INFLUENCE OF COMMUNITY PARTICIPATION ON PROJECT SUSTAINABILITY THE CASE OF MAU MARA SERENGETI SUSTAINABLE WATER INITIATIVE IN MARA BASIN - KENYA

BY

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DECLARATION

This Research project is my original work and has not been presented for a degree in any other university.

Signed……..…… Date……...

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REG NO.: L50/73667/2014

This Research project has been examined and passed with my approval as University Supervisor.

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DEDICATION

This Research Project is dedicated to my family, my husband Samuel Ochieng, my daughter Wendy Awuor Ochieng and my son Ken Odongo Ochieng and his wife Victoria Nyakundi and finally my son Franklin Ochieng for their constant support and being a source of great inspiration during my period of study at the University of Nairobi. May the Lord bless them.

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ABBREVIATIONS AND ACRONYMS

ADB	African Development bank
GIZ	Agency for International Cooperation
HQ	Headquarter
IHE	Institute of home economics
IWRM	Integrated Water Resource Management
MAMASE	Mau Mara Serengeti
RO	Regional Office
SRO	Sub Regional Office
UNESCO	United Nations Educational, Scientific and Cultural Organization
WRM	Water Resources Management
WRMA	Water Resources Management Authority
WRUA	Water Resources Users Association
IWRM	Integrated Water Resources Management

ABSTRACT

Lack of community participation has been cited by scholars as one of the key reasons as to the failure of major community projects receiving donor support. The purpose of this study was to establish the influence of community participation on project sustainability in Mau Mara Serengeti Sustainable Water Initiative (MaMaSe) in Mara Basin - Kenya. The objectives of this study was to; establish the influence of ensuring water security by community members on project sustainability in MaMaSe sustainable water initiative, assess the influence of conservation of water basins by community members on project sustainability in MaMaSe water initiative in Mara Basin - Kenya, determine the influence of conflict resolution by community members on project sustainability in MaMaSe water initiative and determine the influence of water allocation and permitting by community members on project sustainability in MaMaSe water initiative in Mara Basin - Kenya. The study adopted a descriptive research design. The target population was project managers and community leaders within MaMaSe sustainable water initiative. Census sampling was applied in the sampling the community leaders and Purposive sampling procedure was used on sampling project Managers. This gave a sample size of 50 community leaders and 11 project managers. Data was collected using questionnaires which were given to the community leaders and interviews were held with the project Managers. Collected data was analysed using SPSS V21.Descriptive, content and inferential statistics was used .Presentation of findings was done using tables, figure and narration. The study established that there is influence of community participation on project sustainability in MaMaSe water initiative in Mara Basin - Kenya. The community used methods such ensuring water security, conservation of water basin, conflict resolution and water allocation and permitting for the purpose of project sustainability. The study concluded Participation is a key instrument in creating self-reliant and empowered communities stimulating collective action and decision-making. The study has also shown existence of positive and significant relationship of community participation on project sustainability. The study recommended that that the communities within the project area should be actively involved in project activities as this will leads to awareness of the project by the participants which will ensure the success of the project.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Globally, water resource is very essential for socio-economic development and for maintaining healthy ecosystems. Properly managed water resources are a critical component of growth, poverty reduction and equity. Access to adequate, safe and clean drinking water is one of the basic human entitlements. Local and International endeavours have been set up with a view to guaranteeing availability and access to water in light of the fact that these perspectives are specifically connected to advancement of nature of lives of the general population. Be that as it may, absence of access to safe water is not a specialized issue, but rather is a human, coordination, financing and an effectiveness issue. Water assets administration goes for advancing the accessible characteristic water streams, including surface water and ground water to fulfill these fundamental contending needs In a few sections of the world, there was more accessible water however in different parts, including the created world, there was less (Selborne, (2010).

According to Taylor (2009) water and sanitation is directly linked to good health and prosperity of every person in the world. Clean water is one of the most ideal approaches to reduce neediness and infections. Sickness directly affects each individual, particularly in the creating nations. Disorder ruins efficiency in the general public and, keeps youngsters from an instruction, and consequently unneeded costs to the family. This then takes after that the poorest individuals on the planet are likewise the unhealthiest. Giving clean water and legitimate sanitation strategies to these individuals, fundamentally expands their wellbeing, and prompts to a considerable decline in neediness. Water is vital for all types of life including all financial exercises. The United Nations has pronounced that arrangement for clean water is a human right and that dependable access to safe and clean drinking water and sanitation alongside other local purposes, represents around 7 to 10 for every penny of all water utilize (Mays, 2007).

In sub-Saharan Africa, around 250 million individuals (67%) need safe available water while 81% of the rustic populace needs sanitation offices. Everywhere throughout the

world People burn 40 billion hours simply strolling for water. Women and children more often than not shoulder the weight of water gathering, strolling miles to the closest source. Time spent strolling and coming about illnesses keep them and subject them to a more serious danger of badgering and rape. With safe water close-by, women are allowed to seek after different engagements and enhance their families‟ lives. Kids can likewise gain their instruction and manufacture the fate of their groups. A spotless water extend adjacent means more than safe drinking water to women and kids in creating countries; it implies time, opportunity and inspiration to change their groups (Carter, Tyrrel and Howsam, 2009).

As per Barrett and Arcese (2015) project manageability is a noteworthy issue in many Sub-Saharan nations. Most undertakings executed at colossal expenses regularly tend to experience challenges with manageability. Some real benefactors, for example, the World Bank and the African Development bank (ADB) have been communicating worries on this matter. As per studies led as of late, while the pattern with execution is demonstrating noteworthy change, the pattern with post usage maintainability is somewhat disillusioning since less activities are being managed. This implies while colossal uses are being acquired by these nations in actualizing projects, poor manageability is denying them from getting expected returns of these speculations.

As per Otiso (2013), Kenya simply like other creating nations everywhere throughout the world has encountered a development of many water Projects supported by nearby and universal associations in the later past. These benefactors actualize different water projects in the nation, the question is, how manageable are these improvement projects? Do these activities last or fall when the giver winds up? Advancement activities began by these patrons appear to perform ineffectively in and many apparently get to be non-operational not long after end of contributor subsidizing. It is upon this foundation that the study means to set up the impact of group cooperation on project supportability with particular enthusiasm for the instance of MAMASE feasible water activity in Mara Basin - Kenya-Kenya that will help in settling the inconsistency with regards to the impact that group interest has on tasks.

1.1.1 MaMaSe Sustainable Water Initiative in Kenya

According to the M&E reports, the Mau Mara Serengeti Sustainable Water Initiative was authoritatively propelled at the premises of the Mara River Water Resource Users Association(WRUA).It is made out of a consortium of partners with enthusiasm for the Mara Basin. Its program covers four years and has a 10.7 million Euro spending plan, with 75% gave by The Netherlands Embassy in Kenya and 25% by HSBC Bank and the partnersin the consortium.

The Mau Mara Serengeti (MaMaSe) Sustainable Water Initiative bolster intercessions prompting to more water savvy and ecologically reasonable social and monetary improvement, while saving the environments and natural life of the celebrated around the world Mara-Serengeti scene. The MaMaSe consortium is driven by UNESCO-IHE Institute for Water Education, in close collaboration with WWF Kenya, and incorporates an extensive variety of specialists from government powers, private area, information establishments and NGOs from Kenya,

Engaging the general population of the basin, ensuring the biological system and advancing independence frame the real standards of the Initiative. Exercises are being arranged in close participation with neighborhood partners keeping in mind the end goal to address the bowl's need needs. A portion of the distinguished needs incorporate information accumulation, catchment assurance and limit working of local and group based water powers to enhance coordinated water asset administration, an undertaking that UNESCO-IHE and the Regional Water Authority Brabantse Delta will get.

To guarantee a reasonable change in the Mara bowl, significant catchment exercises and creative financing systems for water assets administration are being produced in collaboration with the German Agency for International Cooperation (GIZ). The lessons scholarly and new choice bolster apparatuses created by MaMaSe are to be adjusted for more extensive use by Egerton University, Maasai Mara University, UNESCO-IHE, ITC-University of Twente and Deltares. "Together with all accomplices and partners we will make the Mara River Basin a model of supportability for Kenya and the world", McClain closes.

1.2 Statement of the Problem

Interest is a key instrument in project manageability since it makes confident and engaged groups while empowering town level components for aggregate activity and basic leadership. The interest is gone for expanding the feeling of responsibility for inside group individuals. Support likewise expands neighborhood limit and intrigue towards the framework, in this way self-strengthening and the eagerness to be required in the project builds (Sulaiman, 2011).

Barrett and Arcese (2015) expressed that project manageability is a noteworthy issue in many Sub-Saharan nations. A decent number of projects actualized at colossal expenses regularly tend to experience challenges with supportability. Every single significant benefactor have been communicating worries on this matter.

Elimelech (2014) observed that in many Sub-Saharan Africa funded projects, local community members have failed to be involved in making critical decisions that directly affects their projects. This is raising concerns as to whether it is possible reasons as to why many projects have failed after the sponsor withdraw their support. This study therefore aims at establishing the influence of community participation on project sustainability in MaMaSe sustainable water initiative in Mara Basin - Kenya.

1.3 Purpose of Study

The purpose of the study was to establish the influence of community participation on project sustainability in MaMaSe water initiative in Mara Basin - Kenya- Kenya.

1.4 Objectives of the study

This study was guided by the following research objectives:

(i) To establish the influence of ensuring water security by community members on project sustainability in MaMaSe water initiative in Mara Basin - Kenya

(ii) To assess the influence of conservation of water basins by community members on project sustainability in MaMaSe water initiative in Mara Basin - Kenya

(iii) To determine the influence of conflict resolution by community members on project sustainability in MaMaSe water initiative in Mara Basin - Kenya

(iv) To determine the influence of Water allocation and permitting by involving community members on project sustainability in MaMaSe water initiative in Mara Basin - Kenya

1.5 Research Questions

This study was guided by the following research questions:

(i) What is the influence of ensuring water security by community members on project sustainability in MaMaSe water initiative in Mara Basin - Kenya?

(ii) Does conservation of water basins by community members influence project sustainability in MaMaSe water initiative in Mara Basin - Kenya?

(iii) What is the influence of conflict resolution by community members on project sustainability in MaMaSe water initiative in Mara Basin - Kenya?

(iv) Does Water allocation and permitting by community members influence project sustainability in MaMaSe water initiative in Mara Basin - Kenya?

1.6 Significance of the Study

This study was of value to policy makers and academicians. The policy makers will use the recommendations of the study in coming with an effective model of involving the community members in projects. The academicians will use the findings of the study in building empirical literature for future studies.

The community members within the project catchment area will also find the project important by getting guidance from recommendations on how they can best participate in the project in ensuring that it is sustainable.

1.7 Delimitations

The study seeks to establish influence of community participation on project sustainability in Mau Mara Serengeti Sustainable Water Initiative (MaMaSe) in Mara Basin – Kenya. The research will be delimited to community members who belong to the

Water Resources Users Association ’s and project managers in the MaMase consortium in establishing influence of community participation on project sustainability.

1.8 Assumptions of the Study

This study will based on the following assumptions: one is that; the sample chosen for the study represents the population, second is that the study assumes that the respondents are well knowledgeable about the different projects in the area, thirdly is that the respondents will answer questions correctly and truthfully, that all the respondents will give genuine, truthful, and honest responses to the questionnaires and finally is that the area leadership will support the initiative of the researcher.

1.9 Limitation of the Study

In carrying out this study the researcher foresees that a portion of the respondents may not will to give the required data. The study will conquer this test by guaranteeing the respondents that the data looked for was only for scholarly purposes and that their characters won't be uncovered.

1.10 Definition of Significant Terms

Community participation in Conflict Resolution

Conflict resolution is a way for two or more parties to find a peaceful solution to a disagreement among them. The disagreement may be personal, financial, political, or emotional. When a dispute arises, often the best course of action is negotiation to resolve the disagreement.

Community participation in Water Security

Water security is the capacity of a people to shield access to satisfactory amounts of adequate quality water for managing jobs, human prosperity, and financial improvement, for guaranteeing assurance against water-borne contamination and water-related catastrophes.

Community participation in Water Conservation

Water conservation refers to the preservation, control and development of water resources, both surface and groundwater, and prevention of pollution.

Community participation in Project Sustainability

Sustainability is the ability of a project to maintain its operations, services and benefits during its projected life time and even long after the donor is gone.

Community participation in Water allocation and permitting

Water allocation involves the process of distributing and permiting water to legitimate claimant and the resulting water rights are granted, transferred reviewed, and adopted. Hence water allocation processes generates a series of water access rights governing the use of water within a catchment area. Water use permit allows withdrawal of a specified amount of water, either from the ground or from a lake or river.

1.11 Organization of the study

This study will contain five chapters. Chapter one of this study introduction- contained a brief background of the study, problem statement, purpose of the study, research objectives, research questions, assumptions of the study, limitations of the study, delimitation of the study and definitions for terms used in the study.

Chapter two of this study which is Literature review- will contain the theoretical review of the study, empirical review of the study and conceptual framework. The main aim was to find out what others had done on project similar scope and magnitude and how the differ from this one.

Chapter three of this study methodology will contain the research design, target population for the study, sampling procedure, data collection instrument, data collection procedures, data analysis techniques, ethical considerations and operational definition of variables.

Chapter four of this study-Research analysis, presentation and interpretation will contain the analysis results, presentation of finding and interpretation of the results.

Chapter five of this study will contain the summary of findings, conclusions and recommendations in line with the objectives of the study.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

Related literature on water influence of community participation on water projects sustainability is reviewed in this chapter: such factors reviewed in this chapter will include water security, conservation of water basins, conflict resolution and of water allocation and permitting. This chapter entails theoretical review, empirical review that was used in the study in regard to each variable in the study and conceptual framework.

2.2 Project sustainability

Sustainability is the endurance of systems and processes. As per Keeble, Topiol and Berkeley (2013), without the impetus of the group to make utilization of the new source, maintainability is destroyed. The buyer must trust that the new source is fundamental to their conventional supply. The perceptible and direct advantage of an upgraded water source is normally get to, or propinquity. A noteworthy further issue to the inspiration of a group to utilize a unique source might be because of progress from "free" water to some plan of money installment.

As indicated by Bell and Morse (2008), in spite of the pressure amid and since the United Nations Water Decade (1981-90) on VLOM (Village Level Operation and Management of Maintenance), a noticeably resourced, organized, and prepared conservation is fundamental. The people group designated gathering may have a key part in maintaining (for which they require direction), however in all cases they require backstopping by some region, local, or national level association.

Training, Staffing, transport, apparatuses, save parts, substitution units and materials, all cost assets, and some fuse outside trade. Amid the season of rising budgetary stringency and common sense, the weight of intermittent cost is put on the group. Whether this is correct or wrong, it is a pragmatic answer to the way that less built up nations' legislatures are very under-resourced, furthermore worldwide NGOs have restricted assets. The stature of installment, including all appropriations, the premise of installment, and the method for overseeing and representing water charges, all must be chosen by the group (Bell and Morse, 2013).

Epstein Buhovac (2014), hypothesized that willingness to keeping water boards in capacity, for embracing improved cleanliness hones, and advancing the accumulation of income for repetitive costs, can lessen inside a few years of development. This is a long-standing capacity, with a need to proceed until there is noteworthiness hone inside the area. This idea of proceeded with support is in threat to restricted term 'projectization'; the truth of the matter is that water and cleanliness arrangement in creating nations can just function as a long haul benefit oversaw commonly by group and outer bolster offices e.g Government, NGOs, and benefactors or loan specialists).

2.3 Community Participation and Water Security

Water security is termed as the solid availability of a satisfactory amount and nature of water for health, jobs and production, combined with an adequate level of water related hazard. Achieving water safety needs legal, institutional and authoritarian support and capacity for change. Water Security involves the whole process of ensuring that there is reliable access to water, water is in good quality and quantity e.g. by activities such as construction of wetlands, controlling of grazing and water source protection (Macquarrie & Wolf, 2013).

2.3.1 Water Security and Reliable Access

According to Singh an Singh (2013), for an appropriate access to water for people in a community they need to have a functioning water facility that can serve safe drinking water within a rational distance from home, without leaving out a certain tribe, disability, race, religion, or gender. This will enable them get access to water at all times and with lesser friction.

To ensure a sustainable water security, it has to be in sufficient quantity and quality throughout the year, such that water is not only available at the beginning of a rainy season only. An unreliable water source makes communities vulnerable to negative impacts on health and livelihoods (Hunter, Zmirou-Navier & Hartemann, 2009).

2.3.2 Water Security and Quantity

Water assets administration goes for advancing the accessible characteristic water streams, including surface water and ground water to fulfill these fundamental contending

needs. It is therefore of great use where the local community puts in place initiative that water is maintained at good quantities through efficient utilization of water by households in their activities like cooking, bathing, sanitation and hygiene and avoid wastages. Other activities such as proper land utilization through controlled grazing will result into preservation of water catchment areas and therefore water security in terms of quantity and quality (Gleick, 2008).

2.3.3 Water Security and Quality

To keep up water security residential water ought to be to such an extent that no significant wellbeing dangers emerge from its utilization. It ought to be palatable to purchasers in appearance, scent and taste. Toxin levels ought not go past the acknowledged water quality principles of the locale or the nation where it is consumed. The community members have the responsibility of ensuring that their activities do not allow for microbial and inorganic contamination which will compromise good water odour, appearance and taste. Other activities such as proper land utilization through controlled grazing will result into preservation of water catchment areas and therefore water ensures security in terms of quantity and quality (Kyessi, 2011).

2.4 Conservation of Water Basins

Namara (2006), contended that the proficiency of group safeguarding of water Basin to get benefits Mgahinga Gorrilla national stop in Kisoro District to the work of NGOs towards guaranteeing groups advantage from preservation. Namara (2006), promote call attention to that the part of group protection officers who name themselves with the groups, has supported in lessening illicit section into the national stop. The achievement of group preservation can be licensed to various laws ordered to offer forces to the general population for untamed life administration where natural life utilize rights are found in the constitution bolstered by statutes like Uganda natural life statute which perceive the part of groups in untamed life administration.

Nelson and Gami (2012) contended that Pallisa Community Development Trust has possessed the capacity to record accomplishments since they have a reasonable statement of purpose, feeling of control and duty, a participatory way to deal with issue recognition

and a feeling of ownership and control by group pioneers. As per them, these pointers help in appreciating the conditions under which group based preservation is powerful.

As per Muthumperumal and Parthasarathy (2013), in Kibale and Semuliki national parks, were included being developed of administration methodologies. The advantage of this was the formation of shared asset administration instruments that allows groups to utilize and oversee chose assets from the national parks. An expansion program of permitting conferences between the national parks and the nearby groups prompted to the identification of required assets and the marking of updates of comprehension to permit controlled collecting from the parks.

According to Byaruhanga (2008), Bwindi Impenetrable National Park provides site for the source of water for villages around the park. The national park has several water sources that supply clean water and the forest takes action as a vital water catchment area not only for the area but also for neighbouring districts of Kabale, Kisoro and Kinungu. The community members on their side have a role to play in conservation of the forest through ensuring that there is controlled cutting of trees from the forests in order to keep the forest alive.

2.5 Conflict Resolution Management

People normally clash as they pursue different interests. When they achieve a state of disjointedness, it is depicted as a conflict. There is dependably plausibility for a contention, however it takes something more to make the start that realizes a question. Incidentally start is given by rivalry or by change. The circumstance itself may prompt to a conflict. Some standard circumstances that prompt to question incorporate; contrasts in behavioral style, contrasts in authoritative status and impact, rivalry for rare assets, contrary goals or potentially techniques, contrasts in data, neglected desires and mutilations in correspondence (Fisher, et, al, 2012).

Hess (2013), there is a number of goals associated with community participation in conflict management and consensus building. One of these goals involves building trustworthiness with those who were affected, the ones to pay and the ones to use the project. The community members have the responsibility of ensuring that their activities do not allow for microbial and inorganic contamination which will compromise good

water odour, appearance and taste. The second goal involves identifying of public concerns and values in a relatively open and straightforward way.

There are reasons behind community participation which includes conflict management, consensus building, and dispute resolution in water resources management. Reasons portraying their association in water ventures incorporate; meet legitimate or formal arrangement prerequisites, meeting the moral measurements of water management, connect water management with the urban culture, to deal with the pressure between the specialized and political b, to settle the discontinuities amongst geographic and jurisdictional limits, to discover and fabricate shared conviction and move from extremes, to get accord building and peace making and to achieve economical and solid assentions (Salman and McInerney-Lankford, 2014).

Trans boundary waters make colossal difficulties for accomplishing water security. Where lake bowls, streams, and aquifer frameworks, are shared crosswise over inside or outer political limits, water-related clashes are aggravated by the need to guarantee harmonization and talks between sovereign expresses, each with it's fluctuated and in some cases contending interests (GWP, 2013). Around the globe, there are somewhere in the range of 276 noteworthy transboundary watersheds, crossing the regions of 145 nations and covering almost 50% of the world's territory surface (MacQuarrie and Wolf, 2013). More than 300 transboundary aquifers have additionally been recognized, most are situated crosswise over at least two nations (Puri and Aureli, 2009).

Transboundary water management and collaboration inside and crosswise over states on the improvement and insurance of transboundary water assets are basic with regards to water security. Transboundary water management (TWM) includes different segments and teaches which incorporates: peace and political security, relations, worldwide water law, water assets management and environment assurance, human rights, global and territorial improvement and coordination. Without continuous discourse and collaboration, one-sided advancement measures, for example, water extractions, and hydropower improvement can prompt to groundbreaking effects on neighboring nations having a similar bowl (Wolf, 2007). Such effects comes about to upsetting the strength of amphibian biological systems, stream fracture, and antagonistically influencing groups downstream that may rely on upon fisheries for vocations and nourishment security.

2.6 Water Allocation and Permitting

water allocation involves channelling water to legal claimant and the resulting water rights are granted, transferred reviewed, and adopted (Jouravlev & Lee ,2008) Thus water distribution drives a progression of water rights governing the utilization of water inside a catchment region.

As indicated by Howe, Schurmeier and Shaw (2006), fundamental water rights adds up to a little rate of all water assets, though water assets assigned for metropolitan, mechanical, or water system uses are for the most part far bigger. Time spent strolling and coming about illnesses keep them and subject them to a more serious danger of badgering and rape. With safe water close-by, women are allowed to seek after different engaements and enhance their families‟ lives. Kids can likewise gain their instruction and manufacture the fate of their groups.

As per Mogaka (2006), Africa's National Water Act incorporates an express right of the earth to water as a "biological save," which is to be resolved for every stream bowl. The biological hold is given as high a need as water for fundamental human needs. Kenya embraced a comparable approach in its 2002 Water Act.

A couple of nations have started a simple approach of keeping up downstream streams by guaranteeing a base measure of normal streams stay in waterways. Some real benefactors, for example, the World Bank and the African Development bank (ADB) have been communicating worries on this matter. As per studies led as of late, while the pattern with execution is demonstrating noteworthy change, the pattern with post usage maintainability is somewhat disillusioning since less activities are being managed. (Caponera, and Nanni, 2012).

2.7 Theoretical Review

A Theory is an arrangement of explanations or standards conceived to clarify a gathering of realities or marvels particularly one that has been over and again tried or is generally acknowledged and can be utilized to make expectations about common wonders. Speculations are methodical devices for comprehension, clarifying, and making expectations about a given topic. A formal hypothesis is syntactic and important when given a semantic component by applying it to some substance, for example, realities and

connections of the real recorded world as it is unfurling (Zima, 2007). This study depended on: partner hypothesis and modernization hypothesis.

2.7.1 Modernization Theory

Modernization hypothesis includes a clarification and depiction of the procedures of upheaval from immature social orders to present day social orders. It worries the procedure of modernization inside the social orders. The hypothesis takes a gander at the inward components of a nation while expecting that, with help, conventional nations can be created similarly more created nations have. Modernization hypothesis recognizes the social factors that prompt to social advance and improvement of social orders, and tries to clarify the procedure of social development (Tipps, 2013).

As indicated by Gilman (2008), the modernization hypothesis holds that customary social orders will create unless they embrace more cutting edge hones. Defenders of modernization hypothesis express that cutting edge states are all the more intense, more rich and that their residents appreciate a higher expectation for everyday life through advancements like new data technology and the need to bring up to date traditional methods in production, communication and transport.

According to Bernstein (2011), the training and technology needed to arrive at the stage of modernization is given by the West. This is the case with developing countries where interventions in terms of help have been planned along the lines of the modernization theory. Aid agencies see problems in certain target communities and continue with the intention to amend them, in the Western sense. This has led to mainy projects failing to accomplish the desired goals.

The theory is vital to the study by its mandates in understanding how projects fail to be sustainable as a result of the lack of inclusion of ideas, views, and local community cultural practices of implementing projects funded by donor. In this case the sustainability of MaMaSe water project was sustainable through participation of community members by providing critical services like conservation of water basins, ensuring water security, water allocation and permitting and conflict resolution.

2.7.2 Stakeholder Theory

Stakeholder theory came from four major academic fields: economics, politics, sociology, and ethics (Wagner Mainardes, Alves & Raposo, 2011). It was highly influenced by many concepts that were raised in the planning department of the Lockheed Company. These ideas were developed from the research done by Igor Ansoff and Robert Steward in this company (MacIntosh & Maclean, 2014).

Muchlinski (2011) viewed the stakeholder theory from different perspectives. There is the Normative Stakeholder theory, which contains theories of how managers or stakeholders ought to act and view the method of reasoning of organization on some moral guideline (Koschmann, 2008). The other point of view is the unmistakable partner hypothesis that is worried with how administrators and partners act and how they see their duties and activities. The aim here is to know how supervisors manage partners and how they remain for their interests. The partnership is viewed as an accumulation of interests, at some point aggressive and different times helpful.

Instrumental stakeholder theory majors on the hierarchical consequences of consindering partners in administration by analyzing the relations between the act of partner administration and the achievement of different corporate administration targets. It concentrates on how administrators ought to do in the event that they need work for their own great. In some writing their own particular intrigue is acknowledged as the interests of the association, which is to get the most out of benefit or to boost shareholder esteem. This demonstrates if supervisors treat partners in accordance with the partner idea the projects was more fruitful over the long haul (Freeman, Harrison, Wicks, Parmar, and De Colle, 2010).

Freeman defines stakeholders as those groups who are fundamental to the survival of the organization (Bailur, 2006). There is concern for mapping the stakeholders, provision of comprehensive list of the specific groups associated with each category of stakeholders, and an equivalent list of interests. How does each stakeholder affect us? What are their interests? Who are our current and potential stakeholders? How do we affect every stakeholder? How do we measure these variables and their impact and how do we maintain score with our stakeholders?

Freeman, Harrison, Wicks, Parmar and De Colle, (2010) incorporates in this list of stakeholders employees, stockholders, suppliers, and the organizations local community. This list, though similar to list given by stakeholder theorists, is not uncontroversial. The stakeholder concept itself has its critics. Those critics imply that the stakeholder approach is not capable of guiding essential enhancements in corporate government in that numerous lines of accountability inferred by acknowledging a multiplicity of stakeholders, minimises efficiency and that the idea of stakeholders as ethically important undermines the morally significant relations between corporations and stockholders.

2. 8 Conceptual Framework

Mugenda (2008) defines conceptual framework as a brief description of the phenomenon under study led by a graphical or visual depiction of the major variables of the study. According to Young (2009), conceptual framework is a diagrammatical symbol that shows the affiliation between dependent variable and independent variables. In this conceptual framework it is shown that water security was measured by: constructed wetlands controlled grazing, water source protection, water quality, water quantity and reliability of water access.

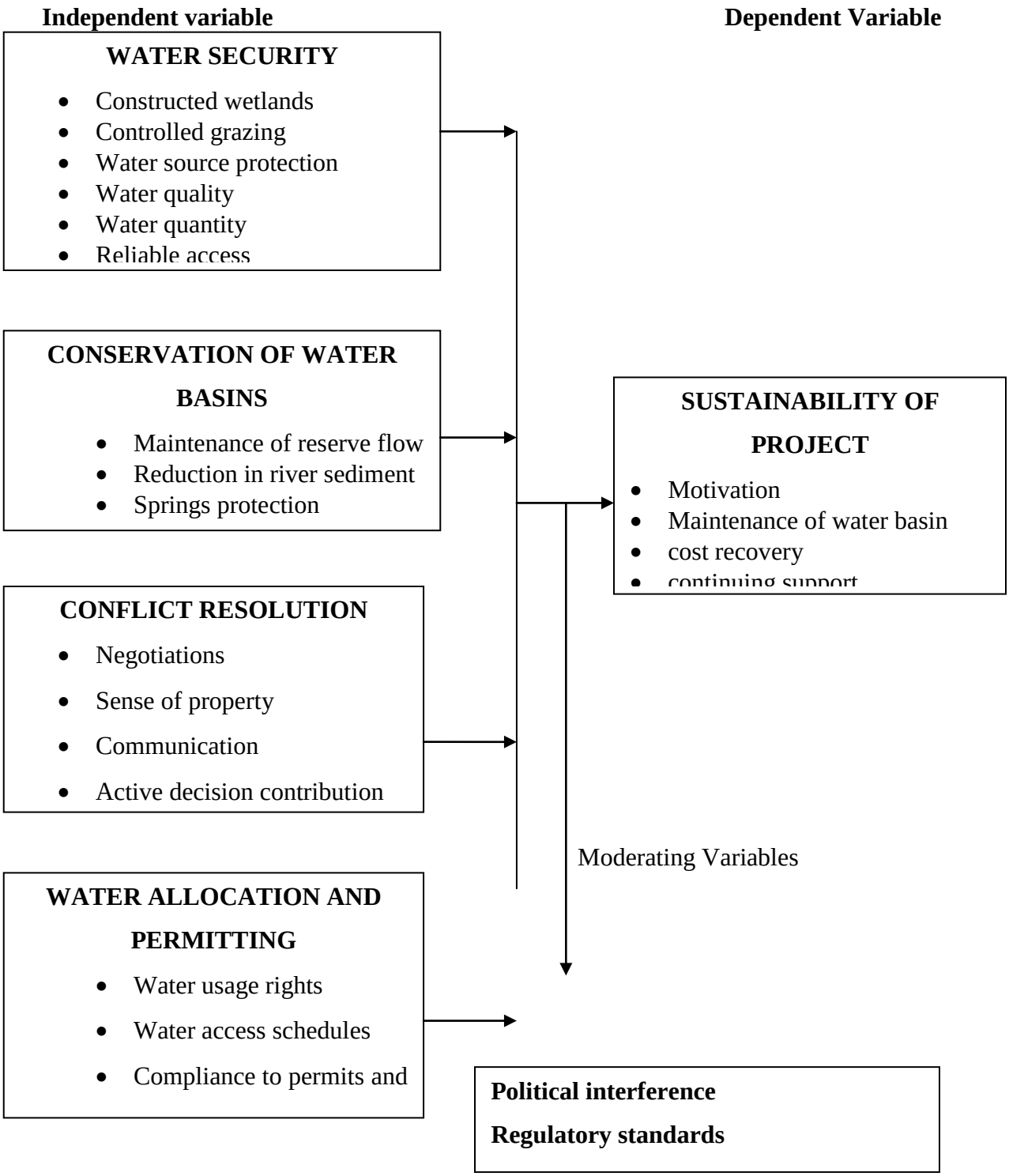

Figure 2.1: Conceptual Framework

Conservation of water basins was measured by: maintenance of reserve flow, reduction in river sediment and springs protection. Conflict resolution was measured by: negotiations by community members, sense of property, communication, active decision contribution

and grazing plans. Water allocation and permitting was measured by: water usage rights, water access schedules and compliance to permits and sanctions. Project sustainability was measured by: motivation, maintenance, cost recovery and continuing support.

2.9 Literature Summary and Research Gaps

The literature reviewed in this chapter has shown that participation of local communities has an influence on the sustainability of water projects. Community participation through ensuring water security, conservation of water basins, conflict resolution and Water allocation and permitting has an influence on the sustainability of water projects. Though the studies reviewed have shown existence of positive and significant relationship of community participation on project sustainability, they have been conducted in other areas and not necessarily in water projects. Other studies reviewed in the study have only been conducted in developed countries little has been conducted in developing countries and in particular Kenya. There is therefore the need to conduct a study on influence of community participation on project sustainability in Mau Mara Serengeti water initiative in Mara Basin - Kenya. The gapas are as discussed in the following paragraphs and shown by table.

Kaur (2013) conducted a study on the influence of community participation in project sustainability in the national irrigation authority in the Philippines ran irrigation projects. The study however was conducted in developed countries and did not focus on local case. The study did not itemise on the different areas of community participation.

A study by Agarwal (2009), on role of community participation in forestry regions in Gujarat, India by women revealed that as a result of a joint management between the conservator and the community one village collected and sold 12 tons of firewood, 50 tons of fodder and other forests products, while also planting and shielding teak and bamboo trees. This study however was conducted in a field that is not in water and as well it was not conducted in local society.

Prokopy (2005) conducted a study on the effect of community participation on 121 rural water supply projects in India. The study observed that properly managed water resources are a critical component of development, poverty eradication and equity. Access to sufficient, safe and clean drinking water is one of the essential human needs. Local and

International endeavors have been set up with a view to guaranteeing accessibility and access to water in light of the fact that these perspectives are specifically connected to advancement of nature of lives of the general population and . value. Be that as it may, absence of access to safe water is not a specialized issue, but rather is a human, coordinations, financing and an effectiveness issue. **Table 2.1: Research Gaps**

Author and year	Topic	Summary of findings	Gaps identified
Kaur (2013)	Community participation in development projects in Philippines ran irrigation projects.	The study established that the impact of participation on productivity, resource conservation and commitment of local groups were significant	The study was conducted in developed countries and did not focus on local case The study did not itemise on the different areas of community participation
Agarwal (2009).	Gender and forest conservation: The impact of women's participation in community forest governance	joint management between the conservator and the community one village increased production planting and protecting teak and bamboo trees was enhanced	Study was conducted in a field that is not in water and as well it was not conducted in local society.
Prokopy (2005)	The relationship between participation and project outcomes: Evidence from rural water supply projects in India	Participation by people through decision-making during all stages of the project, from design to maintenance gave best results occurred.	The study focused on community participation into the different stages and failed to focus on life of the project after donors exit

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter is a structure conceived to help the researcher in answering the developed research questions. It covers decisions about how research was done and how interviewee were approached, as well as when, where and how the research was completed. Hence in this part the researcher identified the measures and techniques that were used in identifying the study population, sampling method to be applied, data collection, and data analysis.

3.2 Research Design

The study used descriptive research design. According to Thomas, Nelson and Silverman, (2011), a good research design is featured by its capacity to detect the association among variables, its suitability in research questions, amount of errors being small and its capability to provide a chance of considering various aspect of a problem. The researcher used a descriptive research to establish the influence of community participation in sustainability of MaMaSe water initiative. The choice is based on the fact that the research design enabled collection of data and reporting of the same without subjecting it to any manipulations.

3.3 Target Population

Target population is defined as all members of a real or hypothetical set of people or events to which a survey wishes to generalize results (Banerjee & Chaudhury, 2010). Therefore target population of this study consisted of all the project managers responsible for different components of MaMaSe water project initiative in Mara Basin - Kenya and Community leaders (chairman, vice chairman, secretary, treasurer and coordinator) within the Sub catchment. According to MaMaSe human resource department (2015), there are a total of 11 project managers in charge of monitoring and evaluation of the project. There are also 50 community leaders in charge of the project in Mara Basin - Kenya.

Table 3.1: Population Distribution for Community Leaders

	WRUA Name	Number Of Community Leaders
1	Amala (Mulot)	5
2	Lower Nyangores	5
3	Mara Emarti	5
4	Isei	5
5	Talek	5
6	Engare Engito	5
7	Upper Amala	5
8	Oldingishu Siana	5
9	Olmerroi	5
10	Sekenani	5
Total		50

Source: MaMaSe M&E reports (2015)

Table 3.2: Population Distribution of Project Managers

Organization	Number of project managers
WWF	2
Kenya forest	2
GIZ	1
WRMA	4
MaMaSe	2
Total	11

Source: MaMaSe M&E reports (2015)

3.4 Sampling Procedure and Sample Size

A sample is a small part of a statistical population whose characteristics are studied to get information about the whole (Lohr, 2009). A good sample should be sufficient and representative of the targeted population. Census sampling is an adequate sample in a descriptive study of this nature as supported by Mugenda and Mugenda (2003).

Huang, Morency and Gratch (2010) includes that that statistics testing is proper if a populace from which an example is to be drawn does not contain uniform gathering since it results to impartial representation of every one of respondents' entries in the objective populace and this aides in speculation of research results when the study configuration is clear. Therefore the study consindered all the 50 community leaders. Mugenda and Mugenda (2003), asserts that a sample size is congruent on what one wants to know, what was useful, what can be done with available time and resources, what is at stake, what had credibility and the reason of the inquest. Therefore this study applied decisive sampling design in to sample 11 Project Managers for the study.

3.5 Data Collection instruments

Primary data was collected. It was collected using both questionnaires and interviews. The interview guide contained semi structured questions that was organized before to collect data on the four research questions from participants. An interview guide is a list of themes, topics, or areas to be covered in a semi-structured interview. This is made ahead of time of the meeting by the analyst and is made so as to permit adaptability and smoothness in the secured subjects, on the most proficient method to be drawn closer with every interviewee, and their grouping (Louise Barriball and While, 2014).

3.6 Validity And reliability

To check the legitimacy and dependability of the questionnaires in collecting the required information for motivations behind the study, a pre-test study was done.

3.6.1 Pilot Study

The explanation behind pretesting was to build up the accuracy and appropriateness of the exploration plan and instrumentation (Saunders, Lewis and Thornhill, 2007). Newing (2011) states that the centrality of field guiding can't be overemphasized; you will dependably discover a few inquiries that individuals neglect to understand or translate in unique ways, addresses that they are not certain where to go next and questions that turn out essentially not to bring out valuable data. Cooper and Schindler (2006) concur that the explanation behind pilot test is to distinguish shortcomings in outline and execution and to give intermediary for information accumulation of a likelihood test. Sekaran (2008) seconds that pilot test is fundamental for testing the unwavering quality of instruments and the legitimacy of a study.

3.6.2 Reliability of the Data Collection Instrument

Reliability quality alludes to the steadiness, repeatability or inward consistency of a poll (Jack and Clarke, 1998). Cronbach's alpha was utilized to test the unwavering quality of the measures in the poll (Cronbach, 1951). To expand the unwavering quality of the survey, this study utilized Cronbach alpha for partitioned spaces of the poll as opposed to the whole survey. A cronbach's coefficient of over 0.7 means our gathering instrument is dependable, cronbach's coefficient < 0.7 means our accumulation instrument is not solid.

Dough puncher (1988) contends that the extent of a specimen to be utilized for unwavering quality testing changes relying upon time, expenses and reasonableness, however the same would have a tendency to be 5-10 for every penny of the primary study. In this study, the information gathering instrument was tried on 10% of the specimen of surveys to ensure that it is powerful and significant. Pre-tried was done on 9 respondents.

3.6.3 Validity of Data Collection Instrument

Validity alludes to whether a questionnaires is measuring what it should quantify (Bryman and Cramer, 1997). McMillan and Schumacher (2006) portrayed legitimacy as the level of compatibility between the clarifications of the wonders and the substances of the world. This study utilized both substance legitimacy and build legitimacy. For develop legitimacy, the polls were partitioned into many areas to ensure every segment evaluates data for an exact goal furthermore guarantee that the same nearly identifies with the theoretical system for this study.

To guarantee content legitimacy, the surveys were subjected to point by point appraisal by two Project administrators who were chosen arbitrarily. The administrators were requested that assess the announcements in the survey for significance and whether they are important, non-hostile and clear. Their looked into remarks were utilized to guarantee that substance legitimacy was upgraded.

3.7 Data collection procedure

The researcher booked appointments with the interviewee where agreement was achieved and explain the rationale of the study and went ahead to carry out face to face interview with the interviewee. Respondents' submissions were noted down as well as recording on

the proceeding of the interview. Individual interviews using semi-structured questionnaires were used to obtain data from the project managers. The questions were set to get data on community participation and sustainability of the projects.

In the closed ended questions the respondents specifically responded using tick for their answers while in open ended questions the interviewees were required to give their opinion in the spaces provided. According to Mugenda & Mugenda (2008), closed ended questions are easier to manage because each question is followed by alternative answers and inexpensive to use in terms of duration.

3.8 Data Analysis

The study used primary data comprising of both qualitative and quantitative data. In analyzing the quantitative data from closed ended questions, the study used descriptive statistics with the help of Statistical Package for Social Sciences (SPSS). Tables were suitably used to present the data findings.

The multiple linear regression model was used to establish the relative significance of every independent variable (Water allocation and permitting, conflict resolution, conservation of water basins and water security) that influence water sustainability in MaMaSe water project. The findings were said to be statistically significant within 0.05 level, results are statistically significance if they are smaller than 0.05 (Kothari, 2004). Pearson Correlation Coefficient was used to test the direction and magnitude of the association between the dependent and independent variables at 95% confidence level.

The study applied a multivariate regression model to check the relative importance of each of the variables on sustainability of the project. The regression model to be used was as follows:

$$Y= a + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + e$$

Where;

Y= Sustainability of the project (Dependent Variable)

a = Constant

B_1…….B_4 = coefficients

X_1..... X_4 = Independent Variables

X_1= Water security

X_2= Conservation of water basins

X_3= Conflict resolution

X_4= Water allocation and permitting

e = error term

Table 3.3 Operationalization of Variables

Objectives	**Type of Variable**	**Indicators**	**Measurement scale**	**Tool of Analysis**	**Type of Statistics**
To establish the influence of ensuring water security by community members on project sustainability	Independent	Constructed wetlands Controlled grazing Water source protection Water quality Water quantity Reliable access	Ordinal	Frequency and Percentages	Descriptive
To assess the influence of conservation of water basins by community members on project sustainability	Independent	Maintenance of reserve flow Reduction in river sediment Springs protection	Ordinal	Frequency and Percentages	Descriptive
To determine the influence of conflict resolution by community members on project sustainability	Independent	Maintenance of reserve flow Reduction in river sediment Springs protection	Ordinal	Frequency and Percentages	Descriptive

To determine the influence of water allocation and permitting by community members on project sustainability	Independent	Negotiations Sense of property Communication Active decision contribution Grazing plans	Ordinal	Frequency and Percentages	Descriptive
Sustainability	Dependent	motivation maintenance cost recovery continuing support	Ordinal	Frequency and Percentages	Descriptive
Influence of community participation on project sustainability	Overall objective	Water security Conservation of water basins Conflict resolution Water allocation and permitting	Ordinal	Regression analysis	Inferential Statistics

3.9 Operationalization of Variables

These sections of the study present the operationalization of variables on the participation of community in the sustainability of MaMaSe water project. This is as shown in the table 3.3

3.10 Ethical Issues

Mugenda (2008) argued that protecting the rights and welfare of the participants should be the major ethical duty for all parties in the research study. The researcher took safety measures to ensure the research data is not disclosed to any third party that would use same data for their own or other purposes. Precaution was taken to ensure non-disclosure of respondents' names and particulars. A system of coding the participants' responses was established such that each completed tool was linked to the key informers without using their actual names. Participation in the research was voluntary and interviewees

were informed that they can withdraw if they felt like. These facts were communicated to them prior to the start of the study through introduction letter to obtain consent.

CHAPTER FOUR

DATA ANALYSIS PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter reports the data collected from the respondents sampled. This data was analysed in an attempt to establish the influence of community participation on project sustainability in MaMaSe sustainable water initiative in Mara Basin - Kenya. Data was collected using questionnaires and interviews as the main data collection tools.

They were given to 50 community leaders and interviews was held with 11 project managers, A total of 44 questionnaires and 8 were interviews were returned. The collected data was then analysed by use of descriptive statistics where frequency distribution and percentages were calculated and displayed in tabular form. The results of the research are presented in the table beginning with the Background information of the respondents. Collected data was analysed using; descriptive, content and inferential statistics and presentation of findings was done using tables, figure and narration.

4.2 Demographic information of the respondents

The study sought to establish the demographic information in order to determine whether project sustainability was influenced by community participation.

Table 4.1: Gender distribution

Gender Distribution	Frequency	Percentages
Female	17	39%
Male	27	61%
Total	**44**	**100**

From the findings it is evident from the findings that a majority of the respondents are male 61.4% (27) and the remaining 38.6 %(17) represent the female respondents. However irrespective of gender imbalance, both the male and female respondents do understand the influence of community participation on project sustainability.

The researcher found it important to establish on the age of the respondents. This is a demographic feature that affects behaviours or perception of respondents. This was operationalised as Less Than 20, 21 to 30 years, 31 to 40, 41 to 50 years and Above 50 years. The frequencies and percentages were tabulated as shown in Table 4.2

Table 4.2: Age distribution of the respondents

Age Distribution	Frequency	Percentage
Less Than 20	4	9.1%
21-30	11	25.0%
31-40	7	15.9%
41-50	10	22.7%
Above 50	12	27.3%
Totals	44	100

There was generally unequal representation of age distribution. Less than 20 years were only 9.1% which represented the lowest representation while the highest 27.3 %(12) were respondents who had age above 50.Others 21-30 were 25 % and 31-40 were 22.7%.There was representation different age category.

The research sought to establish the level of professional qualification of the respondents. The Table 4.3 shows the distribution of the education qualifications

Table 4.3 Education qualification distribution

Qualification level	Frequency	Percentage
KCSE Certificate	20	45.5
Diploma	8	18.2
Degree	16	36.4
Total	44	100

45.5% of them had a KCSE certificates and 36.4 % had bachelor's degree and 11.6% had diplomas. There was a balanced representation of education category.

The study sought to know the duration the participants stayed on the land to check if they had a better understanding of the project. Table 4.4 represent the duration worked on the project.

Table 4.4: Duration worked on the project

Duration worked on the project	Frequency	Percentage
Less than one year	6	15.4%
2-3 years	26	66.7%
4-5 years	7	17.9%

Majority of the participants 66.7 %(26) had worked for the project for 2-3 years.16.7% (7) worked on the project for 4-5 years. Those who worked less than a year were 5.4 %(6).This shows that majority of the participants had a good knowledge of the project and their output would be very helpful since this was a four year project which has been around. The study sought to know if there was any influence by community had towards ensuring there was water security on project sustainability. The following are some of the respondent's comments on communities ensure there is water security for the purpose of project sustainability.by undertaking water protection and conservation measures at individual level or WRUA, through soil erosion control measures, Afforestation and re-afforestation of catchment areas, protection of the rivers source.

The Table 4.5 shows the extent of agreement on Water security measures exercised by the community.

Table 4.5: Water security measures exercised by the community

Statement	Strongly Disagree	disagree	Neutral	Agree	Strongly Agree
There are constructed wetlands by community members	11.6% (5)	48.8% (21)	32.6% (14)	7.0% (3)	-
The Community participate in Water Resources protection	-	7.0% (3)	14.0% (6)	39.5% (17)	39.5% (17)
The community puts its effort in ensuring the water quality is deserved	7.0% (3)	7.0 (3)	37.2% (16)	44.2% (19)	4.7% (2)
The community plays a critical role in ensuring water is used efficiently (water quantity)	7.7% (3)	10.3% (4)	48.7% (19)	15.4% (6)	17.9% (7)
Community ensures that every member can access water when needed (reliability of water access)	14.0% (6)	4.7% (2)	11.6% (5)	51.2% (22)	18.6% (8)

Table 4.5 shows that 48.8% and 11.6% disagreed and strongly disagreed respectively on the constructed wetlands by community members. Only 7% agreed there are constructed wetlands by community members. This shows that there is minimal or no awareness created to the members on constructing wetlands for land conservation. Most residents 39.5% agreed and strongly agreed that community participates in water protection. There were a few respondents 7% who disagreed, showing that this is a practise done by most members of the community .Also majority 44.2% agreed of the interviewed residents agreed that the community puts its effort in ensuring the water quality is deserved.

More than half of the respondents agrees and strongly agreed that the community ensures that every member can access water when needed. Only 14% and 4.7% strongly disagreed and disagreed respectively.

The study also sought to known the Influence of conservation of water basins by community members. The respondents said that the community participates on conservation of water basins in these projects by the following ways: carrying out afforestation and reforestation of catchment areas, terracing the farms, planting trees along rivers especially the indigenous ones, creating awareness about conservation, forming associations, protection of the catchment, harvesting the rain water in dams and big tanks, spring protection, water dams construction, drilled boreholes.

When asked if indigenous water resources management methods are taken into consideration in conservation of water catchments, 55.8 %(24) agreed while 37.2 %(16) said indigenous water resources management were not taken into taken into consideration in conservation of water catchment. Those who agreed said the following methods were used, management of springs and watering points to ensure access, by protecting water shed areas and promotion of indigenous water friendly trees, there is no cutting of trees in sites used for cultural ceremonies.

The table 4.6 shows the agreement levels of some activities on Conservation of water catchment.

Table 4.6: Conservation of water catchment activities

Statement	**Strongly Disagree**	**disagree**	**Neutral**	**Agree**	**Strongly Agree**
maintenance of river water flow	4.7%	20.9%	48.8%	18.6%	7.0%
	(2)	(9)	(21)	(8)	(3)
reduction in sediment in the river	2.3%	39.5%	14.0%	37.2%	7.0%
	(1)	(17)	(6)	(16)	(3)
springs protection	7.0	2.3%	14.0%	53.5%	23.3%
	(1)	(1)	(6)	(23)	(10)
Afforesting	2.3%	4.7%	20.9%	62.8	9.3%
	(1)	(2)	(9)	(27)	(4)
There is controlled grazing by community members	11.6%	20.9%	48.8%	18.6%	-
	(5)	(9)	(21)	(8)	

On farm and off farm soil and water conservation	4.7% (2)	34.9% (15)	20.9% (9)	25.6% (11)	14.0 (6)
Wetland construction	20.9% (9)	44.2% (19)	14% (6)	11.6% (5)	9.3% (4)
Water Resources Data collection	37.2% (16)	7.0% (3)	20.9% (9)	14% (4)	9.3% (4)
Wild life protection	37.2% (16)	23.3% (10)	16.3% (7)	14% (6)	9.3% (4)

A small number 18.6% and 7.0% agreed and strongly agreed respectively that there is maintenance of river flow by of the community. Also less than halve of the sampled group said that members Majority of the responses 53.3% and 23.3% agreed and strongly agreed respectively that one of the major activities practiced by the respondents is spring protection. Afforestation was another major activity that was practiced by the respondents where 62.8% and 9.3% agreed and strongly agreed respectively. Less respondents practiced controlled grazing by community members. As seen earlier wetland construction is less practiced since 44.2% and 20.9% disagreed and strongly disagreed respectively on practicing it. Water resource data collection is another activity that is not majorly practiced by residents

The study sought to understand the influence of conflict resolution by community members. The participants were asked if there are conflicts happening concerning water resources, 68.2% were in agreement while 31.8% said No. Those who stated there were conflict associated it sited some of them as excessive abstraction by some users especially during Dry seasons, animal and human conflict as most are feed from there which leads to pollution, scarcity during low season, inadequacy of water supply, conflict on different uses i.e. domestic and commercial usage. These conflicts are solved by WRUA and community members where in most cases embrace dialogue and creating awareness to the community

The study also sought to know if there were conflicts of Water Resources Management on Geographical and Administrative boundaries since community Water Resources Users Associations follow drainage boundaries

The study sought to know the opinion on geographical and administrative boundaries

Water resources are managed along drainage basin boundaries and not administrative boundaries. Table 4.7 shows opinion by different participants on Water Resources Management on Geographical and Administrative boundaries to know if there was any conflict.

Table 4.7: Opinion on geographical and administrative boundaries

Opinion	Percentage
Yes	40%
No	60%
Total	100%

From Table 4.7 60% said there were boundary conflicts while 40% said there was no conflict. The members were involved since not many cases since need for water has been addressed, the river flows throughout during dry seasons, the capacity of the river is still enough to serve the community and finally since community members live in harmony.

Those who were in agreement said the community is involved in the following ways. Conflict settlement and negotiations, dialogue amongst members, through meeting with WRUA & people of community and through water catchment groups (CMG) negotiations. The study sought to know the methods of conflict resolution. The table 4.8 shows different methods of conflict resolution.

Table 4.8: Conflict resolution

Methods of conflict resolution	Strongly Disagree	disagree	Neutral	Agree	Strongly Agree
Negotiation by community members	11.4% (5)	2.3% (1)	13.6% (6)	40.9% (18)	31.8% (14)
Communications and alerts giving (Early Warning for response)	-	11.4% (5)	31.8% (14)	29.5% (13)	22.7% (10)
Active decision contribution and grazing plans	13.6% (6)	18.2% (8)	22.7% (10)	27.3% (12)	18.2% (8)

Most of member used conflict resolution since 40.9% and 31.8% agreed and strongly agree as the means of negotiations for conflict solving. Communications and early warning was also another means was used since more than 50 % of the respondents.

The research sought to know if the people were aware of water allocation and permitting in MaMaSe Project.

Table 4.9: Awareness of water allocation and permitting

Awareness of water Allocation and permitting	Percentages
No	16%
Yes	84%
Total	100%

Study finding established that 84 % of the respondents agreed that they were aware while 16% said they were not aware. Many said that Water Resources Management Authority (WRMA) was responsible for water allocation while a few others sites WRUA. Some didn't completely know who is responsible.

When asked about the role they play in water allocation and permitting water some said that they carry out obstruction surveys and give recommendations to WRMA,

identification of water abstractor, Through, sensitization and awareness creation among the community members and checking on illegal obstruction.

The research sought to know how water allocation and permitting is used in ensuring there is water security. Participants said that the amount of water to be abstracted per category is indicated and it ensures that there is access to water supply equitably to all members. Water allocation and permitting also helps to know amount of water we have and the demand and hence controls the abstraction on river ensuring water demand and supply.

Table 4.10: Water allocating and permitting

	Strongly Disagree	**disagree**	**Neutral**	**Agree**	**Strongly Agree**
There are Rights to different water uses among the community members	9.1% (4)	31.8% (14)	9.1% (4)	40.9% (18)	9.1% (4)
There are bans on water usage during dry seasons	27.3% (12)	22.7% (10)	27.3% (12)	13.6% (6)	9.1% (4)
There are water access schedules for community members.	25.0% (11)	31.8% (14)	25.0% (11)	9.1% (4)	9.1% (4)
There are penalties where members violates permit requirements	38.6% (17)	25.0% (11)	4.5% (2)	9.1% (4)	22.7% (10)

Majority of the respondents 40.9% and 9.1% agreed and strongly agreed respectively that there are rights to different water uses among the community members. However 31.8% and 9.1 % disagreed and strongly disagreed respectively. Most members were not in agreement that there water access schedules for community members. Since more than 50% did not agree on the same. Also most people were not in agreement that there are penalties where members violate permit requirements.

Finally the study tried to seek if the following activities ensured the project sustainability. The table 4.11 shows the findings from the respondents with a scale of no extent to very great extent.

Table 4.11: Project sustainability

	No Extent	Little Extent	Moderate Extent	Great extent	Very great extent
Continuous motivation given to the community	4.8% (2)	28.6 (12)	38.1% (16)	9.5% (4)	19.0% (8)
Continuous maintenance of water Basin	-	20.0% (8)	50.0% (20)	15.0% (6)	15.0% (6)
Ensuring that cost spent on the project are recovered	31.0% (13)	19.0% (8)	21.4% (9)	9.5% (4)	19% (8)
There is continuous capacity building (support by donor/Project manager) on sustaining the project.	4.8% (2)	14.3% (6)	33.3% (14)	33.3 (14)	14.3 (6)

38.1% moderately agreed that there is continuous motivation given to the community while 28.6% had little extent and 19% had very great extent on the same.15% said continuous maintenance of water Basin had very great extent towards project sustainability while 38.1% and 9.5% had moderate extent and great extent respectively. On Ensuring that cost spent on the project are recovered 31.0% and 19.0% said that to no extent and little extent respectively.

4.3 Regression Analysis

The multiple linear regression model was used to determine the relative importance (sensitivity) of each independent variable (Water allocation and permitting, conflict resolution, conservation of water basins and water security) that influence water sustainability in MaMaSe water project, the regression model was:

$$Y= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Whereby Y represents the Project Sustainability (Dependent Variable), X_1 is Water security, X_2 Conservation of water basins, X_3 Conflict resolution and X_4 is Water allocation and permitting. B_0 is the model's constant, and $\beta_1 - \beta_4$ are the regression coefficients while ε is the model's significance.

Table 4.12: Model goodness of fit statistics

R	R Square	Adjusted R Square	Std. Error of Estimate	Durbin Watson
0.885	0.784	0.713	0.75225	1.6

Table 4.12 shows that there is a good linear association between the dependent and independent variables used in the study. This is shown by a correlation (R) coefficient of 0.885. The determination coefficient as measured by the adjusted R-square presents a moderately strong relationship between dependent and independent variables given a value of 71.3, this depicts that the model accounts for 71.3% of the total observations while 28.7% remains unexplained by the regression model.

Durbin Watson test was used as one of the preliminary test for regression which to test whether there is any autocorrelation within the model's residuals. Given that the Durbin Watson value was close to 2 (1.6), there was no autocorrelation in the model's residuals.

Table 4.13: Analysis of Variance (ANOVA)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	17.764	4	4.441	14.822	.000[a]
Residual	11.386	39	.300		
Total	29.150	42			

The ANOVA statistics presented in Table 4.13 was used to present the regression model significance. An F-significance value of p = 0.000 was established. Thus, the model is significant.

Table 4.14: Regression coefficients

Model	Unstandardized coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(constant)	1.354	0.981		2.0565	0.37
Influence of ensuring water security by community	0.321	0.2201	0.725	1.458	0.004
Influence of water basin conservation	-0.154	0.059	0.286	2.574	0.0015
Influence of community members on conflict resolution	0.145	0.0389	0.248	3.723	0.0017
Influence of water permitting project	-0.356	2.282	1.486	0.156	0.571

The following regression model results were obtained:

$Y=1.354+ 0.321X_1 - 0. 154X_2+ 0.145X_3 - 0. 356X_4$

From the model, when other factors (Water Sustainability, Influence of water basin conservation, Influence of community members on conflict resolution, Influence of water permitting project) are at zero, the Project sustainability was 1.354. Holding other factors constant, unit increase water Sustainability in would lead to 0.321 increases in project sustainability. On the other hand keeping other factors constant, a unit increase in effects on water basin conservation would lead to a 0.154 decrease in project sustainability. Also from the table 4.14 unit increases in the effects of water allocation and permitting, would lead to decrease in project sustainability. This shows that all these factors affect the project sustainability.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RRECOMMENDATION

5.1 Introduction

The findings presented in chapter four are further summarized here so that specific findings can be obtained clearly in relation to the research objective. The findings are presented, interpreted and conclusions drawn based on the findings in order to answer the research objectives. Then recommendations are made on what needs to be done to improve the sustainability of the project.

5.2 Discussion of the findings

The study established the demographic information of the respondents and revealed that the male are more than the female counterparts. The highest level of education for the respondents was a bachelor's degree and the lowest was a Kenya Certificate of Secondary Education. The highest duration known to project by the people was 2-3 years while the lowest duration worked on the project was less than a year.

5.2.1 Influence of ensuring water security by community members on project sustainability in MaMaSe water initiative in Mara Basin – Kenya

From the objective of ensuring water security by community members on project sustainability in MaMaSe water initiative in Mara Basin – Kenya. The study established that there is influence of ensuring water security by community members on project sustainability in MaMaSe water initiative in Mara Basin - Kenya. Most residents 39.5% agreed and strongly 39.5 % agreed that community participates in water protection. There were a few respondents 7% who disagreed, showing that this is a practise done by most members of the community .Also majority 44.2% agreed of the interviewed residents agreed that the community puts its effort in ensuring the water quality is deserved. More than half of the respondents agreed and strongly agreed that the community ensures that every member can access water when needed. Only 14% and 4.7% strongly disagreed and disagreed respectively, the study further found out some recommendations on

communities to ensure there is water security for the purpose of project sustainability. Sustainability is the endurance of systems and processes. According to Keeble, Topiol and Berkeley (2013), Water Security involves the whole process of ensuring that there is reliable access to water, water is in good quality and quantity e.g. by activities such as construction of wetlands, controlling of grazing and water source protection

5.2.2 Influence of conservation of water basins by community members on project sustainability in MaMaSe water initiative in Mara Basin – Kenya

The study showed that there was much influence of conservation of water basins by community members on project sustainability in MaMaSe water initiative in Mara Basin – Kenya. Majority of the responds 53.3% and 23.3% agreed and strongly agreed respectively that one of the major activities practiced by the respondents is spring protection, undertaking water protection and conservation measures at individual level or WRUA, through soil erosion control measures, afforestation and re-afforestation of catchment areas and finally Protection of the rivers source.

However, from the study many disagreed that there were constructed wetlands by community members. Most members said indigenous water resources management were not taken into taken into consideration in conservation of water catchment.

The study concluded that the community members used the following methods for conservation: - carrying out afforestation and reforestation of catchment areas, terracing the farm, planting trees along rivers especially the indigenous ones.

Creating awareness about conservation, forming associations like WRUA, Protection of the catchment, harvesting the rain water in dams and big tanks, spring protection, water and dam's construction.

5.2.3 Influence of conflict resolution by community members on project sustainability in MaMaSe water initiative in Mara Basin – Kenya

The study shows that there are conflicts that arise from the water resources. Most of member used conflict resolution since 40.9% and 31.8% agreed and strongly agree as the means of negotiations for conflict solving. These conflicts are associated with excessive abstraction by some users especially during dry seasons, animal and human conflict as most animals are feed from there which leads to pollution, scarcity during low season,

inadequacy of water supply, conflict on different uses i.e. domestic and commercial usage. These conflicts are solved by WRUA and community members where in most cases embrace dialogue and creating awareness to the community.(Wolf, 2007) argued that Community participation through ensuring water security, conservation of water basins, conflict resolution and Water allocation and permitting has an influence on the sustainability of water projects. Though the studies reviewed have shown existence of positive and significant relationship of community participation on project sustainability, they have been conducted in other areas and not necessarily in water projects. Other studies reviewed in the study have only been conducted in developed countries little has been conducted in developing countries and in particular Kenya.

5.2.4 Influence of Water allocation and permitting by involving community members on project sustainability in MaMaSe water initiative in Mara Basin – Kenya

The study found that there was influence of Water allocation and permitting by involving community members on project sustainability in MaMaSe water initiative in Mara Basin - Kenya. Majority of the respondents 40.9% and 9.1% agreed and strongly agreed respectively that there are rights to different water uses among the community members. However 31.8% and 9.1 % disagreed and strongly disagreed respectively. Most members were not in agreement that there is water access schedules for community members. Since more than 50% did not agree on the same. Also most people were not in agreement that there are penalties where members violate permit requirements.

Howe, Schurmeier and Shaw (2006) argued that basic water rights generally amount to a very small percentage of overall water resources, whereas water resources allocated for municipal, industrial, or irrigation uses are generally far larger. However some others disagreed from the same. Most members were not in agreement that there water access schedules for community members. Since more than halve did not agree on the same. Also most people were not in agreement that there are penalties where members violate permit requirements.

5.3 Conclusion of the study

Community Participation in Projects is a key instrument in creating self-reliant and empowered communities, stimulating mechanisms for collective action and decision-

making. The study shows that participation of local communities has an influence on the sustainability of water projects. Community participation, majorly achieved by ensuring water security, conservation of water basins, conflict resolution and Water allocation and permitting has an influence on the sustainability of water projects. The study has clearly shown existence of positive and significant relationship of community participation on project sustainability.

5.4 Recommendation

The study gave recommendation based on each objective as outlined below

5.4.1 Influence of ensuring water security by community members on project sustainability in MaMaSe water initiative in Mara Basin – Kenya

The study recommends that the community should engage in activities which will ensure proper water security measures such controlled grazing helps in controlling soil erosion, constructed wetlands used before discharging effluent to reduce pollution of water bodies and subsiding sources of energy.

5.4.2 Influence of conservation of water basins by community members on project sustainability in MaMaSe water initiative in Mara Basin – Kenya

Conservation of water basin should be more community driven so that communities can best implement them. The study also recommends that awareness creation and community involvement is key to the sustainability of the project.

This study recommends that the communities within the project area should be active involvement and proper communication in project activities as this will leads to awareness of the project by the participants which will ensure project sustainability.

5.4.3 Influence of conflict resolution by community members on project sustainability in MaMaSe water initiative in Mara Basin – Kenya

The study as well recommended that proper conflict resolution mechanism should be put in place to offset clashes that usually occurs within community members since there is

constantly potential for a contention, however it takes something more to make the start that realizes a debate legitimate question settling system can help in understanding the emergency. Some commonplace circumstances that can prompt to question incorporate; rivalry for rare assets, contrasts in hierarchical status and impact, inconsistent targets as well as strategies, contrasts in behavioral style, contrasts in data, twists in correspondence. These are main areas which should focused during conflict resolution.

5.4.4 Influence of Water allocation and permitting by involving community members on project sustainability in MaMaSe water initiative in Mara Basin – Kenya

The study recommends that proper water allocation and permitting laws should be put in place and enforced in order to promote supportability and assurance of the environment and ought to contain particular necessities for contamination control. Water laws ought to unequivocally require the security of environment's in order to improve water security. There is also need for awareness creation and proper communication among community members to make them aware of the project activities.

5.5 Suggestions for further research

A study of this magnitude cannot be exhausted in covering the area of investigation. More research can be undertaken in related areas. The following suggestions for further research are made: determine the degree to which the rural occupants are included in the implementation of water projects in their groups; characterize the general population's impression of the supportability of the water extends; and distinguish the elements that impact their discernment.

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APPENDICES

Appendix I: Letter of Transmittal

Yuniah Eunice Ochieng,
University of Nairobi,
P.O Box 35384-00100,
Nairobi.

Dear Sir/Madam,

I am a Masters student at the University of Nairobi. In partial fulfilment of the requirement for Master of Arts in Project Planning and Management, I am conducting a survey on 'Influence of Community Participation on Project Sustainability the Case of Mau Mara Serengeti Water Initiative in Mara Basin - Kenya'.

I am glad to inform you that you have been selected to form part of the study. I would therefore kindly request you to spare your 20 minutes in an interview on the study. The information and data was strictly be used for academic purposes only and strict confidence shall be observed on the same. I would like to thank you in advance for your time and consideration.

Yours Sincerely,

Eunice Ochieng
University of Nairobi
Contact: 0722806893

Appendix II: Questionnaire

SECTION A: BACKGROUND INFORMATION

Please tick where appropriate

Gender

Male ( )

Female ( )

Age of the respondent

Less than 20 years ( ) 21- 30 years ( )

31-40 years ( ) 41-50 years ( )

Above 50 years ( )

Academic qualification

Kenya certificate of secondary education ( )

Diploma ( )

Bachelor education ( )

Masters education ( )

PhD ( )

Others ( )

For how long have you worked on this project.(in years)

Less than 1years ( )

2- 3years ( )

4- 5 years ( )

SECTION B: WATER SECURITY AND PROJECT SUSTAINABILITY

How does the community within the project catchment ensure that there is water security?

…….

…….

…….

Using a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= Neutral, 4= agree 5= strongly agree. Please show to what extent you agree or disagree with the following statement on water security measures exercised by community members

Statement	1	2	3	4	5

There are constructed wetlands by community members					
The Community participate in water resource protection					
The Community puts its effort in ensuring the water is quality deserved					
The community plays a critical role in ensuring water is used efficiently (water quantity)					
Community ensures that every member can access water when needed (reliability of water access)					

SECTION C: CONSERVATION OF WATER BASINS AND PROJECT SUSTAINABILITY

How does the community participate on conservation of water basins in these projects catchment areas?

……

……

……

Are indigenous Water Resources management methods taken into consideration in conservation of water catchment? to explain

Yes ( )

No ( )

If yes how

……

……

Using a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= Neutral, 4= agree 5= strongly agree. Please show to what extent you agree or disagree with the following statement on how community members participate in the following activities on conservation of water catchment.

Statement	1	2	3	4	5
maintenance of river water flow					

reduction in sediment in the river					
springs protection					
Afforesting					
There is controlled grazing by community members					
On farm and off farm soil and water conservation					
Wetland construction					
Water Resources Data collection					

SECTION D: CONFLICT RESOLUTION AND PROJECT SUSTAINABILITY

Are there conflicts that happens concerning your water sources

Yes ( )

No ( )

If yes then state the source of some of these conflicts?

…….

…….

…….

How are they resolved?

Are there conflicts of Water Resource Management on Geographic and Administrative boundaries since community Water Resource Users Associations follow drainage boundaries?

Yes ( )

No ( )

How are they resolved? Are the community members involved in this conflict resolution?

Yes ( )

No ( )

If no why?

…….

…….

…….

…….

If yes how is the community involved

…….

…….

…….

Using a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= Neutral, 4= agree 5= strongly agree. Please show to what extent you agree or disagree with the following statement on how community members participate in the following activities on conflict resolution.

Statement	1	2	3	4	5
Negotiations by community members					
Communication and alerts giving (early warning for response)					
Active decision contribution and grazing plans					

SECTION E: WATER ALLOCATION AND PERMITTING ON PROJECT SUSTAINABILITY

Influence of community member's participation in water allocation and permitting

Are you aware of water allocation and permitting in MaMaSe Project?

Yes ( )

No ( )

If yes? Who is responsible for water allocation and permitting?

What role do you play in water allocation and permitting?

……

……

Using a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= Neutral, 4= agree 5= strongly agree. Please show to what extent you agree or disagree with the following

statement on how community members participate in the following activities on Water allocation and permitting.

Statement	1	2	3	4	5
there are rights to different water uses among community members					
There are bans on water usage during dry season					
there are water access schedules for community members					
There are penalties where members violates permit requirements					

SECTION F: PROJECT SUSTAINABILITY

Using a scale of 1 to 5 where 1= no extent, 2= little extent, 3= moderate extent, 4= great extent, 5= very great extent. Show the extent to which the following has ensured Project sustainability

Statement	1	2	3	4	5
continuous motivation given to community members					
continuous maintenance of project					
Ensuring that costs spent on project are recovered					
There is continuous capacity building (support by donor) on sustaining the project					

Thank you

Appendix III: Interview Guide

Please tell me more about how MaMaSe project started? (let the interviewee describe the foundation of the project. If possible let it be a brief story narrated by the interviewee)

Which are your roles as a Project Manager in regard to the project (let the interviewee describe the key areas where they are involved).

Are the community members involved in water security? If yes how are they involved? (let the interviewee tell you different roles played by community members in ensuring water security for the project).

Is there conservation of water Catchment activities on the project? If yes are the community members involved and how are they involved? (let the interviewee here give you some of the activities done by community members in the conservation of water basins).

Do you have water conflicts on this project? If yes which are they?

Have you ever been involved in resolving such conflicts (here cite one of the conflict given)? And how does the community participate in conflict resolution (the leaders in the community can give their independent roles on conflict resolution as well as telling how the other community leaders involved).

Are there right of access to water projects? If they are there who designs them? And how is the whole exercise carried out on permitting and execution? (let the interviewee expound well on how the rules are designed and executions done).

Is the community involved in water allocation and permitting? If yes how is the community involved (let the interviewee here give you areas in which the community play in water allocation roles).

Would you consider the project sustainable? And if so why? (let the interviewee expound well on his position).

Thank you (remember to thank the interviewee after interviewee)

Appendix IV: Map of MaMaSe Project Area Mara Basin - Kenya