EFFECTS OF COMMUNITY PARTICIPATION ON SUSTAINABILITY OF WATER PROJECTS IN KAJIADO COUNTY, KENYA: A CASE OF OLEPOLOS WATER PROJECT

by

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APPROVAL

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I declare that this thesis is my original work and has not been submitted to any other college or university for academic credit.

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<tr>
<td>ADB</td>
<td>African Development Bank</td>
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<tr>
<td>ASAL</td>
<td>Arid and Semi-Arid Land</td>
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<td>CBO</td>
<td>Community Based Organization</td>
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<td>CBD</td>
<td>Community Based Development</td>
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<td>CP</td>
<td>Community Participation</td>
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<td>CBWP</td>
<td>Community Based Water Projects</td>
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<td>COWSO</td>
<td>Community Water Owned Organization</td>
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<tr>
<td>FAO</td>
<td>Food and Agriculture Organization</td>
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<tr>
<td>GoK</td>
<td>Government of Kenya</td>
</tr>
<tr>
<td>JMP</td>
<td>Joint Monitoring Programme for Water Supply and Sanitation</td>
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<tr>
<td>ILO</td>
<td>International Labour Organization</td>
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<tr>
<td>KNBS</td>
<td>Kenya National Bureau of Statistics</td>
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<td>LGA</td>
<td>Local Government Authorities</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td>NACOSTI</td>
<td>National Commission for Science, Technology and Innovation</td>
</tr>
<tr>
<td>PPP</td>
<td>Public Private Partnership</td>
</tr>
<tr>
<td>SDG</td>
<td>Sustainable Development Goals</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for the Social Sciences</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<tr>
<td>WASREB</td>
<td>Water Services Regulatory Board</td>
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ABSTRACT

This study sought to examine the effects of community participation on sustainability of water projects in Kajiado County. The study focused on Olepolos Water Project. Specifically, the study intended to establish the community’s level of participation in actual implementation of Olepolos Community Water Project activities and to recommend strategies that would be adopted to enhance sustainability of community-based water projects. The study adopted a descriptive research design. The population of the study was 1028 and the sample size was 155 respondents. The study adopted simple random sampling in selecting the desired sample. Data was collected using questionnaires and key informant interview guides. Quantitative data was analysed using the Statistical Package for the Social Sciences (SPSS) version 23. Qualitative data was analyzed using content analysis. The study established that 98(95.1%) of the respondents actively participated at all levels in the implementation of Olepolos Water Project activities. Ninety seven percent (97%) of the respondents found the water project to be beneficial, with improved efficiency of water supply services. Further, the study revealed that the water project faced challenges such as water rationing, high cost of maintenance, and illegal connections. The study confirmed that community water projects should invest in training and sensitization of the project beneficiaries on the importance of participation during project implementation in their communities to enhance sustainability. Thus, the study recommends the need for the national and county governments to financially support community managed water projects. This will aid in improving water supply services to serve the increased population in both
rural and urban areas.

DEDICATION

This thesis is dedicated to my loving husband, Cyrus, and my children, Kipsang, Jepkoech and Cherop.
CHAPTER ONE
INTRODUCTION AND BACKGROUND TO THE STUDY

Introduction

Sustainability of any project is essential in all aspects of development projects that ensure utility of resources for generations. According to a report by United Nations Development Program (UNDP, 2013), people should engage fully in activities that reform their lives in the human development pathway. People should also be able to participate in the decision-making process as well as in the process of monitoring the results. According to Karlsen, Graee, and Massoud (2008), community participation is an element of project practices aimed at delivering outstanding project results.

Bryde, Broquetas, and Volm (2013) stated that a beneficiary participation process that is well-managed assists a community to work as a team in order to enhance the worth of living, while diminishing harmful environmental effects and raising a project’s economic sustainability. Statistics show that 29% of the world populace, that is 2.1 billion people lack accessibility to safe drinking water while 844 million lack basic safe clean water (World Health Organization [WHO], 2017).

The agenda for Sustainable Development Goal 6 pursues to ensure accessibility and sustainability of safe water for everyone by 2030 (United Nations, 2017). Similarly, a United Nations Children Education Fund (UNICEF, 2008) report indicated that 41% of Kenyans lack access to clean water for both domestic use and drinking. This means that the majority of Kenyans are presently undersupplied and inadequately access drinking water services that are safely managed. According to a study by World Bank (2009), the majority of Kenyans living in urban and rural setups have no
accessibility to enough, uncontaminated, and safe water. The area of this study, Kajiado County, is a rural area in Kenya with a large population of 1,117,840 people who have no adequate accessibility to clean safe drinking water.

This chapter briefly discusses the study’s background, statement of the problem, the purpose, research objectives, research questions, justification of the study and significance, assumptions, limitations and delimitations, and definition of terms.

Background to the Study

Community participation has been championed since the early 1970s and is considered as an answer to hindrances of projects sustainability. According to McGee, Levene and Hughes (2002), the success of any project improves through participatory approach. Also, projects become more effective and efficient through community participation. Proponents of the argument that participation leads to sustainability of community development projects have often relied on earlier in-depth investigations on selected areas of study which skeptics have easily dismissed as full of loopholes. This is because the cases are small and unofficial methods do permit recognized examination of the results (Botchway, 2001).

World Bank (1995) defined participation as a means by which share and control of development initiatives and making of vital decisions is influenced by investors thus eventually affecting the stakeholders. The poor will endure missing the advantages of whichever involvement unless they are given the opportunity to take part in the development of projects meant to raise their lives. According to Ekong (2003), participation plays an active although not a particularly direct role in community decisions. These roles include public meetings attendance, awareness of local matters,
similar attempts to control planned actions through group and individual actions, group belonging and committees, and financial contributions towards community programmes. Ekong (2003) stated that participation from a community perspective is a social course where particular groups, having common needs, habitually but not at all times dwelling in a distinct physical area, energetically seek recognition of their wants, make choices, and institute ways to meet these needs.

Bridgen (2004) asserted that community participation involves community contribution and control over the decision-making process. This means that community participation is an important course where communities influence and happen to authentic associates in development initiatives or mobilization of resources. According to Armitage (1988), through participation, citizens are educated, and this increases their capability. Participation is a tool used to influence decisions that affect citizens’ livelihoods. It is also an avenue to transfer political power to the people.

Community participation is the procedure by which people act in regard to the interest of the public, express their views on choices that touch them, and bear obligations for modifications to the community in which they live. Similarly, Bridgen (2004), alluded that participation pertains to a community’s involvement and authority over the decision-making processes. Therefore, it is an active process of community participation through which development inventiveness and mobilization of resources is influenced by the community.

Since the 1990s, great emphasis on stakeholder participation has been put by multilateral agencies such as the World Bank as a means of ensuring sustainability of development projects (Gonzales 1998). Similarly, Brett (2003) stated that stakeholder
participation is a significant element which can encourage sustainable growth measures through capacity building and empowerment by the community. Empowerment refers to enabling the community to increase control over the water projects that directly affect their lives and the capability to be self-sufficient in managing their resources. According to Laverack (2008), enabling means that individuals cannot “be empowered” by others from outside but instead can only empower themselves through gaining more different forms of power from within.

Participation increases people’s ability, sustains projects, and makes communities self-sufficient. The community is then able to contribute towards development projects’ sustainability which in turn adds to the wider picture of sustainable national development. Helleiner (1992) added that there is a move to growing consciousness that development is not only an expansion of national income but also a way of gaining essential human wants and progress, especially those associated to collective or individual wellbeing.

Currently, community participation is an important aspect in planning and executing development projects (World Bank, 2003). One of the fastest evolving ways of giving developmental aid is participation in community-based development (CBD). According to Bigdon and Korf (2002), CBD projects in which community participation takes centre stage not only target to override prevailing authority in a way that makes agency for the less fortunate but likewise lets the unfortunate have greater control of project aid.

Sustainability of community owned water projects is wanting with the increased population rate that has overstretched the available water resources leading to water
scarcity (Onjala, 2012). According to Government of Kenya (GOK, 2014) report on National Policy and Disaster Management, the country is among the many in sub-Saharan African continent that struggle with water scarcity and accessibility. The report further revealed that if the scarce resources in Arid and Semi-arid lands (ASALs) are used optimally, the country’s economic growth can be spared.

In Kenya, water supply to households has evolved through a long process of policy reforms. Immediately the country gained independence in 1963, it adopted a policy of water supply that perceived water as a public good that should be given free with heavy subsidies without cost recovery (Mulwa, 2010). However, owing to economic constraints followed by a series of failed centralized approach of water supply services, the government changed the water policy detailed in the 2002 Water Act that was mainly based on a community management approach of water supply (Republic of Kenya, 2007).

The implementation of the policy reform is carried out against the backdrop of continued low accessibility to water in Kenya. According to an annual performance report by the Kenya Water Services Regulatory Board (WASREB, 2013), access to water in Kenya stood at 54% with large disparities between geographic areas. This report further indicated that the ASAL counties had less than 30% of accessibility to safe water as opposed to 60% in other counties. However, even within Kajiado County, large disparities still existed with some sub-counties registering a low performance index below 30%. The low performance exists even where there is community involvement in resource mobilization and management (WASREB, 2013). Therefore, the observations implored for answers as to why the continued death of water projects despite the policy reforms. This study pursued to assess the effects of community participation on project
sustainability of Kajiado County’s community water projects.

Background of Olepolos Water Project

Olepolos Water Project is situated in Oloolua Location within Ngong Division, Kajiado North Sub-County. It was initially a government initiated water project in the late 80s before it was handed over to the community to manage due to rising water demand in the area. In the year 1998, the project was placed under the management of the community water project board committee for better service delivery. However, the terms and conditions of service were not clearly established as the project continued to face challenges of water loss, lack of funding, lack of community involvement, among other issues (Olepolos Water Project, 2018). The water project is solely dependent on two sources: surface springs and boreholes. The fast-growing population in the area has overstretched the precious commodity. With increased water demand, the project operates on rationing basis to ensure that all the water users get water twice or thrice a week (Olepolos Water project, 2018).

Statement of the Problem

According to the World Health Organization (2017) report, each person needs at least 50 litres of water daily to ensure that the most essential wants are satisfied and keep public health risks at a low level. The universal sustainable development goal (SDG 6) calls for guaranteeing accessibility and sustainability of water resources and cleanliness for everyone. The annual performance report by WASREB (2013) indicated that water access services in Kenya stood at 54% with large disparities between geographic areas. Further, the report showed that ASAL counties of Kenya, with Kajiado County included,
had less than 30% of accessibility to safe water. Within Kajiado County, large disparities exist with some sub-counties registering an accessibility index of 40% while others are as low as 10% (Kajiado County Government, 2016). Further, the County Government report showed that Kajiado County occupies an area of 21,871.1 square kilometers and has 1,600 boreholes whereby some are privately-owned, and others community-based. Out of these, only 30% are operational and performing to their full capacity while 70% have collapsed or operating below the expectations due to poor management and lack of stakeholder ownership and participation. This state raises many questions as to why more than 50% of the existing water boreholes are not performing to their full capacity to increase access to water supply services by members of the community.

The current research thus, pursued to establish the level at which the community participated in community-based water projects and how the participation contributes to sustainable water projects. Further, the study investigated the challenges faced by communities in managing water supply services, and provided suitable recommendations to address these challenges in water scarce communities in Kenya and beyond.

Purpose of the Study

This study endeavored to examine the effects of community participation on the sustainability of water projects in Kajiado County, specifically focusing on Olepolos Water Project, located in Ngong Division of Kajiado North Sub-County.

Objectives of the Study

1. To establish the level of community participation in the actual implementation of Olepolos Water Project activities.
2. To investigate the benefits of community participation on the sustainability of Olepolos Water Project.

3. To assess the challenges faced in community participation on the sustainability of Olepolos Water Project.

4. To suggest recommendations that would enhance community water projects sustainability in Kajiado County.

Research Questions

1. How did the community participate in the actual implementation of Olepolos Water Project activities?

2. What were the benefits of community participation on the sustainability of Olepolos Water Project?

3. What challenges did community face during participation on sustainability of Olepolos Water Project?

4. What could be recommended strategies to be adopted in enhancing the sustainability of Kajiado County’s community water projects?

Justification for the Study

A report by WHO (2012) indicated that in sub-Saharan Africa, 39% of the population in rural areas still uses surface water for domestic use. Poor infrastructure in Kajiado County could explain the limited accessibility to better-quality rural water supply. According to a Kajiado County government (2016) report on water supply services, 60% of community and privately managed water providers are not operating to their full capacity. This research pursued to determine the level of community
participation in the implementation of Olepolos Water Project activities. Further, the study sought to determine the challenges faced by the water project when the community is involved. The study also suggested recommendations for enhancing community owned water projects in Kajiado County.

Significance of the Study

The study aimed to inform policy debate on participation-sustainability nexus and add to the literature on beneficiary involvement and outcomes of water projects in Kenya. To the county government of Kajiado, the study findings and policy implications would be of significance in as far as enhancing community water projects and improving community involvement in other community owned water development projects. The recommendations of this research would provide information that would influence policies, plans, and reforms necessary to improve the sustainability of development projects. The findings would also be used by the government of the day, society, policy makers, bilateral and multilateral donor agencies and implementing partners to deal with challenges on sustainability, and plan better ways of executing lasting development interventions. The results from the research would also be vital to the community and development partners since they (findings) would shed light on the association between participation by the community and water project outcomes.

Assumptions of the Study

The study assumed the following:

1. Experiences of the sampled community water project on community participation were representative of other community based water projects in Kajiado County.

2. The respondents were knowledgeable about community involvement regarding
the sustainability of community development projects.

3. The participants would be available for interviewing and would voluntarily provide the required information.

Scope of the Study

This research pursued to investigate the effects of community participation on the sustainability of Olepolos Water Project, which reasonably represented other community owned water projects of such nature in Kajiado County. This location was selected for the convenience of getting enough and important data related to the study. The researcher specifically drew responses from the project’s management staff, the domestic users of the water, and the community in general.

Limitations and Delimitations of the Study

Mugenda and Mugenda (2003) stated that limitations are some aspects of a study which can undesirably impact the outcomes or generalization of the findings and which the researcher has no control over. The researcher was faced with non-cooperation among the committee members of the community water project due to fear of disclosure of information needed from them, some of which may be considered confidential. To delimit this, the researcher worked closely with the Ministry of Water in Kajiado County where a formal introduction was done to introduce the researcher to the Olepolos Water Project’s management.

Another limitation was lack of technical know-how on the subject matter relating to community participation and project sustainability by respondents. To delimit this, the research assistants explained to the participants the technical aspects of the study, thus getting objective information.
Lastly, the respondents worked under busy schedules and therefore, it was quite hard for them to participate in the research. To address this problem, the investigator requested the management of the water project to notify the respondents early enough of the planned study. She also conducted several visits to the community in order to meet with the required respondents. This enabled the researcher to collect the required information to complete the study.

Definition of Terms

Sustainable projects: Mitchell (2014) defined sustainable projects as ventures which can be fully utilized under economical items and intended resources for a second and even to the third cycle. In this study, sustainable projects meant the ability of community owned water projects’ initiatives to continue utilizing available resources locally after external funding is depleted.

Community: UNDP (2005) defined a community as a group that relates for common social, economic, or political benefits. Community was used in this study to mean a group of individuals having shared wants.

Community participation: This refers to community members’ contribution all over the project’s life in making decisions and participating in activities in needs assessment, project design, implementation, and evaluation (Mdunyelwa, 2008). This study assumed the principle which holds that those who are affected by a decision deserve to be part of the process of decision-making.

Community based water projects: Parker (2002) defined community based water projects as a water project made up of community membership, whether registered with relevant government authorities or not, and the members have control over key decisions
in implementation and capital projects.

Summary

This chapter has introduced and given the background of the study. The chapter has further discussed the purpose of the study, objectives, research questions, justification, significance, the scope, as well as the definitions of terms. The following chapter presents theoretical and conceptual frameworks and reviews of both general and empirical literature.
CHAPTER TWO
LITERATURE REVIEW

Introduction

Literature review is an orderly, clear, and a reproductive way of identifying, evaluating, and synthesizing available knowledge of other scholars, researchers, and practitioners. Chandran (2004) mentioned that literature review encompasses evaluation of empirical studies, government reports, newspapers, and historic records. The researcher describes theories connected to the study under review, the general literature in general, and also discusses the conceptual framework and empirical literature. The focus of this study was community’s level of participation, benefits of community involvement, challenges, and recommendations on sustainability of water projects.

Theoretical Framework

Koskela and Howell (2002) defined a theory as containing concepts which indicate causal relations. A theory explains observed behaviors, contributes to understanding of such behaviors, and helps to foresee future behavior. A theory provides a general language which forms a basis for analyzing an event. This study was grounded on two theories which are in line with the subject under investigation. The theories in focus are theory of citizen participation and Armstein’s ladder theory.

Theory of Citizen Participation

This theory is based on the research work of Parker (2002). With citizen participation, stakeholders are provided with a chance to guide public decisions. Greece and New England are credited with citizen participation. Before the 1960s, governmental processes and procedures were designed to facilitate "external" participation. Citizen
participation was institutionalized in the mid-1960s with President Lyndon Johnson's great society programs (Cogan & Sharpe, 1996). The majority of the agencies and individuals opt to exclude or downplay public participation terming citizen participation as time consuming and too expensive. Numerous community participation events are started in reaction to public response to a planned project. There are however concrete merits that can be gotten from an effective public participation program despite these facts. Cogan and Sharpe (1996) identified five merits of community participation in planning. The benefits include public support during decision-making, providing information and ideas on communal matters, averting of prolonged conflict and expensive postponements, good will reservoir that can be carried over to future choices, and essence of collaboration and conviction amongst the public and the agency.

When discussing the participation theory, it is important to review wider decision-making theories, the democratic approach, and the technocratic approach. Technocratic approach advocates for use of technical expertise, knowledge, methods, and techniques to solve problems. DeSario and Langton (1997) defined democracy as involving citizens taking part in activities concerning a government’s plan and policy. Trained staff are better poised to make complex technical decisions. In both private and public sectors, specialists are continuously being involved in decision-making arrangements. However, Nelkin (2001) stated that technocratic and scientific methods have not just failed to provide solutions to societal evils but have also frequently led to the problems. There is a notion that the ‘treatment is time and again worse than the ailment’ has become more and more vital as the technology gives solutions to public issues.

To determine the potential of what is practical, choices depend on technical
methods and conclusions. Value issues involve normal determinants of what should be more like the essence of appreciative inquiry. Desario and Langton (1997) stated that science-based information can give direction regarding value decisions and it is seldom the only determinant. Because social problems are often complex, the technocratic approach to decision-making is hard to use fruitfully to address social evils since social aims are many a times conflicting, complex, and not clear (DeSario & Langton, 1997). In this regard, there is amplified necessity for decision-making processes that permit agencies to fruitfully put together demands from the public for better contribution while combining the agency’s capability and need for efficiency, hence, stakeholder participation at all levels of government.

Compared to democratic decision-making, technical decision-making is based on the premise that those who are affected by a choice deserve to be involved in making that choice. According to Kweit and Kweit (2001), participation in the classical democratic sense can be direct or through agents for their point of view in a pluralist model. The criteria to evaluate policies and interventions in a democratic process are ease of access of the method of the plan of those affected by it, somewhat than the efficacy of the choice. In this study, the theory of citizen participation was used to find out whether the community was more involved in decision-making processes in the implementation of water project activities.

Arnstein’s Ladder Theory

Arnstein (1969) developed a typology of participation that distinguished between the degrees to which stakeholders were engaged. Community involvement in various stages of community-based projects is the greatest way to expound diverse levels of
participation. Arnstein’s ‘ladder of citizen participation,’ elucidates that this categorization is important to disclose how policy makers misuse people in the form of community involvement. The different levels of participation are represented by eight rungs of the ladder. The levels include manipulation, therapy, informing, consultation, placation, partnership, delegated power, and citizen control. At the bottom of the ladder, the rungs represent least citizen participation or ‘nonparticipation’. This includes manipulation and therapy. The central steps of the ladder signify informing, consultation, and placation. The boundary between manipulation at the bottom and citizen control at the top is termed as ‘tokenism’. This is where people are allowed to take part only to the extent of only expressing views but have no control of issues.

Figure 2.1 shows the three last rungs representing partnership, delegated power and citizen control at the top of the ladder. This is where real and significant contribution occurs. Categorizing various types of people’s involvement is very important in expounding the puzzle between ‘non-participation’ and true ‘citizen power’ and to recognize the genuine motive behind participatory projects.

The Arnstein’s ladder theory was applicable in this study in establishing the level of community participation in the actual implementation of Olepolos Water Project. This theory was suitable as it complemented citizen participation theory on the involvement of the community in decision-making processes. It was used to identify the challenges faced during participation and the benefits gained during the same process.
Figure 2.1: Eight Rungs on the Ladder of Citizen Participation
Source: Arnstein (1969)

General Literature Review
This research reviewed works of other scholars in relation to the aim of the study.

Community Involvement and Sustainability of Water Projects

Recently, participation by communities has become a vital aspect regarding creating a conducive environment for sustainable water supply projects in rural areas. In participation by the community rather than the community receiving a share of project benefits, the process is considered an active one where the beneficiaries determine the execution and implementation of the project. Mwakila (2008) stated that emphasis has been put on beneficiaries taking part as a team and considering the project to be a course
of creating goods and services rather than its product.

Reid, Parsons, and Green (2012) explained that the concept of community involvement assumes that value accrues to the community beneficiaries through the acts of participation and association. Consequently, the more the community takes part in making decisions, the more likely it will produce a sense of cooperation and project ownership thereby improving the community inspiration, commitment, and involvement in development processes (Sanoff, 2006).

Importance of Community Participation in Development Projects

According to Mwakila (2008), community participation leads to beneficiaries taking a center role in the project implementation process. It is thus a requirement for successful project implementation, ownership and sustainability. According to Tadesse, Bosona, and Gebresenbet (2013), it is important for beneficiaries to participate in the initiation of a project, its implementation, operations, and maintenance. This gives the stakeholders a better chance to run and make decisions on matters touching their water supply systems (Jansz, 2011). A good number of development initiatives based within rural areas in developing countries, do not benefit the community in the long-term due to misunderstanding of community participation and sustainability (Toyobo & Muili, 2013). Throughout sub-Saharan Africa, low rural water supply sustainability levels indicate severe limitations of community management approach (Harvey & Reed, 2007).

Through community participation and management, capabilities and desires within communities are made to influence and manage goods and service production during the project life cycle. Indicators of community participation and management can be listed as follows:
1. Taking part in decision making: This refers to development and implementation of project aspects that are dictated by community preferences. The project stakeholders decide on the project design, external aid, community aid, and user charges.

2. Informed choice: The communities are made aware of all options or alternatives available and associated outlays. Communities can make knowledgeable choices regarding their capability to run the project.

3. Community contribution: If the community must feel that it owns the project, it should be ready to make contributions to its development and operation. For sustainability of projects, monetary investments, material equipment and labor are important. According to Narayan (2013), voluntary participation in project related committees and meetings is recommended since coercive contribution creates hostility towards the project.

4. Representation: Individuals that are tasked with managing community water projects should be democratically elected and should represent the diversity of the community. The individuals should be aware that the project’s survival or collapse depends on community investments such as time, infrastructure, and financial capital and that the project belongs to the community. In order to avoid confusion, roles must be clearly defined (Yacoob & Walker, 1991).

It is not possible to attain community development without the community participating and getting involved in the specific projects (Nikkhah & Redzuan, 2009). Participation is a means as well as an end. As an end, it ensures that people are involved
directly in projects and take control of decisions that affect their lives. Furthermore, as a bottom up approach, community participation leads to high development and consequently the specific community accesses sustainable development.

According to Dungumaro and Madulu (2003), in most developing countries, Kenya included, the involvement of the community in environmental issues which directly affect humanity is anchored on three reasons. First, the local community’s participation approval in decision-making processes that affect their lives. Secondly, communities know the importance of natural resource conservation, which includes proper water resource utility. Lastly, create trust of the people and confidence of the citizens to avoid complaint and conflict between users of water resources and other stakeholders due to different demands and interest.

Lessons from successful water projects in British Columbia in Canada recommend that community owned water supply services that is sustainable must be demand driven, the implementing agency must create an enabling environment, and equally empower beneficiaries to assume responsibility and ownership for the completed water systems (Furlong & Bakker, 2008).

Community Participation as a Means or as an End

Community participation as a ‘means’ and an ‘end’ is one of the common divisions made by rural development practitioners (Miles & Samndong, 2015). As a means, participation implies the use of involvement to achieve some pre-determined goals. According to Burns and Taylor (2000), participation is a way of pooling rural dweller economic, physical, and social resources to attain development goals and objectives and run projects more effectively and efficiently.
Community participation as an end is seen as a dynamic, active and genuine process that rolls over time and whose purpose is to strengthen and develop people living in the rural areas to directly get more involved in development initiatives projected to benefit them (Swai, 2016). As an end, participation empowers communities and individuals in regard to acquiring knowledge, skills, and experience; resulting in superior independence. Unless the beneficiaries themselves control the process, development intended for their benefit cannot occur. Burton (2003) stated that by establishing a valid participation process, rural development will be realized as a direct outcome. A comparative breakdown that summarizes the differences between these two concepts is provided in Table 2.1.

Table 2.1: Comparative Analysis on Community participation as Means Versus End

<table>
<thead>
<tr>
<th>Community Participation as Means</th>
<th>Community Participation as End</th>
</tr>
</thead>
<tbody>
<tr>
<td>It suggests using participation to gain some prearranged aims.</td>
<td>Seeks to bestow power to individuals to contribute more emotively.</td>
</tr>
<tr>
<td>The focus is on attaining the goal and not necessarily participation itself.</td>
<td>The goal is to improve people’s active participation in project as opposed to just achieving the predetermined objectives of the project</td>
</tr>
<tr>
<td>It is an effort to use available means to attain project goals.</td>
<td>The approach tries to ensure an increased role of people in rural development initiatives.</td>
</tr>
<tr>
<td>It is frequently used in governmental developments, where the major concern is to bring the community together and engage them in improving the delivery system.</td>
<td>This view finds relatively less favor with the government agencies. Rural development agencies in principle agree with this viewpoint</td>
</tr>
<tr>
<td>Generally, participation is short-term</td>
<td>Participation is viewed as a long-term process</td>
</tr>
<tr>
<td>It is a passive form of participation</td>
<td>Long term process where beneficiaries are actively involved.</td>
</tr>
</tbody>
</table>

Source: Kumar (1984)

There is no clear-cut or mutually exclusive distinction between these concepts. They signify diverse drives and methods to encouraging participatory development.
Whilst the majority of the development agencies give the same weight to both, some stress on one or the other. For example, a report by World Bank (2001) observed that in recent times, the concept of ‘participation as means’ has controlled rural development practice. Although a little rural economic development has been attained due to this strategy, only a few rural development projects have gained significant community participation and gains by this means. This strategy has not led to significant participation of the poor. According to Dooris and Heritage (2013), the degree of enablement is more restricted in ‘participation as a means’ than it is in ‘participation as an end’.

Development projects based in the rural areas have been driven by wider goals economically. Although satisfying essential community wants is normally prioritized, if economic growth will trickle down to the most marginal elements of community and space. Lack of community participation, however, has many times resulted in community poverty deprivation trap which aggravate underdevelopment. Therefore, it is important that development projects and strategies in rural areas be built upon the original knowledge systems of the beneficiaries in problem identification and project implementation.

Ways of Community Participation in Water Projects

Mulwa (2008) suggested that to realize effective and sustainable development, the project major beneficiaries must be fully engaged by electing the beneficiaries into project implementation committees to ensure that the beneficiaries take part in project planning, budgeting, identification, and allocation of resources. Community participatory planning is a process in which every stakeholder is involved in community development
and it is the most efficient way to plan community project interventions.

Often, participatory planning is the most successful and inclusive manner to organize a community development project. Normally, experts are required, but simply to make work easier. According to Jain and Polman (2003), plans made by experts from outside, no matter the technical reliability, fail to motivate the people to take part in their implementation.

Any of the parties who are engaged in a project can initiate participatory planning. The stages of establishment expected and the project timelines are to be worked out and discussed amongst participants (Hague et al., 2003). Democratic planning is receptive to power differences and pursues to make sure that this does not control the outcome and jeopardize community projects’ sustainability. Stakeholders should swap information to explore common opinion areas and strike a balance to find methods of mitigating disagreements that aim to promote sustainability of community projects.

Community management means that the society takes responsibility of making decisions during the lifecycle of the project (Sanoff, 2006). These decisions include fixing of price charges and mode of collection, regular routine maintenance of the project, and decision making about system extension. It regards all matters related to ownership of the project, authority on making decisions, and power over system operations and project development. There are common principles of community management identified by Lockwood (2004). These principles include involvement, control, ownership, and cost-sharing. Other community management model concepts include operation and maintenance, sustainability, and cost recovery (Koestler, 2008).

Increased participation by the community in development has changed the
traditional roles adopted by government and community where governments changed from “provider” to “facilitator” and community from “receive” to “doer” (Amerasinghe, 2009). Sustainability of community-based initiatives critically depends on the institutional surroundings, which require commitment from government and responsibility of community leaders to avoid ‘supply-driven’ development.

Community Water Owned Organization

Many studies have been conducted focusing on the significance of community-based water projects. Experiences from the many studies conducted concerning water management indicate that there is greater need for stakeholder participation in the community water supply projects. When properly applied, keen stakeholder participation in the management of water projects might enable sustainability. From studies conducted by World Bank (1995), managing several projects through community participation resulted in speeding up development.

World Bank (2003) conducted a study in Yemen which indicated that through participatory approaches, Food and Agriculture Organization (FAO) over 23 years ago implemented hundreds of projects comprising several significant development projects in rural areas. Yemen was regarded as a good illustration of community participation in water management during the building of small dams with support from donors in the 1990s. Yemen created training activities to build its own technical and management capabilities. Mulwa (2008) has asserted that approximately 30% of Kenyans living in rural areas have access to better supply of water from community water projects, a majority of which were started as self-help groups by the community.
Past studies have indicated the significance of community participation in improved water service delivery regardless of the evaluation given to the value of community participation in the realization of project sustainability. None of the studies has however shown the extent to which community participation has led to sustainability. Particularly, these studies focused on matters relating to community participation in running water projects.

Level of Community Participation in Actual Project Implementation

The level of community participation includes community’s involvement as a means by which shareholders have influence and say on decision-making, resources that affect them, and development initiatives (Ofuoku, 2011). According to Smock (2004), the degree of participation takes two forms. The first form is instrumental participation where involvement is considered as an exercise where locals pull together with external agents or partners in accomplishing the development project. Through this process, participation becomes the means through which the development projects are implemented more effectively. In this form of participation, development processes are normally initiated by the government or donors using community resources to give people service. The other form of participation where the community can get involved in is transformational participation which is a goal. This goal is articulated empowering individuals in terms of their experience, knowledge and skills acquired to assume bigger roles for their own development. According to Ofuoko (2011), participation seeks to ensure that people take responsibility to solve their own socio-economic challenges.

Furlong and Bakker (2008) maintained that participation issues in development projects are mainly to make sure that established cultures and societies are made an
essential part of the development process. In addition, they ensure that beneficiaries of development projects are not marginalized. However, the serious issue is how to attain a suitable structure and guideline. This ensures correct and successful community participation and defining a variety of levels of community involvement. In any project implementation, community involvement entails active participation of beneficiaries at most, if not all areas of the project cycle including problem identification, preparation, design, implementation, and monitoring (Ofori, 2008).

The extent in which communities get involved in various project stages dictate their participation level in the project. When people are given a chance to take part in all stages of a project, such a situation is referred to as total participation. On the other hand, meaningful and true community participation entails entrustment of power, partnership, and citizen control. This implies that members of the community should have the opportunity to actively participate in project development and ought to be empowered to assist sustain the project (Ofori, 2008).

At the implementation stage, community participation can be split into division of labour and sharing of cost. Many a times, depending on one of two alternative principles, cost sharing is attained. One is that the cost of the project is born on beneficiaries of the project. Alternatively, community members are freely left to donate according to their perceived interests. Compulsory cost sharing is usually used to finance projects meant to improve vital community services such as waterworks and sewer systems. Construction of essential community facilities such as water ways within beneficiaries’ homesteads is usually financed through compulsory cost sharing. There are two different ways of sharing labour. Schor (2016) states that the two methods are direct contribution of labour
and; the initial contribution of money equal of one’s share of labour, then recouping the money as wages by working in the project.

Mikkelson, York, and Arritola (2015) brought to the fore other major participation types found in development projects. First, there is induced involvement strategy in which the project design and work plan are pre-determined, and the designated beneficiaries encouraged to take part in its activities and obtain certain benefits. In various projects, people are invited to make labour contributions or other resources, which is considered as cost-sharing. Then people take part in particular short-term activities majorly for community development but there is no structure for continued participation. This is referred to as transitory mobilization for community (Kumar, 2002).

The second participation type is group formation. This is, where the project has a definite goal to assist and generate new or fortify available self-formed and self-initiated organizations and groups. The poor can then access resources, inputs, services and actively take part in the project by self-proposed actions (Mikkelson et al, 2015). Full participation also leads to community empowerment. The community, through groups, will not only get access to resources but also bargaining power and decision-making and a base for continued self-development efforts. These levels of participation were adopted in this study.

Benefits of Community Participation

Through participation, the community creates expertise for collective action, routine maintenance, and future sustainability (Musa, 2002). Also, communities build their capabilities, and create ownership of the project resulting in greater organization and sustainability (Barasa & Jelagat, 2013). Participating in projects empowers communities
resulting to greater efficiency, transparency, accountability, enhanced service delivery, and generally better project outcomes. Community participation encourages donor harmonization and can kick-start local private contractors and service providers (Okafor, 2005).

Community participation in projects has its benefits such as improved designed projects, enhanced targeted advantages, projects that are cost effective, increased fair distribution project gains, reduced corruption, strengthened citizenry capabilities to carry out self-initiated development activities, and improve the match between what is needed by the community and what it gets as the project will be more consistent with the preference of the community.

Wide literature exploration has recognized that the significance of the community participating in development projects is a key ingredient of an empowered society (Norman, 2000). However, community participation is not just a requirement; it is a prerequisite for accomplishment. Governments engaging their people and cohorts intensely in community project development work increase more resources that realize increased outcome and progress holistically, and eventually, in a more useful way. Therefore, community involvement is significant to the accomplishment of development projects targeting the community.

Though community involvement in development projects has a number of merits that encourage sustainability, important challenges in participatory approach that can intimidate sustainability of community-based projects need be recognized. According to Mulwa (2008), several communities lack the essential managerial and organizational skills which are likely to hamper project progress and will lead to waste of resources.
Kumar (2002) stated that participation takes place in social-political contexts and cannot occur in a vacuum. Kumar reiterated that social obstacles, for example, attitude of dependency, domination of the local elite, culture of silence, or gender disparity diminish a community’s participation in projects, thus intimidating the sustainability of the projects.

Arimoto (2012) stated that community participation in development projects is linked to community power relations and politics. Thus, whenever a project tends to involve beneficiaries, it should prepare to deal with the political situation and its effects. Consequently, using participation to run community development projects may ultimately provide a contradictory result. The participation of women in community projects can be negatively affected by gender inequalities. The Elder and Smith (2010) acknowledged the fact that the majority of community-based projects’ labour force is comprised of women. However, the women are many a time marginalized with regard to accessing information, making decisions, and identifying opportunities to improve their skills. This may threaten project sustainability.

Active community involvement in development projects does not diminish the necessity for a well-functioning state apparatus (Mansuri & Rao, 2004). To sustain such projects, communities should lobby for sustained support for inputs and training. Support from the government can be financial or material support. For instance, after the completion of a water project, breakdown of pumps, which are very expensive to purchase, or construction of water storage tanks, the community may find it hard to replace without the government support.

Challenges of Community Participation
Many researchers have expressed a myriad of opinions on the fact that community participation is a continuous subject. For instance, De Villiers (2011) stated that undertaking participation processes could prove costly since heavily depend on resources, time, and political will. The justification of a commitment to participatory programs is often an issue, given the broad demands on government resources and the strained nature of delivery. Spending money on critical needs such as service delivery and physical deliverables is considered a better way of spending (Lizarralde, 2013). Due to political and administrative barriers, project objectives and outcomes may not augur well with those in power, causing community-based projects to be delayed. The needs of the community are also left as secondary. Public-private partnerships, seconded by the government frequently minimize the level of participation by communities through transferring large stakes in projects to non-governmental organizations (Lizarralde, 2013).

Lizarralde (2013) further opined that there are some reasons which can cause reluctance on the part of the beneficiaries or community to participate in the project including uneven distribution of the project works or benefits among the community members, treating beneficiaries as being helpless by the agency, an overdependence by community members that they assume the government or external agency should provide the facilities, and the lack of unity where there is little or no sense of community. In other quota, Schouten and Moriarty (2014) argued that there are two principal factors that can cause limited community participation in development projects. The first entails internal factors such as lack of community commitment, poor leadership communication, lack of participatory skills, technical issues, misplaced priorities and financial problems. The
second aspect is external factors, which include the lack of standardized technologies, political interference, and occurrence of natural hazards. Mwesigye and Matsumoto (2016) further classified the challenges to participation in form of economic, socio-cultural and political barriers. With regard to socio-cultural barriers, the development processes are considerably influenced by beliefs and norms. Though opportunities for participation exist, ethnicity differences, gender, religion, and status may still lead to diverse responses and initiatives. For instance, a male dominated culture, where women are seen and not heard, poses difficulties to participation by the women folk. Therefore, participatory development has to take into consideration contextual barriers which affect people's seclusion from the development process.

Meanwhile, economic barriers imply that, for people who have been dispossessed and lack access to natural, economic and financial resources, participation cannot be possible (Mwesigye & Matsumoto, 2016). In conclusion, political setbacks provide the structure for participation, thus an appraisal of the nature of delegation of power in the state. The state is hostile to participatory processes and least answerable to its electorate in highly centralized systems. Therefore, there is diminutive prospect for involvement in development. For decentralized systems the reverse is true. No authentic participation is achieved where political beliefs of a country do not encourage opinions and diffusion of ideas.

Empirical Literature Review

Kenya faces water scarcity like many other countries in the world. About 80% of Kenya’s population lives in the rural areas, where only 54% have access to safe water (World Bank, 2009). A study by Mansuri and Rao (2004) reported that in 49 countries of
Africa, Asia and Latin America, participation was the most significant factor contributing to project effectiveness and maintenance of water systems in about 121 rural water supply projects. Involving people in decision-making in all stages from design to implementation, leads to the best results. Limiting people engagement to sharing of information and dialogue alone, leads to poorer outcome (Narayan, 2013).

Managing several development projects through community participation focuses on fostering development without considering sustainability of the same (World Bank, 2009). For example, a study conducted by the World Bank (2003) in Yemen indicated that FAO executed close to 200 projects using participatory approaches. These included several major rural development projects. In the 1990, Yemen was considered a great example of water management that succeeded through community participation in construction of donor-funded small dams. Yemen build its own technical and management capabilities through trainings.

A study by Babooa (2015) focused on citizen participation in policy making and implementation in Port Louis’ Local government in Mauritius. The study revealed that citizen participation in projects is regarded to responsiveness of public needs. Eventually, at local levels, citizen participation was affected by control mechanism. Nonetheless, the study revealed that at Port Louis local government, citizen participation was not adequate. Major factors that could have contributed towards citizen participation improvement in policy making and implementation in Port Louis’ were provided. The factors included providing civic education, disseminating effective information, communicating effectively, and publicizing public hearing.
A study by Khwaja (2004) in Northern Pakistan provided empirical evidence using primary data on development projects to demonstrate the effect of community participation on performance of projects. Khwaja proved that increased projects results are associated with great community involvement in non-technical decision-making. In another study, Sara and Katz (2004) analyzed water systems performance in different countries. They established that discharge of water systems was noticeably superior in communities where beneficiaries had the opportunity to decide about the system type and service level required. Decision making was genuinely inclusive and democratic. On the contrary, projects implemented with limited community involvement and the absence of an accountable management to the project beneficiaries, seemed to be badly done by the external agents.

Over the last half century, there has been failure of many development projects and programmes due to inadequate reference to people’s need, skills, or knowledge during design. When 25 projects that were sponsored by the World Bank were evaluated, it was revealed that 13 were discontinued a few years later following stoppage of financial aid. According to Zazueta (1994), the main cause of project failure is lack of community involvement and to local organization-building during project formulation. An evaluation of community-based projects in sub-Saharan Africa established that although initially communities are doing well in terms of creating a project, material resources may not be sufficient (Cleaver, 2009). In an in-depth examination of tank management in South India, Mansuri and Rao (2004) came to a similar conclusion by revealing that maintenance of community projects is frequently critically dependent on external agents. Therefore, though there may be active community development, there is
also need for well-functioning state machinery.

Oakley and Marsden (2007) stated that stakeholders’ support brings together individuals, families or communities that assume the obligation for their wellbeing and create potential to contribute to individual and communal development. With regard to expansion of development projects, community involvement is an active engagement activity through which a beneficiary group determines the course and implementation as opposed to simply receiving a portion of the benefits.

From literature review, the identified indicators of community participation were involvement in making decisions from the inception stage, contribution in the execution process and the effects it has on sustainability of the project. The literature reviewed revealed a knowledge gap on the importance of community ownership of water projects towards their sustainability in Kajiado North Sub-County, Kajiado County, Kenya, thus prompting the investigator to undertake this study to fill the existing gap.

Conceptual Framework

Svinicki (2010) defined conceptual framework as an interrelated set of ideas (theories) about how a specific phenomenon functions or is connected to its parts. This framework serves as the foundation for understanding the correlation patterns of interrelations across experience. Mugenda and Mugenda (2003) asserted that it is used in model identification in research and explains existing correlation between dependent and independent variable. The independent variable is explained by Kothari (2004) as the explanatory variable that causes the dependent variable to change and goes ahead to explain the dependent variable. Figure 2.2 presents the conceptual framework of this study.
Discussion

Independent variables are those that influence the dependent variables (Sekaran & Bougie, 2010). In this research they included community participation in decision-making, project management and implementation. The dependent variable, which in this study was sustainability of community water projects, is influenced by the independent variables which is community participation. The involvement of project beneficiaries in decision making during implementation would create a sense of project ownership that provides for regular maintenance hence continued water accessibility by the community.

On the other hand, intervening variables affects the relationship between the dependent and independent variables. This include government policy, capacity building, awareness creation, community mobilization and technical and financial support. If water projects in the community are to thrive, there must be a government policy in place that governs the management operations of the water projects. This would boost the sustainability of the
water project and promote reliable water supply services. In addition, capacity building and awareness creation would promote a stronger community water project that is sustainable. Similarly, technical and financial support is critical in the continuity and sustainability of community water projects. This study aimed at examining the relationship between community participation and sustainability of community water projects.

Summary

This chapter has focused on the review of relevant literature related to the problem. The literature was organized in line with the research questions and their specific objectives. The chapter has also provided empirical studies and conceptual framework. The next chapter discusses the research methodology.
CHAPTER THREE
RESEARCH METHODOLOGY

Introduction

Chapter three provides the research methodology adopted by the study. The methodology highlights how the study was conducted. It discusses the population of the study, sample size, sampling procedures adopted, data collection instruments, data analysis plan and ethical considerations.

Research Design

Cooper and Schindler (2003) identified research design as a plan used to carry out a research. Research design refers to theoretical structures within which a study is carried out. The study design gives answers to questions regarding the methods used to collect data and type of sampling used. Kothari (2004) alluded that a research design is important because of various research operations ease and consequently make the study efficient and provide most information with less finances and time. It specifies the necessary procedures used to obtain needed information (Malhotra & Birks, 2007).

This study adopted a descriptive research design. According to Kothari (2004), a descriptive research refers to an enquiry which describes the situation as they exist, and the investigator can only report what is happening and has no control over variables. Descriptive research is intended to depict situations as naturally as possible. The design can be used to validate present practices, make judgments and build up theories. This design gave the researcher data by using both quantitative and qualitative techniques. According to Mugenda and Mugenda (2003), mentioned that descriptive research is important in observing, describing and documenting aspects of a situation.
Population

As defined by Mugenda and Mugenda (2003), a population is an entire set of elements, objects or cases with having similar characteristics that differentiate it from other populations. Population is the total specified aggregation of study units from which the sample is drawn (Levin, 2010). Levin further stressed that population involves an entire group of individuals, events, or objects, having a common observable characteristic. According to Kenya population and housing census report of 2019, the approximate population of Kajiado North Sub-County was 304,404 (KNBS, 2019). The population of this study comprised of Oloolua Location residents who are part of Olepolos Water Project beneficiaries in Kajiado North Sub-County.

Target Population

Kothari (2004) referred to target population as the subgroup of individuals from which the sample was selected. The target population for this research was 1,028 people who are part of the community, management staff and users of Olepolos Water Project in Kajiado North Sub-County. According to Olepolos Water Project (2018) annual report, the population of people using Olepolos Water Project is presented on Table 3.1.

<table>
<thead>
<tr>
<th>Category</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olepolos Management Team</td>
<td>50</td>
</tr>
<tr>
<td>Domestic Users (Households)</td>
<td>619</td>
</tr>
<tr>
<td>Community</td>
<td>359</td>
</tr>
<tr>
<td>Total</td>
<td>1028</td>
</tr>
</tbody>
</table>

Sample Size

Sample is a part of the population that is representative and that can be used to generalize data of the entire population (Marshall, 2007). An investigator needs to
carefully select the right sample from the population to raise the level of validity and reliability of the research. A sample size of between 10% and 30% is representative enough to inform a study (Mugenda & Mugenda, 2003). This study considered 15% of the target population as the sample size to make a total of 155 respondents. This is recommended as most of the cadres selected are believed to have homogenous characteristics, hence, can be generalized to the larger population. This also helped to cater for attrition and poorly responded questionnaires. The study sample size is presented on Table 3.2.

### Table 3.2: Sample Size

<table>
<thead>
<tr>
<th>Category</th>
<th>Target Population</th>
<th>Percent</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Team</td>
<td>50</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>Domestic Users (Households)</td>
<td>619</td>
<td>15</td>
<td>93</td>
</tr>
<tr>
<td>Community</td>
<td>359</td>
<td>15</td>
<td>54</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1028</strong></td>
<td><strong>15</strong></td>
<td><strong>155</strong></td>
</tr>
</tbody>
</table>

**Sampling Techniques**

Chandran (2004) defined sampling as the procedure of choosing an appropriate sample from the population. Through sampling, a number of elements are systematically selected to represent a larger set in a study. Chandran maintained that through sampling, a portion of the population is selected in order to have a representative of the entire population. Kothari (2004) defined sampling as a specific plan used to obtain or select a sample from a known populace. Kothari further described sampling technique as the procedure a researcher adopts in picking items for the sample.

To conduct this study, the researcher used purposive sampling technique to choose the participants of the study to gather useful information that may otherwise have been unattainable, given the large population of respondents at Olepolos Water Project.
This technique of sampling was adopted since it allowed the researcher to select respondents with the required information as per the study objectives (Mugenda, 2008). Deliberate efforts were made to ensure gender inclusivity to capture the views of both men and women. The respondents who were included in the study were those with considerable number of years’ experience in community participation with regard to Olepolos Water Project. The researcher also purposively sampled eight (8) key informants who were mainly members of the management and staff of Olepolos Water Project with which in-depth interviews were conducted.

Data Collection Instruments

Zikmund (2010) termed data collection as the approach used to collect data from the field. The research instruments for this study were questionnaires with both open and closed-ended questions for purposes of receiving complete and detailed information on the research topic. Closed-ended and opened-ended questions were used to guide the respondents’ answers within the choices given (Mugenda & Mugenda, 2003). The principal researcher with the help of research assistants administered an in-depth interview guide to management staff, domestic users and the community. According to Kothari (2004), a researcher utilizes the interview guide to collect data from persons who are considered to hold crucial and relevant information from the field. In this case, key informants from the management team and staff provided more information to answer the research questions.

Questionnaires

Questionnaires were administered to the target population in order to collect data on the objectives of the study under review. Mugenda and Mugenda (2003) postulated
that questionnaires are most preferred in a study where sensitive issues are addressed and particularly when the study involves anonymity in order to ensure respondents are not reluctant to respond to the questionnaire. The researcher and research assistant distributed questionnaires to 155 respondents; some of the questionnaires were self-administered while some were administered by the research assistants.

The questionnaires contained open-and closed-ended questions. Each set of questions addressed a specific objective of the study. Open-ended questions enabled the respondents to provide their own answers to the questions (Allen & Babbie, 2008). The respondents had an opportunity to provide their answers in detail on Olepolos Water Project. The closed-ended questions enabled the respondents to select answers from the list provided by the researcher to obtain background information. These questions were easy and could be quickly answered by the respondents.

In-depth Interview Guides

In-depth interview guides were administered by the principal researcher during the face-to-face interview sessions. In-depth interviews were particularly useful for getting the story behind participant’s experiences (Chandran, 2004). The principal researcher conducted face to face in-depth interviews with key informants who were staff and management at Olepolos Water Project. Information obtained was useful for purposes of triangulation with data obtained from primary respondents (McNamara, 2008).

Types of Data

As defined by Mugenda and Mugenda (2003), data is all information that a researcher collects for a study. There are two types of data: primary and secondary.
Primary data was collected using questionnaires and interviews guides while secondary data was obtained from literature review, research reports, journals, newspaper articles, websites and textbooks.

Data Collection Procedures

Kombo and Tromp (2006) advised that collecting data is essential in a study because it permits for giving out information and developing meaningful programs. Questionnaires and in-depth interviews were used as the main tools of collecting data. Kothari (2004) described a questionnaire as a set of written or printed questions having choices of answers devised for the purpose of a study. Closed- and opened-ended questions were used to guide the respondents’ responses to be within the given choices (Mugenda & Mugenda, 2003).

The researcher and research assistants utilized the drop and pick approach in distribution of the questionnaires during data collection exercise. This allowed respondents enough time and privacy to fill the questionnaires within the agreed period. The researcher sought permission from relevant gatekeepers before embarking on field work. The principal researcher collected data from key informants. This method was most preferred since it facilitated the researcher to get in-depth details concerning the study under review and to gather more information that was needed for review and examination of collected data gathered from the field.

Interview guides were administered to six management staff of Olepolos Water Project by the researcher where those who were available for the interview were informed early enough of the time and given access to the questions, they were expected to answer the researcher at the time of interview. Time constraint was reduced for both
the researcher and the participants since the participants were already familiar with the questions to answer. The researcher also got accurate answers that facilitated the study.

Pretesting

Pretesting is important as it guides researchers identify problems in sequencing and wording of questionnaires before the actual study is conducted (Cooper & Schindler, 2003). Pretesting also helps the researcher to identify ways to increase the interest of participation. Through pretesting, the questionnaire is tested on a small population to determine whether the instrument measures the study variables and if the variables are unambiguous so that they are responded to without biasness. The findings obtained from pretesting were used to appropriately adjust the data collection tools to enhance quality collection of data. Therefore, pretesting was done in order to establish suitability of the tools.

The number of cases in a pretest should be between 1% and 10% of the sample size (Mugenda & Mugenda, 2003). Hence, the research tool was pretested among 10 respondents, which is 6% of the sample size (155). The pretest was done in Keekonyokie Community Water Project in Kajiado West which had similar characteristics with the targeted research community a few days prior to the actual study to avoid contamination of data. The respondents of the pretest were randomly selected and did not participate in the actual study. Keekonyokie Community Water Project was suitable for the pretest because the respondents had similar characteristics as those of the target population at Olopolos Water Project.

Data Analysis Plan

In this study, data was analyzed using the Statistical Package for the Social
Sciences (SPSS) version 23. Prior to analysis, completeness and uniformity of data was confirmed. Data analysis process included organizing, editing, coding, analyzing and summarizing the findings of the study (Obwatho, 2014). Immediately after the questionnaires were gathered, they were coded and entered into the SPSS version 23 for analysis. The open-ended questionnaires with qualitative bias were thematically classified and analyzed. The information was specifically investigated and analyzed using thematic approach and triangulated with findings generated from quantitative analysis. The study findings were presented using tables, figures and narratives and quotations.

Ethical Considerations

According to Chandran (2004), ethics are principles or behavioral norms that inform noble choices regarding own behaviors and relationships with others. In research, the objective of ethics is that the research activities do not affect anyone adversely. Mugenda and Mugenda (2003) posited that ethics deal with one’s behaviour and serve as a guideline to one’s conduct, and researchers must be careful to avoid causing physical and psychological harm to the respondents by asking inappropriate and embarrassing questions. The language which was employed in the study was friendly and thus made the respondents free and relaxed. In the view of Babbie (2004) confidentiality is an important consideration for social science research. To keep confidentiality in this study, the respondents’ names were concealed and their opinions and attributes in responses were kept confidential.

The researcher obtained a letter from the department of Development Studies, Daystar University, after being cleared by the supervisors to proceed for data collection. The researcher then proceeded to seek approval from Daystar University-Ethics and
Review Board (DU-ERB) and acquired a research permit from the National Commission for Science, Technology and Innovation (NACOSTI). Finally, the researcher obtained clearance from Kajiado County Ministry of Water and Irrigation and the County Commissioner to conduct the research in Kajiado.

Further, to adhere to ethical considerations, identification and training of research assistants was carried out by the researcher. This training focused on use of research tools, confidentiality, informed consent, anonymity, and respect of respondents. During the interviews, informed consent was sought from the respondents who were assured that the information would share would be treated with confidentiality and only for the purpose of this research. The researcher and the research assistants explained to the respondents the benefits of the study to the water project and the society in general. Confidentiality was emphasized and the respondents were debriefed. All the information obtained was used only for the purpose of this research. Respondents were not required to give any details that would lead to their identification. The researcher exercised high level of professionalism, confidentiality and honesty to ensure that the information given was only going to be used for academic purposes. The respondents were allowed to drop out of the study at will.

Summary

This chapter has discussed the research methodology that was followed, and the data collection methods utilized in the study. The researcher has justified every action that was made in implementing the study. The chapter has highlighted the methodological details which were the research design, target populations and sample selection, research instruments, and methods of data analysis. The next chapter is about
CHAPTER FOUR
DATA PRESENTATION, ANALYSIS AND INTERPRETATION

Introduction

This chapter presents analyses and interpretation of the research findings in relation to the study objectives. The results were also evaluated in the context of the literature review. The purpose of this study was to examine the effects of community participation on sustainability of water projects in Kajiado County, Kenya with specific reference to Olepolos Water Project. An analytical report was developed in consideration of the study objectives.

The objectives of the study were to determine community’s level of participation in the actual implementation of Olepolos Community Water Project activities, identify the benefits of community participation on sustainability of Olepolos Water Project, establish the challenges faced in community participation on sustainability of Olepolos Water Project, and draw policy recommendations that would enhance sustainability of community-based water projects in Kajiado County.

Data was collected using questionnaires and interviews which were structured based on the research objectives. The questions were both open-and closed-ended. The researcher used Likert scale which mostly scales response in survey research. The Likert scale ranged between 1 and 4, where those with very large extent were represented by 4, those who agreed at large extent were represented by 3, those who moderately agreed were represented by 2. Lastly those who disagreed were represented by 1. In reflection to
the study objectives, a systematic report was dispensed consisting of the inquiry and explanation showing the important findings of the survey. The data analysis was presented in the form frequency tables, percentages and graphs.

Analysis and Interpretation

Response rate

A sample size of 155 respondents was utilized in this study. The researcher distributed questionnaires to 93 domestic users of the water from Olepolos Project and 54 members of the Olepolos Community. The questionnaires that were duly filled and returned by the domestic users were 62 and that of the community were 35 respectively. The interviews were scheduled with eight management staff for Olepolos Water Project and only six were available for the interview and filled the questionnaires. The valid questionnaires and interviews that were duly filled and analyzed were 103 out of 155 administered. This represented a response rate of 66.5%. A response rate of 50%-60% is considered sufficient, 61-70% good and above 70% excellent and can provide a basis for statistical analysis for a research (Mugenda & Mugenda, 2003). This study’s response rate of 66.5% was considered good and sufficient to facilitate effective data analysis and interpretation. Table 4.1 shows the response rate.

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Sample Size</th>
<th>Actual Response</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olepolos Water Project domestic users</td>
<td>93</td>
<td>62</td>
<td>66.7</td>
</tr>
<tr>
<td>Olepolos Community members</td>
<td>54</td>
<td>35</td>
<td>64.8</td>
</tr>
<tr>
<td>Olepolos Water Project management staff</td>
<td>8</td>
<td>6</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>155</td>
<td>103</td>
<td>66.5</td>
</tr>
</tbody>
</table>

Respondents’ demographic characteristics

Before the researcher could address the study findings as per the objectives, it was
necessary to find out respondents’ demographic information to provide a clear interpretation of the characteristics which were later used to inform data analysis and interpretation. The main characteristics that were considered in the study included level of education, gender, and role played at Olepolos Water Project, and number of years participated in the project. Other findings are examined and explained as per the study objectives in the subsequent sub-titles under this section.

Gender of the respondents

The study sought to find out the gender of individuals who participated in this research as presented in Table 4.2.

Table 4.2: Gender Distribution of the Respondents

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>55</td>
<td>53.4</td>
</tr>
<tr>
<td>Female</td>
<td>48</td>
<td>46.6</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>100</td>
</tr>
</tbody>
</table>

More than half 55(53.4%) of respondents were male while 48(46.6%) were female. The findings of this study show that the roles of both genders were appreciated in Olepolos Water Project. The success of water services delivery initiatives is a shared role between men and women in the sector who are associated with the recognition that water demand cuts across both genders. Each play an important role in environmental protection and management (UNDP, 2005). However, there was fair gender representation to this research.

Respondents’ participation at Olepolos Water Project

Table 4.3 shows the respondents’ participation at Olepolos Water Project.
Table 4.3: Participation at Olepolos Water Project

<table>
<thead>
<tr>
<th>Participation</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olepolos Community members</td>
<td>24</td>
<td>23.3</td>
</tr>
<tr>
<td>Olepolos Water Project domestic users</td>
<td>68</td>
<td>66</td>
</tr>
<tr>
<td>Olepolos Water Project management staff</td>
<td>11</td>
<td>10.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>103</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

The domestic users of the Olepolos Water Project were 68 (66%), while 24 (23.3%) were community members who are either users of the Olepolos Water Project but are not connected to the main lines, and 11 (10.7%) of the respondents participated in the management.

Respondents’ years of experience on participation

The researcher sought to know the period the respondents had participated in Olepolos Water Project as this was essential factor in the study as presented in Table 4.4.

Table 4.4: Respondents’ Years of Experience

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 years</td>
<td>27</td>
<td>26.2</td>
</tr>
<tr>
<td>5-10 years</td>
<td>31</td>
<td>30.1</td>
</tr>
<tr>
<td>Above</td>
<td>45</td>
<td>43.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>103</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

All the respondents had varied length of experience participating in Olepolos Water Project. This ranged from either below 5 years to above 10 years. The study findings revealed that the highest number of respondents 45 (43.7%) in Olepolos Water Project had more than 10 years of experience. This was followed by those who had 5-10 years of experience 31 (30.1%). The least were those who had 0-5 years of experience at
27(26.2%). Even though the respondents had varied years of experience, most 73.8% of them had more than five and above years broken down into various groups. This shows that respondents had enough experience to give the information required about the community water project. They got to learn the dos and don’ts. Some problems such as water leakages, water rationing, pipe maintenance works, and water redirection needed a lot of experience for them to understand and run the system with minimal challenges. This agreed with the findings by Braxton (2002) who posits that respondents with a high working experience assist in providing reliable data on the study under investigation since they have technical know-how on the problem being investigated.

Education level

The education level of respondents was important for the study to establish how the respondents were acquainted on matters concerning community participation in the water project under review. In this study, educational level was categorized into four levels which were primary, secondary, college and postgraduate as presented in Table 4.5.

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>15</td>
<td>14.6</td>
</tr>
<tr>
<td>Completed Secondary</td>
<td>33</td>
<td>32</td>
</tr>
<tr>
<td>College</td>
<td>33</td>
<td>32</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>22</td>
<td>21.4</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>100</td>
</tr>
</tbody>
</table>

From the study findings, 15(14.6%) of the respondents had primary level as their highest educational level while 33(32%) had attained secondary and college level
education respectively and 22(21.4%) had attained post graduate education level. The study indicated that 100% of the respondents had accomplished basic education in primary level, secondary, college and graduate level. These results could imply that most of the respondents had basic education level which enabled them to read and write and therefore, were able to handle water project activities.

The education level results also revealed that the respondents in the water project were able to make some valid and informed decisions that impacted positively on project sustainability. This observation is consistent with that of Gitari, Goodman, Elliott, Keiser, and Raimer (2016) who averred that households with some basic education can provide valid and consistent information that impact positively on the water project sustainability in their locality. The results also support those by UNESCO (2003) that observed that sustainable development requires knowledgeable, caring and informed decision makers capable of making the right choices on the complex and interrelated economic, social and environmental issues facing mankind. Issues raised in water projects are complex and transcends economic, social and environmental sectors and therefore require that the stakeholders are informed and hence their level of education has some implications.

Community Members’ Level of Participation

In response to objective one of this study which sought to determine community members’ level of participation in the actual implementation of Olepolos Water Project activities. Table 4.6 shows the findings on the respondents’ responses on whether community participation contributed to the success the water project.

<table>
<thead>
<tr>
<th>Community Participation</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>52</td>
<td></td>
</tr>
</tbody>
</table>
The findings revealed that most of the respondents at 98(95.1%) agreed that community participation contributed to the success of Olepolos Water Project. While only five respondents at 5(4.9%) disagreed with this view. With the majority in agreement, the findings confirm that indeed community participation played a role in the success of the water project under review. Mulwa (2008) reiterated that the community being the major project beneficiary should participate in form of project management committees, project design and other important aspects including budgeting, identification and allocation of resources. This will lead to realization of effective and sustainable development.

Community’s involvement in decision-making

The researcher went further to find out whether Olepolos Water Project had adopted the five main components of community involvement in decision making as informed by Theory of Citizen Participation (Parker, 2002): Community preference, community basic needs, community contributions, community capabilities to manage projects, and community involvement in daily operations or activities. The findings are presented in Table 4.7
Table 4.7: Components of Community’s Involvement in Project Implementation

<table>
<thead>
<tr>
<th>Roles</th>
<th>No extent</th>
<th>Moderate extent</th>
<th>Large extent</th>
<th>Very large extent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Project development and implementation based on community preferences.</td>
<td>N 3</td>
<td>23</td>
<td>43</td>
<td>34</td>
<td>103</td>
</tr>
<tr>
<td>Community communicates their needs and decide what’s best for them</td>
<td>% 2.9</td>
<td>22.3</td>
<td>41.7</td>
<td>33</td>
<td>100</td>
</tr>
<tr>
<td>Project design, community contributions, external assistance, user fees or tariffs decision by the community</td>
<td>% 10.7</td>
<td>19.4</td>
<td>40.8</td>
<td>29.1</td>
<td>100</td>
</tr>
<tr>
<td>Community involvement in the assessment of project management</td>
<td>% 8.7</td>
<td>43.7</td>
<td>24.3</td>
<td>23.3</td>
<td>100</td>
</tr>
<tr>
<td>Daily operations, technical, maintenance, and evaluation of the water project</td>
<td>% 12.6</td>
<td>28.2</td>
<td>41.7</td>
<td>17.5</td>
<td>100</td>
</tr>
<tr>
<td>Make contributions of labour</td>
<td>% 22.3</td>
<td>37.9</td>
<td>30.1</td>
<td>9.7</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>% 34</td>
<td>38</td>
<td>18</td>
<td>13</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>% 44.7</td>
<td>30.1</td>
<td>14.6</td>
<td>10.7</td>
<td>100</td>
</tr>
</tbody>
</table>

The community’s involvement in decision making include community preference, community basic needs, community contributions, community capabilities to manage projects, and community involvement in daily operations’ activities. The findings of each of the five components were presented here in after.

As per the study findings in Table 4.7, on the extent to which water project implementation was based on community preferences, out of 103 respondents; 43(41.7%) respondents indicated they were involved to a large extent while 34(33%) of the respondents indicated that they were involved to very large extent. On the other hand, 23(22.3%) respondents revealed a moderate involvement in decision-making while only
3(2.9%) respondents reported lack of involvement in decision-making towards the water project development and implementation in the community. The majority of the respondents at 90(97%) indicated they were involved in decision-making which revealed that the water project implementation was based on community preferences. This position affirmed that of Jansz (2011) who opined that giving the stakeholders a chance to participate in the implementation of their own projects gives them a better chance to run and make decisions. From the interviews, one of the key informants stated as follows:

During implementation of water project activities, community members are called upon to participate and proposals are usually passed during Annual General meeting (AGM) on the utilization of the money collected from the water project services. In this process the beneficiaries are fully engaged in decision making process on formulating and designing the water project activities.

Communication of community needs

Based on the study, on the extent to which the community communicates its needs and choose what is suitable for them, Table 4.7 presents the findings. The findings indicate that 42(40.8%) of the respondents agreed to a large extent that the community members are involved in an open communication system and they ensure their needs are well communicated and make decision of what is good for their water project while 30(29.1%) respondents agreed to a very large extent that community, communicates their needs and decides what is best for them.

Similarly, 20(19.1%) respondents moderately agreed to the extent towards the community basic needs and decision of what is the best for the people, while 11(10.7%) of the respondents disagreed with that. Most of the respondents 92(89%) agreed that the water project operates in an open communication system and the community are always
well informed on the project activities.

A key informant from the interviews stated as follows:

Running of water distribution points (kiosks) is sub-contracted to an agent who sells water and collects daily revenues. This implies that through buying water by the community members who are not connected to main lines in kiosks is part of the means to give their contributions for the development and expansion of water project activities.

Another Key Informant added as below:

The water project operates in an open system of communication where every activity affecting the project is carried out in full consultation with the community. In the case where meetings were conducted before the Annual General Meeting, letters were issued two weeks prior to the meeting date and also use of quick messages on phones via Short Message Service (SMS) to ensure no one was left out from participating during decision making processes in communicating their needs.

Community participation on project design and contributions

The study findings showed that the community participated in decisions regarding project design, community contributions, external assistance and tariffs. Table 4.7 presents that 45(43.7%) of respondents reported moderate extent of participation on issues such as project design, community contributions, external assistance and user fees or tariffs were decided by the community while 9(8.7%) of the respondents reported that they were not involved, 24(23.3%) of the respondents indicated that they were engaged to a very large extent during project design, community contributions, external assistance, and user fees or tariffs had to be decided upon by the community.

On the other hand, 25(24.3%) of the respondents agreed that project design, community contributions, external assistance and user fees or tariffs were decided upon by the community. From the study findings, it was noted that a majority 91(92.3%) of the respondents agreed that issues such as project design, community contributions, external assistance,
assistance, and user fees or tariffs were decided upon by the community members based on the roles they played at Olepolos Water Project.

To affirm what the respondents reported a key informant from the interviews stated as follows:

_Olepolos Water Project activities are implemented by the community and they contribute fully through payment of water tariffs. In this process, an awareness campaign and mobilization are carried out by the management with the assistance of selected sub-committee representing the water users and the community in which the water project activities are designed. The aim of involving the community members in project implementation is to help them acquire relevant knowledge, skills and build up their experience in the operation and management of water supply activities._

Community involvement in the assessment of project management

From the study findings presented on Table 4.7 on involvement of the community in the assessment of management of the project revealed that, 13(12.6%) of the respondents indicated that they were never involved in the assessment of project management, 18(17.5%) of the respondents indicated that to a very large extent they had knowledge in the assessment of project management, and 29(28.2%) of the respondents were moderately informed while 43(41.7%) of the respondents indicated to a large extent that they were involved in the assessment water project management. From the study findings, majority 87(87.4%) of the respondents, therefore agreed the community were involved in the assessment of project management though in varying degrees.

Community involvement on project daily operations

Based on Table 4.7, respondents were involved on daily operations such as on matters regarding technical, water project routine maintenance and evaluation. From the study findings, 39(37.9%) of the respondents moderately agreed that the community was
involved in decision making either on day-to-day operations, technical and maintenance, and evaluation of the water project, 23(22.3%) of the respondents disagreed, 31(30.1%) of the respondents revealed at a large extent while only 10(9.7%) of the respondents agreed to a very larger extent that there was involvement of community in different decision-making roles concerning routine operations, technical and maintenance of the project and evaluation of the water project.

From the interviews, one of the key informants stated as follows:

The community fully participates in various decision-making roles on daily operations, technical and maintenance as the management receive daily updates from the water leakages that need to be addressed immediately and safe the water project from unaccounted for water loss and to improve on water supply to all the water users. This increases the level of ownership of water project by the community as immediate alerts on issues affecting the water supply continue to promote project sustainability since management addresses issues as they arise.

Community members’ contributions in form of labour

Respondents were asked to state to what extent they are invited to make contributions to the project in form of labour provision which is also seen as a form of cost-sharing. In Table 4.7 findings indicates that 34(33%) of the respondents reported that they were not involved at all to provide labour-related contributions while 38(36.9%) of the respondents were invited to make contributions in form of labor in the water project to a moderate extend. Similarly, 18(17.5%) of the respondents were involved in making labour contributions to a large extend while 13(12.6%) of the respondents revealed that they were always involved in to make contributions in form of labour.

When beneficiaries are engaged in one way or another on mobilization of resources for their projects it increases their emotional attachment which is significant for
project ownership. This observation concurs with the assertion made by Isham and Kahkonen (2009), who observed that the attachment of community participation in a project is measured in terms of the amount of cash or labor contributed to the project. The more the amount of cash or labor the community contributed meant more demand-responsive community, hence the more the likelihood of project sustainability.

Contribution by project beneficiaries saves the project from being captured by dependency mentality in which case the project can halt and risk sustaining itself after the external funding period comes to an end. This observation was consistent with that of Ostrom (2002) who observed that to break patterns of dependency and passivity voluntary provision of labor, time, money, and materials to project by project beneficiaries is a necessary condition.

The study also sought the opinion of respondents on the source of project resources. Participant responses indicated that most of the project resources that are most crucial in putting up project activities are sourced from the community project beneficiaries and not from the government, donors, and other stakeholders.

From the interviews, one of the key informants stated as follows:

After the Government of Kenya and World Bank funding at the initial stages of setting up and revamping the water project and major construction works the duty of operating and maintenance of the project was left to project members. To ensure that everybody is responsible we installed water meters for every beneficiary so that we could be able to recover the cost of the services rendered to beneficiaries.

This shows that there was a general feeling that community members had the responsibility of carrying out maintenance operations of the water project. Willingness by project beneficiaries is an indicator of project sustainability. This assertion is backed by
Evans and Colin (2008) who observed that the level of preparedness of beneficiaries to provide the necessary support both material and financial to keep the project functioning positively ensures good progress in the sustainability of rural water supply services.

Benefits in Respondents’ Participation in Olepolos Water Project

In response to this study’s objective two which pursued to investigate the benefits of community’s participation on sustainability of Olepolos Water Project. The following was a section of the benefits in respondents’ participation in the water project as shown in Table 4.8.

<table>
<thead>
<tr>
<th>Benefits in Participation</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>100</td>
<td>97.1</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>2.9</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>100</td>
</tr>
</tbody>
</table>

The findings revealed that most of the respondents at 100(97.1%) agreed that their participation in Olepolos Water Project was beneficial to them. While only three respondents at 3(2.9%) disagreed with this view. With the majority in agreement, the findings confirm that indeed the community benefited from participating in Olepolos Water Project. According to Waweru (2015), it is evident from the study findings that the main driving force for people to participate in a development project is the benefits either in form of financial and non-financial.

The researcher went further to find out the benefits that the respondents gained when they are involved in the water project under review. The findings are presented in Table 4.9.
Table 4.9: Benefits Gained by Respondents’ Participation

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Response</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved water supply services</td>
<td>22</td>
<td>22.4</td>
</tr>
<tr>
<td>Employment opportunities</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Increased Revenue</td>
<td>8</td>
<td>7.8</td>
</tr>
<tr>
<td>Promote good working relations with management</td>
<td>10</td>
<td>9.7</td>
</tr>
<tr>
<td>Accurate water billing system</td>
<td>25</td>
<td>24.3</td>
</tr>
<tr>
<td>Reduced water leakages</td>
<td>19</td>
<td>18.4</td>
</tr>
<tr>
<td>Maintain permanent water ways</td>
<td>7</td>
<td>6.8</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The findings revealed that they drew benefits from participating in Olepolos Water Project, which may suggest a positive impact the water project has in the community. From the study findings 22(22.4%) of the respondents agreed that their participation has improved the water supply services. A further 12(12%) indicated that the water project has created job opportunities for the community both for skilled and unskilled manpower.

A section of the respondents 8(7.8%) cited increased in revenue collection which was used for project expansion and maintenance. A further 10(9.7%) answered that their participation promoted good working relations with the management of the water project. While 25(24.3%) indicated that their participation led to accurate billing system since they would always provide the right meter readings at the end of each month that was used to generate the water consumption bills.

On the other hand, 19(18.4%) of the respondents reported that their participation in the water project reduced water leakages. They can inform the management whenever they come across leaking pipes that were fixed immediately. While 7(6.8%) of the respondents indicated that they always ensured that the pipe work and water ways passed through the designated road reserves this avoided future conflicts with landowners and
encroachment that might lead to destruction of pipe work.

These findings imply that respondents benefited through participation in the water and enhanced sustainability in different ways. The findings are backed by Okafor (2005), who observed that when communities participate in improving own projects, the community becomes empowered, and there is greater efficiency, transparency, accountability, enhanced service delivery and generally better project outcomes.

From the interviews, one of the key informants stated as follows:

_The water project has created employment opportunities. The sustainability and good management of the project had made it possible for expansion of the project and its sustainability for many years. Also, the good relations between the management, staff and the customers are key to the stability of the project. He added that Olepolos Water Project was vetted by Kajiado County government as the best managed community water project in the County and we have emerged winners for ‘Kajiado Maji Awards’ twice since its inception in 2015. This is a good indication of recognition that we get from our stakeholders who even come and benchmark with us._

Another Key informant added to the information saying:

_Transparency is consistent since beneficiaries take full responsibility in monitoring the operations of the water project. All water leakages and suspicious water connectivity is swiftly reported to the management to take action that curbs water loss and promote sustainability of the project. Besides, the billing system is managed by both consumers and management of water project. It is worth noting that the billing system is computerized and auto generated at the time of reading the meter figures at the end of every month._

Challenges Faced by Respondents during Participation in Olepolos Water Project

In response to objective three of this research which sought to assess the challenges faced by community’s participation at Olepolos Water Project; the respondents were asked to specify the challenges faced during their participation. The respondents identified five main challenges they faced regarding their participation in

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Olepolos Water Project. The findings are presented in Table 4.10.

Table 4.10: Challenges Faced by Respondents During Participation

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Response</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakdown of pipes</td>
<td>16</td>
<td>15.5</td>
</tr>
<tr>
<td>Water bill defaulters</td>
<td>5</td>
<td>4.9</td>
</tr>
<tr>
<td>Unmetered water connectivity</td>
<td>12</td>
<td>11.7</td>
</tr>
<tr>
<td>Encroached water ways</td>
<td>20</td>
<td>19.4</td>
</tr>
<tr>
<td>Water Rationing</td>
<td>45</td>
<td>43.6</td>
</tr>
<tr>
<td>None</td>
<td>5</td>
<td>4.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>103</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

The findings showed that 45(43.6%) respondents indicated that they had difficulties due to water rationing, 20(19.4%) stated that they had problems with encroached water ways, 16(15.5%) noted that they struggled with breakdown of pipes whereas 12(11.7%) found it strenuous dealing with unmetered water connectivity and 5(4.9) indicated that water bill defaulters were constraining the water project. It was noted that 5(4.9%) respondents did not identify any challenges. This could mean that they did not face any challenges regarding Olepolos Water Project or they did not use the water all together. From the interviews, one of the key informants stated as follows:

*Some technicians who are employees collude with community members who do not want to pay for water to get illegal connection which contributes to unaccounted-for water volumes. This is a big loss to the water project since the water supply services have to be paid for sustainability of the project. Also, frequent breakdown of pumps and pipe work contributes to high cost of running the project which might not be sustainable in the long run.*

Yet, another Key informant further revealed as below:

*Water rationing is a major challenge since some of the zones get water only twice a week and if one has other commercial activities that requires high volume of water supply, it is hardly enough. Another set back is the issue of encroachment on water ways which leave pipes passing through the road to frequent bursts because they can easily be damaged by road users.*
Suggestions on Ways Challenges could be Solved

The study sought to find out from the respondents on their suggestions that could solve the challenges facing Olepolos Water Project. The following was a section of the suggestions on how challenges affecting the water project could be solved as presented in Table 4.11.

<table>
<thead>
<tr>
<th>Response</th>
<th>Response</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular monitoring of water ways</td>
<td>20</td>
<td>19.4</td>
</tr>
<tr>
<td>Adopt alternative solar power</td>
<td>50</td>
<td>48.5</td>
</tr>
<tr>
<td>Replacement from old technology PVC pipes to HDPE</td>
<td>5</td>
<td>4.9</td>
</tr>
<tr>
<td>Dismiss untrustworthy employees</td>
<td>15</td>
<td>14.6</td>
</tr>
<tr>
<td>Seek compensation from road contractors who damage pipes</td>
<td>6</td>
<td>5.8</td>
</tr>
<tr>
<td>Non responses</td>
<td>7</td>
<td>6.8</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>100</td>
</tr>
</tbody>
</table>

From the findings presented in Table 4.11, 20(19.4%) of the respondents suggested that there should be regular monitoring of the water ways to manage water loss and illegal connectivity and 50(48.5%) mentioned that the water project should adopt solar power as the alternative source of power that would allow continuous supply of water services to curb on power outages and high cost of electricity. The study indicates that most of respondents reiterated the importance of having an alternative source of power.

The study established that 5(4.9%) of the respondents suggested the replacement of old PVC (Polyvinyl chloride) pipes to the most preferred currently in the market HDPE (high-density polyethylene) which are more durable and easy to install and can withstand high speed water volumes. From the response, 15(14.6%) of the respondents argued that the water project would perform better if the management dismiss or sack employees who cannot be entrusted with the daily operations on water supply services.
and also to promote transparency.

Further, 6(5.8%) of the respondents revealed that the water project should seek compensation from relevant authorities when contractors who are carrying out road construction and any other major maintenance that will enable the water project to recover damaged pipes. The study noted that 7(6.8%) of the participants did not offer suggestions on how the challenges could be resolved.

With regard to suggestions on how the articulated challenges should be solved, from the interviews, one of the key informants stated as follows:

*Employees who are found guilty for colluding with other water users to carry out illegal connections should be sacked immediately from the water project and be reported to the relevant authorities since they can be charged in court for unlawful practice.*

Another Key Informant added as below:

*In order to reduce operation cost the water project must incorporate new technology by adopting solar power. This will reduce cost of electricity and increase water supply services that will satisfy consumers and operate with minimal power interruption.*

**Improvement of Community Water Projects**

To establish how the community water projects will be enhanced to ensure sustainability, the alternative strategies are presented in Table 4.12.

<table>
<thead>
<tr>
<th>Suggestion</th>
<th>Response</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarterly meetings</td>
<td>16</td>
<td>15.5</td>
</tr>
<tr>
<td>Daily water supply</td>
<td>60</td>
<td>58.3</td>
</tr>
<tr>
<td>Government support and funding</td>
<td>15</td>
<td>14.6</td>
</tr>
<tr>
<td>Training workshop for water technicians</td>
<td>7</td>
<td>6.9</td>
</tr>
<tr>
<td>No response</td>
<td>5</td>
<td>4.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>103</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

When asked to make recommendations on how to improve water project,
16(15.5%) of the respondents indicated that if they were called for meetings on quarterly basis, they will be able to participate in critical decision making processes that will improve implementation of project expansion. Also they will be able to monitor closely how the revenue generated from the water supply services is utilized in the running of the project. A majority number of the respondents at 60(58.3%) suggested that the water project should focus on supplying water services daily to the consumers as opposed to rationing by sinking more boreholes that will generate enough volume of water, 15(14.6%) suggested that the water project should receive government funding and support to allow for project expansion to meet increased demand for water supply services. Further 7(6.9%) suggested that water project technicians employed at the water project should be trained regularly in order to keep them abreast on the current emerging trends in the market on matters water supply services. However, 5(4.9%) of the respondents did not offer suggestions on how to improve the water project performance. This was indicative that the respondents could not be troubled on issues of how to improve the water project.

Similarly from the interviews, one of the key informants stated as follows:

*The water project needs alternative sources of funding either from Government or other water funding agencies in order to drill more boreholes that will enhance daily water supply since the area population is fast growing which means demand for water will continue to rise.*

Summary of Key Findings

The findings showed that 55(53.4%) of the respondents were male while 48(46.6%) were female. Meaning more males participated in this study. Disaggregating
the role with gender this study agreed with the general notion that men dominated in regard to their majority of roles at Olepolos Water Project.

The respondents’ participation at Olepolos Water Project who played the role for 10 years and above were 45(43.7%) out of 103 that implies that a high number of respondents are well experienced with the water project and its sustainability. The longer the stay period, the more the experience.

The study reveals that the respondents who had completed College and Post Graduate training was 55(53.4%) a good indication that the water project has high-level skilled stakeholders who are able to make the right choices in ensuring good management of the water project that will enhance sustainability.

Most of the respondents at 98(95.1%) from the study findings agreed that Olepolos Water Project success was played hugely through community participation. With the majority in agreement, the findings confirm that indeed community participation played a role in the success of the water project under review. Similarly, majority at 92(89%) of respondents agreed that the water project operates in an open communication system and the community are always well informed on the project activities.

Majority of respondents at 100(97.1%) agreed that their participation in Olepolos Water Project was beneficial to them. With the majority in agreement, the findings confirm that indeed the community benefited from participating in Olepolos Water Project. The benefits gained by the respondents through participation in the water project includes improved water supply services, employment opportunities, increased revenue, promote good working relations with the management, accurate water billing system, reduced water leakages, and the ability to maintain permanent water ways.
From the study findings the respondents at Olepolos Water Project faced challenges like any other service-oriented projects where there must be good and bad encounters. The challenges indicated by the respondents are breakdown of pumps and pipes, water bill defaulters, unmetered water connectivity, encroached water ways and water rationing. The challenges hindered the smooth running of the project and interfered with water supply services schedules.

Finally, the study findings revealed that the water project could perform better than it is currently by putting in place measures recommended by the respondents. A significant number of the respondents at 60(58.3%) suggested that the water project should focus on supplying water services daily to the consumers as opposed to rationing by sinking more boreholes that will generate enough volume of water. Other suggestions made by the respondents on how to improve community water projects included: Quarterly meetings, government support and funding, and training workshop for water technicians.

Summary

This chapter presented and interpreted the results on effects of community participation on sustainability of Olepolos Water Project. Community participation played a key role on the success of the water project where majority 100(97.1%) of the respondents agreed that the project was successful through their participation. However, they also encountered challenges that hindered the smooth running of the project and interfered with water supply services.
CHAPTER FIVE
DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

Chapter five provides a discussion on the study findings in relation to the objectives as well as recommendations and conclusion. It presents areas identified for further research during the study.

Discussions of Key Findings

This research was guided by four main objectives namely; to establish the level of community participation in the actual implementation of Olepolos Water Project activities, to investigate the benefits of community participation on sustainability of Olepolos Water Project, to assess the challenges faced in community involvement on the sustainability of project under review and finally to suggest recommendations that would enhance sustainability of community-based water projects in Kajiado County.

Level of Community Participation in Actual Implementation of Olepolos Water Project Activities

Majority of the participants agreed that the sustainability of Olepolos Water Project was fully dependent on active involvement of the beneficiaries. The decision-making processes had positive impact on water supply services. From the 98(95.1%) of the respondents agreed that Olepolos Water Project success was as a result of community participation. These findings therefore affirm the findings by Mulwa (2008) that in order
to realize effective and sustainable development, the chief beneficiary of the project, that is the community, must take part in project planning and implementation.

According to Jain and Polman (2003), experts in community projects are needed, but only as facilitators while members of the community assume the role of planning and implementing their own project to ensure sustainability. Hague et al., (2003) postulated that community intervention requires community members to be integral to the planning and implementation of community projects. This facilitates their ownership of the projects. They have a stake in these projects, not only as beneficiaries, but as implementers, hence do what they can to see their work succeed.

Further, the study respondents revealed that they were involved in form of labour related contributions in the project which is also seen as a form of cost-sharing. This is made possible through initial pipe work installation fee and metered billing system, whereby the money collected is used to operate and expand the project for efficient water supply services. Involving beneficiaries in one way or another in mobilization of resources for their projects increases their emotional attachment in the project. This finding is in line with the assertion made by Isham and Kahkonen (2009) who observed that breath community of participation in a project is always measured in terms of the amount of cash or labor contributed to the project. The more the amount of cash or labor the community contributed meant more demand-responsive the community, hence the more the likelihood of project sustainability.

Similarly, contribution by project beneficiaries saves the project from being trapped by dependency mentality where the project can halt and risk sustaining itself after the donor withdraws the funding. This finding was consistent with that of Ostrom (2002),
who observed that in order to break patterns of dependency and passivity, voluntary provision of labor, time, money and materials to project by project beneficiaries is a necessary condition.

Benefits in Respondents’ Participation in Olepolos Water Project

The study revealed that a majority at 100(97.1%) respondents agreed that their participation in Olepolos Water Project was beneficial to them. While only 3(2.9%) respondents disagreed with this view. With the majority in agreement, the findings confirm that indeed the community benefited from participating in Olepolos Water Project. This concurs with Waweru (2015), who reported that the main driving force for beneficiaries to participate in development projects are its benefits either financial or non-financial.

The study indicated that 22(22.4%) respondents agreed that their active participation had improved the water supply services and efficiency in the project. Further, another 12(12%) indicated that the water project has created job opportunities for the community both for skilled and unskilled manpower. This finding is reinforced by Okafor (2005) who observed that when communities actively engage in their own projects, the community becomes empowered, and there is greater efficiency, transparency, accountability, enhanced service delivery and generally better project outcomes.

Another 25(24.3%) indicated that their participation led to accurate billing system since they would always provide the right meter readings at the end of each month that was used to generate the water consumption bills. The findings were in agreement with Mansuri and Rao (2004), who reported that community involvement in projects...
contributes to better project designs, more cost-effective projects, better targeted benefits, more just distribution of project benefits, solidifies the capability of the people to assume self-initiated development activities, advances the match between what is needed by the community and what it is obtained since the project will be more consistent with the priority needs of the community.

Challenges Faced by Respondents during Participation in Olepolos Water Project

This research showed that the water project faced challenges like any other service-oriented development project. The results indicated that 45(43.6%) respondents indicated that they had difficulties due to water rationing, 20(19.4%) stated that they had problems with encroached water ways, 16(15.5%) revealed they struggled with breakdown of pipes whereas 12(11.7%) found it strenuous dealing with unmetered water connectivity and 5(4.9) indicated that water bill defaulters were constraining the water project in terms of finances. This finding corroborated with the report by Schouten and Moriarty (2014), who argued that there are two principal factors that can cause limited community participation in development project. This include internal factors such as poor management, ineffective communication channels, technical issues, misplaced priorities and financial problems and external factors including lack of standardized technologies, interference with politicians’, issues and occurrence of natural hazards.

Further, the respondents suggested ways in which the challenges affecting the water supply services could be resolved. From the findings 20(19.4%) of the respondents suggested that there should be regular monitoring of the water ways to manage water loss and illegal connections. This concurs with Sharma (2009) who argued that losses accruing from distribution networks can be reduced effectively and controlled in a
sustainable manner through constant monitoring of project activities. Besides, recovered losses can be viewed as an alternative new source of water that will, in most cases, be more cost effective than developing expensive new water supplies.

Further 50(48.5%) mentioned that the water project should adopt solar power as the alternative source of power that would allow continuous supply of water services to curb on power outages and high cost of electricity. The findings is in line with the study done by Foster and Cota (2009) who observed that the lifetime cost of solar pumps varies depending on the system, its maintenance, and inputs and pumping systems have payback times of two to three years.

The study also established that 5(4.9%) of the respondents suggested the replacement of old PVC (Polyvinyl chloride) pipes to the most preferred currently in the market HDPE (high-density polyethylene) which are more durable and easy to install and can withstand high speed water volumes. Further 15(14.6%) of the respondents argued that the water project would perform better if the management dismissed or sacked employees who who are not trustworthy and cannot be entrusted with daily operations of the project for their lack of transparency.

Furthermore, 6(5.8%) of the respondents revealed that the water project should seek compensation for damaged pipes from relevant authorities and contractors who carry out road construction and any other major maintenance that damage laid down water project systems. The suggestions of the respondents concurs with the study by World Bank (2009) in assessing challenges and providing solution where community involvement is vital in project sustainability by providing new methods of examining and learning from more inclusive changes and receptive to the desires and aspirations of those 73
Recommendations on Improving Community Water projects

The study findings revealed that majority of the respondents at 60(58.3%) suggested that the water project should focus on supplying water services daily to the consumers as opposed to rationing by sinking more boreholes that will generate enough volume of water. This assertion is supported by (Mulwa, 2010) who avers that one of the determinant factors for the sustainability of rural water supply services is the effort of the community to sustainably operate the water project. The willingness is indicated in the form of community to consistently pay for water supply services and revenue generated utilized in project maintenance and other crucial activities in the water project.

Specifically, 16(15.5%) of the respondents indicated that if they were called for meetings on quarterly basis, they will be able to participate in critical decision making processes that will improve the implementation of project expansion. The finding is supported by Barasa and Jelagat (2013) who opined that through participation, people built their capability on project ownership leading to sustainability. Further, this concurs with the study done by Okafor (2005), who observed that when communities assume an active role in their own projects the community becomes empowered, and there is greater efficiency, transparency, accountability, enhanced service delivery, and generally better project outcomes.

Further 15(14.6%) suggested that the water project should receive government funding and support to allow for project expansion in order to meet the increased demand for water supply. This concurs with the study by Cleaver (2009), who also studied water projects in sub-Saharan Africa. His study established that initially, communities may be
successful in initiating the project, however resources and initiatives to sustain the project’s operational costs may lack.

A further 7(6.9%) suggested that water project technicians employed at the water project should be trained regularly in order to keep them abreast on the current emerging trends in the market on matters water supply services and technology. This include tariff setting and payment collection, doing routine maintenance and decision making on system extension.

The community has to take part during the development process of the project that has a direct control on strategic decision making. This range from the design stage to long-term operations and maintenance of the system and contribute to recurrent costs. This is in line with Lockwood (2004) who observed that community project management activities are critical and requires community participation to realize any success.

Conclusion

The study made the following conclusions:

1. Olepolos Water Project involved the stakeholders at all levels of project implementation activities which strengthen sustainability of the project. From the study, 98(95.1%) respondents concurred that the water project success was played hugely through community engagement in decision making. Greater participation of beneficiaries in decision making, which included open communication system, having prior information about major decisions of the project, ability to control the choice of the project management committee by assessing the need, labour contributions that contributed to increased level of project sustainability.
2. The participants also indicated that they benefited through their participation in the water project. Increased water supply services and employment opportunities translates to high standards of living in the community. This fosters transparency and accountability thus improves water resource sustainability.

3. The study respondents reported that they faced challenges in the water project ranging from unaccounted for water, illegal connections, power interruption and water rationing.

4. The respondents understood that the problems identified could be solved using technology which will save the project from losing money, community participation and training of staff. All these can be used for project expansion and resultantly lead to sustainability of the water projects.

Recommendations

From the findings of this study, the following practice and policy recommendations were arrived at.

a) Practice Recommendations

1. There is need to have frequent meetings that will enable the beneficiaries to fully participate in the project implementation activities and promote a good working relation with the management committee. All the stakeholders must be able to track water supply services and ensure the resource is utilized for future generations.

2. The water technicians should undergo regular training on new water supply technology including pipe work and energy generation to facilitate sustainability and reduce cost of water supply services.

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3. The water project management should leverage on technology in communicating with the stakeholders to ensure timely information on matters water rationing schedules, pump breakdown, power outages among other basic communication that should keep the water beneficiaries informed. In addition, scheduling of major meeting like the Annual General Meeting (AGM) should be done early enough within a notice period of three (3) months to allow the participants to reschedule their busy calendar events.

4. The management should be strict on employees who carry out illegal connections and should be dismissed from the water project immediately they are reported to stop water loss and high cost of water project management.

5. The water projects should enhance the use of new technology including solar power, computerized billing system that will reduce cost of water supply services and making it affordable to all.

b) Policy Recommendations

1. The National and County government should financially support community managed water projects to improve the water supply services that will serve the increased population in both rural and urban areas. This is due to the expensive nature of materials and the new technology which may not be affordable by the water projects to operate smoothly and at the same time engage in massive expansion and installation of new machinery.

2. The County governments should vet all the best managed water projects in the counties and allocate funding for expansion of water projects that will be able to
benefit a larger population who are currently underserved with water supply services.

3. Management committee should be nominated or elected by community water project beneficiaries since they fully understand the people their needs and the kind of leaders they want for the sustainability of the project.

Recommendations for Further Research

This study focused on effects of community participation on the sustainability of community water projects in Kajiado County: A Case study of Olepolos Water Project. This limited its scope to examining community involvement in only one community owned Water Project in Kajiado County. Therefore, the study recommends that further research can be conducted on other Community-owned Water Projects of same nature or different nature from Kajiado County to come up with comparative study advantage that will be the basis of overall recommendations for better community engagement in ensuring sustainability of Water projects in Kenya and beyond.

In addition, similar research on the place of gender in promoting water projects sustainability in Kajiado County is another area that could be conducted. Other stakeholders in water sector need to study on how teamwork between the county government and the community could avert duplication of responsibilities and wastage of water which is a valued commodity.
REFERENCES


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Ostrom, E. (2002). Common-pool resources and institutions: Toward a revised theory. *Handbook of Agricultural Economics, 2*(1), 1315-1339


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APPENDICES

Appendix A: Introduction Letter

Dear Respondent,

My name is NELLY KOSGEY, a Master of Arts Student in Monitoring and Evaluation at Daystar University. I am undertaking a research on “Effects of Community Participation on Sustainability of Water Projects in Kajiado County, Kenya: A Case of Olepolos Water Project.”

Kindly spare some time to fill this questionnaire to facilitate the research. This questionnaire is being administered purely for research purposes and any information provided will be treated with confidentiality.

For more information/and or request for feedback, kindly contact:

NELLY KOSGEY

C/o Daystar University

Email: nellykosgeykulei@gmail.com

Please read the questions carefully and feel free to respond to them by ticking whichever option best describes you.

Thank you.

This questionnaire is to collect data for purely academic purposes. All information will be treated with strict confidence. Do not put any name or identification on this questionnaire. Answer all questions as indicated by either filling in the blank or ticking the option that applies.
Appendix B: Questionnaire for Domestic Users, Community and Management

**Demographic Variables**

1. **Gender**
   - Male [ ]
   - Female [ ]

2. Kindly indicate your role here at Olepolos Water Project?
   - Community [ ]
   - User [ ]
   - Management [ ]

3. For how long have you played that role on this water project?
   - 0-5 Years [ ]
   - 5-10 Years [ ]
   - Above 10 Years [ ]

4. What is your level of Education?
   - Primary [ ]
   - Completed Secondary [ ]
   - College [ ]
   - Post-Graduate [ ]

Section B: Community’s level of participation in the actual implementation of Olepolos Water Project activities

5. Do you believe that for this project to be successful community participation has played a big role?
   - Yes [ ]
   - No [ ]
6. Do the following represent the roles that you are involved in the Olepolos water project? Whereby: 4= Very Large Extent, 3= Large Extent, 2= Moderate Extent, 1= No extent (Tick as appropriate)

<table>
<thead>
<tr>
<th>Statement</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Project development and implementation is based on community preferences.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The community communicates their needs and decide what’s best for them</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Issues such as project design, community contributions, external assistance, and user fees or tariffs have to be decided upon by the community</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The community is informed of the available options to assess capabilities to manage the project</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Involved in decision making of roles such as daily operations, technical and maintenance, and evaluation of the water projects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Are you involved in actual water projects implementation in Olepolos?
   - Yes [ ]
   - No [ ]

8. Do the following statements represent your level of involvement in water projects implementation in Olepolos? Whereby: 4= Very Large Extent, 3= Large Extent, 2= Moderate Extent, 1= No extent (Tick as appropriate)

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<table>
<thead>
<tr>
<th>Statement</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involved in strategy, design and work plan of the project and encouraged</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>to participate in its activities and obtain certain benefits.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invited to make contributions of labour and/or other resources which is</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>also seen as a form of cost-sharing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participate in certain specific temporary tasks with no institutional base</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>or structure for more sustained participation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participating in creating/strengthening groups to gain access to resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>inputs and services and participate actively in the project</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participate in decision-making and bargaining power as well as a base for</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sustained self-development efforts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. Do you think there are any benefits in your participation in Olepolos Water Project? If yes kindly state

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

10. Have you faced any challenges in your participation in Olepolos Water Project? If so, kindly state

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
11. What would you recommend to be included in your participation in Olepolos Water Project?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

THANK YOU FOR YOUR PARTICIPATION
Appendix C: Interview Guide for Management Staff

Dear participant,

My name is NELLY KOSGEY, a Master of Arts Student in Monitoring and Evaluation at Daystar University. I am undertaking a research on “Effects of Community Participation on Sustainability of Water Projects in Kajiado County, Kenya: A Case of Olepolos Water Project.”

Kindly spare some time to answer this questionnaire to facilitate the research. This questionnaire is being administered purely for research purposes and any information provided will be treated with confidentiality.

For more information/ and or request for feedback, kindly contact:

NELLY KOSGEY
C/o Daystar University
Email: nellykosgeykulei@gmail.com

Please answer the questions accordingly and feel free to respond in to the best of your knowledge and ask any clarification where you need more details to be provided.

Thank you.
1. When was Olepolos Water Project established?

2. How do you keep the records for Olepolos Water Project in order to track progress?

3. How and when do you conduct your Annual General Meetings?

4. How do you handle complaints raised both internally by the staff and externally by customers or any other interested party?

5. Explain how Olepolos Water Project has managed to cut on water supply cost and expansion of the water project.
6. What measures does the water management committee have put in place to minimize wrangles in the water distribution process?

7. What nature of complaints do you normally receive from the water beneficiaries and other stakeholders?

8. How do you deal with water defaulters and the measures put in place to ensure smooth running of the water project?

9. What can be done to improve the water project in the future?
10. What are the benefits that the water project has got from the County government and other water funding agencies?
Appendix D: Olepolos Water Project Organizational Structure

Consumers

Management

Executive Committee

Manager

Supervisor

Plumbers

Guard’s Supervisor

Subordinate Staff

Account

Procurement

Kiosk

Other water vendors

Meter Readers

Source: Olepolos Water Project (2018)
Appendix E: Ethical Clearance

Daystar University Ethics Review Board

Our Ref. DU-ERB/26/04/ 2019 /00290

Date: 26-04-2019

Nelly Kosgey

Dear Nelly,

EFFECTS OF COMMUNITY PARTICIPATION ON SUSTAINABILITY OF WATER PROJECTS IN KAJIADO COUNTY, KENYA: A CASE OF OLEPOLOS WATER PROJECT

Reference is made to your request dated 26-03-2019 for ethical approval of your proposal by Daystar University Ethics Review Board.

We are pleased to inform you that ethical review has been done and approval granted. In line with the research projects policy, you will be required to submit a copy of the final research findings to the Board for records.

This approval is valid for a year from 26-04-2019

This approval does not exempt you from obtaining a research permit from the National Commission for Science, Technology and Innovation (NACOSTI).

Yours sincerely,

[Signature]

Mrs. Purity Kambai
Secretary, Daystar University Ethics Review Board
Appendix F: Research Permit

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Ref: No. NACOSTI/P/19/42103/30201

Nelly Chepkemoi Kosgey
Daystar University,
P.O. Box 44400 – 00100,
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “Effects of community participation on sustainability of water projects in Kajiado County, Kenya: A case of Olepolos Water Project” I am pleased to inform you that you have been authorized to undertake research in KAJIADO COUNTY for the period ending 23rd May, 2020.

You are advised to report to the County Commissioner and the County Director of Education, Kajiado County before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a copy of the final research report to the Commission within one year of completion. The soft copy of the same should be submitted through the Online Research Information System.

DR STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Kajiado County.

The County Director of Education
Kajiado County.
Appendix G: Kajiado County Research Approval

OFFICE OF THE PRESIDENT
MINISTRY OF INTERIOR AND CO-ORDINATION OF NATIONAL GOVERNMENT
COUNTY COMMISSIONER, KAJIADO

Telephone: 0203570295
Fax: 0202064416
Email: kajiadocc2012@gmail.com
When replying please quote

Ref. KJD/CC/ADM/45 VOL. I1(161) 18th July, 2019

Nelly Chepkemoi Kosgey,
Daystar University,
P.O BOX 44400 – 00100,
NAIROBI

RE: RESEARCH AUTHORIZATION- NELLY CHEPKEMOI KOSGEY

Following the request made on your behalf by National Commission for Science, Technology and Innovation vide letter Ref. No.NACOSTI/P/19/42103/30201 dated 27th May, 2019.

You are hereby granted authority to carry out research on "Effects of community participation on sustainability of water projects in Kajiado North Sub - County: A case of Olepolos Water Project", for a period ending 23rd May, 2020

It is expected that you adhere to research ethics in doing your study.

MBISO JACK
FOR: COUNTY COMMISSIONER
KAJIADO COUNTY.

CC:
County Director of Education
KAJIADO COUNTY.

Deputy County Commissioner
KAJIADO NORTH SUB - COUNTY
Appendix H: Olepolos Water Project Research Approval

OLEPOLOS WATER PROJECT
P.O. Box 872 Telephone: 013246125...Ngong Hills

Your Ref: OWP/NK 01/2019
Our Ref: .................................................. Date: 5/8/2019

Dear Madam Nelly Kosgey,

RE: REQUEST FOR MASTERS RESEARCH DATA COLLECTION.

We refer to your letter on the above reference dated 22nd July 2019.

This is to inform you that, your application to undertake research data collection has been approved.

During this three month exercise, you are not authorised to carry out or transact any business on behalf of Olepolos Water project.

You are required to report to our offices on 6th of August for further arrangements.

Yours sincerely,

[Signature]

David Kimani
Chairman OWP

Copy by email to:

National Commission for Science,
Technology and Innovation

The County Commissioner
Kajiado County

The Deputy County Director of Education
Kajiado County
Appendix I: Plagiarism Report

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**Primary Sources**

1. Submitted to Kenyatta University
   - Student Paper
   - 1%

2. www.basicresearchjournals.org
   - Internet Source
   - 1%

3. Submitted to Daystar University
   - Student Paper
   - 1%

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   - Student Paper
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   - Internet Source
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6. Submitted to Kampala International University
   - Student Paper
   - 1%

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   - Student Paper
   - <1%
Appendix J: Digital Map of Olepolos Water Project

Source: Google Maps (2019)