

**ASSESSMENT OF THE IMPACT OF RESOURCE USE CONFLICTS ON
COMMUNITY LIVELIHOODS WITHIN THE TANA DELTA SUB COUNTY,
KENYA**


SAID ABDULAHI OMAR

**A thesis submitted in partial fulfilment of the requirement for the award of a Degree of
Master of Science in Environmental Studies (Community Development) of Pwani
University**

June, 2016

DECLARATION

This thesis is my original work and has not been presented for an award of a degree in any other University or any other award.

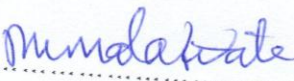
Signed.....  Date. 27/01/17

Said Abdulahi Omar

REG NO: N50/PU/2174/1

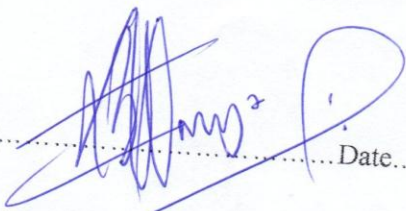
Declaration by Supervisors

We confirm that this thesis has been done by the student with our guidance as the University supervisors

Sign.  Date. 24/01/17

Dr. Felix L.M. Ming'ate

Department of environmental Studies and Community Development - Kenyatta University

Sign.  Date. 03/04/2017

Dr. Okeyo Benards

Department of Environmental Sciences - Pwani University

DEDICATION

This study is dedicated to my family who saw me through this study with love, encouragement and unwavering support.

ACKNOWLEDGEMENTS

Various contributions in different capacities facilitated the end product of this thesis. The people behind the action need to be acknowledged. I wish to first express my sincere gratitude to my mentor and academic supervisors, Dr. Felix L.M. Ming'ate and Dr. Okeyo Benards, for their commitments, guidance and support in the preparation of this work, and exposing me to methods of writing a scientifically acceptable thesis. All the lecturers in the Environmental Science Department need extension of my gratitude for their participation in teaching and guidance. Respondents and research assistants, who supported this study also need to be praised for their cooperation and willingness to give information freely. I am also thankful to Kenya Coastal Development Project for the financial support which immensely assisted this study. Above all, I thank the Almighty God for giving me strength to work and for the provision of all my needs.

ABSTRACT

Most conflicts in the African continent have been connected with natural resources. Resource-based violent conflicts have direct, immediate and devastating impacts, with social, psychological, economic and ecological dimensions. Most conflicts in Kenya occur in the North Rift and North Eastern regions, with majority of those affected being pastoralists. These conflicts are mainly a consequence of cattle raiding, land use, water, pasture and grazing rights. Owing to the perennial resource use conflicts in the Tana Delta, an assessment of how the conflicts impact local communities' livelihoods is important in abating the conflicts and mitigating the impacts. The objectives of this study were to: 1) identify types and drivers of resource-based conflicts in the Tana Delta 2) examine the institutional arrangements for resource management and their influence resource-based conflicts in Tana Delta and 3) establish the effect of resource-based conflicts on local communities livelihood strategies. Using a cross-sectional survey research design, data was collected using household questionnaires, interview schedules, focus group discussions and simple field observations. Our observations indicate that there were diverse types of conflicts in the Tana Delta, the most prominent and significant being the biodiversity resource-based type. The study also established the existence of diverse drivers for resource-based conflicts in the area. The scarcity of resources were the significant drivers and stimulants of the resource-based conflicts. The study also confirmed the existence of a wide range of institutions for managing resources in Tana Delta. However, the institutions responsible for management of resources had no influence on resource-based conflicts. These organizations had common policies relationships towards resource management but did not share traditional recognitions and resource values with each other. The study revealed that resource-based conflicts had significant impacts on the livelihood strategies of communities in the Tana Delta. Active engagement of communities in conflict resolution strategies, and the use of community institutions in resolving resource-based conflicts were recommended. Harmonization of local community group's relations, creating awareness on policies governing natural resource management, and initiating economic interventions to mitigate resource-based conflicts were also recommended. The findings of the study could be used to formulate policies for promoting livelihood strategies and enhancing the resolution of resource use conflicts in the Tana Delta.

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENTS.....	iv
ABSTRACT	v
TABLE OF CONTENTS.....	vi
LIST OF FIGURES.....	x
LIST OF TABLES	xi
LIST OF PLATES	xii
LIST OF ABBREVIATIONS AND ACRONYMS	xiii
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.1 Background to the Study	1
1.2 Statement of the Problem	2
1.3 Study Objectives.....	3
1.3.1 Broad objective of the study.....	3
1.3.2 Specific objectives.....	3
1.4 Research Hypotheses.....	3
1.5 Significance of the Study.....	3
1.6 Scope and Limitation of the Study	4
1.7 Conceptual Framework	5
1.8 Definition of Terms Used in the Study.....	6
CHAPTER TWO.....	8
LITERATURE REVIEW	8
2.1 Introduction.....	8
2.2 Types and Drivers of Resource Based Conflicts.....	8

2.3 Institutional Arrangements for resource-based management and Resources-based Conflicts.....	10
2.4 The Impacts of Resource-based Conflicts on Communities' Livelihoods	13
CHAPTER THREE	18
METHODOLOGY	18
3.1 Introduction.....	18
3.2 Study Site.....	18
3.3 Research Design	20
3.4 Sample size and sampling procedure.....	22
3.5 Data Collection procedures.....	24
3.6 Data Analysis.....	26
3.7 Ethical Considerations	26
CHAPTER FOUR.....	28
RESULTS AND DISCUSSION	28
4.1 Introduction.....	28
4.2 Demographic Characteristics of Respondents	28
4.2.1 Population Dynamics in Tana Delta	28
4.2.2 Educational Level	29
4.2.3 Level of Income	30
4.2.4 Sources of Livelihood.....	32
4.2.5 Distance from the Source of Livelihood.....	33
4.3 Types and drivers of Resource-based Conflicts in the Tana Delta.....	34
4.3.1 Types of Resource based conflict in Tana Delta	34
4.3.2 Drivers of Resource-based Conflicts in Tana Delta	37
4.4 Institutional Arrangements for Resource Management and resource based conflicts in Tana Delta.....	38
4.4.1 Existence of Organisations for Resource Management in the Delta	39

4.4.2 Types of Organisations for Resource Management in Tana Delta	41
4.4.3 Relationships of Communities' and NGOs' Rules for Resource Management	54
4.4.4 Awareness of Community Norms for Resource Management	55
4.4.5 How Customs and Mores Could Lead to Resource-based Conflicts.....	57
4.4.5.1. Reporting of Resource-based Conflict Occurrences.....	58
4.4.6 Establishment of Organisational Arrangements	60
4.4.6.1. Level of Community Benefits from Resource Management Organisations.....	63
4.4.6.2. Level of Inclusion during Implementation of Organisations' Mandates	64
4.4.7 Recognition of Traditional Resource Values and Taboos by Organisations	66
4.4.8 Displacement of Communities as a Result of Organisational Arrangements.....	67
4.4.8.1. Reasons for Displacement as a Result of Organisational Arrangements.....	69
4.4.9 Types of Land Tenure Systems existing in Tana Delta	70
4.4.10 Land allocation in Tana Delta.....	71
4.4.11 Who allocated land in the Tana Delta?.....	71
4.4.12 When did the land allocation occur in Tana Delta?.....	73
4.4.13 Rights of Using Land in Tana Delta	74
4.4.14 Consultation on Land Allocation in Tana Delta	75
4.4.15 Relationships of Organisational Arrangements and Resource-based Conflicts	76
4.5 Impact of Resource-based Conflicts on Communities' Livelihood.....	78
4.5.1 Resources and Livelihood Strategies Decreased/Increased due to Conflicts	78
4.5.1.1. Trends of Resources as a Result of Resource-based Conflicts.....	79
4.5.2 The Dry Course of the River.....	83
4.5.3 Land Degradation in Tana Delta.....	84
4.5.4 Death/Injuries as a result of Resource-based Conflicts	85
4.5.5 Displacement of Communities as a result of Resource-based Conflicts	86
4.5.6 Crops and Livestock Destruction as a result of Resource-based Conflicts	87
4.5.7 Markets Trends as a Result of Resource-based Conflicts.....	88

4.5.8 Social-economic Activities, Livelihood Strategies and Employment	89
4.5.8.1.Trends of Social-economic Activities, Livelihood Strategies due to conflicts.....	90
4.5.8.2.Employment trends as a results of Resource-based Conflicts.....	92
4.5.9 Vulnerability to Natural Disasters	93
CHAPTER FIVE	95
SUMMARY, CONCLUSION AND RECOMMENDATION	95
5.1 Summary of the results	95
5.2 Conclusion	98
5.3 Recommendations.....	100
5.4 Recommendations for Further Research.....	102
REFERENCES	104
APPENDICES	115
APPENDIX 1: SURVEY QUESTIONNAIRE	115
APPENDIX 2: INTERVIEW SCHEDULE FOR KEY INFORMANTS	126
APPENDIX 3: FOCUS GROUP DISCUSSION GUIDE	135
APPENDIX 4: LIST OF STUDY POINTS (VILLAGES)	146
APPENDIX 5 A: LIST OF INSTITUTION IN OPERATING IN TANA DELTA.....	147
APPENDIX 5 B: LIST OF SELECTED INSTITUTIONS FOR THE STUDY	148
APPENDIX 6: INTRODUCTION LETTER	149
APPENDIX 7: CONSENT FORM FOR ALL RESPONDENTS	150

LIST OF FIGURES

Figure 1.1: Conceptual framework showing relationships between variables	5
Figure 4.1: Population distribution in Tana Delta (Kenya bureau of statistics, 2009)	29
Figure 4.2: Levels of income for household respondents in Tana Delta	31
Figure 4.3: Sources of livelihoods for communities in Tana Delta	32
Figure 4.4: Distance from sources of livelihood for communities in Tana Delta	33
Figure 4.5: Mean variation for types of resource-based conflicts in Tana Delta.....	35
Figure 4.6: Households views on existence of organisations for resource management	39
Figure 4.7: Types of organisations for resource management in Tana Delta	42
Figure 4.8 : Organogram of the existing organizations in Tana Delta	51
Figure 4.9: Relationships of communities' and ngos' rules for resource management.....	54
Figure 4.10: Level of awareness on community constitutions for resource management.....	56
Figure 4.11: Customs and mores that leads to resource-based conflicts in Tana Delta	57
Figure 4.12: Reporting of resource-based conflicts occurrences in Tana Delta	59
Figure 4.13: Households views on establishment of resource-based organisations in Tana Delta.....	61
Figure 4.14: Level of community benefits from resource management organisations	63
Figure 4.15: Level of community inclusion in resource management by organisations	65
Figure 4.16: Recognition of traditional resource value and taboos by organisations.....	66
Figure 4.17: Displacement of local communities as a result of organisation	68
Figure 4.18: Land tenure systems existing in Tana Delta	70
Figure 4.19: Respondents' views on who allocated land in Tana Delta	72
Figure 4.20: Levels of rights in using land within Tana Delta	74
Figure 4.21: Relationship between organisations and resource-based conflicts in Tana Delta.....	76
Figure 4.22: Relatives' deaths/injuries as a result of resource-based conflicts in Tana Delta	85
Figure 4.23: Displacement of communities as a result of resource-based Conflicts in Tana Delta.....	86
Figure 4.24: Crop destruction as a result of resource-based conflicts in Tana Delta	87

LIST OF TABLES

Table 3.1: Populations of study villages in Tana Delta and sample sizes	23
Table 4.1: Educational levels of household respondents in Tana Delta	30
Table 4.2: Mean variation for drivers of resource-based conflicts	37
Table 4.3: FGs and KIs views on existing organisations for resource management	40
Table 4.4: Organizations responsible for management of resources in Tana Delta	43
Table 4.5: FGs and KIs views on establishment of resource-based organisations	62
Table 4. 6: Reasons for community displacement by organisations in TanaDelta.....	69
Table 4.7: Respondents views on land allocation in Tana Delta	71
Table 4.8: Periods when land allocations occurred in Tana Delta.....	73
Table 4.9: Community consultation on land allocation in Tana Delta	75
Table 4.10: Relationships between organisations and resource-based conflicts	77
Table 4.12: Resource trends as a result of resource-based conflict in Tana Delta	80
Table 4.13: Resources and livelihood strategies trends as a result of conflicts	81
Table 4.14: Livestock destroyed due to resource-based conflicts in Tana Delta	88
Table 4. 15: Market trends as a result of resource-based conflicts.....	89
Table 4.16: Trends social economic activities and livelihood strategiess in Tana Delta	90
Table 4.19: Mean variation for social-economic activities and livelihood in Tana Delta.....	91
Table 4.20: Employment trends as a result of resource-based in Tana Delta.....	92
Table 4.21: Community vulnerability increased/decreased due to resource-based conflicts.	93

LIST OF PLATES

Plate 4.1: Diversion of Tana River course at Matomba in Tana Delta..... 79

Plate 4.2: Dry Lake Kongolola wetlands in Tana delta 83

Plate 4.4 Dry Tana River river course within Delta 83

Plate 4.3: Dry Lake Shakababo wetlands in Tana Delta..... 83

Plate 4.5: Bare land and dry trees on the dry river bed course in Tana Delta 84

LIST OF ABBREVIATIONS AND ACRONYMS

ACCORD	African Center for the Constructive Resolution of Disputes
ANOVA	Analysis of Variance
BMU	Beach Management Unit
CBOs	Community Based Organisations
CRS	Catholic Relief Services
ERC	Ethical Review Committee
FAO	Food and Agriculture Organization of the United Nation
FGD	Focus Group Discussion
FIAN	Food First Information and Action Network
GoK	Government of Kenya
GOs	Government Organizations
HHs	Households
H ₀	Null hypothesis
ICJ	International Commission of Jurists
IPCC	Intergovernmental Panel on Climate Change
IPSTC	International Peace Support Training Centre
ISI	Website of Science Knowledge
KARI	Kenya Agricultural Research Institution
KBS	Kenya Bureau of Statistics
KFS	Kenya Forest Service
KICE	Kipini Integrated Community Enterprises
KIs	Key Informants
KMFRI	Kenya Marine and Fisheries Research Institute
KWS	Kenya Wildlife service
N/A	Not Applicable
N/a	Not aware
NEMA	National Environment Management Authority
NGOs	Non-Governmental Organizations

NIB	National Irrigation Board
NICE	Ngao Integrated Community Enterprises
NRCS	Natural Resources Conservation Service
NTNU	Norwegian University of Science and Technology
SPSS	Statistical Package for Social Sciences
TARDA	Tana and Athi Rivers Development Authority
TAWASCO	Tana Water Services Company
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children Education Fund
USAID	United States Agency for International Development
WARMA	Water Resources Management Authority
WHO	World Health Organization
YWCA	Young Women Christian Association

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The World Commission on Environment and Development (1987) points out that nations have often fought to assert or resist control over environmental resources. Malaquias (2001) observes that it is “not accidental that some of the nastiest wars in Africa are being fought in countries richly endowed with natural resources. According to a recent United Nations (UN, 2012) report for the last sixty years, at least 40 per cent of civil wars on the African continent have been connected with natural resources and intrastate conflicts that have a link to natural resources (Humphreys, 2005). Resources based violent conflicts have direct, immediate and shocking impacts, including injury, battlefield and civilian deaths, the destruction of household assets and displacement (Klopp, 2010).

Violent resource use conflicts also have indirect and long-term poverty impact by increasing dependency ratios (Stewart, 2000). They lead to damage of public infrastructure and assets, disrupt livelihoods and reduce savings. Resource based conflicts undermine law and order, and political processes. Conflicts result to social and cultural erosion, and dislocation (Goodhand, 2003). Resource based conflicts led to the generation of over 3 million African refugees in 2006 (Knickmeyer, 2007). This is costly for host countries since the refugees put pressure on domestic resources, jobs and services (Stewart, 2000).

In Kenya, approximately 2 million people are affected by resource use conflicts, either directly or indirectly (Wilson and Tisedel 2003). Most conflicts in Kenya occur in the North Rift and North Eastern regions (Osamba, 2000). The majority of those affected by these conflicts are pastoralists (Makutsa, 2010). The affected include the Turkana people in the North; Samburu and Pokot in the central and Marakwet, Keiyo and Tugen in the South (Turton, 1975). To the East are Rendille, Borana and Somali (Hendrickson et al., 1998).

Importantly, these conflicts have undesirable effects both on the communities surrounding these areas and the nation as a whole (Nyukuri, 1997).

These conflicts revolve around cattle raiding, land and grazing rights (Mghanga, 2010). The Orma and Wardei pastoralists accuse the Pokomo farmers of restricting their access to water points and grazing fields (Mwakera, 2012). While the Pokomo blame the pastoralists for grazing on their farms and destroying their crops (Irungu, 2000). Both pastoralists and farmers are also against the government supported land adjudication process. Land that had been taken away from the communities during the colonial times became government land. Some of this land has been alienated by political elites from other regions (Kinyanjui, 2008). It was on this basis that this study sought to understand the impacts of resource use conflicts on livelihood in Tana delta sub county, Tana River County in Kenya.

1.2 Statement of the Problem

When communities engage in resource use conflicts, it may impact on their livelihood strategies. Livelihood concern has implications in promoting development, reducing disparities among the communities and protection of the ecological system if communities live nonviolently. Resources are drivers to conflicts especially where there are diverse stakeholders with differing interests over the available resources. In the Tana Delta for instance, the main resources include land, pasture and water. Over the past decade, conflicts have been increasing in the Delta as a result of increasing human activities on these resources for pastoralist, farming and development projects, which lead to competition for the resources (Goldsmith, 2012). However, resource-based conflicts are bound to intensify with limitation of the resources such as water, pastures and land for development project. The government had demarcated thousands of hectares of land for agricultural projects (Malalo, 2013). The government's plan was to maximize resources for investment to contribute to the global food requirements. owing to the perennial resource based conflicts in the Tana Delta. Therefore an assessment of how the conflicts impact on the livelihood of the people is critical. Understanding the impact will also provide an opportunity to find out what

institutional arrangements are in place for resource use and the extent to which such arrangements influence or deter resource-based conflicts in the area. This study therefore sought to investigate the impact of resource based conflicts on communities' livelihood.

1.3 Study Objectives

1.3.1 Broad objective of the study

The broad of objective of the study is to assess the impact of resource-based conflicts on livelihoods of the communities living in the Tana Delta Sub-County of Tana River County, Kenya.

1.3.2 Specific objectives

The specific objectives are:

1. To find out the types and drivers of resource-based conflicts in the Tana Delta
2. To examine the organisational arrangement and the extent to which they influence resource based conflicts in the Tana Delta
3. To identify the effects of resource-based conflicts on the communities' livelihood strategies.

1.4 Research Hypotheses

1. H_0 : There were no types and drivers of resource-based conflicts in the Tana Delta
2. H_0 : There were no institutions arrangements for resource-based and did not influence resource based conflicts in Tana Delta.
3. H_0 : The resource use conflicts had no effects to communities' livelihood in Tana Delta.

1.5 Significance of the Study

The study has a number of significance. First it may contribute in providing information on conflict management of community resources literature. Second the study is useful in supporting policy on the use of community resources.

Third the study may lead to the understanding of the nature of the local conflicts thus being helpful in providing some guidelines that will support the locals in resolving their conflicts. Fourth the study may assist in improving the management, conservation and sustainable use of common resources amongst the local communities. Fifth the study may be used to enhance economic benefits to the local communities through creation of favourable ambience, which is necessary for the improvement of people's livelihood strategies. Accordingly, the findings of this study may be useful to the national and county governments, and the civil society and the communities in the formulation of policies and strategies that will enhance prudent management of natural resources to mitigate resource-based conflicts in the area. Finally, the findings of this study may enhance the understanding of resource-based conflicts which will improve the livelihood strategies of the communities living in Tana Delta.

1.6 Scope and Limitation of the Study

The study had a limited scope covering the Tana Delta Sub County; hence the results could therefore only be generalized along the Tana Delta sub-county. This study considered the type of resource use conflicts in terms of water-related conflicts, biodiversity conflicts, land-related conflicts, gender-related and management conflicts. Similarly this study focused on drivers of resource use conflicts related to institutional arrangements. The study defined institutional arrangements for resource use in terms of community; (both formal and informal). Furthermore the study examined any association between resource use conflicts and institutional arrangements. The study also sought to investigate the effects of resource use conflicts on communities' livelihood. These effects were selected based on the criteria that they affected the human, financial, social, ecological and physical capital.

Further, the study had the following limitations; first, respondents were not ready to release vital information as truthfully as was envisaged in the study. Second, infrastructure problems as the area had suffered many years of neglect and marginalization as indicated by impassable roads and poor means of transport along the river; third, it was dangerous due to wild animals' (i.e. crocodiles) when crossing the river Tana; fourth, it was also dangerous to

carry out sampling in some community villages due to existing tension resulting from the recent (2002 to 2013) inter-community conflicts in the study area: fifth, the study topic was sensitive and some respondents refused to answer the questions. And sixth, it was not possible to study all the villages in the sub county due to constraints and limitations of time, finance and other resources.

1.7 Conceptual Framework

The conceptual framework below (Fig. 1.1) outlines the variables of interest to this study and their interlinkages.

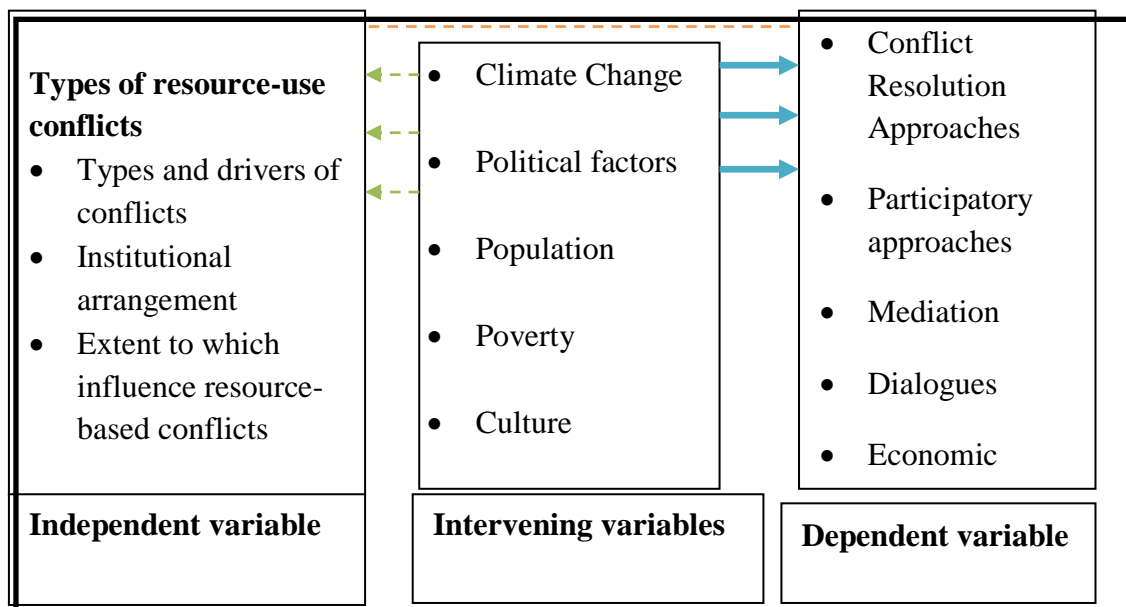


Figure 1.1: Conceptual framework showing relationships between variables

The first box entails independent variables which are: types of resource based conflicts, drivers of conflicts, institutional arrangement, extent to which they influence resource-based conflicts as concerns the use of community natural resources. The community awareness of resource-based conflicts influence conflict resolution approaches.

The second box shows intervening variables those which influence the community conflict resolution approaches. These include climate changes, political factors, poverty, population and culture. All these intervening variables influence the outcome of community natural resource base management.

The third box include dependent variables, the conflict resolution approaches which are; participatory approaches, mediation, dialogues and economic interventions, which influence the independent variable to enhance resource use conflicts and thus improving the livelihood of the conflicting communities. The study conceptualizes that, understanding of independent and intervening variables enables the enhancement of resource-based conflicts through improving conflict management mechanisms of the conflicting communities. Participatory approaches, mediation and dialogues empower communities in decision making processes. Economic interventions provides the community with alternative livelihood strategies and this enhances resource-based conflicts.

1.8 Definition of Terms Used in the Study

(i) Livelihood

Livelihoods are the means by which households obtain and maintain access to the resources necessary to ensure their immediate and long-term survival (USAID, 2005). These essential resources can be categorized into six: physical, natural, human, financial, social and political. Households use these assets to increase their ability to withstand shocks and to manage risks that threaten their well-being (USAID, 2005).

(ii) Environmental degradation

According to Miller (2006), environmental degradation refers to: The downward trend in the environmental resources such that their level of use in the human societies equally decreases at an increasing rate. Thus, environmental degradation refers to the process or a situation of depreciation in quantity and/or quality of the resources of the environment such as air, water resources, mineral resources, land, flora and fauna, as a result of harsh climatic factors, pollution and/or unsustainable exploitation by man.

(iii) Conflict

Conflict, in this context, is defined as a situation of struggle between and/or among opposing individuals, groups, communities or states over certain perceived desirable values arising

from differences in the action of any of the parties in the quest to realize or secure those values (Stagner, 1967).

(iv) Biodiversity

Biodiversity is the shortened form of two words "biological" and "diversity." It refers to all the variety of life that can be found on Earth (plants, animals, fungi and micro-organisms) as well as to the communities that they form and the habitats in which they live (Gaston, 2000).

(v) Household

A household consists of one or more people who live in the same dwelling and also share at meals or living accommodation, and may consist of a single family or some other grouping of people (Haviland, 2003).

(vi) Biodiversity conflicts

Conflicts between the conservation of biodiversity and other human activities (Fortier & Alphantery, 2001).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Review of related literature focused on types and drivers of resource based conflicts, examining the institutional arrangement for resource use and whether the institutions are responsible for resource based conflicts, and also establishing the impact of resource based conflicts on community livelihoods.

2.2 Types and Drivers of Resource Based Conflicts

Conflicts arise when conservation and environmental management policies are not holistically formulated in order to balance conservation with the needs of the people (Alida and Salome, 2009). Environmental conflicts therefore, are manifestations of the interrelatedness among the environmental components and they range from intrapersonal, inter-personal to inter-state conflicts (Alida and Salome, 2009). Every living organism is interconnected with nature from its micro to macro levels. Thus conflicts arise in local situations where there is little or no concern about the future of the environment and this challenges the local, regional, national and international security. According to Bob (2010), the key types of conflicts include; biodiversity conflicts which are between people and wildlife or any other aspect of biodiversity (White et al., 2009). They include conflicts relating to conservation of protected areas, patenting rights and indigenous knowledge linked to natural resources. In the Tana Delta area the key natural resources include water and land (pasture). Generally, conflicts result from the interaction between people and their environment, the relationships (gender) and issues that are associated with policies pertaining to wetland accessibility (Kok, 2009). Literature explains vividly to the effect that there are many types and drivers of resource use conflicts. It is within these confines therefore, that this study was devoted to identify the types and drivers of resource-based conflicts in order to understand the mitigation strategies.

Needs and Conflict Theories

The study was guided by the needs and conflict theories. According to Burton (1990), conflict theory states that, groups will engage in conflict if their needs (basic needs), recognition, participation, identity, and security are denied. On the other hand, the conflict theory seeks to scientifically explain the general contours of conflict in society i.e. how conflict starts and varies and the effects it brings. According to Collins, (1974) the central concerns of conflict theory are the unequal distribution of scarce resources and power (Collins, 1974). The theories explain that existence of various stakeholders will always compete for resources necessary for their livelihood. These theories guided the understanding of the impact of conflicts on livelihood of the communities in Tana Delta Sub County as occasioned by different factors like institutional arrangements and other drivers.

The theories also helped to understand the dynamics and evolvement of conflicts amongst the Tana Delta communities. Further, it analyzed the type of resource-based conflicts and their drivers. Equally; it explored the extent to which institutional arrangements influenced resource-based conflicts, with extended impacts on the livelihood of the communities in Tana Delta.

Historically, struggle over territory has been the most prevalent form of conflict. However, natural resources often underlie those territorial struggles. It is therefore, important to understand how these resources interwoven into the complex dynamics of conflict (Collier and Anke, 2005). Some scholars (Thomas and Homer, 1999) have proposed two theories to explain the role of natural resources in conflict. One points to scarcity (also called the neo-Malthusian view, named after the English demographer Thomas B Robert Malthus) and the other points to abundances. According to Miller (2007) these theories are demonstrating the cognitive or normative feasibility of policy rationales and prescriptions. Having delegated technical authority to expert bodies, actors create policy by enacting the recommendations of

scientific or technical epistemic communities (Haas, 1992) or by defaulting to the standards and regulations of global governance (Dingwerth and Pattberg, 2006; Miller, 2007).

2.3 Institutional Arrangements for resource-based management and Resources-based Conflicts

Institutions are defined as the "rules" in any kind of social structure, i.e. the laws, regulations and their enforcement; agreements and procedures (Uphoff, 1986). Organizations are a particular type of institutions and are composed of groups of people with a common objective (Geoffrey, 2006). Organizations can be formalized, such as "official" sector entities with operational objectives, their own budgets and professional staff. They can also be informal and less well described, such as "the public", the "customers" who pay for a water service, the socio-economic distinct groups in a village or town community (Uphoff, 1986).

Institutional arrangements are essentially the "rules" influencing human behavior including both formal and informal rules (Meyer and Rowan, 1977). The formal sector institutions are codified in constitutions, statutes, regulations, plans and policies (Nurse and Kabamba, 1999). The informal institutional arrangements are manifest in social expectations such as the rules governing relationship in a family, firm or community (Smajgl et al., 2003). These literature explanations created the expectation that there should exist various institutional arrangements for resource management, hence investigation in the study area was conducted to ascertain whether they exist or not.

The interaction of various actors with diverse interests in a particular resource may result in conflicts regardless of the institutional framework guiding natural resource use (Dean and Jeffrey, 1986). More often disagreements may be due to competition over scarce resources. Conflicts are expressed in a variety of ways such as confrontational, 'hidden transcripts' or 'the everyday forms of peasant resistance' (Scott, 1987) and social tension that is played out in gossip and witchcraft accusations. Confrontational conflict is often violent (Matondi, 2001). However, with the breakdown of traditional practices and the penetration of global

economic forces to the local level, such conflicts often come under the jurisdiction of states (Chevalier and Buckles, 2013). In peripheral regions, the states have often acted to assert authority for security reasons, national identity and nation-building against the interests of local resource users (Lindsay, 1998). The states are increasingly constrained in ability to act unilaterally, even in matters over which they may have constitutional jurisdiction, such as natural resources.

There are also a variety of ways in which the direct actions (or inactions) of policy-driven government agencies can contribute to resource conflicts (Lindsay, 1998). Uncoordinated planning and investment by sectoral agencies typically prepare land and resource plans, zoning strategies and maps that reflect their own objectives. The plans may be contradictory at the local level (Cernea, 1988). This is a particular problem in protected areas, where conservation-oriented managers can gain strong international and national political support for excluding other resource users. This is not only physical exclusion from the protected area, but also conceptual and ideological exclusion. More precisely, other interests have often been assumed to be secondary to the (“urgent, imperative and previously overlooked”) conservation objectives. Hence, the other non-conservation interests are ignored by the planners and managers of protected areas (Ayling and Kelly, 1997).

These case studies provide illustrations of how different government officials concentrate on their protected area conservation mandates, paying little attention to the legitimacy of other claimants ((Lindsay, 1998). Similar arguments apply where government agencies are charged with resource planning and investment in their own sectors for example in forestry, agriculture, mining and industrial development. Within the local community, various resource users are represented in different sectors and receive contradictory signals from different government agencies in dealing with the same resource base (Ayling and Kelly, 1997). Tyler, (1999) established that government officials are unaware of the conflicts and confusion caused by the contradictory regulations, procedures and plans of their various agencies.

Further, inadequate or obsolete data and a limited understanding of local resource uses are common problems in many developing countries (Tyler, 1999). Sometimes these problems are not recognized (that is, central-government officials think they understand the situation better than they actually do), but often decisions are made in full knowledge that the available data are inadequate. Surprisingly, even in cases where obvious data gaps are recognized, local consultation is seldom attempted as a way to improve understanding before devising or implementing a policy (Tyler, 1999). As a result, plans and programs may actually worsen the problems they are intended to address. For example, in Laos, government policy supporting community resource management was implemented in a rigid manner such that the village demarcations or boundary changes created new conflicts (Tungittiaplakorn, 1995).

Many countries have tenure systems for land and resources that either reflect historical inequities in wealth and political power or have been modified to encourage large-scale industrial agriculture and capital investment (Tyler, 1999). The interests of small-scale and marginalized farmers have been widely ignored. As a result, these people become involved in disputes over resources that they have traditionally used or managed, but to which they have no legal claim (Tyler, 1999). Such situations have frequently arisen as a result of government policies intended to promote industrial agriculture or forest plantations (Posgate, 1998).

A frequent result of major development projects supported explicitly by government policy is the displacement of resident populations. In many countries, there are also policies supporting (or even forcing) migration and resettlement away from more populous regions to the agricultural frontiers. In addition, a variety of regional development policies are intended to attract voluntary migration to target regions of large countries. However, both voluntary and involuntary resettlement can lead to deprivation and conflict, even when they are planned and supported financially by government or other project sponsors (Cernea, 1988). In this case resource conflicts arise at the resettlement site, when migrants establish farms or begin to use resources that had previously been available to local groups. In many cases, the

migrants have a different cultural background from that of the local residents. They share no common traditions or recognition of resource values and taboos with the local communities. The migrants usually do not share a common social framework to identify resource rights and processes with local people, hence they are not party to any established mechanisms for arbitration, benefit-sharing, and managing common property. They are also highly stressed, have little knowledge of the local resource base and with limited food or cash reserves to depend on (Cernea, 1988).

This situation calls for the external imposition of rules, regulations and orders, together with initial dialogue and monitoring programmes. Governments typically underestimate the impact and disruptions caused by resettlement and fail to recognize the conflicts that arise. For example, in the Vangvieng District of Laos, where repatriated refugees were settled without adequate attention to existing resource users, the ensuing conflict made it impossible to introduce pilot projects to improve management (Hirsch et al., 1997). The foregoing case studies illustrate the extent to which policies have been responsible for resource use conflicts. All these institutional arrangements have to be examined to establish the extent to which they have been responsible for resource-based conflicts, thereby underscoring the need for undertaking this study within the Tana Delta.

2.4 The Impacts of Resource-based Conflicts on Communities' Livelihoods

Whatever the causes of farmer-herdsmen conflicts are, it is evident that the conflicts have been of great negative effects to their livelihoods. These range from economic effects (such as loss of income/resources/yield) to physical (such as home/farm destruction, bodily injury or death of family members) and socio-psychological effects such as emotional exhaustion, job dissatisfaction as well as ecological impacts such as land degradation, salinization of water and habitat fragmentation (Solagberu, 2012).

In the foregoing discourse, it is clear that the interaction of various stakeholders in resource-based utilisation impacts on their livelihood strategies. Conflicts directly impact on people's

livelihoods through death, injury and displacement. Critical livelihood support assets, such as houses, educational infrastructure, land, crops and livestock may be destroyed or looted. The indirect impacts on people's livelihoods include decimation of basic services and governance structures, and loss of access to employment, markets, farms or traditional grazing pastures through limitations of people's movement (Solagberu, 2012).

One notable implication of environmental degradation on social existence is disruption of the socio-economic life of local human populations that are immediately dependent on natural resources for sustenance (Onuoha, 2008). By increasing the scarcity of basic necessities such as food and water resources, environmental degradation further increases the likelihood of violent conflicts (Onuoha, 2008). The Southern African Millennium Ecosystem Assessment suggests a bidirectional causal link between ecological stress and social conflict: conflict may cause environmental degradation but the latter may also trigger conflict (Biggs et al., 2004). The arguments from the authors have shown that institutional arrangements for resource use have effects on the livelihood of local communities. The findings of this study are therefore important in justifying how the institutional arrangements for resource management have affected the livelihoods of local communities in Tana Delta.

The impoundment and abstraction of freshwater in river systems for the purposes of power generation and agricultural irrigation has provided huge economic benefits at the global scale over the last 50 years. However, the environmental and social costs of large dams have been poorly accounted for in economic terms so that the wider long-term cost/benefit analysis to determine the true profitability of these schemes remains elusive, according to the World Commission on Dams (2000). For instance, the construction of large dams has significantly reduced the threat of devastation from extreme flood events; however, they often alter seasonal flooding that is critical to the maintenance of floodplain agriculture, fisheries, pasture, and forests, particularly downstream.

According to World Energy Council (1999), dams may cause diversion of water, may change the groundwater flows in the local area and can change the ecology of the area. The report ascertained that most dams have negative implications on rivers. Damming also result to a myriad of other associated environmental problems in riverine ecosystems. More specifically, salt water intrusion, which results from the movement of salt water into a non-salt water environment, such as a fresh water marsh, can arise from reduced water flow volume due to damming of the river. This intrusion may also occur as the result of a natural process like a storm surges from hurricanes or from human activities such as construction of navigation channels or oil field canals. Salt water intrusion can be detrimental to freshwater ecosystems because water with high salt concentrations can adversely affect biodiversity in the affected areas. For instance, when highly saline water enters a low-saline or non-saline area, most or all of the native biota will be destroyed. Because plant root systems are essential in holding the marsh soil together, loss of plant life eventually leads to rapid erosion (Bridget, 2007).

Saline water intrusion also leads to salinisation of non-saline resource areas. When freshwater resources become saline, they can no longer be used for irrigation or drinking. Saline water is also toxic to plants, and the high sodium levels of the water cause dry soils to become hard and compact, thereby and reducing their capillary ability to absorb water. Salinity is not dangerous to humans, but water becomes non-palatable for human consumption at about 250 mg/l. Groundwater extraction and irrigation can increase salt concentrations in water and soils in various ways. First, irrigation increases the salinity of soil water when evaporation removes water but leaves salt behind. This occurs when irrigation water contains some salt and the irrigation rates are not high enough to flush away the salt. Irrigation can also cause salinization by raising the water table and lifting saline groundwater near the surface into the plant root zone. This occurs when irrigation efficiency is poor such that a large fraction of irrigation water infiltrates into the soil, and groundwater flow is slow (Maasland, 1961). A similar problem occurs in some areas when trees are cut

down, reducing transpiration and increasing the rate at which water flushes through the vadose zone. According to Bridget (2007), the increased infiltration flushes high concentrations of salt to the water table and lifts the water table toward the surface.

Another type of salinization occurs in coastal areas, where excessive ground water pumping draws sea water into aquifers and contaminates freshwater wells. In coastal aquifers less dense fresh water floats on top of denser sea water. When this lens of fresh water is diminished by withdrawals, seawater rises up from below. Because the world populations are increasing particularly rapidly in coastal regions, seawater intrusion is a threat in many coastal aquifers (Bridget, 2007).

Pollutants, which contaminate water within coastal areas come from a wide range of sources. Microorganisms are typically found in human and animal waste materials. Some inorganic contaminants such as arsenic and radio nuclides such as uranium occur naturally in geologic deposits. However, many inorganic and most major organic pollutants are emitted from the industrial facilities, mining, and agricultural activities such as the application of fertilizers and pesticides. Sediments (soil particles) from erosion and activities such as excavation and construction also pollute rivers, lakes, and coastal waters. Availability of light is the primary constraint on photosynthesis in aquatic ecosystems, so adding sediments can severely affect productivity in these ecosystems by clouding the water (Bridget, 2007). Sedimentation also smothers fish and shellfish spawning grounds and degrades habitat by filling in rivers and streams (Melbourne, 2007).

Further, reports from the World Water Council (2007) show that many rivers around the globe have also been depleted by increasing water withdrawals. Some, such as the Colorado and Rio Grande, no longer reach the sea during much of the year because their flow levels have been reduced so drastically by the dams and water diversion. This overuse destroys estuaries at the river mouths, which are important habitats and breeding grounds for fish and birds. Such destructions affect community livelihoods from spawning conflicts over limited

available resources. According to the World Health Organization (2008), conflicts disrupt trade and other business activities, and divert resources to defense from other vital services and sectors. A report of the World Bank (2011), indicated that conflicts have dramatically reduced national outputs and government revenues, and increased external debts. Besides exerting extensive damage to the infrastructure of regions, violent conflicts have also discouraged private investment and pushed the economy towards stagnation. Foreign business houses have curtailed operations due to uncertain atmosphere, lack of infrastructure, and non-conducive and difficult work environments (Mac, 1991).

The foregoing case studies have clearly shown the diversity of resource use conflicts, their impacts on community livelihoods, as well as the negative influence and implications of institutional arrangements on resource-based conflicts. It is against this background that the present study endeavored to provide further understanding of resource use conflict and appropriate mitigation measures for enhanced community livelihood strategies within the Tana Delta.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses the study site, research design and the population of study, sample size and sampling procedure, and tools that were used in the collection of data so as to understand the type and drivers of resource based conflicts, determine the organizational arrangements for resource management and their influence on resource-based conflicts, and identify the effects of resource based conflicts on the livelihood strategies of local communities in Tana Delta.

3.2 Study Site

The study was conducted within the Tana Delta (Figure 3.1). Tana Delta (02°27'S 040°17'E) is the second most important estuarine and deltaic ecosystem within the Eastern Africa region, and Kenya's largest river deltaic ecosystem. It is also Kenya's 6th Ramsar Site with significant local communities of farmers, cattle herders, fishers and others dependent on it. These communities have lived in and around the delta for centuries. The Tana Delta covers an area of 163,600ha (404,000 acres) that is endowed with high biological diversity. The delta is a highly fragile, dynamic, extremely rich and important wetland ecosystem. The area floods during times of good rain and dries out during droughts. Tana River Delta is therefore, highly sensitive to the hydrological system of the area, which maintains its delicate natural balance and ecosystem processes (Muraguri, 2013).

Tana Delta is a unique ecosystem, characterized by a diverse range of habitats that support a rich diversity of both floral and faunal species (Ministry of Lands Kenya, 2012). The diverse mosaics of natural habitats that characterize the Tana Delta include savannah, semi-arid acacia bushlands, coastal forests, grasslands, beaches, sand spits, dunes, lakes, mangrove swamps, ocean waters as well as the permanent and seasonal fresh water pools and channels.

The Tana Delta is also one of the 3 sub-counties of Tana River County, with people predominantly from the Pokomo, Orma and Wardei ethnic communities.

The study was done in the Tana Delta ($02^{\circ}27'S$ $040^{\circ}17'E$) (Figure 3.1).

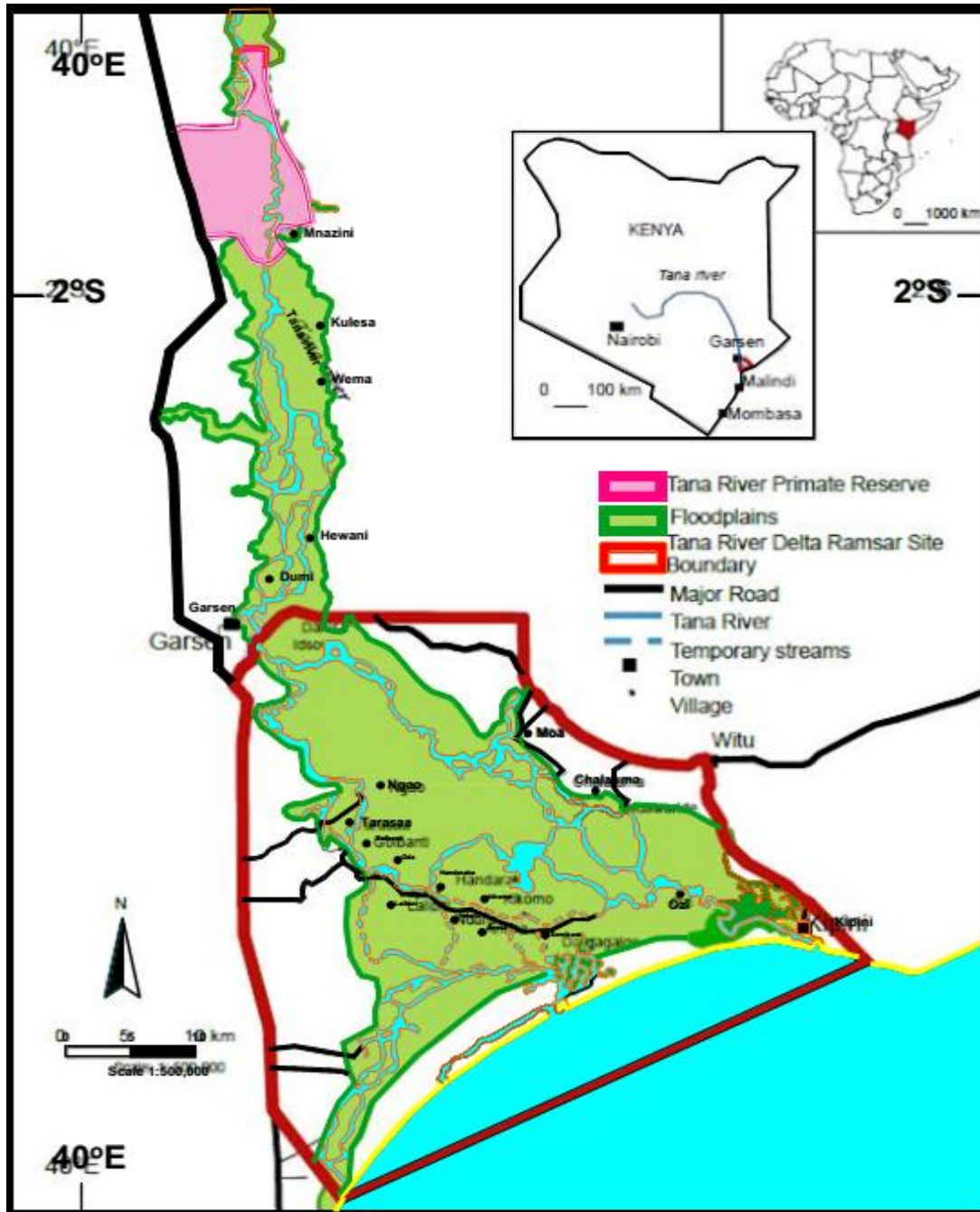


Figure 3.1: A map of the study area showing administrative boundaries

The most important source of water input to the Delta is the Tana River. The Tana is the longest river in Kenya, stretching approximately 850 km of length. The river basin covers approximately 127,000 km², with five hydropower dams that were constructed in its upper reaches. The average volume of water discharged to the Indian Ocean by the Tana River

varies between 2.7 and 10.2 billion cubic meters annually, depending on the amount of rainfall within its catchment are (Leauthaud et al., 2013). Mount Kenya and the Aberdare Ranges are the sources of the river, from where it runs for about 1000 km to drain into the Indian Ocean at Kipini within the Tana Delta (WARMA, 2009).

The Tana Delta area is characterized by low and unreliable rainfall. The rainfall pattern in the area is bimodal, with two rain seasons a year (WARMA, 2009). The main rains fall between April and June (contributing about 45% of annual rainfall for the area) and the short rains in November-December (producing about 25% of the annual rainfall). All the other months of the year contribute on average, less than 50 mm of the annual rainfall (WARMA, 2009). According to Wokabi et al., (1976), the soils of the Tana River Delta are generally classified as Fluvisols, the eutric and vertic-Fluvisols.

Livestock keeping is the main source of livelihood for the pastoral communities although sedentary communities also keep livestock to supplement other livelihood sources such as farming, fishing and bee keeping (Government of Kenya, 2012). Agriculture is also an important socio-economic activity for both pastoral and farmer communities within the Tana River Basin (Ecosystems Ltd, 1985), particularly the delta area. The delta is also important as a dry season fall back area for farming and grazing by the local people and other resource users from different regions of Kenya and beyond. The list of study villages (appendix 3) are clearly illustrated in the map (figure 3.1).

3.3 Research Design

The researcher used cross-sectional survey research design (Ross, 2002). This research design was appropriate in discovering and understanding the experiences, perspectives and thoughts of target groups (Mugenda, 2003). The technique also enabled the researcher to study things in their natural settings by attempting to make sense of, or interpret phenomena in terms of the meaning people bring to them (Ross, 2002). Further, it assisted the investigator to answer contemporary research questions of what, when, where and how much

(Dawson, 2002). Therefore, the cross-sectional research design was most suitable for this study since it enabled the researcher to examine objectives 1, 2 and 3 for the purpose of understanding resource-based conflicts that impacts on the livelihood of the communities in the Tana Delta.

Qualitative research methods were used to maximize the objectivity, replicability, and generalizability of findings as well as in prediction. Integral to this approach was the expectation that the researcher was able to set aside his experiences, perceptions, and biases to ensure objectivity in the conduct of the study and the conclusions that are drawn (Alise & Tiddlie, 2010). Quantitative methods were also used because they are deductive in nature, hence the inferences from statistical tests of hypotheses lead to general inferences about characteristics of the study population (Alise and Tiddlie, 2010). Quantitative methods were therefore handy in this study since they characterize an assumption of a single “truth” that exists, independent of human perception (Alise and Tiddlie, 2010).

The study also sought qualitative understanding of human behavior and the reasons that govern such behavior with regard to resource use conflicts in the study area. Asking broad questions and collecting word-type data that was analyzed in a way that brought out the major findings of the study (Bernard, 1994). The triangulation of various, quantitative and qualitative methods was therefore an indispensable approach for the accomplishment of this research.

The study used two sources of data namely primary and secondary data. Primary data was obtained from the development agencies (Government and NGOs), and the local communities. The following instruments were used for collecting primary data. The researcher used questionnaire for collecting data. The researcher relied on this instrument as it enabled the capturing of both qualitative and quantitative data. The tool was also relevant and cost effective, given the limited time for carrying out the study (Dawson, 2002). A questionnaire was used to capture information on the following parameters: loss of market, death/injury, displacement of the community, destruction of the crops/animals, loss of

biodiversity and diversion of water bodies. Furthermore, the tool was also important in the comprehension of the various variables ranging from independent variables, intervening variables and dependent variables clearly elaborated in the conceptual framework figure 1.1

3.4 Sample size and sampling procedure

The study targeted the population of residents of Tana Delta, which has approximately 18,790 households (Government of Kenya, 2009). The study also targeted existing institutions for data collection on resource use and conflicts that ensue.

The method below, by Ross (2002), was used to determine the study sample size.

$$n = \frac{N}{1 + N(e)^2}$$

Where: n= Sample size, N= Population size e= Level of Precision at 95% level of confidence and P=5%

From the calculation using the number of 18,790 (HHs) at of 95% confidence level, the study had a sample size of 300 households. Since the 22 villages have been established along ethnic basis, it was suitable to sample population according to the proportion of to the number of people in each village. This means the villages with larger population had more people than villages with small number of population. Therefore they were sampled randomly. Table 3.1 below shows the distribution of the number of population, percentage and sample size for each village based on the ethnic classification.

Table 3.1: Populations of study villages in Tana Delta and sample sizes

No.	Major Villages	No. of Households	Percentage	Sample Size
1	Shirikisho	790	4.2%	12
2	Idsowe	1061	5.6%	18
3	Dalu	619	3.3%	9
4	Galili	442	2.4%	6
5	Danisa	332	1.8%	5
6	Dumi	494	2.6%	7
7	Bilisa	1899	10.1%	30
8	Salama	911	4.8%	15
9	Mwina	1200	6.4%	22
10	Assa	327	1.7%	5
11	Ndera	1266	6.7%	23
12	Kipini	2165	11.5%	32
13	Ozi	249	1.3%	4
14	Kilelengwani	443	2.4%	6
15	Kipao	997	5.3%	17
16	Konemasa	774	4.1%	12
17	Chara	892	5.0%	15
18	Wachu Oda	1736	9.2%	27
19	Kurawa	1017	5.4%	17
20	Ngao	440	2.3%	6
21	Tarasaa	570	3.0%	9
22	Golbant	166	0.9%	3
Total		18,790	100	300

This study adopted the stratified random sampling design. This is a probabilistic sampling technique that selects representative units from a heterogeneous population (Ross, 2002). The community was stratified along occupation (farmers and pastoralist) ethnicity, gender and age. On the other hand, purposive sampling was used to select respondents from target institutions. Purposeful selection of 10 institutions (appendix 4a and 4b) was done based on those institutions operating in Tana Delta Sub-County. The selected institutions were chosen

since they work in the community and had the valuable information regarding the natural resource conflict.

Validity of the instruments was carried out by a panel of experts from the School of Graduate Studies, Pwani University. This was done to ensure measuring instruments were valid and resulted in correct measurement (Kothari, 2004).

Reliability test was done during piloting. Test retest method was used to ascertain reliability of the instruments. This method was best for assessing stable characteristics of individuals such as intelligence (Abbott and Bordens, 2011).

Pilot testing was done before data collection for 4 days using a sample of 20 respondents to test the instruments . The respondents were administered with the questionnaires and Focus Group Discussions were also held. Pilot testing helped to detect potential problems in research design and/or the instrumentation. It also ensured that the measurement instruments used in the study were reliable and valid measures of the parameters of interest. After a successful pilot testing, the researcher proceeded with data collection using the sampled population (Bhatta, 2012).

3.5 Data Collection procedures

The researcher collected data using the following methods; one on one interviews, Focus Group Discussions and Simple Observations. Closed and open ended questionnaire (appendix 1) were also used. The first part of the questionnaire focused on general information, the second part addressed the types and drivers of resource-based conflicts, the third part dealt with institutional arrangement for resource use, the fourth part of the questionnaire interrogated the extent to which institutions were responsible for resource use conflicts, and the last part sort to establish the effects of resource use conflicts on communities' livelihoods.

Questionnaire surveys were conducted to both 10 institutions (appendex 5a and 5b) and the communities in all 22 villages within the Tana Delta Sub County where a total of 300

households (HHs) were selected randomly. Selection of samples ensured representation of the communities in the study area where the number of HHs selected was proportional to the respective number of households in the study area. A research assistant was used to translate the questions in to respective tribal languages (Orma, Pokomo and Wardei) in cases where the respondents could not understand the English language.

Focus group discussions were conducted with the village leaders. Participant for household's interview were selected with the assistance of village elders and village leaders and covered the entire Tana Delta. There were 4 Focus groups discussion and each group had 6 participants, which were selected from (22) villages. The focus group were selected from these focus groups, based on awareness on history of resource use conflicts that impact on the livelihood of the communities in the area. Focus groups enabled the researcher to collect a large amount of information from different perspective at convenient time.

The researcher observed, and listened to an interaction or phenomena as it took place without asking the respondents. This was relevant in situations where accurate information was not to be elicited by questioning. This approach was effective in obtaining data during preliminary visits to gather information on the geo-physical setting, location of possible sampling sites, traditional community structures and identification of relevant institutions involved in natural resource management (Kothari, 2004). The Observations were however, participatory as the researcher lived with and participated in the daily activities of the people under investigation for a period of two months.

Secondary data was obtained from other research findings focusing on the impact of resource use conflicts on the livelihood of the communities in Tana Delta Sub County. Various documents including, scientific articles, conservation articles, conservation books, and internet and NTNU search engines as well as ISI website of science knowledge were used to gather information on the subject and related topics. Stewart (1993) argued that an investigator using secondary data is at an advantage compared to another researcher using

primary data because the secondary data already exists and can be evaluated prior to use. He further argued that the time spent evaluating potential secondary data sources is time well spent, as rejecting unsuitable data earlier can save much wasted time later. In light of this, earlier work done that provided the required information on the subject matter was reviewed.

3.6 Data Analysis

The data which was collected through this study was analyzed both qualitatively and quantitatively. In the case of qualitative data, all the information collected was coded into similar themes and used to answer the study objectives. Quotes from the qualitative information were used to triangulate quantitative data. In the case of quantitative data; they were analyzed using the Statistical Package of Social Science (SPSS). The information obtained as a product of the data analysis presented in the thesis with descriptive and interpretation were mainly based on analysis of the SPSS output.

The Chi-Square test was used to compare the parameters among the respondents to prove/disapprove the hypothesis during the study. ANOVA Test was also used to compare the results from households, key informants and existing organizations using P value at 95 % significant level to understand whether there were differences/similarities from their views to test whether accept/not accept hypotheses .

During data collection various methods were triangulated to examine the views on institutional arrangement for resources-based, to examine the extent to which institutional arrangements were responsible for resource use conflicts and to establish the effects of resource use conflicts on the communities' livelihood by use of both qualitative and quantitative methods.

3.7 Ethical Considerations

The researcher sought ethical review and obtained a clearance certificate from the panel of Ethical Review Committee (ERC) of Pwani University. All participants received and signed an informed consent form that clearly described their right to not participate and right to

withdraw, before their responses in the study can be recorded (Bhatta, 2012). All the information of the study was provided to the respondents (See appendix 5 for introduction letter). The researcher sought informed consent before administering the questionnaires. Only a competent individual of legal age was used as respondent for the study (See appendix 6 for consent form).

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The main objective of the study was to assess the impact of resource use conflicts on community livelihoods within the Tana Delta Sub County, Tana River County in Kenya. To achieve this objective, the findings of the study are presented and discussed within the four sections of this chapter. The first section introduces the demographic characteristics of the community. The second section address objective one on the type and drivers of resource based conflicts. The second section examines objective two, the institutional arrangements and their influence for resource management. While the final section examines objective three on the effects of resource based conflicts on the livelihood strategies of the communities.

4.2 Demographic Characteristics of Respondents

To put the study into perspective, it was prudent to examine the demographic characteristics of the respondents. Thus the study looked at the population dynamics, level of education, the level of income, sources of livelihood and the distance from the sources of livelihood for communities in the Tana Delta.

4.2.1 Population Dynamics in Tana Delta

According to Government of Kenya (2009) population census, the Tana River County has a population growth rate of 3%, which is slightly higher than the national average of 2.9% and hence, a justified reason for population increase in years to come. Prior to the significant population dynamics, anthropogenic resource-based activities in the area were in a state of balance with the ability of the ecosystem to provide goods and services. The balance between anthropogenic resource-based activities and ecosystem goods and services therefore, created a state of equilibrium between resource supply (ecosystem goods and services) and demand (anthropogenic resource-based activities), which catered for the livelihood of communities in

the Tana Delta. Figure 4.1 illustrates the population distribution for the previous years (before 2009 census) and the predicted population structure based on the inter-census population growth rate for 5 years after the 2009 census (2010-2014).

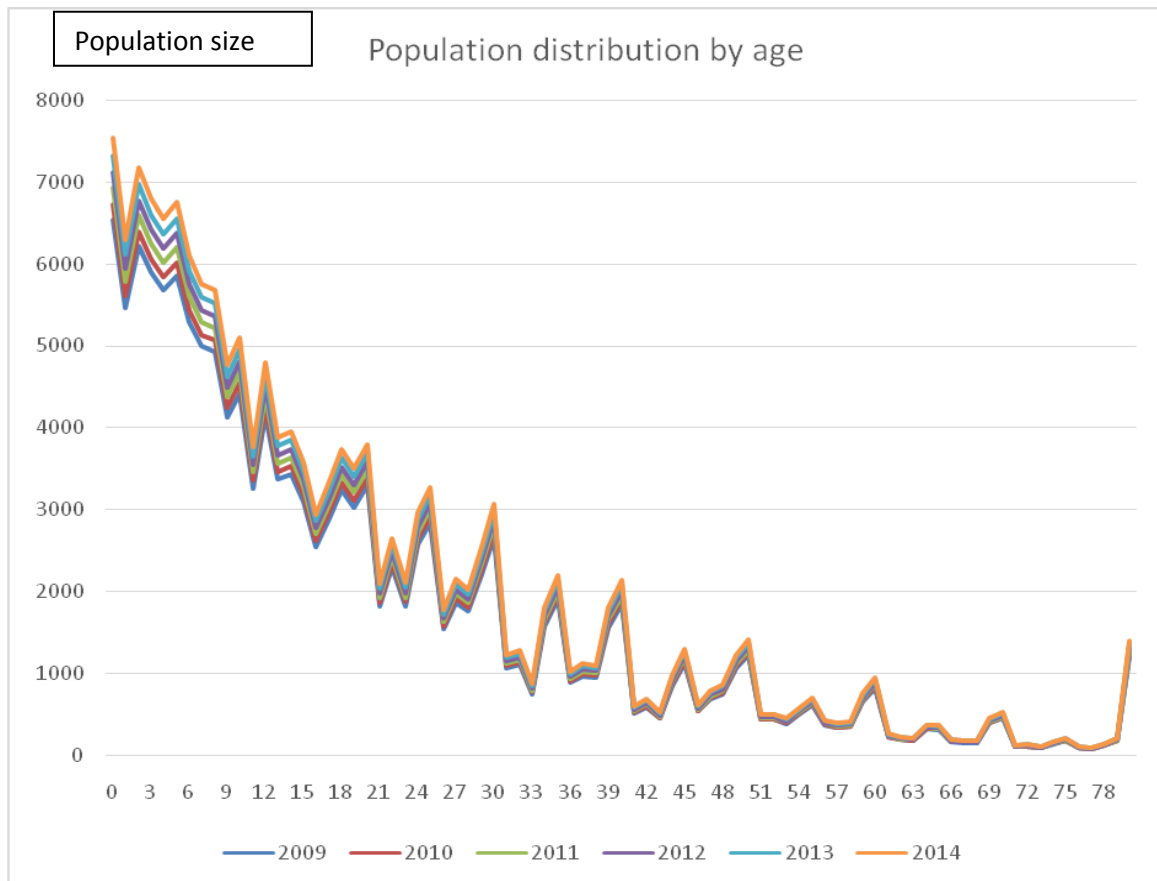


Figure 4.1: Population distribution in Tana Delta (Kenya bureau of statistics, 2009)

The population structure indicates that the number of youth (8-23 years old) is significantly higher compared to older people. This implies that within 5-10 years after the 2009 census more members of the population (youth) will need to find their livelihood sources from the resource base within the Tana Delta. Significant population dynamics and the subsequent demand, competition and diverse usage of common resources are causal factors linked to resource-based conflicts, which afflicts communities of the Tana Delta in recent times.

4.2.2 Educational Level

According to the study by Van and Voermans (2013) the area is characterized by high illiteracy level 70%, which makes it difficult to communicate with local people new ideas and therefore, difficult to give and receive information. To gain further understanding of the

demographic characteristics of communities in Tana Delta, the study examined the level of education for households. The results (Table 4.1) illustrate the level of education of the survey respondents from amongst community members.

Table 4.1: Educational levels of household respondents in Tana Delta (n = 300)

Responses	Frequency	Percent (%)
Not Gone To School	89	30
Primary	122	40
Secondary	59	20
University/College	30	10

The results indicate that 40% of the community members have primary level of education, 20% have reached secondary level while 10% have attained tertiary level of education. However, a substantial group (30%) of community members within the population have never attended school. Overall, about 70% of the survey respondents from the communities were composed of members who have primary level of education and those who have attended secondary school as well as university/college education. According to these results the literacy level of the community is low and this has implication on resource utilization and management within the Tana Delta. It is therefore not surprising that prior to this research most members of the area communities (about 26%) were found not aware of the organisations responsible for resource management within the Tana Delta (Figure 4.6).

4.2.3 Level of Income

The data provided by Government of Kenya (2009) indicates that Tana River County is one of the poorest in the country, ranking 43 out of 47 counties in the poverty index. Also the poverty rate is estimated at 75% hence, the level of income has significant impacts on resource management. The researcher thus analysed the level of income for the households (Figure 4.2).

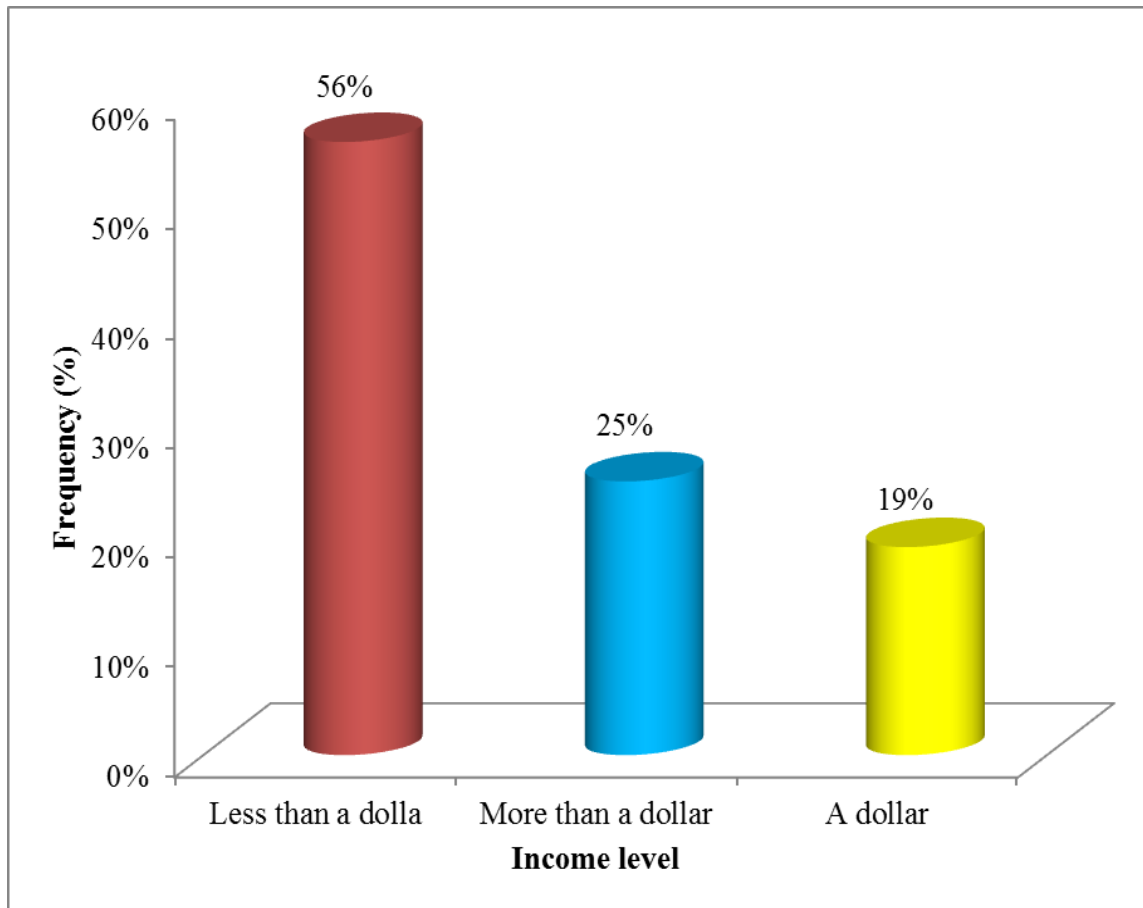


Figure 4.2: Levels of household income for respondents in Tana Delta

The results show that about 19% of community members have an income of one dollar per day, another 56% earn less than one dollar per day and only 25% of the sample respondents make more than one dollar a day. This implies that about 44% of community members in Tana Delta live within and above the poverty line (one dollar and above per day). This group comprises people who depend on additional sources of income to supplement peasant farming and pastoralist including formal employment, businesses, modern livestock husbandry and agriculture among other sources of livelihood. However, the results also demonstrate that more than a half (56%) of the community members in Tana Delta live below one dollar per day, hence depend on the natural resource-based for their livelihood strategies. This dependency and over-reliance on common resources of the Tana Delta by diverse communities, which are occasioned by the deplorable state of poverty, are major causal factors for the increased demand, competition and multiple uses of the natural capital, thereby leading to resource-based-conflicts.

4.2.4 Sources of Livelihood

This component of the study was interested in ascertaining the livelihood strategies of local communities within the Tana Delta area. The sample respondents were asked to state the main sources of their livelihood as provided for within the research questionnaire. Figure 4.3 illustrates the various sources of livelihood identified from amongst the communities living in Tana Delta.

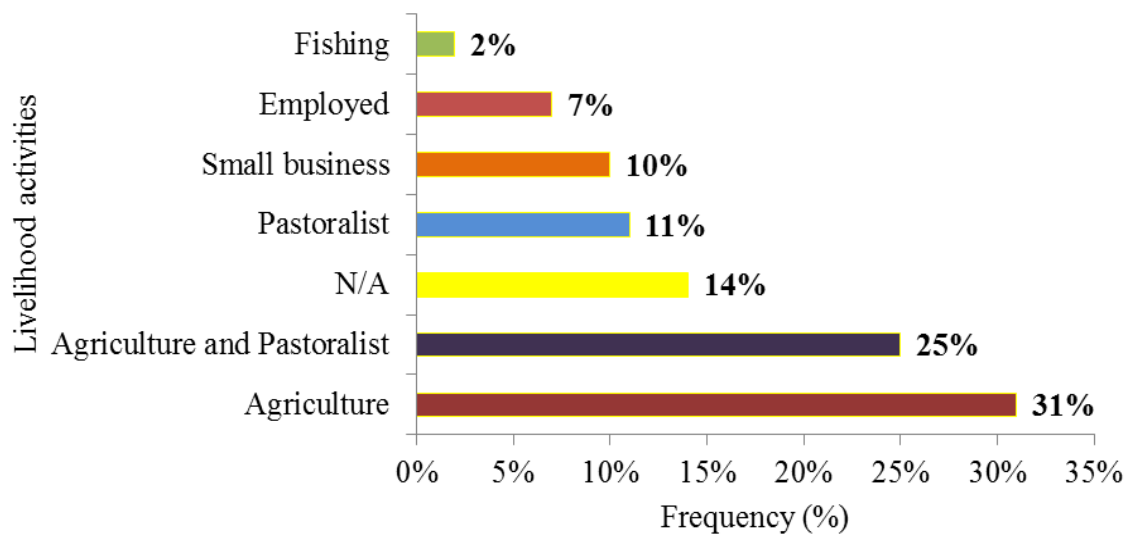


Figure 4.3: Sources of livelihoods for communities in Tana Delta

The study shows that most community members 31% rely on agriculture as their main source of livelihood, followed by 25% who depend on both farming and pastoralist sources. The results also established the existence of other important sources of livelihood, which are relied upon by different groups of the communities in Tana Delta including pastoralist (11%), small business entrepreneur (10%), employed (7%), a small group (2%) that rely on fishing along the river and 14% who were not aware. These findings implies that a significant size of community members (67%) in Tana Delta rely on agriculture and pastoralist together with a combination of both farming and pastoralist sources of livelihood. The results correspond with findings by Duvail and Hamerlynck (2012) who found that communities rely on the delta for livelihood sustenance, including agricultural production, fishing and livestock keeping for subsistence.

4.2.5 Distance from the Source of Livelihood

The survey households indicated the distances that they lived away from the river banks to enable the determination of community reliance on livelihood sources within the riverine ecosystem. The response of the sample households (Figure 4.4) illustrate that most of the community members (69%) live within a distance of 1 kilometre from the river.

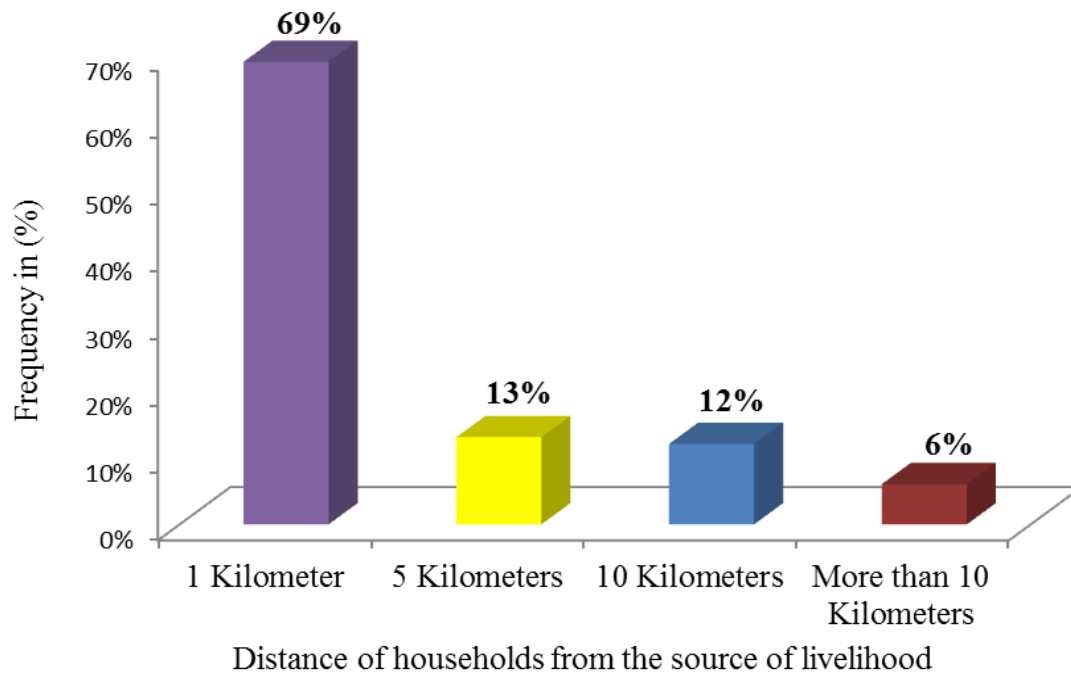


Figure 4.4: Distance from sources of livelihood for communities in Tana Delta

This is explained by the fact that most of the communities in Tana Delta depend on the river and flood plains as their main sources of livelihood. The results also indicates that some communities in Tana Delta have their settlements and resource-based activities located at varying distances from the river banks. Some community members (13%) live within 5km from the river, other members (12%) live 10 km away from the river while a small group (6%) live in settlements that are located more than 10km away from the river banks. The study by Strategic Environmental Assesment (2014) had similar findings which explain that the settlement patterns of communities in Tana Delta are random, but mostly concentrated close to the river, which is a reflection of communities' reliance on resources along the river and its floodplains (Ministry of Lands Kenya, 2012). However, several factors interplay together in determining the location of human settlements and activities within the Tana

Delta including security, river flooding, types of settlements, types of activities, seasonal variations, topography and elevation among other considerations (Mghanga, 2010). The farmer communities in Tana Delta depend on natural river flooding regimes for their traditional flood-recession agriculture while the pastoralist communities practise traditional flood-dependent grazing patterns (Pickmeier and Rutten, 2013). The study had similar finding by temper, 2012 which depicts that the traditional livelihood strategies of the local communities have undergone significant modification over historical times, which were necessitated by demands for community resilience to both natural and human-induced environmental changes. The results relate with the findings by Malalo (2013) which elaborate that the communities living in Tana Delta have therefore, adjusted their traditional livelihood strategies by practising both farming and pastoralist lifestyles. These livelihood adjustments have been occasioned by the need to cope with both natural and anthropogenic environmental dynamics namely; changing river flooding regimes, cultural assimilation, community integration and technology adoption (Mghanga, 2010) among other factors.

4.3 Types and drivers of Resource-based Conflicts in the Tana Delta

The first objective of this study was to find out the types and drivers of resource based conflicts in Tana Delta. To achieve this objective, it was found necessary to gauge the opinions of community members regarding the types and drivers of resource-based conflicts that exist in the area.

4.3.1 Types of Resource based conflict in Tana Delta

The following types of resource-based conflicts were identified and examined; biodiversity conflicts, land conflicts, water conflicts and ethnic conflicts. This research hypothesised that there were no types and drivers of resource-based conflicts in the Tana Delta. The opinions of household respondents regarding the identified types of resource-based conflicts were analyzed using Chi-square to compare the mean variation between responses (Figure 4.5) and hence, determine prominence and significance of the different types of conflicts.

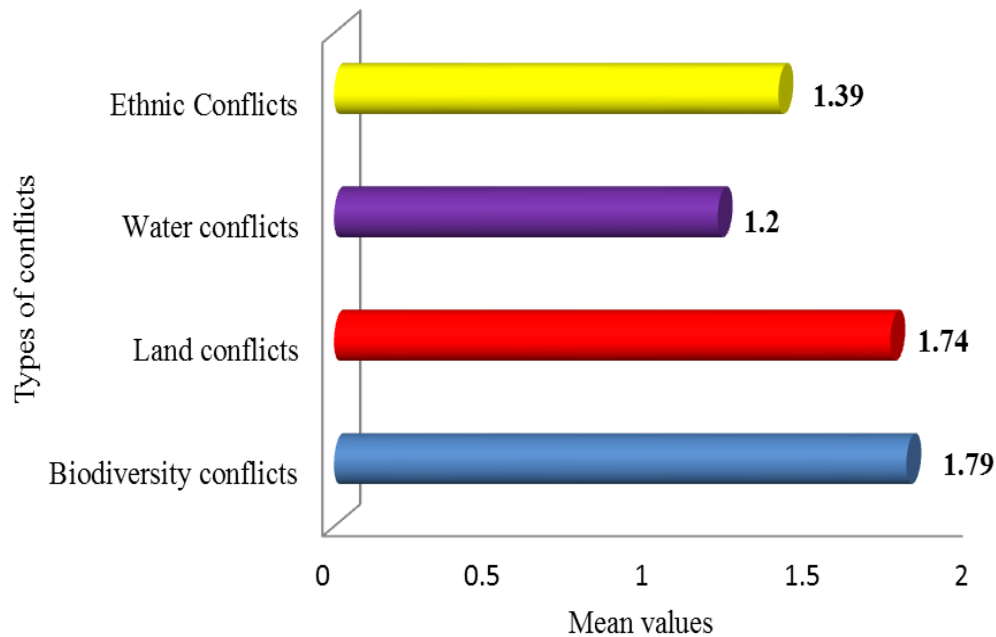


Figure 4.5: Mean variation for types of resource-based conflicts in Tana Delta

The results indicate that biodiversity type of conflicts have the highest mean (1.79) followed by land conflicts (1.74), ethnic conflicts (1.39) and water conflicts (1.20) respectively. These results therefore, imply the existence of diverse types resource-based conflicts in Tana Delta. Therefore, in relation to the first research hypothesis, these results confirmed that there exist different types of resource-based conflicts within the area. As argued by Odhengo et al. (2012) conflicts are caused because of land and water issues, as the communities use the same water and land for their livelihoods and there are no clear boundaries between the settlement areas of different communities. Further, the results agree with the findings by Duvail et al. (2013) that the communities use the dynamic flood system of the river to cultivate, fish, graze and gather resources. The production systems are therefore, mostly traditional and are operated mainly for subsistence. These findings are also similar with the results of Martin (2007), which stated that communities fight for the land (pasture and water) right, though Nunow (2011) further observed that the government has also planned for both national economic development and conservation projects, thereby limiting the resources in the area.

The findings by Odhengo et al. (ibid) support the results of this study that biodiversity conflicts are the most prominent and significant types of resource-based conflicts, which characterises the Tana Delta. Similarly, White et al. (2009) noted that biodiversity types of conflicts emanate from interactions between people and wildlife, and any other component of biodiversity. A detailed probe of the respondents found that biodiversity conflicts include human-wildlife conflicts, which results to injuries and losses of human lives, destruction of crops, livestock and other properties, displacement of people for creation of protected areas and loss of resource use rights among other forms.

Through qualitative interviews with the households, on the various types of conflict namely: biodiversity, land, water and ethnic related conflicts, it was found that the land conflicts arise due to diverse demands, competition and utilisation of common areas. Divergent interests and competition over common land within the Tana Delta includes pastoralist, farming, wildlife conservation, large scale agriculture and other development projects.

The ethnic conflicts in Tana Delta emanates from competing traditional resource-based activities of the different ethnic communities, particularly pastoralists and farmers, who depends on the area's common land and water resources. These types of resource-based conflicts manifest in different forms including confrontation, hatred, tension, gossip and accusations (Scott, 1987), which pits the divergent interests of different ethnic communities against each another.

Similar findings by Goldsmith (2012) and Van and Voermans (2013) found out that land and water conflicts within Tana Delta emanates from divergent stakeholders' interests, demands, competition and utilisation of water for resource-based activities including pastoralist and farming, conservation and environmental protection, large scale agriculture and other development projects. Due to the existence of diverse types of conflicts local communities have traded accusations (Mwakera, 2012) and counter accusations over resource-based

rights, access and utilisation among other resource-based aspects of the Delta (Mwakera, 2012).

4.3.2 Drivers of Resource-based Conflicts in Tana Delta

The study examined the drivers of resources based conflict in the Tana delta as provided for in the conceptual framework. Different drivers of resource-based conflicts were interrogated as scheduled in the survey questionnaire namely: scarcity of resources; political incitement; competition for resources; climate change; ethnic rivalry; human wildlife conflicts; institutional arrangements and gender related conflicts. The study postulated that there were no drivers for resource-based conflicts in Tana Delta. The opinions of survey from households were cross-examined in order to understand the relative importance, significance and the influence of different drivers for resource-based conflicts. A comparison of mean household responses was therefore conducted using Chi-square tests in order to determine the differential importance and significance of the respective drivers of resource-based conflicts (Table 4.2).

Table 4.2: Mean variation for drivers of resource-based conflicts (n = 300)

Drivers of conflicts	Mean	Remarks
Scarcity of resources	1.69	Most Significant Relationship
Political incitement	1.61	More Significant Relationship
Competition for resources	1.59	More Significant Relationship
Climate change	1.57	More Significant Relationship
Ethnic rivalry	1.46	Significant Relationship
Human wildlife conflicts	1.15	Less Significant Relationship
Organisational arrangements	1.12	Less Significant Relationship
Gender related conflicts	1.02	Least Significant Relationship

The results indicate that scarcity of resources have the highest mean (1.69) followed by political incitement (1.61), competition for resources (1.59), climate change (1.57), ethnic rivalry (1.46), human wildlife conflicts (1.15), organisational arrangements (1.12) and gender

related conflicts (1.02) in descending order. The results show that there exist diverse drivers for the resource-based conflicts in Tana Delta. These results imply that the importance and significance of the drivers for resource-based conflicts vary in ascending order from gender related conflicts (lowest), through organisational arrangements, human wildlife conflicts, ethnic rivalry, climate changes, competition for resources, and political incitements to scarcity of resources (highest). The results justify further that scarcity of resources are not only the most important and significant drivers, but also stimulants of resource-based conflicts within the Tana Delta. The study results corroborate with the findings of Goldsmith (2012), which established positive correlations between the onset of dry seasons and increased incidents of resource-based conflicts within the Delta. The results also agree with the findings of previous studies by Pickmeier (2012), which suggested that climate changes, drying of the river and subsequent increase in aridity have led to deterioration of land carrying capacity, and scarcity of water and pasture, thereby escalating resource-based conflicts within the Delta. Further, the results of this study correspond to the findings of Goldsmith (2012), which acknowledge that the increase of conflict within the area was as a result of increased resource-based activities and development projects.

4.4 Institutional Arrangements for Resource Management and resource based conflicts in Tana Delta

The second objective of this study was to examine the institutional arrangement for resource management and the extent to which they influence resource based conflicts within the Tana Delta. To achieve this objective, the study looked at different parameters of institutional arrangements for resource management and their influence to resource based conflicts within the Tana Delta thus; existence of organisations for resource management and the types of organisations, community rules for resource management and how customs and mores could lead to conflicts, establishment of the organisations for resource management, levels of community benefits from organisations, levels of community inclusion in implementation of organisational mandates, existing types of land tenure systems, land allocation, recognition

of traditional resource values and taboos by organisations and displacement as a result of organisations for resource management, Relationships between organisational arrangements and resource-based conflicts; Community inclusion and participation in resource mapping and; Community involvement in strategic management of natural resources within the Delta.

In evaluating the institutional arrangements for resource management and their influence in resource based conflicts in Tana Delta. The study also tested the hypothesis that there were no organizational arrangements for resource management and did not influence resource based conflicts in the area .

4.4.1 Existence of Organisations for Resource Management in the Delta

The researcher asked households if there existed organisations for management of resources within the delta and the opinions of the respondents (Figure 4.6)

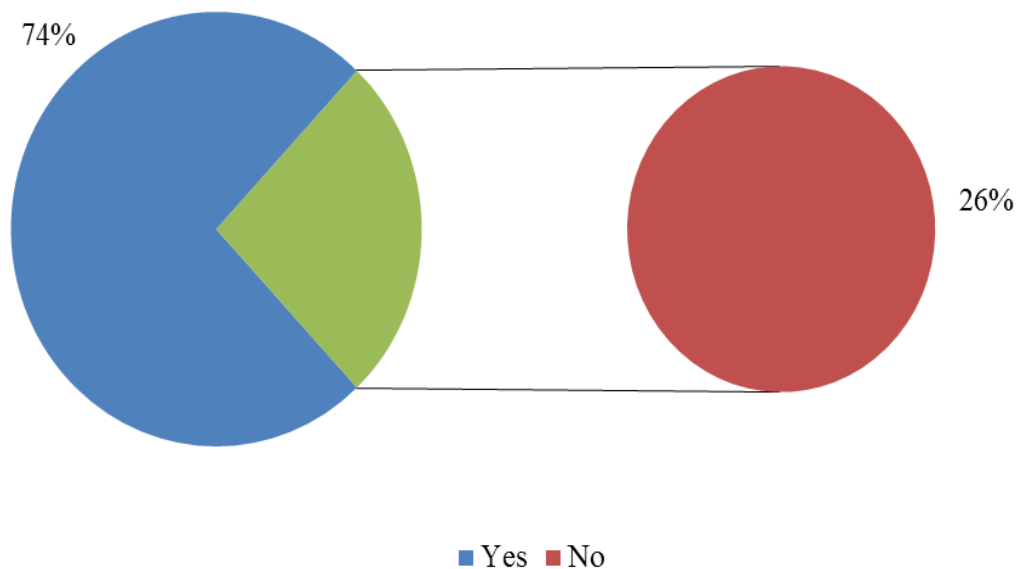


Figure 4.6: Households views on existence of organisations for resource management

The results indicate that 74% of household respondents admitted there exists organisational arrangements for resource management, while 26% of respondents believed there were no organisations for resource management in the Tana Delta. This acceptance that there exists organisational arrangements by 74% of the survey households is not peculiar since all the

respondents live within the same geographical area under similar prevailing environmental and social-economical conditions. The study therefore, expected similar opinions from the household respondents regarding the existence of institutional arrangements for resource management within the Tana Delta.

The researcher further conducted focus group discussions with local community leaders and key informant interviews with employees of organisations, which operate within the Tana Delta to elucidate whether there exists organisations for resource management. The results of focus group discussions and key informant interviews (Table 4.3).

Table 4.3: FGs and KIs views on existing organisations for resource management in Tana Delta(n = 14)

Groups (Respondent)	Response (%)		
	Yes	No	Total (%)
Focus Groups	100	0	100
Key Informants	90	10	100

The results show that 100% of focus groups agreed there exists organisations arrangement for resource management in the Delta. This 100% affirmation is attributable to the regular interactions between local community leaders and the organisations operating in the area through participatory workshops, seminars, campaigns, advocacy and other activities. The results also illustrate that 90% of the key informants accepted there exists organisations, while 10% of the key informants thought there were no organisations for resource management in the Tana Delta. The study found further, that the key informants who believed there exists organisations for resource management (90%) are governmental organisations, while those who denied (10%) are non-governmental organisations operating within the Delta area. Comparing the results of the respondents; households figure 4.6, key informants and the organizations Table 4.3, the results show that there were no different from the responses, these results therefore, imply that there exist organizations for resource

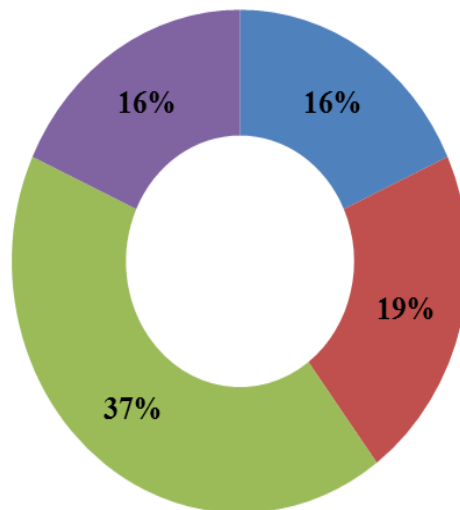
management, contrary to the research hypothesis. In line with the findings of this study, Bucx et al. (2014) asserts that Tana Delta contains ample valuable resources, which should be managed and exploited sustainably. However, the institutional arrangements for resource management within Tana Delta are dominated by governmental and non-governmental organisations.

To test the hypothesis whether there are existing organizations for resource management or not, the study also compared the results from the respondents by using ANOVA test. The opinions' of households, key informants and focus groups were subjected to One-way ANOVA. It was found that the p-value (0.134) of the test was greater than (0.05) for such a test at 95 % confidence level. These results imply that there are no significant differences between the responses of survey households, community leaders, and employees of both government organisations and NGOs. The study therefore demonstrates that the opinions of the respondents (Key informants and organizations) are similar, thus providing further confirmation that there exists organisational arrangements for resource management in the Tana Delta. These results also imply that there is high awareness of the organisations for resource management amongst community households, local leaders and organisations within the Tana Delta. The confirmation from respondents that exist organizations for resource management (Key informants and organizations) is not different with the finding of Temper (2012) which explains that there is high level of stakeholders awareness which presents favourable opportunities and advantages for the implementation of community-based natural resource management, nature-based enterprises and sustainable development programmes, which will ensure the effective resolution and management of resource-based conflicts in the Tana Delta.

4.4.2 Types of Organisations for Resource Management in Tana Delta

The researcher sought to understand the existing organisations further by asking households to identify the different types of organisations that are responsible for management of

resources in Tana Delta. The results (Figure 4.7) illustrate the responses of survey households pertaining to the types of organisations.



■ Community ■ GOs and NGOs ■ GOs, NGOs and Community ■ Not Aware (N/A)

Figure 4.7: Types of organisations for resource management in Tana Delta

About 37 % of the respondents confirmed existence of the following types of organisations namely: Governmental organisations (GOs), Non governmental organizations (NGOs) and Community Based Organisations (CBOs), 16 % of the sample respondents admitted that there were also organisations, which were established by the communities in Tana Delta. Another 19% of the respondents believed there were organisations for resource management that were established by both Governmental and Non-Governmental organisations while 28% of household respondents thought they were not aware (N/A) of any organisations for resource management within the area. These results can be further explained by the interplay between existing demographic characteristics among other dynamic scenarios within the Tana Delta. First, low literacy and subsequent ignorance of the communities may have contributed to the low awareness of institutional arrangements amongst households. Second, inadequate publicity, awareness and promotion of the resource management organisations' mandates could have lead to low community appreciation. Third, inadequate benefits from resource management organisations, loss of resource rights and abject poverty existing within the area

may have lead to low community recognition and appreciation towards the organisations for resource management. Fourth, negative attitudes of the local people resulting from perceived and actual impacts of organisations' existence including the loss of resource rights and displacemet may have lead to oposition, defiance and consequential low opinin by local communities towards the organisations for resource management in the area.

The list of organisations for resource management, which were identified by the survey households within the Tana Delta was compiled as per the types, institutions guiding it and how they are guiding in the management of the resources as shown in Table 4.4.

Table 4.4: Organizations responsible for management of resources in Tana Delta

Type of organization	Policies guiding it	How the they are guiding in the management of the resources
NGOS		
Kenya Red Cross Society	Cap 256 of Kenya to provide humanitarian assistance	Reduce human suffering
Team and Team International	International organization WASH (water supply, sanitation and hygiene promotion) water shortage and waterborne disease in the marginalized areas of the world.	Provision of clean water and protect communities from diseases
Aphia plus	International organization which supports an integrated service delivery model to improve the health of Kenyans across the country.	Reduce human suffering from diseases and other illness
World Vision	For Children For Change For Life	Promote wellbeing of the children.
Young Women Christian Association	Is a movement of women working for social and	Promote women empowerment.

	economic change around the world. It advocates for young women's leadership, peace, justice, human rights and sustainable development, both on a grassroots and global scale	
Catholic Relief Services	Is the international humanitarian agency of the Catholic community in the United States	Promote education and livelihood support.
Water NGOs		
Wetlands international	Convention on Wetlands, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources	Conservation and sustainable development.
Tana water services company	Water Act 2002 Mandated as per its license granted by the WASREB. sustainable access to quality water and enhanced sewerage services to all residents within the area of its jurisdiction	Clean water provision services to the communities.
Biodiversity NGOs		
Nature Kenya	Nature Kenya mission is to "connect nature and people" to take action for	Conservation

	biodiversity conservation	
Agriculture NGOs		
Agricultural Cooperatives	Chapter 490 of the Kenya Boost agricultural activities Provision of financial and assets support through loans for agricultural activities	Ensure food security
FAO	The Rome Declaration on Nutrition enshrines the right of everyone to have access to safe, sufficient and nutritious food.	The eradication of hunger, food insecurity and malnutrition
Germany Agro-Action	It provides aid from a single source: from fast disaster relief and reconstruction to long-term development cooperation projects with local partner organisations.	Reduce human suffering
Action Aid Kenya	Is a global movement of people working together to further human rights and defeat poverty for all	Reduce human suffering
Medicines San-Frontiers	It is guided by Chantity principle and la Mancha agreement, its governance is addressed in section 2 of la Mancha agreement for providing charity to vulnerable communities	Provide livelihood support
Development NGOs		
United Nations Development Programmes	Is the United Nations' global development network.	Promote sustainable development

(UNDP)	UNDP advocates for change and connects countries to knowledge, experience and resources to help people build a better life.	
United states agency for international development (USAID)	Foreign Assistance Act of 1961-2011 Creating markets for the United States by reducing poverty and increasing production in developing countries.	Promote sustainable development.
Government Department		
NEMA	EMCA 1999 ACT; Coordinating the various environmental management activities being undertaken by the lead agencies.	Promote conservation and management of resources and sustainable development
County department of Environment	Constitution of 2010 of Kenya Ensure sustainable exploitation, utilisation, management and conservation of the environment and natural resources	Sustainable utilization, conservation and management
Water departments		
Water resources management authority (WRMA)	The Authority is mandated through the Water Act 2002 Sec 8(i) to manage the water resources, which includes the regulation of water use to ensure fair and equitable allocation and	Water conservation

	apportionment of the available water resources.	
National Irrigation Board	Is a state corporation through the Irrigation Act, Cap 347 of the Laws of Kenya. The objective of this Act is “to provide for the development, control and improvement of irrigation schemes	Ensure food security and sustainable development
Kenya Marine and Fisheries Research Institute	(Cap 250), KMFRI is mandated to:- Undertake research in marine and freshwater fisheries, aquaculture, environmental and ecological studies, and marine research including chemical and physical oceanography.	Promote conservation of marine resources and ensure protection of biodiversity from adverse effects of chemical and physical oceanography.
Government departments on forests		
Kenya Forest Service (KFS)	(Forest act, 2005). To enhance development, conservation and management of Kenya’s forest resources base in all public forests, and assist County Governments to develop and manage forest resources on community and private lands.	Promote conservation and sustainable development
Government departments on wildlife resources		
Kenya Wildlife Service	The Wildlife Conservation and Management Act (2013). This Act provides	Promote conservation and awareness creation

	for protection, conservation and management of wildlife.	of the importance of wildlife resources
Government department on agriculture		
Department of Agriculture	Act (Cap. 318) of Agricultural policy in Kenya revolves around the main goals of increasing productivity and income growth.	Provisions services sustainable agriculture
Kenya Agricultural Research institution (KARI)	Kenya agriculture research bill 2012; Promote, streamline, coordinate and regulate research in crops, livestock, marine and fisheries, genetic resources and biotechnology in Kenya.	Sustainable agriculture
Government department on development		
TARDA	CHAPTER 443 1973-1985 An Act of Parliament to provide for the establishment of an authority to advise on the institution and co-ordination of development projects in the area of the Tana River and Athi River Basins	Promotes development projects
Government department on fisheries		
Department of fisheries	ACT CHAPTER 378 Revised Edition 2012 [1991] General Licensing Provisions Fishing and entry into Kenya fishery waters by foreign fishing vessels	Conservation and sustainable harvesting of marine resources

Government department on drought management		
National drought management authority (NDMA)	The National Drought Management Authority Bill, 2013-15 Coordinate drought response initiatives being undertaken by other bodies, institutions and agencies	Reduce human suffering from adverse effects of drought
Community based organizations		
Maridhiano	Social economic activities to improve the livelihood of the communities.	Livelihood support
Kipini Integrated Community Enterprises/ Ngao Integrated Community Enterprises	An integrated project to access clean energy which support livelihood of the communities.	Sustainable development
Tana River Life Foundation	The Foundation was set up to assist the marginalized through education and acquisition of livelihood skills.	Improve the livelihood of the marginalized communities
Ozi Site Support Group	Conservation	Conservation
Kipini Community Conservation and Management Forum	Mangroves conservation	Conservation
Ndera Community Conservation	To ensure the communities attain education, health, water, jobs, food security, infrastructure	Sustainable development and conservation
Wema Farmers Association Tana Agricultural Forum/Hewani farmers	Farmers and pastoralists in Tana river delta working together to create wealth The main intervention	Sustainable agriculture

cooperation	strategy in the two villages was through agricultural training, and the establishment of the Farmers Field School (FFS)	
Community (Traditional arrangements)		
Gasa, Matadeta and Oodesh	Rules established by their ancestors passed from one generations to other through folks, myths for management of resources example Kaya, wildlife management, fish conservation and land use plan, demarcation and allocations	Conservations, management and sustainable use

The Table 4.4 above contains institutional organizations that are interrelated in the management of natural resources in Tana Delta. Their relationships and contradictions of these organizations were further illustrated in the organogram (Figure 4.8).

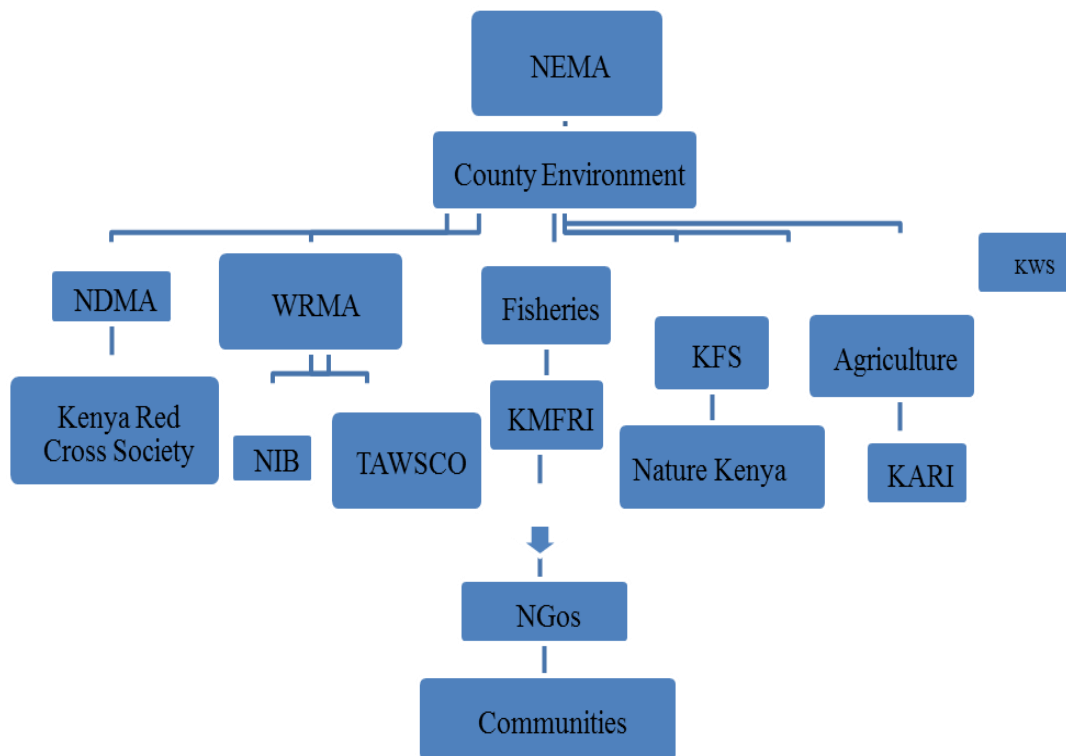


Figure 4.8 : Organogram of the existing organizations in Tana Delta

The organogram (Figure 4.) presents a summary of five levels/segments for the existing resource-based organizations. These levels/segments are based on different views, perception and characteristic of resource management in the study area. Level 1 illustrates that National Environmental Management Authority is the lead agency among the existing organizations for resource management in Tana Delta. This argument relates to the principles of national Environmental Management and Coordination Act (EMCA) of 1999, which explains that the National Environmental Management Authority (NEMA) coordinates all the environmental management activities that are undertaken by lead agencies. Level two, County Department of Environment that is charged with management responsibility for all major components of the environment (Forest, wildlife, water resources etc.). Level three comprises the resource management institutions operating within various components of the environment (WRMA, Agriculture, Kenya Wildlife Service, Kenya Forest Service, and the National Drought

Management Authority). Although institutions within this level have different mandates, they tend to override each other and result to difficulties during implementation of their objectives. These mandate overlaps and contradictions have created confusion between the organizations and among the communities during implementation of resource management activities. Level four is composed of organizations characterised by diverse policies. The main objectives of these organizations are; humanitarian assistance, provision of water and sanitation services, livelihood support, education support, conservation, food security, development, financial and human resources support. Most of these institutions can also operate under the mandates of those in levels 4, 3, 2, or even 1 and therefore, cause confusion among the communities and stakeholders. In cases where the communities benefit there can be no objections to these institutions. However, when the local people become suspicious they can easily change their attitude towards these organisation. The last level of the organogram shows organisations that are lower in resource management authority. They include Community Based Organisations (CBOs) and traditional authorities (Gasa, Matadeta and Oodesh) of the local communities in Tana Delta. It was observed that there are few CBOs mostly established within the urban centres. This implies inadequacy of community organisational arrangements for resources management within the area. These observations relate with studies by Martin, (2007) who observed that natural resources in the Tana Delta were managed by the traditional authorities, the community councils' of elders namely; Gasa, Matadeta and Oodesh for the Pokomo, Orma and Wardei communities respectively. The Gasa of leadership has been in existence for ages within the Pokomo community. This community council of elders is responsible for the formulation of traditional policies, rules and regulations governing the management of resources, and making important decisions that affects the community (Martin, 2007). Similarly, the Orma pastoralists have an equivalent traditional leadership institution known as the Matadeta. However, the Matadeta traditional organisational arrangement is not very active in conservation issues, perhaps due to the nomadic lifestyle of the Orma community. These traditional organisations made laws, rules

and regulations, which were essential for the survival of respective communities (Kinyanjui, 2008). The Wardei pastoralists also have a council of elders known as the Oodesh, which is not active in resource management. Contrary to the Orma, the Wardei claimed they have never had any resource management agreements with the Pokomo community in Tana Delta, probably due to last coming and late settlement by the Wardei in the area (Martin, 2012). The early arrival and first settlement by the Pokomo farmers in Tana Delta was later followed by the Orma pastoralist, which necessitated the agreements on common rules for resource management between the communities (Kinyanjui, 2008). However, agreements over natural resource use between Orma and Pokomo have become less in use over time due to the erosion of community elder's authority, which has in turn hampered the effective management of the resource base in Tana delta (Ensminger, 1992).

4.4.3 Relationships of Communities' and NGOs' Rules for Resource Management

The study sought better understanding of the existing relationships between traditional and NGOs' rules and regulations for resource management. The researcher asked the survey households to explain how the communities' rules and regulations for resource management relate to those of non-governmental organisations' (NGOs'). The responses of survey households (Figure 4.9) show that 63% of the survey respondents believed the rules and regulations for resource management that are used by local communities in Tana Delta have relationships with those of the Nongovernmental Organizations (NGOs) as pertains to the conservation, sustainable use and management of natural resources.

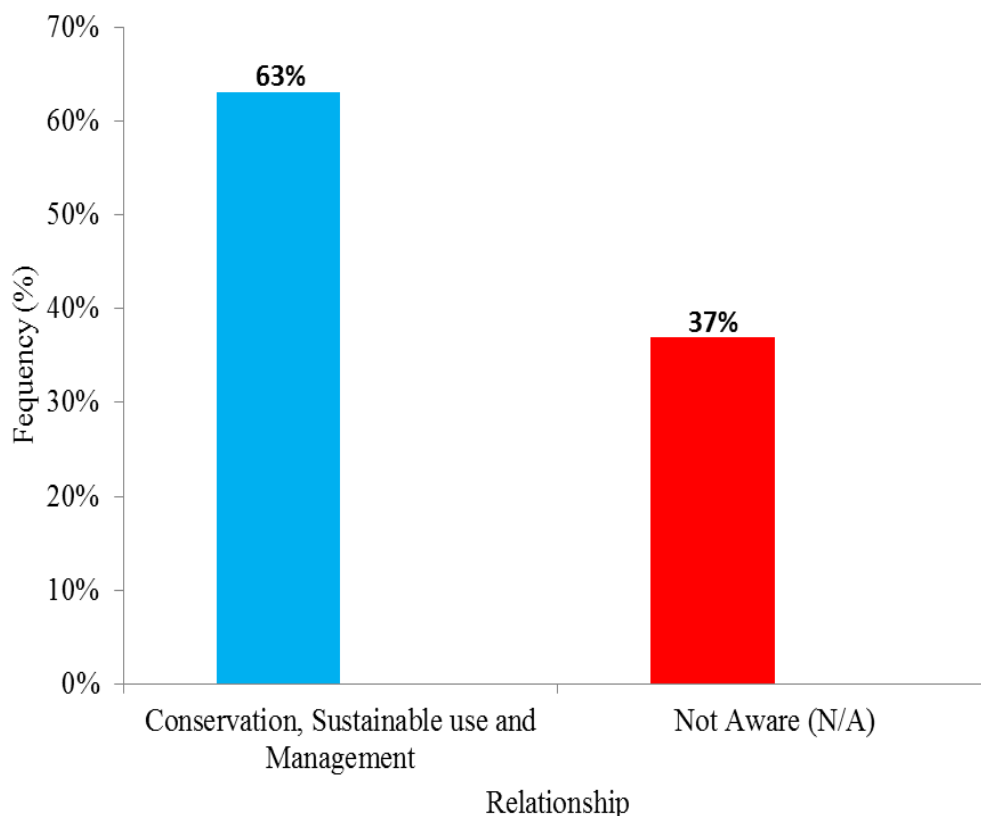


Figure 4.9: Relationships of communities' and ngos' rules for resource management

Another 37% of the sample respondents were not aware of any existing relationships between the traditional rules and regulations for resource management and those of the non-governmental organisations' (NGOs). The results demonstrate a clear 63% majority opinion that community rules and regulations for resource management within the area have

relationships with those of NGOs dealing with the conservation, sustainable use and management of natural resources. This positive opinion by a majority of the survey respondents is probably due to the support offered to communities by NGOs operating within the area. The study implies that traditional rules and regulations for resource management are similar to the modern legal frameworks of NGOs for conservation, sustainable use and management of natural resources. These results have therefore, provided further confirmation of the relevance and applicability of the community rules and regulations for effective management of natural resources within the Tana Delta. The study further demonstrate the relevance and therefore, potential applicability of community organisations in resolution and management of resource-based conflicts within Tana Delta.

4.4.4 Awareness of Community Norms for Resource Management

The research intended to establish the community governance instruments that are used for management of natural resources within Tana Delta. The surveyor asked the households if they had norms within their respective communities for resource management. The results of the households respondents (Figure 4.10).

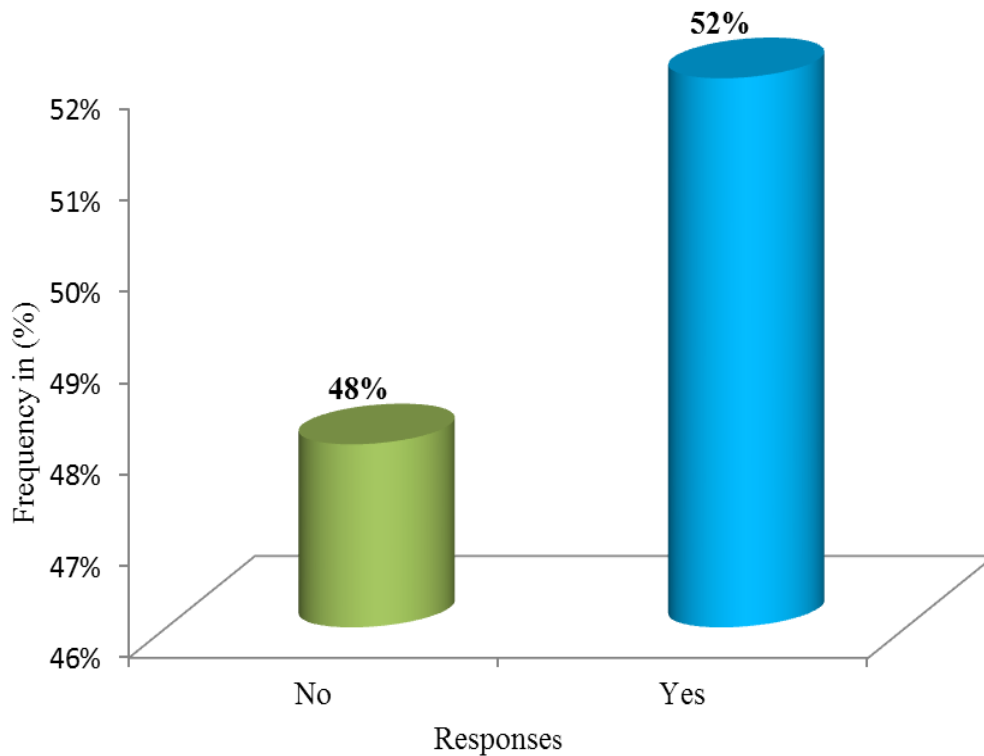


Figure 4.10: Level of awareness on community constitutions for resource management

The results indicate that 52% of the survey respondents were aware of community norms for management of resources but 48% of sample households denied having knowledge of the constitutions for managing resources within their communities.

These results demonstrate that communities in Tana Delta have split opinions regarding the existence of resource management constitutions, which is shown by the 52% for and 48% against the knowledge by household respondents regarding the existence of community norms for managing resources. The almost half split opinion (52% and 48%) of sample respondents regarding existence of norms for management of resources by local communities is probably due to the few community-based organisations (CBOs), which are dedicated towards natural resources management within the Tana Delta. During the field study it was observed that there were a lot of inactive membership within the CBOs in Tana Delta. This may have influenced the awareness of the existence of the community norms.

4.4.5 How Customs and Mores Could Lead to Resource-based Conflicts

The study was interested in understanding the influence of cultural diversity on resource-based conflicts amongst the local communities in Tana Delta. The researcher gauged the views of survey households pertaining to how communities' customs and mores have lead to the resource use conflicts in the area. The results of survey households (Figure 4.11).

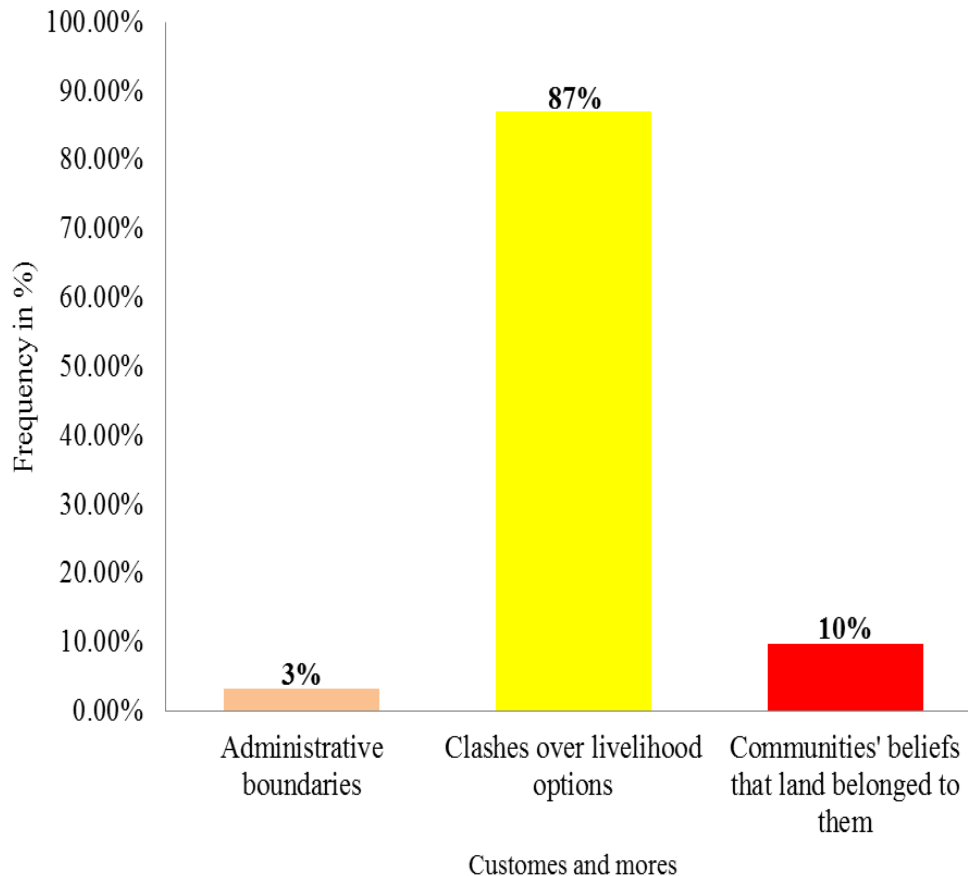


Figure 4.11: Customs and mores that leads to resource-based conflicts in Tana Delta

The study results indicate that 87% of survey respondents believed the resource-based conflicts emanates from clashes over livelihood options, 10% of the survey households thought the conflicts results from communities' beliefs that land belonged to them and 3% of the sample respondents believed the resource-based conflicts arises due to administrative boundaries within the Tana Delta.

These results therefore provide a clear confirmation by 87% majority of survey households that resource-based conflicts within Tana Delta are attributable to the clashes over livelihood options, which are occasioned by competition between divergent land use practices of the

communities. This is particularly true since the study established that competition for scarce resources by the diverse livelihood strategies is a major cause and significant driver of resource-based conflicts in Tana Delta. These results agree with the findings of Malalo, (2013), who established that the Orma and Wardei pastoralist communities perceived land as a communal resource while the Pokomo farmers believed they are the original and rightful owners of the land in Tana Delta. The differing lifestyles and therefore, livelihood strategies amongst communities inhabiting the Tana Delta stem from the different ways in which each of the communities utilize the river, pasture, land and water among other resources. In the past, the pastoralist communities were permitted by the farming communities to access and utilize these key resources during droughts through corridors called "malkas" (animal watering points and access corridors). The communities had agreements that ensured the pastoralists returned to their communal grazing areas in the hinterland whenever the dry spells were over (Martin, 2007). In the present context however, the approach is no longer respected by the Orma and Wardei pastoralist communities who perceive land as communal contrary to the Pokomo farmer community who believe in individual ownership of the land. These divergent perceptions that emanates from the diverse customs, mores and traditions of different communities inhabiting the Tana Delta have therefore, lead to severe clashes over livelihood options, thereby resulting to resource-based conflicts.

4.4.5.1 Reporting of Resource-based Conflict Occurrences

The researcher examined the confidence of local communities towards different organisations by collecting the views of survey households on how they reported the occurrences and incidents of resource-based conflicts within Tana Delta. The results (Figure 4.12).

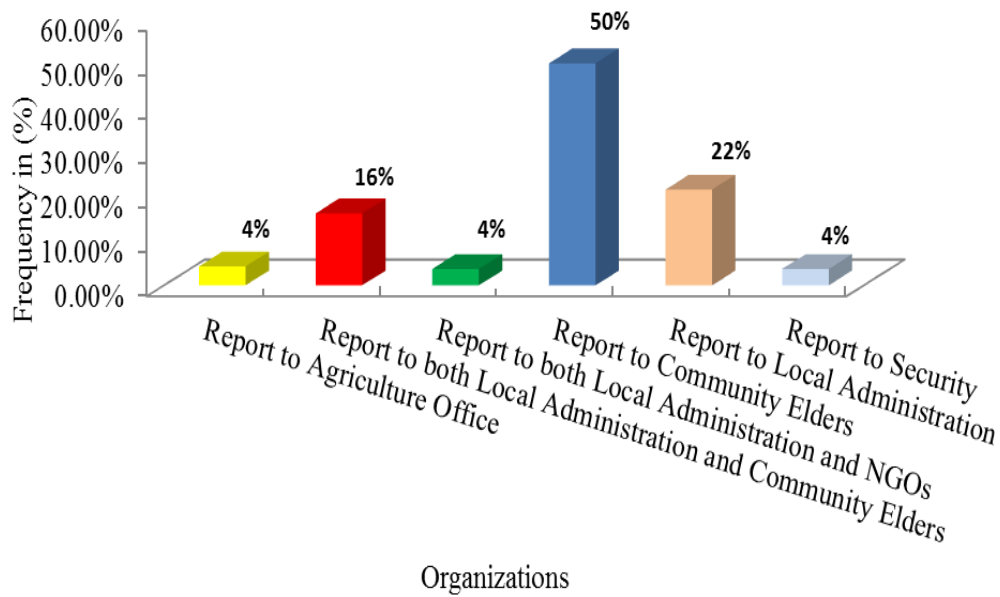


Figure 4.12: Reporting of resource-based conflicts occurrences in Tana Delta

The results show that 50% of household respondents reported the conflict incidences to community elders, 22% of sample households reported to the local administration, 16% of survey respondents reported to both the local administration and community elders, 4% of sample respondents reported to the agricultural officers, 4% of survey households informed the security and 4% of respondents reported the occurrences and incidents of resource-based conflicts to both the local administration and NGOs. These results indicate that about half (50%) of the survey respondents reported the occurrences of resource-based conflicts within Tana Delta to the community elders and another half (50%) of the survey households reported the conflict occurrences to other authorities.

Despite the high preference of reporting conflict incidences to community elders, a similar portion of the survey respondents believed that reporting to the local administration, both local administration and community elders, agricultural officers, security and both local administration and NGOs were the most preferred channels. This implies that a significant portion (50%) of local community members have no trust in reporting the occurrence of

resource-based conflicts to their traditional organisational arrangements (Community Elders). This lack of trust in traditional organisations is probably due to either culture erosion amongst the local communities or perceived inability of the community elders to adequately punish the perpetrators of resource-based conflicts within the area.

4.4.6 Establishment of Organisational Arrangements

The study aimed to understand the establishment of organisations for resource management in Tana Delta. The survey households were asked to identify the agencies that established the organisations for resource management in the area. The opinions of the sample households (Figure 4.13) on responsibility for the establishment of resource-based organisational arrangements within the Tana Delta area show that 32% of survey respondents confirmed the government established the organisations for resource management, 28% of households thought the arrangements were established by Non-Governmental Organisations (NGOs), 28% of survey respondents believed all agencies were involved in the establishment of the organisations and 12% of the survey households said the local communities established the organisations (CBOs) for resource management within Tana Delta.

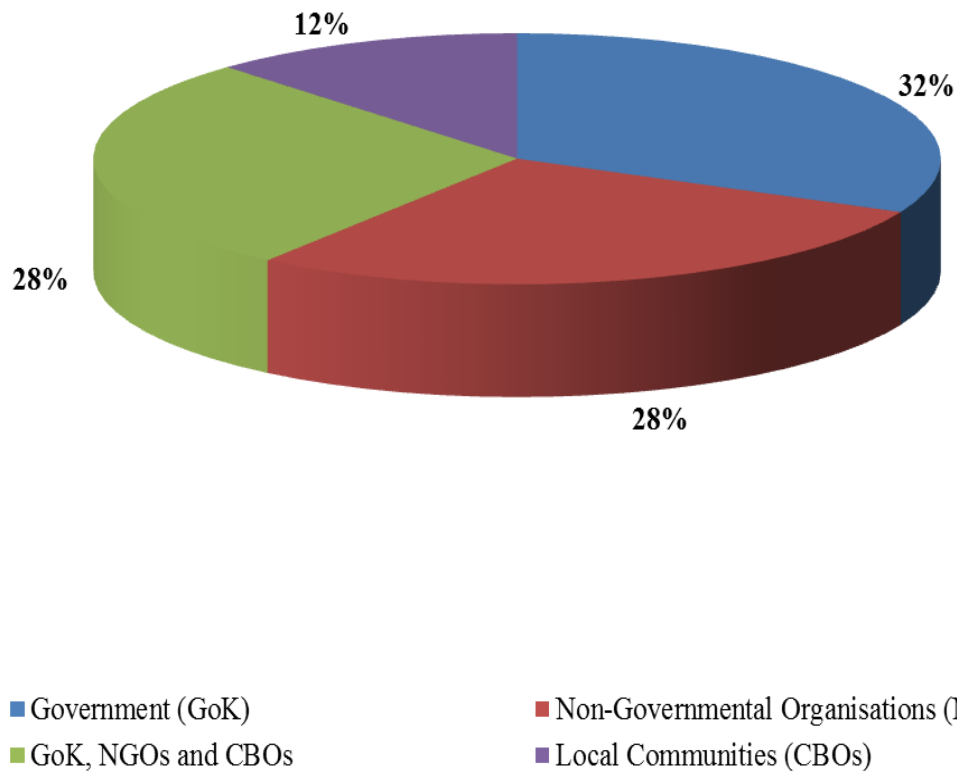


Figure 4.13: Households views on establishment of resource-based organisations in Tana Delta

The results have also demonstrated major opinion divisions amongst the local communities with regard to the establishment of the organisational arrangements. These divergent community views exist because all the NGOs, CBOs and local communities implement their resource management programmes under guidance of the relevant government policies. This interaction therefore, makes it difficult for the survey households to distinguish the individual roles amongst governmental, non-governmental and community-based organisations towards establishment of the organisational arrangements for resource management in Tana Delta. The study found that the local communities were unable to distinguish the mandates of different resource-based organisations within the delta area. The findings of this study are supported by that of Rosemarie et al. (2011) who concluded that local communities continue to experience the effects of responsibility duplication and shifting between different sectors. The study results imply that despite spirited investment efforts in resource management by CBOs and NGOs, the government remains as the lead agency in the formulation of policies,

legal and organisational frameworks for managing natural resources within the Tana Delta. However, the researcher observed that the local communities were not well represented within the governance processes that affects the management of natural resources in Tana Delta. The local communities are largely unorganized, mostly isolated and marginalized, hence their views on resource management and development proposals have no formal recognition within the decision-making processes.

The focus groups Discussions (FGDs) and key informants (KIs) gave their views on who established the organisational arrangements for resource management (Table 4.5).

Table 4.5: FGs and KIs views on establishment of resource-based organisations (n = 14)

Respondents (Groups)	Responses Percent (%)				Total
	Government	NGOs	All of them	CBOs	
Focus Groups	75	0	25	0	100
Key Informants	80	20	0	0	100

The results indicate that 75% of focus groups believed the government established the organisations for resource management while 25% of the groups thought the institutions were established by all agencies in Tana Delta. Similarly, 80% of the key informants felt the government established the organisations for resource management but another 20% of the key informants were of the opinion that NGOs established the resource management organisations in the Delta. The study therefore, implies that the government is the lead agency (as confirmed by 75% and 80% of focus groups and key informants respectively) in the establishment of organisational arrangements for resource management within Tana Delta.

The results of household respondents, focus groups and key informants were aggregated and further analysed using One-way ANOVA tests in order to determine the variation in mean responses of the sample groups. The results of the One-way ANOVA test indicate that there

were no significant differences (variations) in the mean responses of survey households, focus groups and key informants, since the resultant test p-value of 0.12 was greater than the expected test output of 0.05 at 95% confidence level. These test results imply that the government is the agency championing the establishment of organisational arrangements for resource management in Tana Delta. All the results of household respondents, focus groups, key informants and the One-way ANOVA test reflects actual realities on the ground, since the National Environmental Management and Coordination Act was enacted by government in 2000 with the aim of coordinating all issues pertaining to the environment.

4.4.6.1 Level of Community Benefits from Resource Management Organisations

The study examined the benefits of local communities by asking the survey households whether they were benefiting from the institutional arrangements for resource management in the Tana Delta (Figure 4.14).

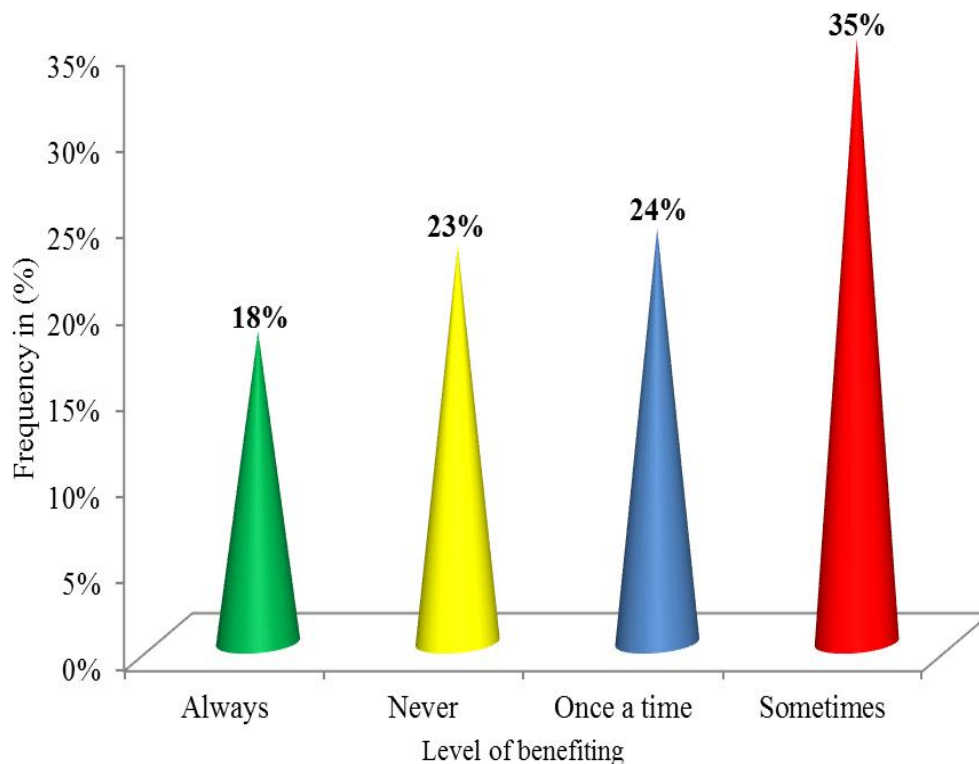


Figure 4.14: Level of community benefits from resource management organisations

The results indicate that 35% of the survey respondents said they sometimes benefited, 24% of households thought they once a time benefited, 23% of respondents believed they never

benefited at all and 18% of sample households felt they always benefited from the establishment of organisations for resource management within the Tana Delta.

These results demonstrate a clear division of community perceptions regarding the levels of benefiting from resource management organisations. About 53% of the survey respondents were of the opinion that they always and sometimes benefited, while the other 47% of survey households have only benefited once or never benefited at all. The study findings had similar views by Bucx et al., (2014) which narate that these divided perceptions emanate from the large parcels of delta land that are held by development organisations under disputed ownership for lack of transparency in their acquisition. Bucx et al., (2014) also established that un-procedural land acquisitions for large scale development projects have lead to the denial of land rights, development potentials and livelihood opportunities for the local communities within Tana Delta. The situation is further compounded by government's continued reliance on sectoral policies that overlap or duplicate responsibilities (Rosemarie et al., 2011), thereby leading to low community appreciation towards the organisations for resource management.

4.4.6.1. Level of Inclusion during Implementation of Organisations' Mandates

The study wanted to understand the participation of local communities in the implementation of resource management programmes by the resource management organisations within the Tana Delta. The survey households were asked to confirm whether they were included in the implementation of resource management programmes by the organisations in Tana Delta. The results (Figure 4.15)

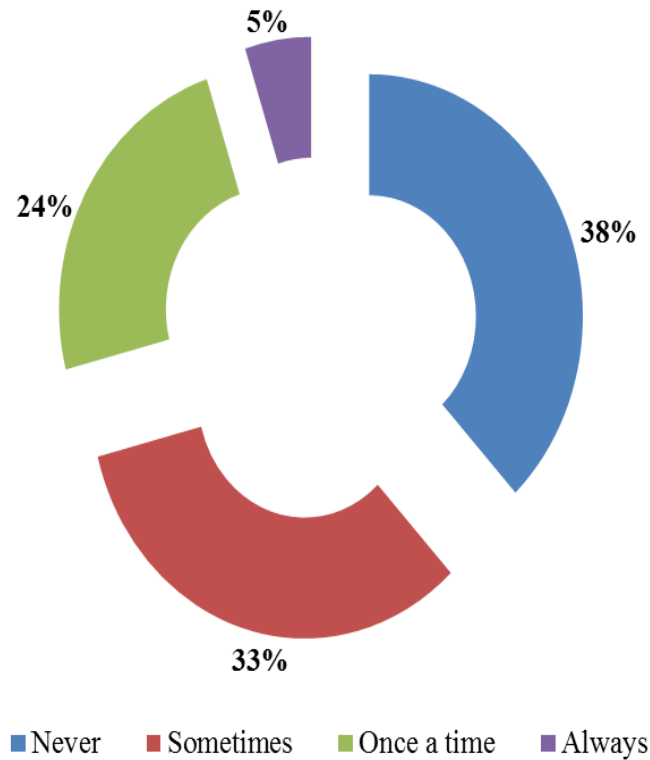


Figure 4.15: Level of community inclusion in resource management by organisations

The results show that 38% of the survey respondents were never included, 33% of the households were sometimes included, 25% of the sample respondents were only included once a time and only 5% of the survey households were always included during the implementation of programmes by resource management organisations in Tana Delta. These results imply that 38% of the survey households were always or sometimes included by the organisations during implementation of resource management programmes while the remaining 62% of the sample respondents were included once only or never at all. This study therefore, demonstrates the inadequacy of community involvement during implementation of resource management activities by the organisational arrangements in Tana Delta. These results also reflect the findings by Martin, (2012) which express that the limited participation of rural communities, which arises from the selective preference of urban populations for involvement in resource management activities by the organisations in the area. The Martin, also found that the local communities living within urban centres are engaged more in the decision making processes and implementation of resource management initiatives of the organisations than people living in the rural areas of the delta. According to

information gathered from literature and the study results therefore, majority of the organisations rarely implement their resource management programmes within the interior rural areas of the Delta. Instead, such organisations blame their failures on poor access roads, lack of basic amenities and inadequate security among other lame excuses.

4.4.7 Recognition of Traditional Resource Values and Taboos by Organisations

The research intended to understand the level of recognition of community resource values and taboos by the organisations for resource management within Tana Delta. The perceptions of households were sought on whether they shared traditions or recognition of resource values and taboos with the organisations for resource management. The views of survey respondents (Figure 4.16) with regard to the traditional resource values and taboos of local communities within the Tana Delta.

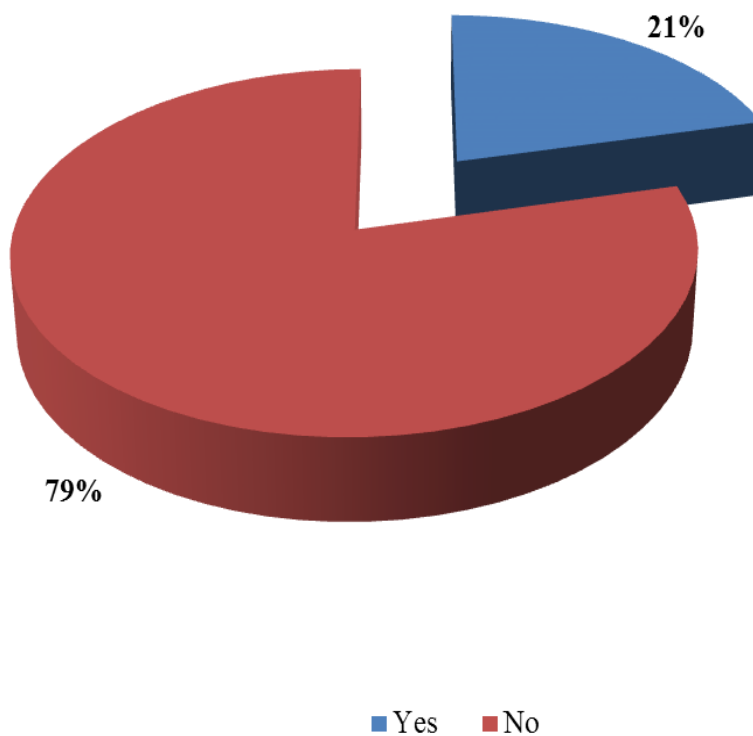


Figure 4.16: Recognition of traditional resource value and taboos by organisations

The results show that 21% of the household respondents agreed the organisations shared traditional recognition of resource values and taboos with the local communities while an overwhelming 79% majority of the sample respondents disagree.

These results imply a clear confirmation that the organisations in Tana Delta do not share traditional recognition of resource values and taboos with the local communities. The study results in line by Temper, (2012) who explain that lack of common values for bonding the resource management organisations and indigenous people of the Tana Delta arises both from conflicting claims between state laws and communal rights, and within the local community levels. These results also again agrees with the findings by Temper, (2009) who established that the common resources of land and water are not homogenous, which reflects the divergent nature of pastoralist and farming livelihoods within the Tana Delta. The results corroborate with the findings of Martin, (2012), which showed that the Pokomo livelihood strategies of farming are largely concentrated within the river flood plains while the Orma pastoralists mainly use the hinterlands for rich grazing pastures.

4.4.8 Displacement of Communities as a Result of Organisational Arrangements

The study sought to further understand the consequences for the existence of organisations within the Tana Delta. The views of the survey respondents pertaining to whether there were local community members who were displaced as a result of organisational arrangements were collected (Figure 4.17).

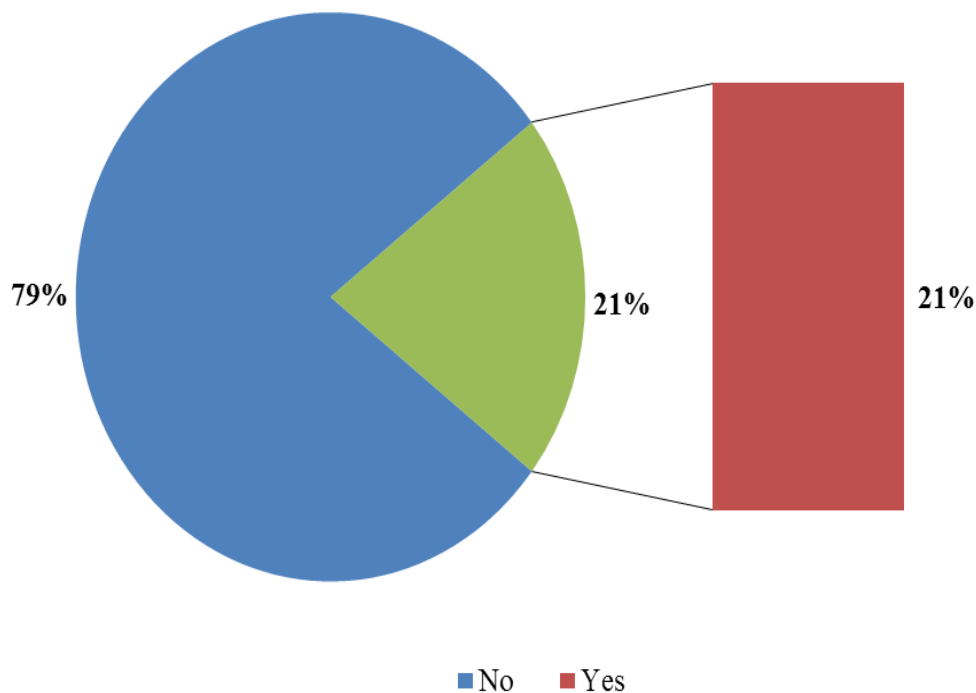


Figure 4.17: Displacement of local communities as a result of organisation

The results show that 79% of the survey respondents denied the displacement of members of the local communities as a result of organisational existence within the delta and only 21% of survey households confirmed there were cases where local community members were displaced by the organisations' projects and programmes. This study demonstrates a clear denial of the displacement of local communities as a result of organisations' existence in Tana Delta. These results agree with the findings of previous studies conducted within the area including that of Temper, (2009) and Nunow, (2011), which showed that the Tana Delta is a historical dry season grazing refuge for pastoralists coming from northern Kenya, Somalia and the southern parts of Ethiopia. During the drought periods, up to three million heads of cattle stay in the Tana Delta region (Goldsmith, 2012). Some members of the local communities were forced to migrate from their ancestral land because of the migrants who displaced them from their cultivation lands. It is believed that the delta area accounts for about 50 per cent of Kenya's lands with potential for irrigation due to the waters of the River Tana (Makutsa, 2010). This has made the Kenyan Government to introduce various development interventions, which have led to loss of large tracks of land by both farmers and pastoralists (Daniel & Mittal, 2009). However, the results of this study differ with the

findings by Nunow, (2011) who concluded that development interventions by the Kenyan Government have irritated the traditional arrangements of the local communities and thereby displaced them from their ancestral lands within the Tana Delta.

4.4.8.1. Reasons for Displacement as a Result of Organisational Arrangements

The study was determined to further investigate the nature of displacement of local communities by the organisations in Tana Delta. The survey households gave different reasons (Table 4.6) for the displacement of local community members by the organisations.

Table 4. 6: *Reasons for community displacement by organisations in TanaDelta (n = 300)*

Reasons for displacement		Frequency	Percent (%)
Valid	Administrative boundaries	4	1
	Clash for livelihood option	44	15
	Lost land for agriculture	12	4
	Migrants sell land	8	3
	N/a	232	77

The results indicate that 15% of the respondents believed displacement was caused by clashes over livelihood options, 4% of the households thought displacement was due to lost land for agriculture, 3% of the survey respondents felt the migrants sell land, 1% of the sample households said displacements was occasioned by administrative boundaries and 77% of the sample respondents were not aware of the reasons. The study therefore, implies that the major cause for the displacement of local community members is the clash for livelihood options. These results also correspond with the findings of similar studies conducted within the Delta area. As observed by Klopp, (2010) the conflicts have been triggered by high influxes of cattle in the region that were occasioned by dry spells in neighbouring regions of North Eastern Kenya. These influxes contributed to further strains on the already scarce water and pasture resources within the land (Martin, 2012), thereby leading to clashes over livelihood options (Nunow, 2011). However there are isolated cases of conflicts over administrative boundaries (Odhengo, 2012), where communities' are

restricted in access to resources and movement from one place to another (Mghanga, 2010). Tension has also increased because people fear that large scale farming will affect their lives by encroaching on their lands, thereby leading to loss of pasture and farmland (Pickmeier & Rutten, 2013).

4.4.9 Types of Land Tenure Systems existing in Tana Delta

The study also aimed at finding out if land issues had any influence on resource-based conflicts within the Tana Delta. The views of the survey households were collected as to the types of land tenure systems that they possessed (Figure 4.18).

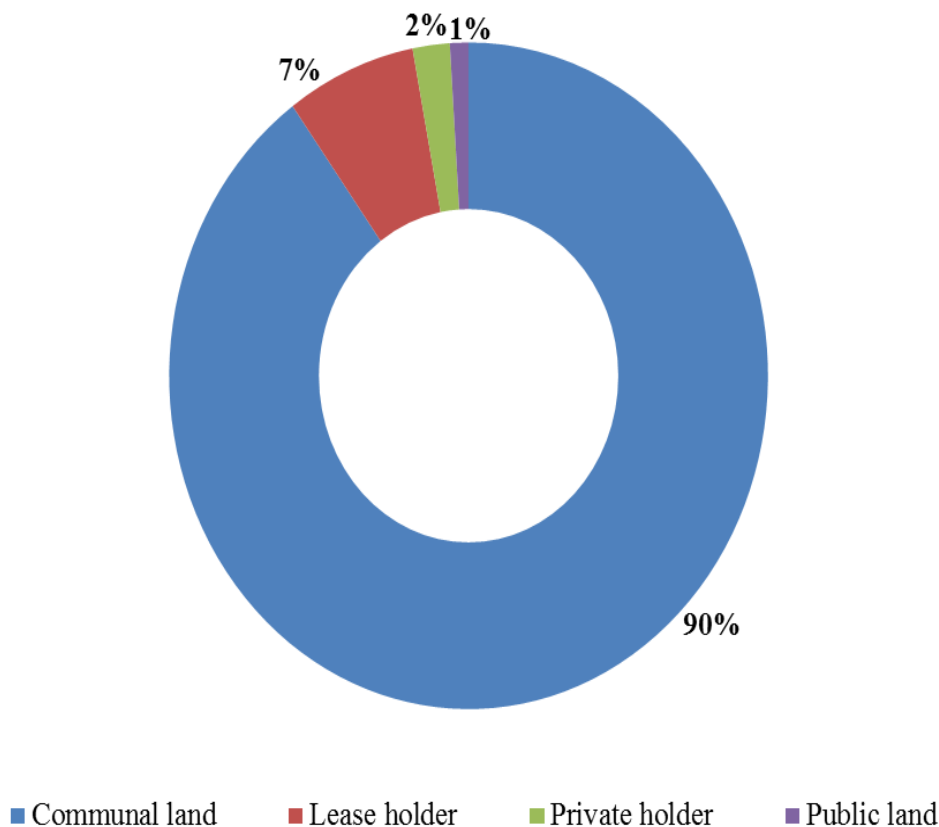


Figure 4.18: Land tenure systems existing in Tana Delta

The study shows that 90% of the sample respondents confirmed the land tenure system is communal, 7% of households thought the land tenure is public, 2% of survey respondents believed the tenure system is lease hold and only 1% of sample households felt the land is private holder. These results imply that about 90% of the sample households in Tana Delta dwell on communally owned lands. The study results corroborate with the findings of Nunow, (2011), which established that majority of the local people do not have title deeds to

bestow legal security of land ownership or tenure and are therefore squatters. This implies further that the land is vulnerable to acquisition by influential people within society (IPSTC, 2013). This insecurity of land tenure exposes the local people to exploitation, marginalization and consequential poverty, which constitutes major root causes of resource-based conflicts in Tana Delta (Kinyanjui, 2008).

4.4.10 Land allocation in Tana Delta

The sample households were requested to express their opinions on whether or not there were other people who possessed land in Tana Delta. The results of survey respondents regarding the existence or absence of people who have been allocated land in Tana Delta (Table 4.7) showed clearly that 50% of respondents confirmed the existence of people who were allocated land but another 50% believed there were no people who have been allocated land in the Tana Delta.

Table 4.7: Respondents views on land allocation in Tana Delta (n = 300)

Respondents	Frequency	Percent (%)
No	150	50
Yes	150	50

These results demonstrate a clear opinion division among local communities (50% for and 50% against), probably due to the reflection of opposite views between people who have benefited from large scale development projects within the Tana Delta and those who have never benefited. The results also agree with the findings of research by Abdirizak, (2010) who found that land acquisition for large scale irrigation within the area have not only alienated the local people from their ancestral land but also posed threats to the environmental quality of Tana Delta ecosystem.

4.4.11 Who allocated land in the Tana Delta?

The survey households explained how people got the land rights by identifying those who allocated land in the Tana Delta (Figure 4.19).

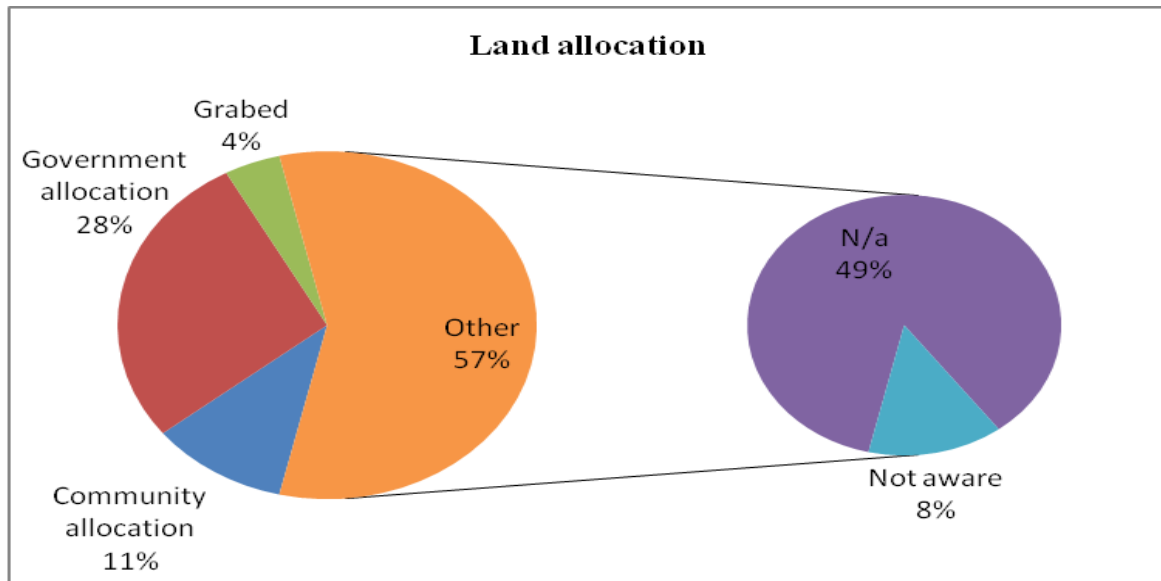


Figure 4.19: Respondents' views on who allocated land in Tana Delta

The results indicate that a large 49% of the households felt the issue of who allocated land in the area was not of concern (N/A) to them, 28% of the respondents believed the government allocated land for development projects, 11% of the sample households confirmed there were land allocations by community elders, 8% of the survey respondents were not aware of who allocated land in Tana Delta and 4% of the survey households thought there was grabbing of some lands. The study demonstrates yet another division of community opinions with regard to who allocated the land in Tana Delta. These opposite perceptions can be attributable to divergent views of the local communities regarding their respective legal securities of land ownerships and tenure systems as depicted by the findings of Mghanga, (2010) and loss of ancestral land rights, which was also demonstrated by Nunow, (2011). The restriction on grazing resources posed by land grabbing has led the local communities to organize themselves and acquire group ranches in order to secure land for their livestock. The study identified seven group ranches that were established within the Tana Delta namely; Idassa Godana, Giritu, Hagadandi, Kibusu, Kitangale, Wachu, Oda and Kondertu. These group ranches have been allocated thousands of hectares of land by the government, a factor that has put them at the central focus of the controversies over ancestral land rights, ownership and tenure systems between farmer and pastoralist communities within the Tana Delta.

4.4.12 When did the land allocation occur in Tana Delta?

The different periods when land allocation occurred in the Tana Delta were established by analysing the perceptions of household respondents (Table 4.8) within the area.

Table 4.8: Periods when land allocations occurred in Tana Delta (n = 300)

Response (Period when land was allocated)	Frequency	Percent (%)
1960-1970	27	9
1980-1990	63	21
2000-2010	46	15
2010-2015	12	4
N/a	148	49
Not aware	4	2

The results indicate that 21% of the respondents believed land allocation took place between 1980-1990, (15%) felt the allocation occurred around 2000-2010, 9%) thought the land was allocated within the 1960-1970 period, 4% confirmed the land allocation occurred between 2010-2015, 1% were not aware of when the land was allocated and 49% of household respondents thought it was not applicable for them to know when land allocation took place in Tana Delta.

The study implies that a majority of the land allocations took place between the 1970s and 2010, a period which was identified by 49% respondents out of the total 51% survey households who accepted the occurrence of land allocation within the Tana Delta area. These results corroborate with the findings of Makutsa, (2010), who established that land acquisition for large scale irrigation within the Tana Delta area increased between 1990 and 2007 period. The study also agrees with the findings by Syagga, (2010), which concluded that large-scale commercial farming began in the 1970s but its recent acceleration has created

greater pressure on the remaining land, thereby further reducing the access to water and grazing areas as well as land for subsistence farming by the local communities.

4.4.13 Rights of Using Land in Tana Delta

In order to examine the governance of land resources by local communities in Tana Delta, the researcher asked survey households to state which rights they have in using the land. The study (Figure 4.20).

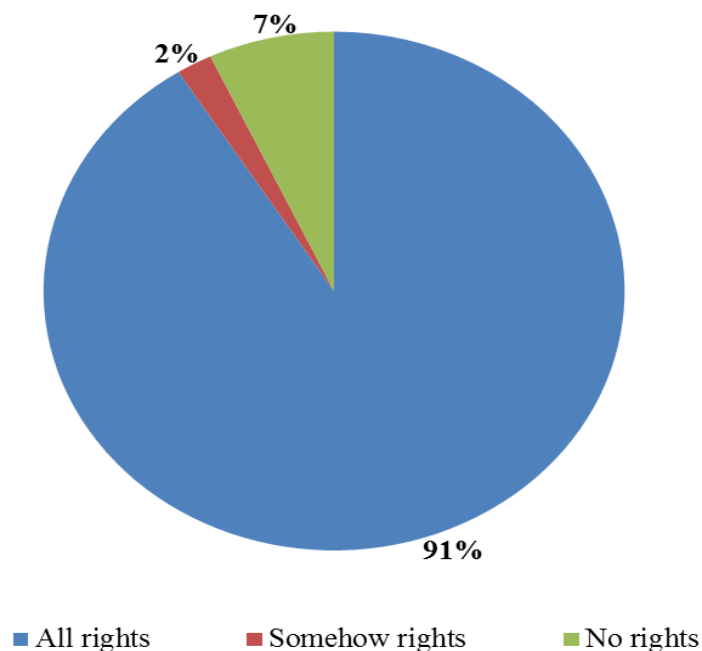


Figure 4.20: Levels of rights in using land within Tana Delta

The study shows that 91% of household respondents have all land use rights, 7% have no rights in using the land and 2% of the sample respondents have somehow (unspecified) rights. These results imply that a majority (91%) of community members have unlimited rights over the use of land, pasture and water resources within the Tana Delta. This overwhelming majority of people who claimed to have all rights in using these resources can be attributed to the lack of adjudication and legal ownership of the land, which encompasses pasture, water and other common resources. The open access and free use policy renders the land vulnerable to ownership wrangles of simultaneous claims, which leads to escalation of resource-based conflicts within the Tana Delta. The unrestricted access and free use of land

policies have further compounded the problem by attracting migrants to the delta area, thereby increasing competition for resources, conflicting livelihood strategies and divergent land use activities. The study results corroborate with the findings of FIAN International Secretariat (2010), which observed that communities are obliged to use complementary and mutually beneficial resource exploitation strategies to regulate the rights of access to their key common resources. The communities still use their customary rights to regulate access to, and control over, the land, pasture and water, though officially the land is appointed as government land. The study established that the local communities do not have title deeds for ownership of the land as required by law, hence they are traditional land users but not defined by the relevant government policies.

4.4.14 Consultation on Land Allocation in Tana Delta

The study also examined community involvement in land management by asking the views of survey households as to whether they were consulted during land allocation. The opinions of sample respondents (Table 4.9).

Table 4.9: Community consultation on land allocation in Tana Delta (n = 300)

Responses	Frequency	Percent (%)
N/a	142	48
No	106	35
Yes	52	17

The results illustrate that 17% of the survey households accepted they were consulted during land allocation and 35% denied. However, 48% of the sample group were not aware of any consultations during land allocation. The study implies the existence of negative opinions within the local communities towards consultation in land allocation. The findings of this study depicts relationship of findings by Nunow, (2011) which narrate that, low perceptions of local communities are due to lack of transparency in land allocation processes that have denied people of their rights (Nunow, 2011), land grabbing and other historical injustices.

The local communities have no access to the agreements entered into between the government and investors and the local people are rarely consulted. The Pokomo are not against large scale investments but they complain about lack of consultation by the government and investors (Syagga, 2010). They perceive these investments as possible sources of employment and economic development. However, the Orma are against the large-scale land acquisition (Nunow, 2011) because of the potential loss of grazing land and water without compensation.

without compensation.

4.4.15 Relationships of Organisational Arrangements and Resource-based Conflicts

The researcher wanted to understand the influence of existing organisations on resource-based conflicts. The responses of survey households (Figure 4. 21) on whether there exists any known relationships between the organisations and resource-based conflicts in Tana Delta.

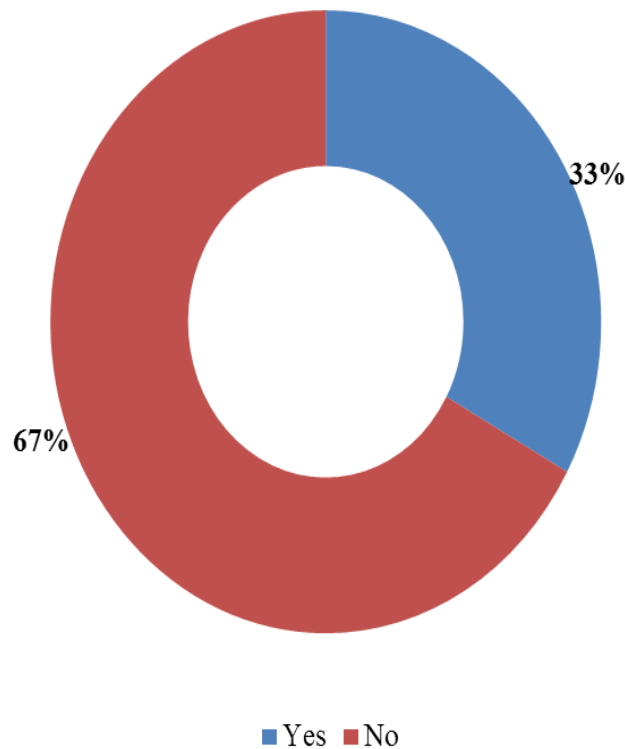


Figure 4.21: Relationship between organisations and resource-based conflicts in Tana Delta

The results indicate that about 67% of the survey respondents believed that there were no relationships between organizations and resource-based conflicts while 33% of sample households believed there existed some relationships.

The investigator also gauged the opinions of focus groups and key informants with regards to the existence of relationships between the organisations and resource-based conflicts (Table 4.10).

Table 4.10: Relationships between organisations and resource-based conflicts (n = 14)

Respondents (Groups)	Responses Percent (%)		Total
	Yes	No	
Focus Groups	75	25	100
Key Informants	100	0	100

The study illustrates that 75% of the focus group respondents felt there were no relationships and 25% agreed. Similarly, 100% of the key informants believed there were no relationships between the organisational arrangements and resource-based conflicts within Tana Delta. The results imply the non existence of relationships between the organisations for resource management and resource-based conflicts in Tana Delta. This study has therefore confirmed that the organisations for resource management within the Tana Delta have no relationships with or influence over the resource use conflicts that characterise the area.

The responses of households, focus groups and key informants were statistically tested using One-way ANOVA techniques to determine variations in the opinions of respondents', hence establish whether there exists relationships between the organisational arrangements and resource-based conflicts. The test shows that there were no significant differences between respondents' opinions since the resultant p-value of 0.101 is greater than 0.05 at 95% confidence level. The test results also indicate that there were no relationships between the organisations for resource management and resource-based conflicts. The study results for households, focus groups and key informants therefore, imply that the organisations are not

responsible for resource-based conflicts within the Tana Delta. These results agree with field observations, which revealed that most of the organisations are concentrated within urban areas while the community settlement villages are located within the peripheral areas of urban centres and deep in to the rural areas of the delta. The Tana Delta region is also sparsely populated thus, most institutions organize meetings with the community members who live within the urban centres and immediate surrounding areas. The sparse rural population of the Delta communities, coupled with the urban location of most organisations and poor communication infrastructure within the area, have made the regular interaction between organisations and grassroots' communities difficult.

4.5 Impact of Resource-based Conflicts on Communities' Livelihood

The third objective aimed to find out the impact of resource-based conflicts on the communities' livelihood. The study assumed that resource-based conflicts had no impacts on livelihood strategies' of the communities within the area. In order to realise this objective, the study looked at various areas namely: Resources versus communities' livelihood strategies decrease/increase as a result of resource-base conflicts; Dry course of the river; Land degradation; Human deaths and injuries; Community displacement; Destruction of crops and livestock; trends in markets, socio-economic activities, employment, and vulnerability to natural disasters.

4.5.1 Resources and Livelihood Strategies Decreased/Increased Due to Conflicts

The water resources play integral roles in the community's livelihood strategies. Decreasing in water resources results to reduction of other livelihood strategies such as vegetation cover, mangroves, wildlife, fish and marine ecosystems (Duvail et al 2012). The picture (Plate 4.1) below shows a diversion of the main river course within the Tana Delta.



Plate 4.1: Diversion of Tana River course at Matomba in Tana Delta

The plate above portray similar explanation by IPSTC, (2013) which explains that, the damming has caused the river to change its course downstream moving towards Kipini The major channel change took place about 26 Km further north, away from the former mouth of the river imposing negative impacts on the affected people.

4.5.1.1. Trends of Resources as a Result of Resource-based Conflicts

The study aimed to understand the dynamic trends in resources and livelihood strategies of the local communities as a result of resource-based conflicts. The researcher sought the views of survey households, focus groups and key informants on the trends of different resources and livelihood strategies as occasioned by resource-based conflicts within the Tana Delta area (Table 4.12).

Table 4.11: Resource trends as a result of resource-based conflict in Tana Delta (n = 300)

Resource / Condition	Respondents / Responses Percent (%)					
	Households		Focus Groups		Key Informants	
	Increased	Decreased	Increased	Decreased	Increased	Decreased
Water Resources	2	98	-	-	-	-
Land	21	79	25	75	10	90
Vegetation	17	83	0	100	10	90
Wildlife	51	49	25	75	30	70
Marine ecosystem	25	75	-	-	-	-
Mangrove	35	65	-	-	-	-
Land degradation	63	37	-	-	-	-
Salinization	60	40	-	-	-	-

The study demonstrates that a majority of respondents from across the sample groups agreed the resources have decreased as a result of resource-related conflicts in Tana Delta. Contrary to this general agreement by the sample groups, 49% of the households believed that wildlife resources have declined while another 51% of the respondents thought that wildlife increased. However, an overall majority of the survey respondents confirmed that all resources declined as a consequence of resource-based conflicts except their divided opinions on the status of wildlife resources. The results of survey households indicate significant decreases in various resources namely; water, vegetation, land and the marine ecosystem, which were observed by 98%, 83%, 79% and 75% of survey households respondents respectively. Similar downward trends in other resources have also been reported by the household respondents, including decreased mangrove (65%), increased land degradation (63%) and increased soil salinization (60%) respectively. Therefore study results imply from households respondent there are significant decreased of resources as a result of resource based-conflicts.

To test for hypothesis the responses of survey household were further subjected to Chi-square tests in order to determine whether there exists relationships between decreases or increases of the different resources and livelihood strategies as a result of resource-based conflicts in the Tana Delta. Table 4.13 illustrate the results of Chi-square tests, which were conducted to find out the relationships in the views of survey respondents regarding decreases or increases of the various resources and livelihood strategies as occasioned by resource-based conflicts within the Delta.

Table 4.12: Resources and livelihood strategies trends as a result of conflicts (n = 300)

Resource/Strategy	Chi-Square	df.	Asymp. Sig	Remarks
Water Resources	276.480 ^a	1	.000	Significant relationship (Decrease)
Land	286.160 ^b	2	.000	Significant relationship (Decrease)
Vegetation	130.680 ^a	1	.000	Significant relationship (Decrease)
Wildlife	013 ^a	1	.908	No relationship (Increase)
Marine ecosystem	235.220 ^b	2	.000	Significant relationship (Decrease)
Mangrove	139.860 ^b	2	.000	Significant relationship (Decrease)
Land degradation	20.280 ^a	1	.000	Significant relationship (Decrease)
Salinization	160.980 ^b	2	.000	Significant relationship (Decrease)

The study shows that there exists significant relationships between decreases of the resources and livelihood strategies on one hand, and inverse increases of wildlife resources on the other hand as a result of resource-based conflicts. The study results imply that there exists inverse correlation between decreases of the resources and increases of wildlife within Tana Delta.

The increase in wildlife can be attributed to dryness of the river (reduced water resources), which permits free movement of wild animals, causes increased salinization, reduces pastures and displaces wildlife towards human settlements. The study found that the Tana River usually acts as a natural barrier, which controls the movement of wild animals, livestock and people within and between both sides of its banks.

These results imply that most of the resources and the resource dependent livelihood strategies of the communities have decreased while wildlife resources have increased within the Tana Delta. These community perceptions that resources have decreased are also exacerbated by the lack of free access and use that are occasioned by fear and threats of likely violent attacks on people pursuing resource-based livelihoods within the remote rural areas of the Delta, which are considered to be unsafe during periods of conflicts. However, water-based resources in the Delta have actually decreased in recent times due to continuous drying of the river, changing flooding regimes, siltation of floodplain oxbow lakes, soil salinization, land degradation and other associated processes. Moreover, the inability to freely access and use resources that are the consequences of conflicts have exacerbated the scarcity of resources in the Delta area. Similarly, land and vegetation have also been perceived as decreasing due to the limitation of access and use, which are imposed by tension, fear and threats emanating from resource-based conflicts in the area. The perceived decrease in marine resources is exaggerated by excessive harvesting of fisheries through trawling and other commercial fisheries activities close to the shoreline. Similarly, the perceived decline in mangrove is magnified by the uncontrolled harvesting, which emanates from inadequate institutional arrangements for management of the resources within the delta area. Land degradation and salinization within the area have resulted from increased aridity, which emanates from drying of the river and decreasing water resources of the Delta.

4.5.2 The Dry Course of the River

In order to understand whether the lakes have been the implicated as result of resource-based conflicts which impact livelihood strategies of the study area, the resercher managed to get

clear



Plate 4.4 Dry Tana River river course within Delta *Plate 4.3: Dry Lake Kongolola wetlands in Tana delta* *Plate 4.2: Dry Lake Shakababo wetlands in Tana Delta*

pictures from the of lakes and ex-bow existing in the

study area. The picture (Plate 4.2) below shows the river course in lower Tana River and ox-bow lakes, which are completely dry.

The left photograph in (Plate 4.4) shows the dry river belt, the middle (Plates (4.2) shows dry Lake Kongolola wetlands and the right (4.3) shows the dry Lake shakababo wetlands in Tana Delta.

The pictures show that the course of the River, Lake Shakababo and Kongolola wetlands in Tana delta are completely dry due to changes in river flow and flood regimes overtime. The completely dry segments of the river have significant impacts on the environment as well as the livelihood strategies of communities living in Tana Delta.

The pictures above agree with findings by Duvail et al (2012) which explain that the current main course of the river has suffered two diversions within the upstream areas of the Delta, at Matomba and Mnazini. The river Tana has in recent times shifted its course regularly within its lower reaches as a result of both natural and human causes. One of the most significant changes of the river course was triggered by local residents, when they excavated a small

canal to support agriculture and fishing activities. This small channel eventually grew deeper than the main river, which henceforth became the main branch, leaving the ‘original’ main river branch often dry. This change of river course had drastic effects on villagers living near the old river branches, which were cut off from a continuous water flow. There are also swamps like Lake Shakababo in Tarasaa area that used to store a lot of water but has since dried up completely. In fact, most of west ward of Kipini, (Which includes villages like Shirikisho, Kibusu, Ngao, Kipao, Oda, Golbanti, Nduru, Hanadaraku and Semikaro), one can walk across the dry river channel.

4.5.3 Land Degradation in Tana Delta

The study sought to understand whether the land degradation taking place in study area is as results of resource-based conflicts or not. The research took picture during data collection (Plate 4.5)



Plate 4.5: Bare land and dry trees on the dry river bed course in Tana Delta

The picture (Plate 4.3) above illustrates how the land has been degraded as a result of decline in the river flows, flooding regimes and dry course of the river, and oxbow lakes. Decline in water levels of the River Tana and changes in its flooding regimes have negatively affected the Tana delta. The picture’s findings there are different from the findings by Mnyamwezi and Misati, (2012) which elaborate that the riverine forests, woodland and bush lands within

the Delta are edaphic in origin, and their continued existence depends on critical minimum levels of flooding. Most of the tree species in these forests are disappearing due to decline in the river flows and flooding regime. The effect has also been felt in the delta's oxbow lakes and the floodplains. The water levels in oxbow lakes such as Lake Moa have continued to decline while other lakes such as Shakababo and Kongolola receive water during the rainy seasons only. These changes have in return negatively affected the livelihood of the communities, which are dependent on fisheries resources. The floodplains which are considered to be of high value for subsistence agriculture, source of fresh water fish, reeds for thatching, fresh water and grazing are also experiencing reduced productivity owing to the changes in the flooding regime.

4.5.4 Death/Injuries as a result of Resource-based Conflicts

The researcher asked household whether they incurred relatives' deaths or injuries as a result of resource-based conflicts. The responses of the households (Figure 4.24) .

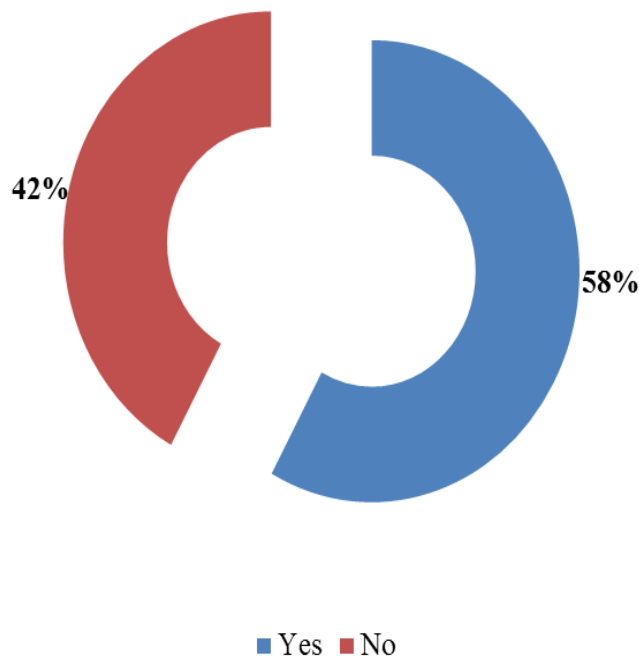


Figure 4.22: Relatives' deaths/injuries as a result of resource-based conflicts in Tana Delta

The figure show that 58% of the respondents claimed to have incurred relatives' deaths/injuries during resource-based conflicts in Tana Delta, while 42% did not have casualties. The results findings in line assesment done by Kenya Initial Rapid Assessments, (2012) which explains that the impacts of resource-based conflicts were felt not only in lives

lost and injuries, but also in tens of thousands of people displaced from their homes and the serious disruptions of the already fragile local economy.

4.5.5 Displacement of Communities as a result of Resource-based Conflicts

In order to determine the effects of conflicts on social structures and livelihoods of the communities, the researcher asked household whether they were aware of people who were displaced as a result of resource-based conflicts in Tana Delta. The results (Figure 4.23).

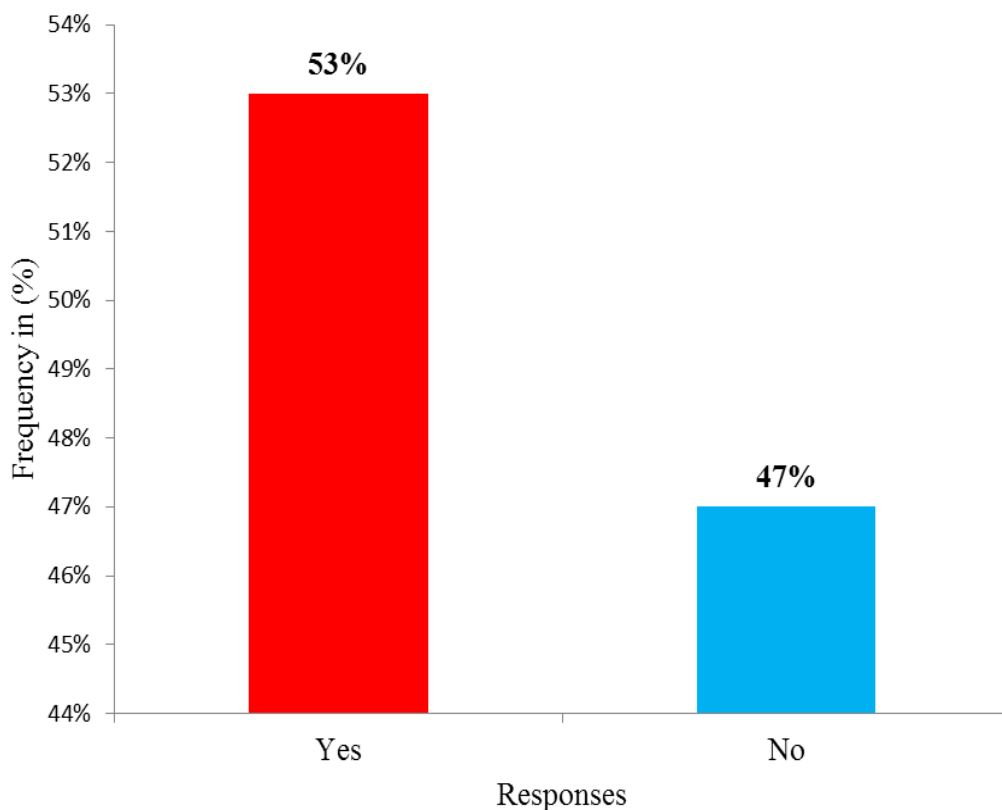


Figure 4.23: Displacement of communities as a result of resource-based Conflicts in Tana Delta

The results illustrate that 53% of the respondents confirmed some people were displaced as a results of resource-based conflicts, while 47% denied The result correspond to Kenya Initial Rapid Assessments, (2012). which established the net effect of resource-based conflicts, like all alienations of community land, is the displacement of tens of thousands of people, mainly the Pokomo farmers who are smallholders growing subsistence crops within the delta. The Orma and the Wardei pastoralists, and the agro pastoralists amongst them have also suffered

immensely as the delta has been used as grazing land for their cattle for several generations (Kenya Initial Rapid Assessments, 2012).

4.5.6 Crops and Livestock Destruction as a result of Resource-based Conflicts

The study was interested in understanding the impacts of resource-based conflicts on livelihood strategies of the farmer and pastoralist communities living in the Tana Delta. In order to determine the impacts occasioned by conflicts the researcher asked the households whether their crops were destroyed during resource-based conflicts (Figure 4.26).

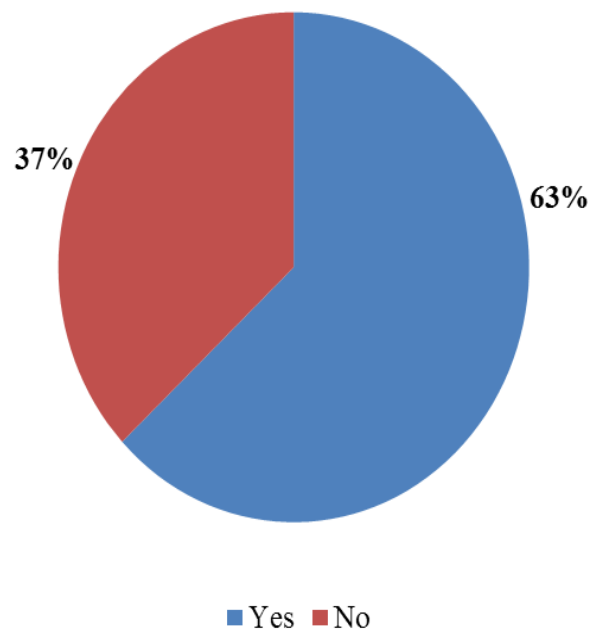


Figure 4.24: Crop destruction as a result of resource-based conflicts in Tana Delta

The study shows that 63% of the respondents confirmed there were crops destroyed during resource-based conflicts while 37% denied. These results imply that crops were actually destroyed during resource-based conflicts within Tana Delta, which is depicted by a 63% majority of the household respondents.

The investigator asked the survey households whether livestock were destroyed as a result of resource-based conflicts within the Tana Delta. The results (Table 4.16) indicate that 59% of the survey respondents confirmed livestock were destroyed and 41% of the household respondents claimed livestock were not destroyed during the resource-based conflicts. These

results imply that livestock were actually destroyed during resource-based conflicts in Tana Delta as illustrated by 59% majority of the household respondents.

Table 4.13: Livestock destroyed due to resource-based conflicts in Tana Delta (n = 300)

Response	Frequency	Percent (%)
No	124	41
Yes	176	59

The study results (Figure 4.25 and Table 4.14 above) show that there exists divided opinions, which are demonstrated by 63% to 37% and 59% to 41% of household respondents for and against the destruction of crops and livestock respectively. These differences in respondents' views are expected when interrogating sensitive issues, which affect the livelihood strategies of warring communities. The divergence in respondents' perceptions can be attributed to the following, among other factors: First, both the farmer and pastoralist communities may have exaggerated the destruction of their respective crops and livestock as deliberate justification for seeking sympathy, possible compensation and even future retaliation; Second, the parties may have underemphasised the destruction of their respective properties in order to portray less damages and therefore, strengths on their parts respectively; Third, both communities may have exaggerated the destruction of properties for their opponents to portray huge damages and hence, weaknesses on the opposite parties respectively; Fourth, the warring communities may have overemphasised the destruction of properties for their opponents to conceal the actual damages they inflicted on the opposite sides respectively and; Fifth, both groups may have been sincere in their responses and thus, the results depicts the actual opinions of communities regarding the destruction of crops and livestock as a result of resource-based conflicts in the Tana Delta.

4.5.7 Markets Trends as a Result of Resource-based Conflicts

The study examined the impacts of resource-based conflicts on market-based livelihoods of the local communities within the Tana Delta. The researcher asked the households whether markets decreased as a result of resource-based conflicts. The Table (Table 4.15)

Table 4. 14: Market trends as a result of resource-based conflicts (n = 300)

Responses	Frequency	Percent (%)
Decreased	236	79
Improved	61	20
Not aware (N/a)	3	1

The study results illustrate the responses of survey households, which show that 79% of the respondents admitted the markets decreased, 20% of the respondents claimed the markets increased and 1% of the respondents were not aware of any changes in markets.

These results imply that markets decreased as a result of resource-based conflict in the Delta, which was attested to by 79% majority of the survey respondents. The study done by Nunow, 2011), confirmed the explanation which state that these results were expected since, conflicts result in tension, fear and threats, which in turn lead to the disruption of traditional arrangements of affected communities including social and economical life styles. The results have also confirmed that resource-based conflicts causes the displacement of people (Figure 4.25), destruction of property (Figure 4.26 and Table 4.14) and loss of human lives and injuries (Figure 4.24), thereby reducing the market-based livelihood activities of local communities. The situation is further compounded by the location of major market centres within areas that are inhabited by different communities, which necessitates inter-community interactions during marketing activities. This may have contributed to the high respondents (79%) who felt that the markets declined as a result of resource-based conflicts within the Delta.

4.5.8 Social-economic Activities, Livelihood Strategies and Employment

The study was interested in examining the impact of resource-based conflicts on the social economic activities and livelihood strategies of local communities within Tana Delta.

4.5.8.1 Trends of Social-economic Activities, Livelihood Strategies due to conflicts

The investigator asked the households whether their social economic activities and livelihood strategies increased or decreased as a result of resource-based conflicts (Table 4.16).

Table 4.15: Trends social economic activities and livelihood strategiess in Tana Delta (n = 300)

Socio-economic activities Livelihood strategies	Responses (%)			
	Decrease	Increase	Not applicable	Total
Water bodies	98	2	0	100
Crop production	97	3	0	100
Livestock production	94	6	0	100
Fish production	91%	9%	0	100
Firewood harvesting	47	53	0	100
Industries	76	20	4	100
Trade	79	21	0	100

The study shows that all the social economic activities and livelihood strategies of the local communities decreased in the Delta area due to resource-based conflicts except firewood harvesting, which increased. The results imply that over 90% majority of the respondents believed the water bodies, crops, livestock and fish production have declined in the area as a result of resource-based conflicts. However, the opinions of survey households were divided with regards to firewood harvesting activities, which were thought to have increased by 53% of the respondents as opposed to 47% of the respondents who believed that firewood collection activities decrease. The industries and trade-based livelihood activities have also decreased within the Tana Delta as reported by 76% and 79% of the sample respondents respectively. The findings of this had similar expalination by HVA, (2007) which explain that. the Tana River has suffered significant increase in siltation of its beds and oxbow lakes within the delta area. The increase in siltation is attributed to poor land use practices in the upstream regions of the river, prolonged droughts, rainstorms and floods that disrupts the processes of erosion and deposition, thereby resulting to the frequent changes of river course.

The frequent river channel dynamics within the delta have confirmed to negative impacts on socio-economic activities and livelihood strategies of the local communities. The drying of water bodies within the Delta has lead to drastic declines in the production of crops, livestock, fish and other livelihood sources.

The results of household respondents regarding water bodies, the production of crops, livestock, fish and firewood harvesting were analysed using Chi-square to determine the relationships of decrease and increase trends for the social economic activities and livelihood strategies as a result of resource-based conflicts within the Tana Delta. The Chi-square test results (Table 4.19).

Table 4.16: Mean variation for social-economic activities and livelihood in Tana Delta (n = 300)

Resource/Activity/ Strategy	Chi- square	Df	Asymp sig	Remarks/Interpretation
Water bodies	272.653 ^a	1	.000	Significant relationship (Decreased)
Crop production	268.853 ^a	1	.000	Significant relationship (Decreased)
Livestock production	228.813 ^a	1	.000	Significant relationship (Decreased)
Fish production	446.180 ^b	2	.000	Significant relationship (Decreased)
Firewood harvesting	1.080 ^a	1	.299	No relationship (Increased)

The results indicate that most social-economic activities of the local communities decreases except firewood harvesting, which increases during resource-based conflicts within the Tana Delta area. This is probably due to the reduction of non-critical socio-economic activities, which can not deter continuation of life during resource-based conflict periods and promotion of livelihood strategies that are essential, safe and critical for the survival of affected communities within the Delta.

The results of household respondents for the increases or decreases of all social economic activities and livelihood strategies as a result of resource-based conflicts (Table 4.18) and aggregated Chi-square tests (Table 4.19) imply that production of crops, livestock and fish by the warring communities in Tana Delta reduces during violence. These results therefore, demonstrate the distinct relationships in decreases of all social economic activities and livelihood strategies due to resource-based conflicts in the area. This reduction of socio-economic activities results from tension and fear, which compels the warring communities to undertake alternative livelihood activities for their survival. These supplementary livelihood strategies are therefore, driven by short-term survival desires of warring communities within the area. The desperate desire of community survival creates enabling environments that are suitable for implementation of opportunistic activities perceived as quick yielding, urgent and safer to supplement the reduced social-economic activities and livelihood strategies. These prevailing open ended opportunities therefore, portrays firewood collection as ideal among alternative livelihood options, due to high demand of domestic fuel, quick financial returns and safety from possible destruction by other warring parties.

4.5.8.1. Employment trends as a results of Resource-based Conflicts and in Tana Delta

The researcher asked the survey households whether employment within the Tana Delta increased or decreased as a result of resource-based conflict. The responses of the survey households (Table 4.20).

Table 4.17: Employment trends as a result of resource-based in Tana Delta (n = 300)

Responses	Frequencies	Percent (%)
Decreased	213	71
Improved	87	29

The results indicate that 71% of the household respondents confirmed employment decreased as a result of resource-based conflicts while 29% of the sample respondents said employment

improved in the Delta area. The study therefore implies that employment decreased in Tana Delta due to resource-based conflicts as depicted by the 71% majority of survey respondents. The decrease of employment is due to the fact that it is not a critical livelihood strategy that can deter the continuation of life by local communities during resource-based conflicts. It is also common practice for employers to reduce or halt employee activities during periods of conflicts. The researcher observed that the situation worsens due to displacement of people, tension and fear, which tends to scare away real and potential employers, entrepreneurs and development agencies from conflict prone areas like Tana Delta.

4.5.9 Vulnerability to Natural Disasters

The study examined the vulnerability of local communities to natural disasters as a result of resource-based conflicts in the Tana Delta area. The investigator asked the survey households to express their opinions as to whether members of the communities were more vulnerable to natural disaster (increase) or less vulnerable (decrease) as a result of resource-based conflicts. The results (Table 4.21).

Table 4.18: Community vulnerability increased/decreased due to resource-based conflicts (n = 300)

Responses	Frequency	Percent (%)
Decreased	76	25
Increased	221	74
N/a	3	1

The results indicate that 74% of the survey respondents confirmed members of the communities were more vulnerable to natural disasters (increased vulnerability) as a result of resource-based conflicts in Tana Delta, while 25% suggested members of the communities were less vulnerable to natural disaster (decreased vulnerability) and 1% of household respondents were not aware of the possible consequences. These results therefore, imply that communities in the Tana Delta live under increased vulnerability to natural disasters due to persistent resource-based conflicts as depicted by 74% majority of the survey respondents.

These study findings correspond with Inter-Governmental Panel on Climate Change (2007) which explain that this high disaster vulnerability of local communities within the Tana Delta can be attributed to various causal factors that arise naturally and as a result of the conflicts. And elaborate further that, there is evidence that the climate is changing at alarming rates and intensities as indicated by temperature rises throughout the country and the irregular and unpredictable rainfall patterns. The Kenyan communities are therefore vulnerable to pressures on agricultural production, since 70% of the population depends on rain fed agricultural production and livestock husbandry. The loss of livelihood strategies and reduction of social economic activities that results from resource use conflicts are major factors for the increase in vulnerability of communities to natural disasters. These results agree with the Assessment Report of the Inter-Governmental Panel on Climate Change (2007), which predicted a (50%) reduction in food productivity in Africa by 2020. Conflict victims are pushed away from their livelihood sources, forced to settle in disaster-prone areas and subjected to live under unusual conditions, thereby increasing their vulnerability to natural disasters. The results of this study also corroborates with the findings of the Inter-Governmental Panel on Climate Change (2007), which demonstrated that multiple stressors and low capacity of populations to adapt to crises makes Africa the most vulnerable continent to climate change. The victims are subjected to severe environmental conditions, uncertain social economic activities, insecure livelihood strategies and poor food security, which makes them less resilient and more vulnerable to natural disasters. This is expected to worsen the cycle of resource-based conflict as the local communities fight over dwindling natural resources (Inter-Governmental Panel on Climate Change (2007)).

In response to the fifth hypothesis, these results have proved that there are numerous impacts on the livelihood strategies of local communities within the Tana Delta, which are occasioned by resource-based conflicts.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary of the results

The study uses various methodologies such as questionnaires (Households, key informants, and organizations existing in the study area), observation and literature review. The following are summary of the study based on five objectives;

Objective one the study it was found that there were diverse types of conflicts in the Tana Delta, the most prominent and significant being the biodeversty resource-based type, which characterises the Tana Delta. The study used a Chi-square to compare the mean variation from the parameters from the respondents, the results indicate that biodiversity type of conflicts have the highest mean (1.79) followed by land conflicts (1.74), ethnic conflicts (1.39) and water conflicts (1.20) respectively. These results therefore, imply there is significant existence of types resource-based conflicts in Tana Delta. Therefore, in relation to the first research hypothesis, the results have confirmed the different types of resource-based conflicts within the area.

The study also found that there exist drivers for the resource-based conflicts in Tana Delta. It was established that the scarcity of resources were the main stimulants and significant drivers of resource-based conflicts in Tana Delta. The researcher used a Chi-square to compare the mean variation from the parameters from the respondents. The results indicate that scarcity of resources have the highest mean (1.69) followed by political incitement (1.61), competition for resources (1.59), climate change (1.57), ethnic rivalry (1.46), human wildlife conflicts (1.15), organizational arrangements (1.12) and gender related conflicts (1.02) in descending order. The results show that there are significant existing drivers of resource-based conflicts in Tana Delta. These results imply that the importance and significance of the drivers of resource-based conflicts vary in ascending order from gender related conflicts (lowest), through organizational arrangements, human wildlife conflicts, ethnic rivalry, climate changes, competition for resources, and political incitements to scarcity of resources

(highest). The results justify the research hypothesis that scarcity of resources are not only the most important and significant drivers, but also stimulants of resource-based conflicts within the Tana Delta.

In the case of objective two it was established that there exists diverse types of organisational arrangements for resource management namely; government organisations, non-governmental organisations, community-based organisations and traditional organisations for the local communities. The researcher asked households if there existed organizations for management of resources within the delta and the opinions of the respondents and the results indicate that 74% of household respondents admitted there exists organisational arrangements for resource management, while 26% of respondents believed there were no organizations for resource management in the Tana Delta. The study did confirmation to test for hypothesis from the key informants and focus to compare the results from the households, Key informants and focus groups the results show that 74%, 90%, 100% respectively accepted there are significant existing organizations for resource management.

The researcher also asked the households if the existence of types of organization within the study area and found about 37 % of the respondents confirmed existence of the following types of organizations namely: Governmental organizations (GOs), Nongovernmental organizations (NGOs) and Community Based Organizations (CBOs), 16 % of the sample respondents admitted that there were also organizations, which were established by the communities in Tana Delta. The study found that the government is the lead agency in the establishment of institutional arrangements for resource management but shows conflicting claims between state laws and communal rights, and within the local community levels. It was revealed that the traditional guidelines over natural resource use, which are still applicable and adhered to but somehow they are sidelined, negeleted and are not trusted by some members of the communities and government official. The organogram established from the summary of the list of institutions and their roles in resource management manage

to retrieve five level/segments with similar and different mandate which contradict each other and established National environmental Management authority is the lead agency.

The study established that divergent perceptions, which emanate from diverse customs, norms and traditions of the different communities have lead to clashes over livelihoods, hence resulting to resource-based conflicts in the area. The researcher gauge the opinion of the households on whether the customs, more and norms could contribute to resource-based conflicts and these results therefore provide a clear confirmation by 87% majority of survey households that resource-based conflicts within Tana Delta are attributable to the clashes over livelihood options.

Additionally, the finding of the study reveals that the existing types of organisations have policy relationships towards resource management within the delta but do not share traditional recognition and resource values with each other. Lastly, there few cases of the displaced from their cultivation land by migrants and administrative boundaries but not as results of institutional arrangements. The survey households show that 63% of the survey respondents believed the rules and regulations for resource management that are used by local communities in Tana Delta have relationships with those of the nongovernmental organizations (NGOs) as pertains to the conservation, sustainable use and management of natural resources. And lastly the results from households respondents indicate that 15% of the respondents believed displacement was caused by clashes over livelihood options, 4% of the households thought displacement was due to lost land for agriculture, 3% of the survey respondents felt the migrants sell land, 1% of the sample households said displacements was occasioned by administrative boundaries and 77% of the sample respondents were not aware of the reasons.

Furthermore the study was revealed organisational arrangements for resource management within Tana Delta have no relationships with the resource-based conflicts. The researcher compared the results from the respondents (Households, Key informants and focus groups) to test for hypthesis if the the existence of relationships between the organizations and resource-

based conflicts and the results show that, 67%, 100% and 75% respectively significantly no relationship.

Finally in the case of objective three it was established that there were relationships between trends in livelihood strategies and resource-based conflicts. The study found significant relationship between decrease in resources (water) and livelihood strategies on one hand, and increase in wildlife resources on the other. The study revealed that social-economic activities have decreased while the communities' vulnerabilities to natural disasters have increased as a result of resource-based conflicts in the area. To test for hypothesis the responses of survey household were further subjected to Chi-square tests in order to determine whether there exists relationships between decreases or increases of the different resources and livelihood strategies as a result of resource-based conflicts in the Tana Delta, and the results indicate as follows at the p value (Water Resources, Land, Vegetation, Marine ecosystem, Mangrove, Land degradation, Salinization) indicate 0.000 at 95% significant level while Wildlife 0.908 at 95% significant level, this imply that there exists significant relationships between decreases of the resources and livelihood strategies on one hand, and inverse increases of wildlife resources on the other hand as a result of resource-based conflicts.

5.2 Conclusion

The study based on the summary above draws the following conclusions ;

Incase of objective one it was concluded that there were diverse types of conflicts in the Tana Delta, the most prominent and significant being the biodiversity resource-based type. Biodiversity conflicts include human-wildlife conflicts, which results to injuries and losses of human lives, destruction of crops, livestock and other properties, displacement of people for creation of protected areas and loss of resource use rights among other forms.

Also the study found that there exist drivers for the resource-based conflicts in Tana Delta. Scarcity of resources are established by positive correlations between the onset of dry seasons and increased incidents of resource-based conflicts within the Delta. And it is

suggested that climate changes, drying of the river and subsequent increase in aridity have led to deterioration of land carrying capacity, and scarcity of water and pasture, thereby escalating resource-based conflicts within the Delta

In the case of objective two it has revealed the following conclusions; there exists diverse types of organisational arrangements for resource management. Government is the lead agency in the establishment of institutional arrangements for resource management. Conflicting claims between state laws and communal rights, and within the local community levels. Traditional guidelines are being sidelined, negeleted and are not trusted. Traditions, mores and customs have lead the communities to clashes over livelihood options. No public participation in the establishment and implementation of institutional arrangements. There is existing Land insecurity in the study area. Organizations do not share recognition and resource values with each other and there are few cases of communities displacement due to migrants with influx of cattle and adminitrative boundaries.

lastly in case of land insecurity the local communities do not posses title deeds for ownership of the land as required by law, hence they are traditional land users but not defined by the relevant government policies.

Moreover the study conclude that institutional arrangement have neither relationships with resource-based not do they influence them. These results agree with field observations, which revealed that most of the organisations are concentrated within urban areas while the community settlement villages are located within the peripheral areas of urban centres and deep in to the rural areas of the delta. The Tana Delta region is also sparsely populated thus, most institutions organize meetings with the community members who live within the urban centres and immediate surrounding areas. The sparse rural population of the Delta communities, coupled with the urban location of most organisations and poor communication infrastructure within the area, have made the regular interaction between organisations and grassroots' communities difficult.

And finally in the case of objective three the study concluded resource-based conflicts have implications on the livelihood strategies of local the communities living in the Tana Delta. The study revealed that water-based resources in the Delta have actually decreased in recent times due to continuous drying of the river, changing flooding regimes, siltation of floodplain oxbow lakes, soil salinization, land degradation and other associated processes and the decreasing in water resources have implications to livelihood strategies in the study area.

5.3 Recommendations

The study based on the conclusions above recommend the following;

Based on the objective one the study recommends introduction of the participatory economic interventions to reduce the divergent interests, demands and competition for common resources directed towards modernisation of the existing communities' traditional livelihood strategies and the initiation of additional livelihood activities targeted at reducing the over-reliance on limited common resources. The concerted effort of stakeholders shall be instrumental in the publicity, awareness, mobilisation and establishment of adequate community based organisations for resource management. There is need to establish cohesive coordinated committee which will involve all the communities in Tana Delta for conflicts management. Zonation and gazettement of the importance water resources such wetland, swamps and catchments areas should be undertaken.

Support sustainable livelihoods and reducing vulnerability to resource scarcity. The sustainable livelihoods framework is one method to analyze options and help determine suitable interventions that reduce vulnerability and help prevent conflict. Understanding livelihood strategies in a specific area, particularly where livelihoods compete for the same limited natural resources use is the key to designing conflict prevention or management strategies. In particular, the risks to minority groups and indigenous people must be assessed. Increase the availability of renewable resources through protection, restoration, infrastructure and efficient use. These measures focus on addressing the quality, quantity and availability of

renewable natural resources in order to reduce scarcity and competition. Supply-side interventions focus on increasing the overall supply of, or access to, renewable resources, as well as stopping sources of environmental degradation and pollution. Demand-side strategies focus on improving the efficiency of resource use and reducing the per capita rate of consumption. Substitution measures attempt to replace scarce renewable resources with alternatives.

The study based on objective two recommend the following; the harmonisation of organisational policies, alignment with shared traditional resource values and the recognition of cultural diversity shall be critical reform areas for effective resource management. The need for mechanisms that will ensure adequate community representation and participation in the governance of natural resources and the equitable benefit sharing with resource-based organisations can not be over emphasised. This will create stronger ties between the diverse stakeholders and further enhance resource management in the Tana Delta area. The relevant traditional structures existing within the local community organisations should blend with conventional natural resource management approaches to enhance the effective resolution of resource-based conflicts. Special attention should be directed to the development of social-economic programmes that promote cultural tolerance, integration and adaptation in order to eliminate the diverse customs, mores and traditions, which have lead to clashes over livelihood options and eventual displacement of inhabitant communitiees. Similarly, the involvement and participation of local communities in land allocation and adjudication within the delta area are critical success factors for harmoneous coexistence. Participatory land adjudication should be implemented to alleviate the existing insecurity of tenure, open access and free use policies, which have rendered the land vulnerable to ownership wrangles and attractive to migrants, thereby increasing competition for resources, conflicting livelihood strategies and escalation of resource-based conflicts. In order to reduce historical land injustices there is need to establish sustainable land framework and its committee with the guidance of national land commission, which will ensure all stakeholders are engaged in

resource mapping, planning and implementation. The sustainable land framework should include the community members from village, ward, sub-county and county level in decision making processes. The sustainable land framework committee should be trained by county government on environmental planning education and thus able to make decisions in accordance with the social, economic and environmental considerations. This will ensure equity, equal and transparent in land demarcation among the community members. This calls for the integration of both conventional and traditional participatory approaches, as well as application of best practices in the resolution and management of resource-based conflicts. Despite the fact that the established institutions have no relationships with resource-based conflicts, the researcher advises for Establishing the governance framework for natural resources, strengthening implementation capacity and recognizing resource rights: Improving resource governance includes a range of measures such as: addressing inequitable access; reducing corruption and improving transparency; preventing environmental degradation; establishing and enforcing rights and rules over natural resource use; fostering parliamentary oversight; enhancing public participation in the design and acceptance of such rules; ensuring the transparent identification of any potential social and environmental impacts from development projects; and, establishing mechanisms for the resolution of diverging disputes. And finally the study based on objective three the study recommend the integration of both conventional and traditional participatory approaches, as well as application of best practices in the resolution and management of resource-based conflicts

5.4 Recommendations for Further Research

This research identified some knowledge gaps and therefore, recommends further studies in the following areas:

To complement this study, research should be conducted on the perspectives of other local community groups that are not directly involved in resource-based conflicts within the delta area and other parts of the County. Such outside opinions could enhance the understanding of actual nature and dynamics of resource use conflicts. Similarly, studies should be conducted

in other parts of the county and the nation to find out the extent to which resource-based conflicts affect the livelihoods of local communities and how they can be minimized in order to improve the living standards of local people. It would also be interesting to compare the impact of resource-based conflicts in Tana Delta with those from other areas of the county and the nation at large.

A detailed evaluation of the effectiveness of conflict resolution measures that have been used within the area could be an interesting field of study. This may include investigations to find out the challenges faced by various conflict resolution agencies and monitoring the success of different management initiatives during and after the resource-based conflicts.

There is need for studies to understand why the Tana River and its delta have drastically continued to dry over time. A comprehensive environmental and social-economic impact assessment of upstream hydropower dams on the downstream riverine ecosystems and local communities should be an interesting field of research. Such a study could ascertain the existence of any relationships between upstream river development projects and the changes in flooding regimes, scarcity of resources and associated resource-based conflicts within the Tana Delta.

Further studies should also be conducted to guide the formulation of guidelines for integrated conservation and management of natural resources in the area.

REFERENCES

- Abbott, B. & Bordens, K. (2011). *Research Design and Methods: A Process Approach*, 8th Edition published by McGraw-Hill, New York, USA. 20:325–357.
- Alida, W. & Salome, T. (2009). Natural Resources the Environment and Conflict. Durban, African Center for the Constructive Resolution of Disputes (ACCORD). Available from www.accordion.org.
- Alise, M. & Teddlie, C. (2010). A Continuation of the Paradigm Wars? Prevalence Rates of Methodological Approaches Across The Social Behavioral Sciences. *Mixed Methods Research*, 4, 103–126.
- Ayling, R & Kelly, K. (1997). Dealing with conflict: natural resources and dispute resolution. *Commonwealth Forestry Review*, 76(3), (pp.182–185).
- Bernard, H. (1994). *Research Methods in Anthropology: Qualitative and Quantitative Approaches*, London, Sage.
- Bhatta, C. (2012). *Social Science Research: Principles, Methods, and Practices*. Published by Creative Commons Attribution, Florida, USA.
- Biggs, A., Vanjaarsveld, J., Scholes, E., Reyers, B., Lynam, T., Musvoto, C. & Fabricius, C. (2004). Nature supporting people: The Southern African Millennium Ecosystem Assessment. In CSIR Pretoria, South Africa: CSIR p. 65.
- Bob, U. (2010). Land-related conflicts in Sub-Saharan Africa. *African Journal on Conflict Resolution*, 10 (2), pp. 49–64.
- Bridget, R. (2007). Global Impacts of Conversions from Natural to Agricultural Ecosystems on Water Resources.
- Bucx, T., W. van Driel, H. de Boer, S. Graas, V.T. Langenberg, M. Marchand and C. Van de Guchte. 2014: Comparative assessment of the vulnerability and resilience of deltas – extended version with 14 deltas - synthesis report. Delta Alliance

report number 7. Delta Alliance International, Delft-Wageningen, The Netherlands

Burton, J. (1990). *Conflict: Human Needs Theory* London: Macmillan and New York: St. Martin's Press.

Cernea, M. (1988). *Involuntary Resettlement in Development Projects: Policy Guidelines for World Bank projects*. World Bank, Washington, DC, USA. Technical Paper 80. CORE (Commission on Resources and Environment). 1994. *Provincial land use strategy*. Vol. 4: Dispute resolution. CORE, Queen's Printer for British Columbia, Victoria, BC, Canada.

Chevalier, M. & Buckles, D. (2013). *Social Analysis Systems 2 (SAS2) A Guide To Collaborative Inquiry and Social Engagement*. New Delhi: SAGE Public actions.

Collier, P. & Anke, H. (2005). *The Political Economy of Secession: Negotiating Self-Determination*. Eds. H. Hannum and E. F. Babbitt. Lanham, Md.: Lexington Books.

Collins, R. (1974). *Conflict Sociology. Towards on explanatory science*. Academic Press, New York.

Daniel, S. & Mittal, A . (2009). *The Great Land Grab. Rush for World's Farmland Threatens Food Security for the Poor: The Oakland Institute*.

Dawson, C. (2002). *Practical Research Methods*. New Delhi: UBS.

Dean, P. & Jeffrey, R. (1986). *Social conflict: Escalation, stalemate and settlement*. Random house, New York.

Dingwerth, K. & Pattberg, P. (2006). *Global Governance as a Perspective on World Politics*.

Duvail, S. & Hamerlynck, O. (2012). *The Rufiji River flood: plague or blessing. International Journal of Biometeorology, 20 52, 33–42.*

- Duvail, S., Médard, C., Hamerlynck, O. & Nyingi, D.. (2013). Land and water grabbing in an East African coastal wetland: The case of the Tana delta. *Water Alternatives* 5(2): 322-343
- Duvail, S., Leauthaud, C., Hamerlynck, O., Paul, J., Cochet, H., Nyunja, J., Albergel, J. & Olivier, G. (2013). Floods and livelihoods: The impact of changing water resources on wetland agro-ecological production systems in the Tana River Delta, Kenya. *Global environmental change*, 23: 252-263
- Ecosystems Ltd (1985). Tana Delta Ecological Impact Study. Final Report. Tana and Athi Rivers Development Authority.
- Ensminger, J. (1992). *Making a market: The institutional transformation of an African society*. Cambridge: Cambridge University Press.
- FIAN International Secretariat (2010): Land Grabbing in Kenya and Mozambique: A report on two research missions and a human rights analysis of land grabbing; published by FIAN International Secretariat.
- Fortier, A. & Alphandery, P. (2001). Can a territorial policy be based on science alone? The system for creating the Natura 2000 network in France. *Sociologia ruralis*, 41(3): 311-328.
- Gaston, K. (2000). Global patterns in biodiversity. *Nature*, 405: 220-227.
- Geoffrey H. (2006). What are Institutions. *Journal of economic issues*, 40(1).
- Goldsmith, P. (2012), Tana Delta Clashes Do Not Fit the Farmer Herder Competition for Resources Narrative, The East African, September 15th, 2012, p. 22:43, Nairobi, Nation Media Group Limited.
- Goodhand, J. (2003). Enduring Disorder and Persistent Poverty: are view of the linkages between War and Chronic Poverty. *World Development*, 31(3): 629-646.

- Government of Kenya (1999). Kenya environmental coordination and management act.
National Council for Law Reporting.
- Government of Kenya (2009). Kenya Population and Housing Census, 2009, Central
Bureau Statistics, Government Printers
- Government of Kenya. (2010). *The constitution of Kenya*. Nairobi, Kenya. National
Council for Law Reporting.
- Government of Kenya. (2012). Kenya post-disaster needs assessment 2008-2011
Drought.
- Grimble, J. & Wellard, K. (1997). 'Stakeholder Methodologies in Natural Resource
Management: A review of Principles, Contexts, Experience and Opportunities'.
Agricultural Systems 55, pp.173–193.
- Haas, P. (1992). Introduction: Epistemic Communities and International Policy
Coordination. *International Organization*, 46:1–35.
- Haviland, W. (2003). *Anthropology*. Wadsworth: Belmont, CA.
- Hendrickson, D., Armon, J. & Mearns, R. (1998). The Changing Nature of Conflict and
Famine Vulnerability: The Case of Livestock Raiding in Turkana District,
Kenya. *Disasters*, 22, 185-199.
- Hirsch, P., Khamla, P. & Kaneungnit, T. (1997). Resource management in Nam Ngum
watershed, Lao PDR: lessons and experience. Final report. International
Development Research Centre, Ottawa, ON, Canada. Internal document.
- Humphreys, M., (2005). Natural Resources, Conflict, and Conflict Resolution:
Uncovering the Mechanisms. *Conflict Resolution*, 49(4): 510.

- HVA. (2007). Environmental Impact Assessment Study Report for the Proposed Tana Integrated Sugar Project in Tana River and Lamu Districts, Coast Province, Kenya; HVA International for Mumias Sugar Ltd. And TARDA
- IPSTC, (2013). International peace support training centre issue briefs, No. 1. Nairobi, Kenya.
- Irungu, P. (2000). Cattle keeping practices of the Orma people: a household survey in Tana River District, Kenya. KETRI –ILR
- Kenya Initial Rapid Assessment. (2012). Tana Delta Multi-Agency Preliminary Report, Nairobi.
- Kinyanjui, S. (2008). Ethnic Conflict in Kenya; An Analysis of the Politicization of Ethnicity and the Impact of Free Markets on Ethnic Relations, in Ethnicity, Human Rights and Constitutionalism in Africa, Nairobi: International Commission of Jurists (ICJ) Kenya Chapter.
- Klopp, J. (2010). Internal Displacement and Local Peace Building in Kenya. Daily Nation Digital.
- Knickmeyer, E. (2007). "A Crisis of Conscience Over Refugees in Israel." The Washington Post.
- Kok, A. (2009). Natural resources, the environment and conflicts. African Centre for the Constructive Resolution of Disputes (ACCORD).
- Kothari, R. (2004). *Research Methodology; Methods and Techniques*. 2nd Edition, Published by New Age International Publishers, India.
- Leauthaud, C., Belaud, G., Duvail, S., Moussa, R., Grünberger, O., & Albergel, J. (2013). Characterizing floods in the poorly gauged wetlands of the Tana River Delta, Kenya, using a water balance model and satellite data. *Hydrology Earth System Sciences*, 17: 3059-3075.

- Lindsay, J. (1998). Law in Community-Based Natural Resource Management. Paper Presented at the International Workshop on Community-based Natural Resource Management, 10–14 May, Washington, DC, USA. Economic Development Institute of the World Bank, Washington, DC, USA; International Development Research Centre, Ottawa, ON, Canada; Ford Foundation, New York, NY, USA.
- Maasland M. (1961). Water Table Fluctuations Induced by Irrigation, *J. Irrigation und Drainage*, Proc. ASCE, 39-58.
- Mac, G. (1991). *The Real Economy of Zaire: The Contribution of Smuggling & Other Unofficial Activities to National Wealth*. London, Philadelphia: James Currey; University of Pennsylvania Press.
- Makutsa, P. (2010). Implications for Small-Holder Farmers. Kenya, Eastern Africa Farmers' Federation.
- Malalo, H. (2013). Land Acquisitions in the Tana Delta. Kenya: REUTERS. Washington, DC.
- Malaquias, A. (2001). Diamonds are a guerrilla's best friend: the impact of illicit wealth on insurgency strategy. *Third World Quarterly*, 22(3): 311-325.
- Martin, P. (2007). Conflict and its Socio-economic Impact in Garsen Division, Tana-River District. Eldoret: Moi University, Department of Anthropology
- Martin, P. (2012). Conflicts between pastoralists and farmers in Tana River District. In K. Witsenburg, & F. Zaal (Eds.), *Spaces of insecurity: Human agency in violent conflicts in Kenya*. Leiden: African Studies Centre.
- Matondi, P. (2001). The Struggle for Access to Land and Water Resources in Zimbabwe: The Case of Shamva District. Doctoral thesis, Swedish University of Agricultural Sciences, Uppsala.

- Melbourne, P. (2007). *The World's water 2006-2007. The Biennial Report on Freshwater.*
- Meyer, W & Rowan B. (1977), 'Institutionalized Organizations: Formal Structure as Myth and Ceremony', *American Journal of Sociology*, Vol. 83, No. 2, pp. 340–363
- Mghanga, M. (2010). *Usipoziba ukuta utaziba ufa.* Nairobi, Mazingira Institute.
- Miller, C. (2006). Integrated concepts in water reuse: Managing global water needs. *Desalination* 187:65–75.
- Miller, C. (2007). Democratization, International Knowledge Institutions, and Global Governance. *Governance*, 20:325–35.
- Ministry of Lands Kenya, (2012). *Tana River Delta Strategic Environmental Assessment Scoping Report, 2012.*
- Mugenda, O. (2003). *Research Methods Quantitative and Qualitative Approaches.* ACTS PRESS, Nairobi
- Muraguri, P. (2013). *Tana River County Short Rains 2012/2013 Assessment Report.* Kenya
- Food Security Steering Group (KFSSG), February 2013. Retrieved June 3, 2014
from http://www.kenyafoodsecurity.org/images/files/shorttrains/sra2013/districts/Tana_River_SRA_2013_Report.pdf
- Mwakera, M. (2012). A history of war between herders and crop farmers. pp. 23–28. Daily Nation, Nairobi.
- Nunow, A. (2011). *The Dynamics of Land Deals in Tana Delta, Kenya.*
- Nurse, M. & Kabamba, J. (1999). *Defining Institutions for Collaborative Mangrove*
- Nyukuri, B. (1997). *The Impact of Past and Potential Ethnic Conflicts of Kenya's Stability and Development.* (Master's Thesis) (P 32).

- Nyukuri, M. (2012). Some contributions on the use of auxiliary information in sample surveys. *Master's Thesis*, Kenyatta University.
- Odhengo, P., Matiku, P., Waweru, P., Guda D., Kinara, T., Kathike, S., Mmyamwezi E., Munguti, S. Nelson, P. and Koyier, G. (2012): *Tana River Delta Land Use Framework*. Published by the Ministry of Lands, Physical Planning.
- Onuoha, C. (2008). Saving Africa's Shrinking Lakes through Inter-Basin Water Transfer: Reflections on the Proposed Lake Chad Replenishment Project. *Nigerian Journal of International Affairs* 34 (2), in press.
- Osamba, J. (2000). The Sociology of Insecurity: Cattle Rustling and Banditry in North-Western Kenya, in: *African Journal on Conflict Resolution*, p.25.
- Pickmeier, U. (2012). Land Acquisitions in the Tana Delta, Kenya: Bio-(Fueling) Local Conflicts, p. 46
- Pickmeier, U. & Rutten, M. (2013). Biofuels or grazing lands? Heterogeneous interests in the Tana Delta, Kenya: A cross-community perspective, African Studies Centre.
- Posgate, P. (1998). Rural development and conflict in northeastern Thailand: background paper. In Armstrong, G., ed., *What works? A case study of successful Canadian governance programming in Thailand and Cambodia*. Southeast Asia Fund for Institutional and Legal Development, Canadian International Development Agency, Ottawa, ON, Canada. 67pp.
- Rosemarie, M., Fisher, E., Patrick, T. & Vivian, B. (2011). *The Relationship Between Community-Based Organizations and the Effective Management of Coastal and Marine Resources in the WIO Region*. A report for the Marine Science for Management Programme of the Western Indian Ocean Marine Science Association.

- Ross, C. (2002). *Sampling and Surveying Handbook. Guidelines for planning, organizing and conducting surveys.* (Vol. 4). Queen's Printer.
- Scott, C. (1987). *Weapons of the weak: everyday forms of peasant resistance.* Yale University Press, New Haven, CT, USA.
- Smajgl, A., Vella, K. & Greiner, R. (2003). Frameworks and Models for Analysis and design of institutional arrangements in Outback Regions. IASCP Pacific regional meeting- Traditional land in pacific region: indigenous common property resources in convulsion or cohesion. Digital library of the commons. Indiana University.
- Solagberu, R. (2012). *Land Use Conflict between Farmers and Herdsmen – Implications for Agricultural and Rural Development, Department of Agricultural Extension and Rural Development, University of Ilorin, Ilorin Nigeria Rmit: University.*
- Stagner, R. (1967). *Psychological aspects of international conflict.* Belmont, Brooks.
- Steele, H. (2003). Environmental issues of Asia and the Pacific, in *The Far East and Australia*, 2003, Regional Surveys of the World, Europa Publications, Taylor and Francis, London.
- Stewart, F. (2000). *Crisis Prevention: Tackling Horizontal Inequalities*. *Oxford Development Studies*, 28(3): 245-62.
- Stewart, W. (1993). *Secondary Research: Information Sources and Methods*, Sage, Newbery Park, CA
- Syagga, P. (2010). *Public land historical land injustices and the new constitution.* Society for International.
- Temper, L. (2012). *Who Gets the Human Appropriation of net Primary Production? Biomass Distribution & the 'Sugar Economy' in the Tana Delta, Kenya.* LDPI Working paper number 5.

- The Intergovernmental Panel on Climate Change (IPPC) (2007). Fourth assessment report.
- The World Commission on Environment and Development. (1987). *Our Common Future*. Oxford University Press.
- Thomas F & Homer, D. (1999) *Environment, Scarcity, and Violence* (Princeton, NJ: Princeton University Press, 1999)
- Tungtittiplakorn, W. (1995). Highland-lowland conflict over natural resources: a case of Mae Soi, Chiang Mai, Thailand. *Society and Natural Resources*, 8(2): 279–288.
- Turton, E. (1975). Bantu, Galla and Somali migrations. In *The Horn of Africa; A Reassessment of the Juba/Tana Area*. *Journal of Africa History*, (4):519-538.
- Tyler, M. (1999). *Policy implications of natural resource conflict management*. Ottawa, ON: International Development Research Centre 1999. 33pp.
- UNICEF (2009). *Tana Delta District Contingency Plan: Draft Report for Consultation*. Nairobi: UNICEF.
- United Nations. (2012). *Causes of conflict and the promotion of durable peace and sustainable development in Africa*. Report of the Secretary-General (A/67/205). New York.
- USAID, (2005). *Livelihoods and conflict: A toolkit for intervention*. Office of Conflict Management and Mitigation Bureau for Democracy, Conflict, and Humanitarian Assistance, (USAID).
- Uphoff, T. (1986). *Local Institutional Development: An Analytical Sourcebook with Cases*. Kumarian Press, West Hartford. Washington, DC.
- Van, P. & Voermans, E. (2013). *Integrated Water Resources Management in the Tana Delta, Kenya*.

- WARMA, (2009). Tana Water Catchment Area Management Strategy. Aisen, A. & Veiga, J. (2006). "Does Political Instability Leads to Higher Inflation? A Panel Data Analysis." *Journal of Money, Credit and Banking*, 38(5), 1379-1389.
- White, R.M., A. Fischer, K. Marshall, J.M.J. Travis, T.J. Webb, S. di Falco, S.M. Redpath, and E. van der Wal (2009). Developing an Integrated Conceptual Framework to Understand Biodiversity Conflicts. *Land Use Policy*, 26, pp. 242–253
- Wilson, C. & Tisdell, C. (2003). Conflicts over natural resources and the environment: economics and security. Working Paper No. 86. The University of Queensland, Brisbane QLD 4072: Australia.
- Wokabi, M., Sombroek, G. & Mbuvi, P. (1976). Preliminary Evaluation of the Soil Conditions of the Tana Delta for Irrigation Development. National Agricultural Laboratories. Kenya Soil Survey. Ministry of Agriculture, Nairobi.
- World Bank, (1996). *The World Bank annual report 1996*. Washington DC; World Bank
- World Bank, (2011). *World Development Report: Conflict, Security and Development: Chapter 1*.
- World Commission on Dams. (2000). Dams and development. A new framework for decision making. Earth scan Publications Ltd., London, UK, 356.
- World Energy Council. (1999). The World's largest hydroelectric plant US Geological Survey. Survey of energy resources. United Kingdom: London street.
- World Health Organization, (2008). Preventing Violence and Reducing its Impact: How Development Agencies can help. Geneva: WHO.
- World Water Council. (2007). Evolution of water withdrawals and consumption since 1900. Retrieved from <http://www.worldwatercouncil.org/index.php?id=5>. 36.

APPENDICES

APPENDIX 1: SURVEY QUESTIONNAIRE

Interview schedule for communities

I am student of Pwani University conducting a study on the impact of resource use conflicts on livelihoods of the communities in Tana Delta Sub County, Tana River County in Kenya. The study is to enable me to produce a Master's thesis as part of the requirement of the institution in fulfilling the master degree program.

I therefore request you to respond as accurately as possible to the questions. The information given will be treated as confidential as possible and used for academic purposes only. I look forward to your kind cooperation.

Sign: _____

Time Start.....

Date of interview: .../.../2015

Questionnaire's Number.....

Interviewee's name.....

Village.....

SECTION A**General Information**

Date.....

1) Which village do you live in?.....

2) Tribe

3) Religion.....

4) Sex A) male B) female 5 a) Are you married? A) Yes B) No

5 b) If yes above how many children do you have?

A) 1 B) 2 C) 5 D) more than 5

6) How old are you?

(A) 18-27 (B) 28- 37 (C) 38- 47 D) 48-57 (E) > 57 7 a) Are you indigenous to this area (Tana delta)? A) Yes B) No 7 b) If not when did you immigrate in this area? A) 1963-1981 B) 1981-2000 (C) > 2000 -2015.

7 c) What was the reason for immigrating to the area?

A) Agriculture B) Small business entrepreneur C) Livestock keeping D) Fishing (E) Employment

(F) Others please specify.....

8) Level of education

A) Primary B) Secondary C) College D) University

E) Others (specify).....

9) Level of income:

A) Less than 1 \$; B) \$1; C) More than \$1 per day

10) What are the main sources of your livelihood?

A) Pastoralist B) Agriculture C) Both agriculture and pastoralist D) Employed E) other activities specify.....

11) How far are you from the source of your livelihood?

A) one kilometer B) 5 kilometers C) 10 kilometers D) More than 10 kilometers 12 a) Do you find any difficulties in earning your livelihood? A) Yes B) No

12 a) If yes above explain.....

SECTION B**Types of Resource-Use Conflicts and Their Drivers**

1) In your opinion what are mostly likely types of resource use conflicts in Tana Delta?

- A) Biodiversity related conflicts
- B) Land conflicts
- C) Water conflicts
- D) Ethnic conflicts
- E) Other specify.....

2) Which of the following are drivers for resource use conflict?

- A) Competition for resource
- B) Scarcity resources
- C) Political incitement
- D) Ethnic rivalry
- E) Climatic change
- F) Human wildlife conflicts
- G) Institutional arrangements
- H) Gender related conflicts

SECTION C

Institutional Arrangements for resource-based management and Resources-based Conflicts

1 a) Are there institutions arrangements for resource use? A) Yes } No

1 b) If yes, what type of institutional arrangements do you have?.....

2) Are the institutional arrangements formal or informal?.....

3) Are there rules set by the community for managing the resources?

A) Yes B) No

3 b)If yes, please explain.....

4) Please can you explain how the rules used by the community relate to those of other organizations.....

5) Do you have a constitution in the community that governs resources use here?

A) Yes B) No

5 b) If no which one do you use? State.....

5 c) Explain why.....

6 Which rights do you have in using the following resources;

i). land.....

ii). pasture and;.....

ii). water.....

7 a) Please explain how the customs, mores and traditions have lead to the resource use conflict.....

7 b) How do the communities sanction those groups involved in resources use conflicts.

8) Please explain who establishes the institutions for resources use discussed above?

A) GoK B) Community C) NGOs

D) All of them

9) Were you involved in the establishment of these institutional arrangements?

A) Once a time B) Sometimes C) Always D) Never

10) Are you benefiting from these institutional arrangements?

A) Once a time B) Sometimes C) Always D) Never

11) Are you included from these institutional arrangements during implementation?

A) Once a time B) Sometimes C) Always D) Never

12) What types of tenure system do you possessed?

A) Communal land B) public land C) Private holder D) Lease holder

E) Other specify.....

13 a) In your view do you think that there other are people who possesses land?

A) Yes B) No

13 b) How did they get land rights? In terms of processes of getting land in relations to Kenya constitution Explain.....

14 c) From when did they get land rights?.....

7 d) How many hectares of land were they allocated?.....

15 a) In your view, for what purpose were they allocated land?.....

15 b) Were you consulted? A) Yes B) No

16) Do you share tradition or recognition of resource values and taboos with these institutions?

A) Yes B No

17 a) The placement of institutions for resource use lead to migrations, At the resettlement site do you think that the migrants can interfere with local cultural in terms of taboos, norms, policies? A) Yes B No

17 b) If yes above explain how these cultural different (Norms. policies and taboos) can affect your livelihood... ..

1 a) Is there any relationship between the institutional arrangements mentioned above and the resources use conflicts?

A) Yes B) No

1 b) If yes above please explain.....

2) To what extent do the institutional arrangements contribute to resources use conflict?.....

3) Can you categorize the extent for each type of conflict?

A) Very High B) High C) Medium D) Low

4 a) In your opinion are institutional arrangements related to communities interest?

A) Yes B) No

4 b) If yes above explain (if possible state some of policies).....

5 a) In your opinion do you find any government official coming to your area for resourcemaping? (Information on resources)

A) Yes B) No (if no go to the next Q 6)

5 b) If yes above, were you included in resource mapping? A) Yes B) No

5 c) Are you included in resource strategic management? A) Yes B) No

SECTION D

The Impacts of Resource Use on Communities' Livelihood

What are implications of resource use conflict on the livelihood of the communities in the following sections? (Key improved or decreased). Please indicate one

Part 1

Environment

a) Water resource.....

b) Land.....

c) Vegetation.....

d) Wildlife.....

e) Marine ecosystem.....

f) Mangrove.....

g) Land degradation.....

h) Salinization.....

Part 2

Social implications

A) Death/injuries

i) Are there deaths/injuries you know that resulted from resource use conflicts?

A) Yes B) No

ii) If yes above how many were they?.....

iii) What were their effects on the family livelihood?.....

B Displacements

i) Are you/ relatives displaced as results of resource use conflicts?

A) Yes B) No

ii) If yes where were you/they displaced?.....

iii) Do you/they find any difficulties in accessing their livelihood? A) Yes B) No

(Key improved or decreased). Please indicate one

C Cultural change.....

D) Illiteracy level

i) Did you go to school? A) Yes B) No

ii) If no above why?

iii) If yes, above which level of education did you reached?

A) Finished primary education

B) Finished secondary education

C) Finished university

Other social implications

Part 3

Infrastructure

A) Livelihoods assets

I) Are your/relatives house/houses burnt during the conflicts

A) Yes B) No

ii) If yes above, how many houses?

iii) Do you aware that some of school infrastructure in your area has been destroyed as results of conflicts? A Yes B No

iv) If yes above, how many?.....

v) Do you think that yours/relatives land (crops) destroyed as a results of resource use conflicts?

A Yes B No

vi) Are your/relatives livestock destroyed/looted during resource use conflicts?

A Yes B No

vii) In your experience do your/relatives business (shops, kiosk) looted as a results of conflicts

viii) Destruction of the following social amenities; (Key improved or decreased). Please indicate one.

- a) Hospital.....
- b) Schools.....
- c) Market center
- d) Water bodies.....

Part 4

Economic implications (Key improved or decreased). Please indicate one.

- a) Crop production.....
- b) Livestock production.....
- c) Fish production.....
- d) Loss of market center.....
- e) Loss industrial tourism.....
- f) Firewood harvesting.....
- g) Disrupts trade.....
- f) Employment.....
- h) Vulnerability to natural disasters.....
- i) Safety networks.....

Time End.....

Thank For Your Cooperation

APPENDIX 2: INTERVIEW SCHEDULE FOR KEY INFORMANTS

Am student of Pwani University conducting a study on the impact of resource use conflicts on livelihood of the communities in Tana Delta Sub County, Tana River County in Kenya. The study is to enable me to prepare an academic report as part of the requirement by the institution in fulfilling the master degree program.

I therefore kindly request you to respond accurately as possible to the questions. And information given will be treated as confidential and used for an academic purpose only.

Looking forward for kind cooperation

SECTION A

General Information

Date.....

1) Position of respondent.....

2) What is the name of your institution?.....

3) When was your institution established?.....

4) What is the objective of your institution for resource use in Tana Delta?.....

SECTION B

Types of resource-use conflicts and their drivers in the Tana Delta

1) In your opinion what are mostly likely types of resource use conflicts in Tana Delta?

A) Biodiversity related conflicts

B) Land conflicts

C) Water conflicts

D) Ethnic conflicts

E) Other specify.....

2) Which of the following are drivers for resource use conflict?

A) Competition for resource

B) Scarcity resources

C) Political incitement

D) Ethnic rivalry

E) Climatic change

F) Human wildlife conflicts

G) Institutional arrangements

H) Gender related

SECTION C

Institutional Arrangement for Resource use

1 a) Besides your institution, are there other institutions involved in resource-use?

A) Yes B) No

1 b) If yes above name them.....

1 c) State the objective for each institution you have named above.....

2 a) Do you have working relations with any of the above institutions?

A) Yes B) No

2 b) If yes name them.....

2 c) Explain the relationship.....

3 a) In your opinion is your institution relate to communities interest?

A) Yes B) No

3 b) If yes above explain (if possible state some of policies).....

4 a) In your opinion do you think your institution might have done resource mapping before establishment? (Information on resources)

A) Yes B) No (if no go to the next Q 6)

4 b) If yes above, do you think that it has included communities in resource mapping?

A) Yes B) No

5) Were communities included in resource strategic planning and management?

A) Yes B) No

6) What types of tenure system does your institutions possessed?

A) Communal land B) Public land

C) Private holder D) Lease holder

E) Other specify.....

7) In your opinion do you think that there are other institution which possesses land?

A) Yes B) No

8 a) Do they have land right?

A) Yes B) No

8 b) If yes, how did these institutions get land rights? (*In terms of processes of getting land in relations to Kenya constitution*) Explain.....

8 c) From when did they get land rights?

A) Many years B) Few years

C) Not aware D) Exact year

Other specify.....

8 d) How many hectares of land is your institution allocated?.....

8 e) In your view, for what purpose is your institution allocated land?

8 f) In which year was your institution allocated land?.....

9 a) Does your institution share tradition or recognition of resource values and taboos with the communities? A) Yes B) No

9 b) If yes above explain how these cultural different (norms, policies and taboos) can affect communities livelihood.....

SECTION D

The extent to which the institutional arrangements in Tana Delta influence resource-use conflicts

1) Who established your institution for resources use?

A) GK B) Community

C) NGOs D) All of them

2) According to you, were the communities involved in the establishment of your institution?

A) Yes B) No

2 b) If yes above,how? Explain.....

3 a) Do communities benefit from your institution?

A) Yes B) No

3 b) How do they benefit? Explain.....

4 a) Do you include communities during implementation?

A) Yes B) No

4 b) If yes, how often?

A) Once a time B) Sometimes

C) Always D) Never

SECTION E

The Impacts of Resource Use on Communities' Livelihood

What are implications of resource use conflict on the livelihood of the communities in the following sections? (Key improved or decreased). Please indicate one

Part 1

Environment

a) Water resource.....

b) Land.....

c) Vegetation.....

d) Wildlife.....

e) Marine ecosystem.....

f) Mangrove.....

g) Land degradation.....

h) Salinization.....

Part 2

Social implications

A) Death/injuries

i) Are there deaths/injuries you know that resulted from resource use conflicts?

A) Yes B) No

ii) If yes above how many were they?.....

iii) What were their effects on the family livelihood?.....

B Displacements

i) Were there displacements you know that resulted from resource use conflicts?

A) Yes B) No

ii) If yes where?.....

iii) Do you/they find any difficulties in accessing their livelihood?

A) Yes B) No

C) Cultural change.....

D) Illiteracy level

i) Did you go to school?

A) Yes B) No

i b) If no above why?

ii) If yes above which level of education did you reached?

A) Finished primary education

B) Finished secondary education

C) Finished university

Other social implications

Part 3

Infrastructure

A) Livelihoods assets

I) Are your/relatives house/houses burnt during the conflicts?

A) Yes B) No

ii) If yes above,how many houses?

iii) Do you aware that some of school infrastructures in your area have been destroyed as results of conflicts? A) Yes B) No

iv) If yes above, how many?.....

v) Do you think that yours/relatives land (crops) destroyed as a results of resource use conflicts? A) Yes B) No

vi) Are your/relatives livestock destroyed/looted during resource use conflicts?

A) Yes B) No

vii) In your experience do your/relatives business (shops, kiosk) looted as a results of conflicts

viii) Destruction of the following social amenities; (Key improved or decreased). Please indicate one.

a) Hospital.....

b) Schools.....

c) Market center

d) Water bodies.....

Part 4

Economic implications (Key improved or decreased). Please indicate one.

a) Crop production.....

b) Livestock production.....

c) Fish production.....

d) Loss of market center.....

e) Loss industrial tourism.....

f) Firewood harvesting.....

g) Disrupts trade.....

f) Employment.....

h) Vulnerability to natural disasters.....

i) Safety networks.....

Time End.....

Thank For Your Cooperation

APPENDIX 3: FOCUS GROUP DISCUSSION GUIDE**Interview schedule for focus group**

I am student of Pwani University conducting a study on the impact of resource use conflicts on livelihoods of the communities in Tana Delta Sub County, Tana River County in Kenya. The study is to enable me to prepare an academic report as part of the requirement of the institution in fulfilling the master degree program.

I therefore request you to respond as accurately as possible to the questions. The information given will be treated as confidential and used for academic purposes only. I look forward to your kind cooperation.

Time Start.....

Date of interview: .../.../2015

Questionnaire's Number.....

Interviewee's name.....

Focus group no.....

SECTION A**Types of Resource-Use Conflicts and Their Drivers**

1) In your opinion what are mostly likely types of resource use conflicts in Tana Delta?

A) Biodiversity related conflicts

B) Land conflicts

C) Water conflicts

D) Ethnic conflicts

E) Other specify.....

Which of the following are drivers for resource use conflict?

A) Competition for resource

B) Scarcity resources

C) Political incitement

D) Ethnic rivalry

E) Climatic change

F) Human wildlife conflicts

G) Institutional arrangements

H) Gender related conflicts

SECTION C

Institutional Arrangement for Resource Use

1 a) Are there institutions arrangements for resource use? A) Yes B) No

1 b) If yes, What type of institutional arrangements do you have?.....

2 Are the institutional arrangements formal or informal?.....

3) Are there rules set by the community for managing the resources?

A) Yes B) No

3 b) If yes, please explain.....

4) Please can you explain how the rules used by the community relate to those of other organization.....

5) Do you have a constitution in the community that governs resources use here?

A) Yes B) No

5 b) If no which one do you use.

5 c) Explain why.....

6 Which rights do you have in using? In terms of the following;

i). land,.....

ii). pasture and ;.....

ii). water.....

7) Please explain how the customs, mores and traditions have lead to the resource use conflict.....

How do the communities sanction those groups involved in resources use conflicts...

8) Please explain who establishes the institutions for resources use discussed above?

- A) GoK B) Community
 C) NGOs D) All of them

9) Were you involved in the establishment of these institutional arrangements?

- A) Once a time B) Sometimes
 C) Always D) Never

10) Are you benefiting from these institutional arrangements?

- A) Once a time B) Sometimes
 C) Always D) Never

11) Are you included from these institutional arrangements during implementation?

- A) Once a time B) Sometimes
 C) Always D) Never

12) What types of tenure system do you possessed?

- A) Communal land B) Public land
 C) Private holder D) Lease holder

E) Other specify.....

13 a) In your view do you think that there other are people who possesses land?

- A) Yes B) No

13 b) How did they get land rights? In terms of processes of getting land in relations to Kenya constitution Explain.....

14 c) From when did they get land rights?.....

7 d) How many hectares of land were they allocated?.....

15 a) In your view, for what purpose were they allocated land?.....

15 b) Were you consulted? A) Yes B) No

16) Do you share tradition or recognition of resource values and taboos with these institutions?

A) Yes B) No

17 a) The placement of institutions for resource use lead to migrations, At the resettlement site do you think that the migrants can interfere with local cultural in terms of taboos, norms, policies? A) Yes B) No

17 b) If yes above explain how these cultural different (Norms. policies and taboos) can affect your livelihood... ..

SECTION D

The extent to which the institutional arrangements in Tana Delta influence resource-use conflicts

1 a)Is there any relationship between the institutional arrangements mentioned above and the resources use conflicts?

A) Yes B) No

1 b) If yes above please explain.....

2) To what extent do the institutional arrangements contribute to resources use conflict?.....

3) Can you categorize the extent for each type of conflict?

- A)Very High B) High
C) Medium D) Low

4 a) In your opinion are institutional arrangements relate to communities interest?

- A) Yes B) No

4 b) If yes above explain (if possible state some of policies).....

5 a) In your opinion do you find any government official coming to your area for resource mapping? (Information on resources) yes/no (if no go to the next Q 6)

5 b) If yes above, were you included in resource mapping?

- A) Yes B) No

5 c) Were you included in resource strategic management?

- A) Yes B) No

6) What types of tenure system do you possessed?

- A) Communal land B) Public land
C) Private holder D) Lease holder

E) Other specify.....

7 a) In your view do you think that there other people who possesses land?

- A) Yes B) No

7 b) How did they get land rights? In terms of processes of getting land in relations to Kenya constitution Explain.....

7 c) From when did they get land rights?.....

7 d) How many hectares of land were they allocated?.....

8 a) In your view, for what purpose were they allocated land?.....

8 b) Were you consulted? A) Yes B) No

9) Do you share tradition or recognition of resource values and taboos with these institutions?

A) Yes B) No

10 a) The placement of institutions for resource use lead to migrations, At the resettlement site do you think that the migrants can interfere with local cultural in terms of taboos, norms, policies?

A) Yes B) No

10 b) If yes above explain how these cultural different (norms. policies and taboos) can affect your livelihood.....

SECTION E

The Impacts of Resource Use on Communities' Livelihood

What are implications of resource use conflict on the livelihood of the communities in the following sections? (Key improved or decreased) . Please indicate one

Part 1

Environment

- a) Water resource.....
- b) Land.....
- c) Vegetation.....
- d) Wildlife.....
- e) Marine ecosystem.....
- f) Mangrove.....
- g) Land degradation.....
- h) Salinization.....

Part 2

Social implications

A) Death/injuries

i) Are there deaths/injuries you know that resulted from resource use conflicts?

A) Yes B) No

ii) If yes above how many were they?.....

iii) What were their effects on the family livelihood?.....

B Displacements

I) Were there displacements you know that resulted from resource use conflicts?

A) Yes B) No

ii) If yes where?.....

iii) Do you/they find any difficulties in accessing their livelihood?

A) Yes B) No

(Key improved or decreased). Please indicate one)

C Cultural change.....

D) Illiteracy level

I) Did you go to school? A) Yes B) No

I b) If no, above why?

I c) If yes above which level of education did you reached?

A) Finished primary education

B) Finished secondary education

C) Finished university

Other social implications

Part 3

Infrastructure

A) Livelihoods assets

i) Are your/relatives house/houses burnt during the conflicts A) Yes B) No

ii) If yes above, how many houses?

iii) Do you aware that some of school in your area has been destroyed as results of conflicts?

A) Yes B) No

iv) If yes above, how many?.....

v) Do you think that yours/relatives land (crops) destroyed as a results of resource use conflicts? A) Yes B) No

vi) Are your/relatives livestock destroyed/looted during resource use conflicts?

A) Yes B) No

vii) In your experience do your/relatives business (shops, kiosk) looted as a results of conflicts

viii) Destruction of the following social amenities;(Key improved or decreased). Please indicate one.

a) Hospital.....

b) Schools.....

c) Market center

d) Water bodies.....

Part 4

Economic implications (Key improved or decreased). Please indicate one.

a) Crop production.....

b) Livestock production.....

c) Fish production.....

d) Loss of market center.....

e) Loss industrial tourism.....

f) Firewood harvesting.....

g) Disrupts trade.....

f) Employment.....

h) Vulnerability to natural disasters.....

i) Safety networks.....

Time End.....

Thank for your cooperation

APPENDIX 4: LIST OF STUDY POINTS (VILLAGES)

No.	Major Villages
1	Shirikisho
2	Idsowe
3	Dalu
4	Galili
5	Danisa
6	Dumi
7	Bilisa
8	Salama
9	Mwina
10	Assa
11	Ndera
12	Kipini
13	Ozi
14	Kilelengwani
15	Kipao
16	Konemasa
17	Chara
18	Wachu Oda
19	Kurawa
20	Ngao
21	Tarasaa
22	Golbant
Total	

APPENDIX 5 A: LIST OF INSTITUTION IN OPERATING IN TANA DELTA

S/n	Government		Non-government
1	National Environment Management Authority (NEMA)	1	Food and Agriculture Organisation (FAO)
2	Water Resource Management Authority (WRMA)	2	Nature Kenya
3	National Irrigation Board (NIB)	3	Team and Team International
4	Tana and Athi River Development Authority (TARDA)	4	Agricultural Cooperative Finance (ACF)
5	Kenya Wildlife Services (KWS)	5	Germany Agro-Action
6	Kenya Forest Services (KFS)	6	Kenya Red Cross Society
7	National Drought Management Authority (NDMA)	7	Wetlands International
		8	Tana Pastoralists Forum

APPENDIX 5 B: LIST OF SELECTED INSTITUTIONS FOR THE STUDY

S/n	Institutions
1	National Environment Management Authority (NEMA)
2	Water Resource Management Authority (WRMA)
3	National Irrigation Board (NIB)
4	Tana and Athi River Development Authority (TARDA)
5	Kenya Wildlife Services (KWS)
6	Kenya Forest Services (KFS)
7	National Drought Management Authority (NDMA)
8	Kenya Red Cross Society
9	Nature Kenya
10	Team and Team International

APPENDIX 6: INTRODUCTION LETTER

SAID ABDULAHI OMAR

Department of Environmental Sciences

Pwani University

P.O Box 195-80108-Kilifi

Date: _____

Dear Sir/Madam

Ref: Introduction Letter

I am Said Abdulahi Omar, a Masters student in the Department of Environmental science at Pwani University. I have approached you to give me information about The Impact of Resource Use Conflicts on Community Livelihood, In Tana Delta Sub County. I request that you provide accurate information to the best of your ability. I do guarantee you that the information you give will only be used for the purposes of the research study and you confidentiality and privacy will be highly safeguarded.

Further, note that the information you provide is intended for the research purposes only and will not be released to any other person whatsoever.

Kindly be a respondent for my research.

Yours faithfully,

Said Abdulahi Omar

Tel number 0722900376

APPENDIX 7: CONSENT FORM FOR ALL RESPONDENTS

TITLE OF THE PROJECT;

Assessment of the Impacts of Resource Use Conflicts on Community Livelihood, in Tana Delta Sub County, Tana River County in Kenya

Dear Sir/Madam,

This is a research project being conducted to examine the effects of resource use conflicts to the communities' livelihood. Field studies of the project have been designed to take place at selected sites in Tana Delta Sub County, Tana River County In Kenya coast. This questionnaire is part and parcel of the field studies. To collect useful data that will achieve the research study's objective for the well-being of the society, I kindly request that you answer the questions as frankly and honestly as possible and to the best of your understanding. The collaboration of you and other respondents in this study is highly appreciated and all the information provided through the responses will be used strictly for the purpose of this study ONLY and will be treated with utmost confidentiality. The respondent does not need to include their names in the interview schedule. Thank you in advance for your kind cooperation.

Dear respondent,

Please answer the questions to the best of your understanding. Your cooperation in this study is highly appreciated and all the information you provide will be treated with utmost confidentiality.

Sign _____

Date _____

Respondent

Sign _____

Date _____

Principal Investigator (PI)

Sign _____

Date _____

Witness

For any enquiry about this project contact PI on

Cell-phone: +254722208676

Email: okeyob@yahoo.com