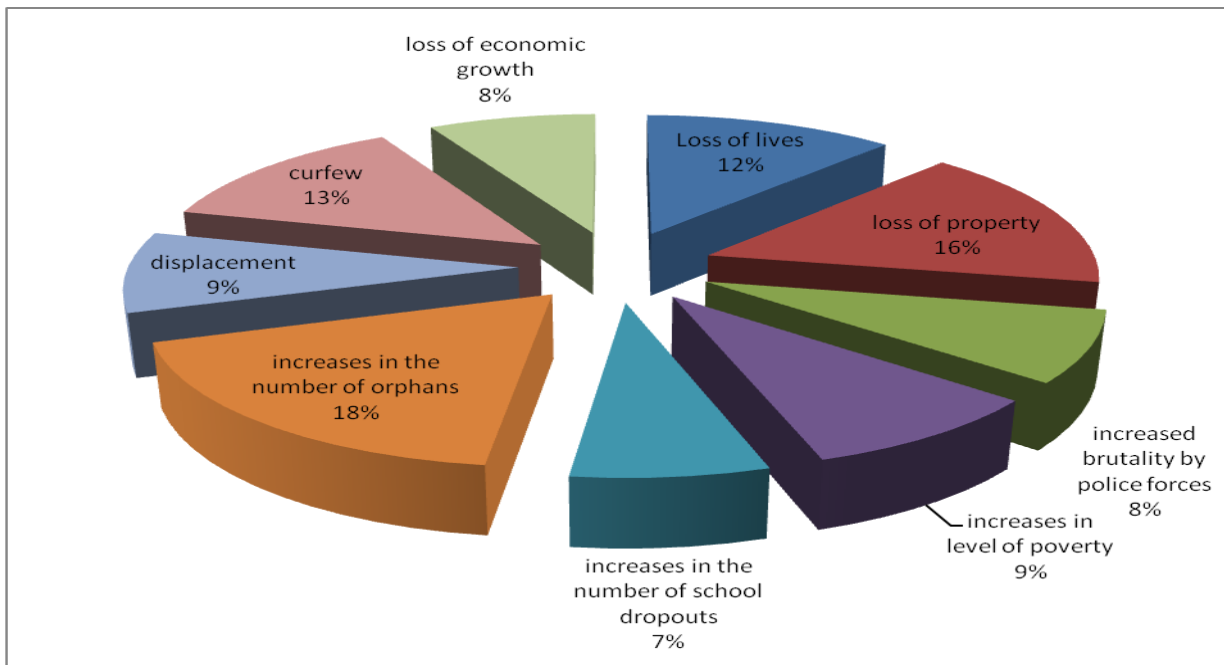
	Frequency		Percent	
	Yes	No	Yes	No
Grazing land	138	164	45.7	54.3
Farmland	162	140	53.6	46.4
Earthpans	142	160	47.0	53.0
Wells	192	110	63.6	36.4
Other water sources	182	120	60.3	39.7

Source: Authors Computation

According to table 5.10, 54.3% of the community members indicated that they did not lose access to grazing lands as a result of raids or conflict. As well, 53% of the community members indicated that did not lose members indicated that they lost access to wells due to raids or access to Earthpans as a result of raids or conflict. However, 53.6% of the community members indicated that they had lost access to the farmland due to raids or conflicts while 63.6% of the community conflicts. This shows that most of the community members indicated that did not lose access to grazing lands and Earthpans as a result of raids or conflict. Further, most of the community members indicated that they lost access to farmland and wells due to raids or conflicts.

5.7.4 Impact of conflict in the region

The interviewees were further requested to indicate the impact of conflict in the region.



Source: Authors Computation

Figure 5.8: Impact of conflict in the region

Long term impacts were; Loss of lives (12%), loss of property (16%), increases in level of poverty (9%) and increases in the number of orphans (18%).

Short term impacts were; increased brutality by police forces (8%), increases in the number of school dropouts (7%), displacement (9%), curfew (13%) and loss of economic growth (8%).

The interviewees also indicated that some leaders lost their jobs, businesses and schools were closed, rise in poverty level, reduced number of tourists in the area, increased migration to other towns and increase in the number of school dropout.

5.8 Hypothesis Testing

The Null hypothesis that regardless of perceptions of abundance or scarcity, the Pokomo-Orma conflict will persist. In other words, the perceptions of abundance or scarcity do not make a difference to the Pokomo-Orma conflict situation in the Tana Delta Region.

A chi-square test was conducted to test the hypothesis of the study. The findings were as presented in the table below.

Table 5.11: Natural resources and Pokomo-Orma conflict Cross-tabulation

		Pokomo-Orma conflict			Total	Pearson Chi-square
		Increasing	Moderate	Decreasing		
Natural resources	Abundant	9	29	36	74	$X^2=76.999$ $df=2$ $p=0.000$
	Scarce	65	6	7	78	
Total		74	35	43	152	

Source: Authors Computation

Table 5.11 summarizes results of chi square test carried out between abundance and scarcity of natural resources in Tana Delta and the Pokomo-Orma conflict. The findings show that there is a statistically significant relationship between natural resources in Tana Delta and the Pokomo-Orma conflict and hence we reject the null hypothesis. The association was statistically significant because the p-value (0.000) was less than the level of significance (0.05). In addition the calculated X^2 (76.999) was greater than the critical X^2 , which is 5.991. This shows that the scarcity of natural resources would lead to an increase in Pokomo-Orma conflict.

CHAPTER SIX

6.0 KEY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS.

6.1 Introduction

This chapter discusses the findings of the study together with the conclusions which were drawn from the findings. Recommendations which arise from the conclusions are also provided. The purpose of the study was to investigate how the existing natural resources in Tana Delta region fuel violent and non-violent conflict and what impact it has on livelihoods and in fostering development in the region. To achieve the objectives of the study, the discussion on key findings, conclusion and recommendations have been made in relation to the research questions.

6.2 Key Findings

The study established that most of the community members used in this study were male. It also established that most of the community members were aged between 48 and 57 years with most of them being married in monogamous marriages. Additionally, the study established that majority of the community members belonged to the Wardei community with most of them having primary education. Most of the community members indicated that their occupation was farming.

6.2.1 How availability of Natural Resources caused Conflict in Tana Delta Region

The first objective of this study was to assess how the available natural resources are causing conflict in Tana Delta region. The study established that according to most of the community members, the use of water, land (for shamba and pasture) and forest/wood was characterized by frequent conflicts in the region. According to the United Nations Security Council, there are many and varied resource conflicts globally available to discuss. The resource use conflicts include domestic conflicts, territorial disputes and interstate conflicts. Additionally, in today's global resource conflicts, the resources involved are also diverse ranging from diamonds, to petroleum to gold (Basedau & Pierskalla, 2014). The instances of global resource use conflicts merit the focus of Security Council and are simply the most pressing in the international relations perception today (The UN Security Council Website, 2011).

The use of fisheries and wildlife resources was characterized by conflict in the Delta region. Inter-group conflict had been increasing over the years and that the main of conflict is

land. The conflict was a result of conflicting land use practiced in the Delta where some pastoralists believed in communal land system while the farmers advocate for land adjudication of individual free holds. Thus one of the causes for the eruption of inter-tribal conflict in the Delta in 2000-01 was connected to the activities of the Land Adjudication Commission (Kyama, 2012). The other sources of conflict in the area were lack of access to river as Pokomo community tends to encroach river banks/ river line land hence hindering accessibility to the river. Pokomo claim that being a Pokomo implies that one has to own the land one lives on, which in turn conforms to their sedentary farming livelihood (Matuszeski & Schneider, 2006).

In addition, politics cause conflict, for instance, conflict of 2012 in Tana Delta was not a tribal clash but election violence. This was as a result of all pastoralists' uniting to vote in a common agreement. In an anarchistic global infrastructure of countries, the underlying cause of conflicts is centered on the control and acquisition of resources, and their resultant connections to political and economic international power. Every so often, these resource conflicts are parodied to be caused by the aforementioned qualities, but it is now an established fact that resource acquisition is now a decisive component of military conflict and geostrategic planning, and that such wars were driven by the need to have access to the particular resources involved. These resources include things such as land, oil, timber, water, natural gas and minerals such as silver, gold and diamonds (Kachikwu, 2004).

6.2.2 Actors involved in conflict and to the their Role

The second objective was to list and identify the actors involved in conflict and determine what role they play. The study established that the main actors in conflicts affecting the region included: Government of Kenya. The government is actor in the conflict in that its government officials have been involved in dirty politics instigating conflict in the region. Another actor is Nature Kenya which is actively used in the management of natural resources countrywide. The conflict over resources in this region therefore directly relates to this organization. Tana peace committee is actively involved in establishing peace in the region. Further, other actors include IRD, MUHURI/ KNHR and Tana pastoralists Forum. Kenya Red Cross is involved in attending to the casualties of the conflict supplementing the role of the government, Politicians who fuel conflict by giving out resources, food and money, Non-Government Organizations that strive to establish peace in the region, K.N.H.R, locals-warning communities, Kenya National Human Rights and the Militia- MRC who claim that

the land belongs to Pokomo. Rwanda also struggled with conflicts between the statutory rights and customary land rights, a fact that has been exacerbated by various changes in the holders of state power and waves of genocide. At present, there are a large number of ownership disagreements dating back to many years. These are classified as either the ‘new caseload’ or the ‘old case load’ subject to the period of struggle they pertain to. These unsettled disputes are in themselves a grave potential conflict source (Hintjens, 2006).

Moreover, other actors include TARDA, IRD, Cocoon Judiciary (Garsen Law Court), IRD-KENWEB, Conversation bodies, National Museums of Kenya, Ministry of Agriculture and the Research Institute e.g. ICIPE. There have been rising interests from governments, donors and non-government organizations (NGOs) regarding natural resource projects is developing within three distinctive areas of international development: poverty reduction; peace-building; and biodiversity conservation (Opiyoet al., 2012).

The study also found out that the Tana Delta especially the wetlands was a conflict hotspot. This was due to the resources available there especially during the dry spell conflict tend to be high than the wet season. Specifically, the hotspots were established to be: Kilelengwani Village in Kipini Division, Riketa Village in Kipini Division, Chara Village Tarasaa Division, OZ Village TarasaaDivisionandKipad Village Tarasaa Division. Further, the study revealed that militias, bandits, politicians, government officials, clan elders and NGOs were the main actors in the conflict in the Tana Delta region. In Democratic Republic of Congo (DRC), the utilization of minerals particularly in the rich provinces of Kasai (diamonds), Katanga (cobalt and copper), Kivu and Oriental (diamonds, gold and coltan as well as agricultural produce) – is an enduring testimony to the global factor in DRC conflicts (Maystadt et al., 2014). The forests in Congo have also instigated conflict. In these forests, multinational companies have neglected the demographic pressures and the rights of people. Forests in the Congo basin are always under threat while the economic and cultural life of the locals is ignored (Shabazz,2009).

6.2.3 Strategies used in the region to manage natural resource conflict

The third objective of this study was to determine the strategies used by the local community in the region to manage and resolve natural resource conflict and what are the challenges involved in the effective implementation of these strategies. The study established that Traditional Peace Committee, the Government (e.g. police), Government institutions,

Religious organizations and NGOs (local/international) were effective in resolving conflict in the past. The study also found out that gazettement of the (contested part of) basin as a conservation area managed by KWS, gazettement of the contested areas basin as community land, gazettement of the (contested part of) the basin as a private land, starting joint economic activities of women/youth groups, disarming warriors, education and that promotion of non-natural resource with regards to employment would be effective in preventing the occurrence of conflicts in general. During conflict, groups and individuals can exploit natural resources as part of the conflict economy generating incentives to destabilize efforts to build peace (Weidman & Ketil, 2010).

The study further established that upgrading dry season grazing areas, fodder provision in dry season (feedlots) and improving seeds would be very effective in addressing conflict related to land resources. With regard to water resources, it was also established that increasing use of roof water harvesting, increasing the number of boreholes and controlling upstream water extraction and pollution would be very effective in addressing conflict related to water resources. In the past few years, in the upper basins five major reservoirs have been built which have meaningfully improved the hydrological regime of the river, with a 20% decrease of the peak flow in May (Leauthaud *et al.*, 2013).

Additionally, with regard to forest resources, it was established that stopping the act of cutting trees, reforestation of riverine area and providing alternative sources of energy for firewood would be very effective in addressing conflict related to forest resources. With regard to fisheries resources, the study found out that adapting fish extraction to sustainable level, upgrading or protecting breeding grounds and re-stocking water sources with fish would be very effective in addressing the conflict related to fisheries resources. Where natural resources have been a significant driver of conflict, they need to be handled as a crucial element of peace building. Failure to do so at this vital stage is probably going to delay the return to long-term stability and peace, increase the risk of a relapse into conflict and endanger reconstruction efforts (Oludheet *et al.*, 2013).

Further, with regard to wildlife, the study established that keeping wildlife in sustainable numbers, implementing wildlife damage compensation programmes and starting genuine community based tourism projects would also be very effective in addressing the conflict related to wildlife resources. Natural resources have been shown to play a key role in the

conflicts that have plagued a number of African countries over the last decade, both in motivating and fuelling armed conflicts (Opiyoet *al.*, 2012).

The study revealed that methods used to solve conflict by the community members included: council elders in the village level (the Orma council of elders), Tana peace committee at the division level, the “Maslah law court” and the Kenya police. The study also established that some conflicts were solved through the judiciary and Tana Delta Committee. However, some were not taken to the police to solve conflicts for fear of community members involved being taken to jail.

The study found out that the challenges involved in the effective implementation of the strategies of solving conflicts included the following: lack of logistics e.g. vehicles, lack of skilled labour, lack of technology, lack of fair gender representation, lack of funding, lack of staff motivation and presence of political interference. Other challenges were economic and religious differences between the communities and the lack of youth inclusion in the process. Further, the study revealed that there were other challenges which included lack of government support, lack of donor funding, the formal system taking a lot of time to be completed, high costs of hiring a lawyer and biasness in the whole process. Conflicts and disputes over natural resources need to be regarded in the context of a multifaceted web of demographic change, new development pressures, sensitive natural environments, structural economic and legal inequalities, ethnic and personal differences, and the multiple interests of different groups, individuals and organizations from both outside and inside rural communities (Moyo, 2005).

6.2.4 Long and short term impacts of the long–running resource conflict

The fourth objective of this study was to assess long and short term impacts of the long–running resource conflict on livelihoods and development in the area. The study established that for most of the community members their family members were injured or died out of the conflict in the region. Tana Delta Sub-County is one of the most underdeveloped and vast regions on the Kenyan Coast. Poverty rates are high and infrastructure is virtually non-existent. Along with this is the minimal presence of “government”, particularly the security forces, in the region. As a result, there is a general feeling of insecurity, which has led to people arming themselves (Mwangi, 2012). This is what has led to the loss of life in large numbers whenever conflicts occur.

Also, most of the community members had lost livestock, granary stock or property to raids or conflict. This loss by community members was in form of 11 to 50 animals and granary stocks due to raids or conflict. The study further established that most of the community members lost access to farmland and wells due to raids or conflicts. It is the environment that suffers great damage during violent conflict. Resources may be targeted for damaged or destruction by bombs and other applicable ordinance; war may lead to displacement of populations into delicate environments where the struggle to survive vitiates the resource base; and, the institutions established to manage natural resources may be interrupted or go into liquidation during a war (Terer, Ndiritu&Gichuki, 2004).

The study further revealed that the impact of conflict in the region included the following: loss of lives, loss of property, increased brutality by police forces, increases in level of poverty, increases in the number of school dropouts, increases in the number of orphans, displacement, curfew and loss of economic growth. The study also established that some leaders lost their jobs, businesses and schools were closed, rise in poverty level, reduced number of tourists in the area, increased migration to other towns and increase in the number of school dropout. For the past several years, conflicts over resources have predictably resulted in similar clashes pitting farmers against pastoralists and between communities and investors. The continued existence of these conflicts point to a failure by responsible government institutions to address land use issues in the Tana Delta which are the basis of the tensions and attacks which left more than 200 peoples mainly women and children to lose their lives and more than 36,000 people displaced in the 2012 conflict (Huninket *al.*, 2013).

6.3 Conclusions

From the findings, it is clear that the use of water, land (as shamba and pasture) and forest/wood was characterized by frequent conflicts and use of fisheries and wildlife by moderate conflict in the Delta region. The study therefore concludes that lack of mutual understanding in the region between communities about how to share the natural resources is the overall cause of conflict. Further, the study found out that politics also played a role in the fuelling the conflict in the region.

The Tana Delta is a conflict hotspot due to the resources amassing there especially the wetlands which are fertile for farming during the dry spell conflict. The many actors in the

conflict are government related institutions and therefore the solutions must be government-led. The study concludes that Traditional Peace Committee, government institutions (e.g. police service), religious organizations and NGOs (local/international) were effective in resolving conflict in the past. Gazetting the parts of basin as a conservation area managed by KWS, parts of the basin as community land, parts of the basin as a private land and initiating joint economic activities for women and youth groups from both the pastoralists and cultivators will be an excellent start for peace. Additional initiatives will include disarming warriors, promoting education and non-natural resource based employment would be effective in preventing the re-occurrence of conflicts in general.

Water resources are central in managing conflicts. The study concludes that increasing roof water harvesting, boreholes and controlling upstream water extraction and pollution would be very effective in addressing conflict related to water resources. Additionally, with regard to forest resources, the study concludes that stopping the act of cutting trees, reforestation of riverine area and providing alternative sources of energy for firewood would be very effective in addressing conflict related to forest resources. With regard to fisheries resources, the study concludes that adapting fish extraction to sustainable level, upgrading or protecting breeding grounds and re-stocking water sources with fish would be very effective in addressing the conflict related to fisheries resources. Further, with regard to wildlife, the study concludes that keeping wildlife in sustainable numbers, implementing wildlife damage compensation programmes and starting genuine community based tourism projects would also be very effective in addressing the conflict related to wildlife resources.

The community members lost livestock, about 11 to 50 animals, granary stock and/or property to raids or conflict. The community members lost access to farmland and wells. The impact of conflict in the region included loss of lives, loss of property, increased brutality by police forces, increases in level of poverty, increases in the number of school dropouts, increases in the number of orphans, displacement, curfew and loss of economic growth.

6.4 Recommendations

Since the study established that the use of water, land (shamba pasture) and forest/wood was characterized by frequent conflicts in the region. It established that there are conflicting land use practices in Delta whereby some pastoralist believed in communal land system while the farmers advocate for land adjudication and individual free hold.

From the above reasons, the study therefore recommends the following;

The land tenure system be revised and amended by the government. This should be done with adequate involvement of the community members. There should be equal representation of the community members in terms of age, gender and religion for purposes of fairness.

Since the Tana Delta wetlands are the only source of water during the dry spell, the study therefore recommends that the Kenyan government and NGO's establishes irrigation mechanisms in the dry areas during the dry season to ensure that the wetlands will no longer be on high demand and the entire region will have a fair distribution of resources.

It has not been easy for implementing strategies of solving conflicts in the region because it experiences some challenges like: lack of logistics, lack of skilled labour, lack of technology, lack of fair gender representation, lack of funding, lack of staff motivation due to lack of salaries for the council of elders and presence of political interference. The study recommends that the inhibitions stated above be addressed by the government offering funds to the council of elders to show them that the government supports the work they are doing. Also, the government should accept help from the NGOs in funding the whole process of establishing peace in this region. The government should also ascertain that its officials do not practice political incitements that result into conflict. This can be done by taking strict measures to those politicians that will engage in any activity tantamount to inciting the public.

The dry season grazing areas, fodder provision in dry season (feedlots) and improving seeds would be very effective in addressing conflict related to land resources. Increasing use of roof water harvesting, number of boreholes and controlling upstream water extraction and pollution are recommended in addressing conflict related to water resources. Further the study recommends stopping the act of cutting trees, reforestation of riverine area and providing alternative sources of energy for firewood in addressing conflict related to forest resources.

Lastly, we recommend that further studies be carried out to establish the viability of adapting other alternative farming mechanisms like fish ponds and bee keeping.

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Appendices

Appendix I: Interview Schedule for Household Heads

1. Sex

Male [] Female []

2. Age

3. Marital Status

Single [] Married monogamous [] Married polygamous []
 Divorced/Separated [] Widowed []

4. Ethnic Group/ community

5. Education

None [] Primary school []
 Secondary school [] College []
 University []

6. Main household occupation (main source of income)

Livestock Keeping [] Farming []
 Fishing [] Hunting/gathering []
 Business [] Employed []

How the available natural resources cause conflict in Tana Delta region

7. Which statement would characterize the use of natural resources in the region best? In this region the people use the natural resources available:

	Without conflicts	Some conflicts	Frequent conflicts
Resources			
Water			
Land (shamba)			
Land (pasture)			
Forest/wood			
Fisheries			
Wildlife			

8. How do natural resources lead to conflict?

.....

9. Which of the following conflicts have been on the increase in the recent years?

- Intra-group []
- Inter-group []
- Group-government []
- Group-private business []
- Human-wildlife []

Actors involved in conflict and their Role

10. The last time there was any conflict that affected your community, who was involved?

.....

11. Who are the main actors in the conflict in the Tana Delta region?

- Militias [] Bandits []
- Politicians [] Government officials []
- Clan elders [] NGOs []
- Others (Specify)

12. Which are the key roles of the main actors in the Tana Delta region?

.....

Strategies used in the region to manage natural resource conflict

13. How effective have the following institutions been effective in resolving conflicts in the past?

	Not effective	Effective	Very effective
Traditional Peace Committee			
Government (e.g. police)			
Government institutions			
Religious organizations			
NGOs (local/international)			

14. Would the following governmental strategies be effective in preventing the occurrence of conflicts in general?

	Yes	No
Gazette the (contested part of) basin as a conservation area managed by KWS	[]	[]
Gazette the (contested part of) the basin as community land	[]	[]

Gazette the (contested part of) the basin as a private land	[]	[]
Start joint economic activities of women/youth groups (e.g pastoralists and cultivators)	[]	[]
Disarm warriors	[]	[]
Education	[]	[]
Promotion of non-natural resource based employment	[]	[]

15. How effective are the following strategies in addressing conflict related to natural resources?

Natural resource	Strategy	Not effective	Effective	Very effective
Land	Introduce better/other breeds of animals			
	Upgrade dry season grazing areas			
	Fodder provision in dry season (feedlots)			
	Land tenure change			
	Farming land redistribution			
	Improve seeds			
Water	Increase use of roof water harvesting			
	Increase number of boreholes			
	Control upstream water extraction and pollution			
Forest	Stop cutting trees			
	Reforestation of riverine area			
	Provide alternative sources of energy for firewood			
Fisheries	Adapt fish extraction to sustainable level			
	Promote pond fish			
	Upgrade/protect breeding grounds			
	Re-stocking water sources with fish			
Wildlife	Keep wildlife in sustainable numbers			
	Implement wildlife damage compensation programmes			
	Start genuine community based tourism projects			

16. What are the challenges involved in the effective implementation of these strategies.

.....

.....
.....
Long and short term impacts of the long–running resource conflict on livelihoods and development in the area.

17. Has any member of your family been injured, or lost life due to conflict?

Yes [] No []

18. Have you lost any livestock, granary stock or property to raids or conflict?

Yes [] No []

19. If yes, which ones?

1-10 animals [] 11-50 animals []

More than 50 animals [] Granary stocks []

Movable Property []

20. Have you lost access to any of the following as a result of raids or conflicts?

Grazing land [] Farmland []

Barkats [] Wells []

Other water sources []

21. Which are other impacts of the long–running resource conflict on livelihoods and development in the area

.....
.....
.....

Appendix II: Key informant Interview Schedule

- i. What are the causes of conflict in Tana Delta? Explain
- ii. Who are the main actors in the conflict and what role do they play in the conflict?
- iii. Do conflict hotspots areas exists? If yes why and name them.
- iv. Which methods are used mostly to solve conflicts?
- v. What are the challenges encountered or experienced in solving conflicts?
- vi. What are the short and long term impacts of these conflicts?

Appendix III: Observation Guide

- Deep scars on the respondents and other community members
- Emotions in conversations
- The presence of burnt houses
- settlements along the natural resources