

**DETERMINANTS OF SUSTAINABILITY OF COMMUNITY
WATER PROJECTS IN CHEBUNYO LOCATION,
CHEPALUNGU CONSTITUENCY, BOMET COUNTY.**

BY;

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**A research project report submitted in partial fulfillment of the
requirement for the award of degree of Master of Arts in project
planning and management, university of Nairobi.**

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DECLARATION

The research project report is my own original work and has never been presented for a degree or any other award in any university.

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This research project report has been submitted for examination with my approval as the university supervisor

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DEDICATION

I dedicate this research project report to my beloved husband, John Mutai and our dear children; Jesca, Evans, Tony and Timothy for offering financial support and encouragement in the course of writing this research report.

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LIST OF ABBREVIATIONS AND ACRONYMS

KRCS	: Kenya Red Cross Society
NGOs	: Non-Governmental Organisations
WASH	: Water Sanitation and Hygiene
AMCOW	: African Ministers Council on Water
WHO	: World Health Organisation
UNICEF	: United Nations Children’s Fund
SDG	: Sustainable Development Goals
WSTF	: Water Service Trust Fund
AWF	: African Water Facility
AFDB	: African Development Bank
CBOs	: Community Based Organisations
BIDP	: Bomet Integrated Development Programme
ICT	: Information Communication Technology
CWI	: Community Water Initiative
UN	: United Nations
WB	: World Bank
USAID	: United States Agency for International Development
MDG	: Millennium Development Goals
ODA	: Official Development Assistants

ABSTRACT

The purpose of this study was to investigate the determinants of sustainability of community water projects in Chebunyo location, Chepalungu Constituency, Bomet County. This study was guided by the following objectives: to establish the influence of community participation on sustainability; to examine how leadership skills influence sustainability; to assess the influence of community creation of awareness on sustainability and to determine the extent to which project financing influences sustainability of community water projects. The findings of the study will be useful in sustaining water projects in the location. The researcher reviewed literature of other authors to the study based on four themes and summarized in conceptual framework which summarizes the independent and dependent variables. Summary of literature review has been done which shows how sustainability is influenced by community participation, leadership skills, community creation of awareness and financing the project. Descriptive research design was used to capture the opinions of the respondents. Target population was 4000 members of households representing 4000 households and 40 officers work in various water projects. The study ascertained instrument validity through peer review and expert judgments'. Instruments reliability was measured by calculating their coefficient using Pearson moment correlation formula. Data was analyzed using descriptive statistical measures such as frequencies and percentage tables. The researcher observed all ethical considerations ranging from plagiarism to relationship with the respondents. The results show that community participation was important for achieving sustainability of community water projects in Chebunyo location. More importantly, the community was found to contribute in kind and cash towards maintenance and operation of water projects. The study further found the representation of women desirable for achieving sustainability. Sustainability of community water projects is associated with high level of leadership skills of water committees. The study shows evidence of increasing community's creation of awareness in both women and men. Finally the study established that funds were adequate and received at appropriate time but the management committee mismanaged. Based on the findings, the study recommends that regulatory framework established to ensure continuous provision of services among the people of Chebunyo. For further research the study recommends a regulatory framework for an enabling environment for creation of accountability.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Water is at the core of sustainable development and is critical for socio-economic development, healthy ecosystems and for human survival itself. It is vital for reducing the global burden of disease and improving the health, welfare and productivity of populations. It is central to the production and preservation of a host benefits and services for people. Water is also at the heart of adaptation to climate change, serving as the crucial link between the climate system, humans' society and the environment.

Water is a finite and irreplaceable resource that is fundamental to human well-being. It is only renewable if well managed. Today, more than 1.7 billion people live in river basins where depletion through use exceeds natural recharge, a trend that will see two-thirds of the world's population living in water-stressed countries by 2025.

The millennium Development Goals (MDGs), aim to halve the proportion of people without sustainable access to safe drinking water between 1990 and 2015. The MDG framework did not address the full water and development agenda, nor fully recognize its synergies, with other areas and concerns. Emphasis on sustainability was not included. Subsequently member states have agreed that human rights, equality and sustainability should form the core of development agenda and be recognized as critical for true development, World Bank, (2012).

UN-water's overarching goal is "securing sustainable water for all", UN water, (2014). The diagram below shows the suggested goal and the key interlinked targets. Domestic sector accounts for 10% of total water use. And yet worldwide, an estimated 748 million people remain without access to an improved source of water, World Bank, (2015).

Africa as a whole, especially sub-Saharan Africa efforts and approaches to extend and sustain water, sanitation and hygiene (WASH) systems and services has led to different health complication leading to death within the region. Even when opportunities exist to address outstanding water issues, deep and widespread poverty across the African region constrains the ability of many cities and communities to provide proper water and sanitation services, sufficient water for economic activities and prevent water quality from deteriorating, (AMCOW, WHO/UNICEF JMP, (2012). Water scarcity in Kenya has been an issue for decades, as only a small percentage of the country's land is optimal for agriculture, and the

year-round climate is predominantly arid. A recent natural disaster also caused major soil degradation and refugee displacement throughout the country.

Kenya's natural water resources also do not provide an equitable delivery of water to the various regions of the country and the country's water basins do not reach an equitable area of the country. This leaves most of the population without any fresh water. Rapid urbanization has also pushed poor urban dwellers to the slums, where there is no water or sanitation, and overcrowding exacerbates the already hazardous health conditions.

Kenya's water politics are also unique, as there has been a divide between areas that have been privatized and sectors where investors have been discouraged from developing. At a time when water privatization is seen as a negative in developing countries because of the high costs that are passed along to the impoverished, lack of development here means a lack of piping, sanitation or tanker service. Rural areas of Kenya are left without water and urban areas aren't much better off, as Kenya's virtually bankrupt government does not have the funds to run pumping stations and existing piping systems are often pirated and in disrepair.

According to sustainability and Rotary Foundation Global grants 2011, there are six steps toward sustainability of projects; Assessment of community needs, use of local materials, identifying a local funding source, provision of training education and outreach, motivating people to take ownership and monitoring and evaluation. Focusing on a study based on sustainability of projects, Dr. May Thomas and Mj Thomas, India (2010) noted that factors such as the organization as a whole, policies, management, leadership, financial intervention and phase out influenced sustainability of projects.

According to Ochelele, (2012), key indicators of sustainability have the following components; Firstly, reliability of the systems which implies that in community based systems, there has to be availability of spare parts and local skills to operate and maintain facilities to ensure that the system remains functional. Secondly the sources of water have to be reliable and thus may be guaranteed by water resources conservation. Thirdly, local institutional capacity with the autonomous management structure is an important component of sustainability. Management of the projects should have the flexibility to implement any necessary remedial measures. Cost sharing for operation and management should be considered as users in the community need to contribute resources to make the project sustainable.

Until recently countries reported their populations' access to water and sanitation by distinguishing between improved and unimproved coverage. In 2015, 663 million people were

drinking from unimproved sources such as unprotected dug wells, and 2.4 billion lacked improved sanitation facilities. The bulk of those without were in Sub-Saharan Africa and South Asia, where rural dwellers, especially the poorest, lagged behind others in access to both water and sanitation, World Bank, (2017).

According to statistics of water crisis, (2016), 783 people do not have access to clean and safe water worldwide. 319 million people in Sub-Saharan Africa are without access to improved reliable drinking water sources. Sub-Saharan Africa is among the regions with the greatest drinking water spending needs, with the greatest investments needs in rural areas. Two-thirds of about 102 million of the 159 million people still using surface water live in sub-Saharan Africa. 1 in 9 people worldwide do not have access to safe and clean drinking water.

In Bomet County, Chepkoech Rita (2014) in her study of an investigation of the factors that affect sustainability of community based projects in Bomet County, her findings provided that there are clear linkages between sustainability and any of the independent variables namely; infrastructure, management system, literacy levels and community ownership participation. The several factors highlighted had some influence on project sustainability.

The provision of safe water to vulnerable communities remains top on the programming agenda of the Kenya Red Cross Society (KRCS) where multiple water projects continue to be implemented. Among the many projects focused on providing safe and clean water for community members in Bomet County is the newly commissioned Sigor water supply system which will serve more than 61,000 people. Partnership is a key component in ensuring ownership and sustainability of such projects, Kenya Red Cross (2016).

1.2 Statement of the problem

Social and cultural Rights, states: “The human right to water entitles everyone to sufficient, safe acceptable, physically accessible and affordable water for personal and domestic uses.” It is quarter of the developing world’s population still lacks water. A target of achieving universal and equitable access to safe and affordable drinking water for all by 2030 is one of the sustainable development goals, World Bank (2016). Chebunyo Location, Chepalungu Constituency faces perennial drought and limited water resources. This has triggered the government and Non-Government Organizations (NGOs) to assisting the communities in these region access safe and reliable water. These water projects includes World Vision Bandaptai water and Sanitation programs, Tililbei Water and Sanitation programmes, County Government piped water projects, National Government dams construction and Tenwek

Community initiative to provide Bio sand filters to every household. However, there is lack of sustainability of these water projects as demonstrated by serious shortages of water during the dry season. Hence the study set to investigate the factors that influence sustainability of community water projects in Chebunyo Location, Chepalungu Constituency, Bomet County.

1.3 Purpose of the study

The study was to investigate the determinants influencing sustainability of community water projects in Chebunyo Location, Chepalungu Constituency, Bomet County.

1.4 Objectives of the study

The study was guided by the following objectives.

1. To establish the influence of community participation on the sustainability of the community water projects in Chebunyo Location, Chepalungu Constituency, Bomet County.
2. To examine how leadership skills influence the sustainability of community water projects in Chebunyo location, Chepalungu constituency, Bomet County.
3. To assess the influence of community creation of awareness on sustainability of community water projects in Chebunyo Location, Chepalungu Constituency, Bomet county.
4. To determine the extent to which project financing influence sustainability of water projects.

1.5 Research questions.

The study was guided by the following research questions:

1. How does community participation influence the sustainability of community water projects in Chebunyo Location, Chepalungu Constituency, Bomet County?
2. To what extent do leadership skills influence sustainability of community water projects in Chebunyo Location, Chepalungu Constituency, Bomet County?
3. How does community creation of awareness influence sustainability of community water projects in Chebunyo Location, Chepalungu Constituency, Bomet County?
4. To what extent does project financing influence sustainability of community water projects in Chebunyo, Chepalungu Constituency, Bomet County.

1.6 Hypothesis

1. There is no significant different between community participation and water project.
2. There is significant relationship between leadership skills and community water project.
3. There is no significant relationship between community creation of awareness and community water project
4. There is significant different between financing project and water project.

1.7 Significance of the study

The study findings would be significant to several people in the location, sub-county and the entire county of Bomet. To begin with, improving long term functionality of water supply projects ensures continuous provision of a service that is fundamental to improved health, reduced burden of carrying water for long distances and improved livelihoods. The findings and recommendations of the study would provide practical solutions to water project stakeholders in ensuring continuity of the projects for long term benefits.

Moreover the study would specifically benefit the government, water resource users and the community towards enhancing sustainability of existing and new water projects during implementation and post implementation phases. It would also provide a basis for future researchers who are interested in this area of study. The study redefined the pre-requisites of enhancing sustainability of community water projects and contributes in achieving the Sustainable Development Goal six of achieving Universal and equitable access to safe and affordable drinking water for all by 2030.

1.8 Limitation of the study

This study was limited by a number of factors such as time and budget since the researcher was self-sponsored. This was overcome by seeking a study leave and borrowing loan.

Suspicion from respondents also limited the study. This limitation was addressed by explaining to the respondents that the purpose of the study was purely academics and that any information would be treated with utmost confidentiality.

1.9 Delimitation of the study

The study focused on the determinants influencing the sustainability of community water projects in Chebunyo location, Chepalungu Constituency, Bomet County. The selected stakeholders included household consumer's heads, management committee, members of the

projects and key Government water officers. This area was selected because it was classified as a water scarce region characterized by perennial drought and the fact that it was a targeted region for water development projects by the government and NGOs whereas the problem of water scarcity is still persistent.

1.10 Basic assumption of the study.

The study was based on the basic assumption that the respondent would be willing to give information concerning their projects willingly, honestly and objectively. It was also assumed that the respondents were familiar with the Kipsigis dialect. In addition, the study would also assume that the data collection instruments would be valid and reliable in measuring the desired outcome.

1.11 Definition of significant terms as used in the study

Determinants: as used in this study referred to the conditions that either promote or impede the sustainability of community water project.

Sustainability of water project: Referred to the management of water resources projects in a manner that ensures benefit for both current and future generation.

Community participation: Referred to the active involvement of community members throughout the project life cycle in decision making processes and activities during needs assessment project design and implementation, and post implementation.

Leadership: Referred to position or state of being a leader.

Community creation of awareness: Referred to the enhancement of skills and knowledge of water projects team and community members

Project financing: Referred to sourcing funds to a long term infrastructure projects.

1.12 Organisation of the study

The study was organized in five chapters. Chapter one featured the background of the study, statement of the problem, purpose of the study, objective of the study, research questions, significance of the study, limitation and delimitation of the study, besides chapter one also presented basic assumption of the study as well as definition of significant terms as used in the content of the study.

Chapter two captured literature review of other scholars as it relates to the study. The chapter highlights the concept of sustainability of community water projects in Chebunyo Location

(dependent variable) and determinants (independent variable) e.g. community participation, community creation of awareness, leadership skills and financing the project. Moreover, it also illustrated the theoretical framework of the study, the conceptual framework of the study, empirical literature and the summary of literature review.

Chapter three highlighted research methods under subtopics such as research design, target population, sample size and sample selection. Data collection instrument, procedures of data collection, methods of data analysis, operationalization of study variables and Ethical considerations are also presented in chapter three.

Chapter four outlined data analysis and interpretation while chapter five indicates research, conclusion and recommendation.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter featured a review from previous scholarly work related to the area of study. Literature was reviewed in line with the study variables; influence of community participation, leadership skills, community creation of awareness and project financing. It also contains theoretical and conceptual framework and summary of literature review.

2.2 The concept of sustainability

According to Ayo (2016) Sustainability is best defined pragmatically as whether or not something continues to work overtime. More specifically it implies the ability to recover from technical breakdown in the scheme.

According to Abrams in the present context the test of water continues to be abstracted at the same rate and quality as when the supply system was designed. He points out that if the water flows, then all of the many elements which are required for sustainability must have been in place. There must have been money for recurring expenses and for the occasional repair, there must have been acceptance from the consumers of the service, the source supplying the service must have been properly done, and there must have been sound construction.

Many water and sanitation programs in developing countries have not continued to work over time. They have not been sustained; the causes of breakdown or non-sustainability are numerous. Communities or households may never have been convinced of the desirability of new water sources, the financial costs which communities are expected to raise as a contribution to capital or recurrent expenses may be unacceptable, unaffordable or impracticable (e.g. Monthly or quarterly cash contributions may be impossible for households which only receive income at harvest), communities may never have felt ownership of the new infrastructure, and Governments may have been over-stretched and under-resourced, so that repairs and maintenance have not taken place; benefits promised at the outset of projects (e.g. dramatically improved health) have failed to materialize; community education (e.g. hygiene education) and the attitudinal and behavioral change expected to be achieved by it, take a long time to produce results, and yet it often ceases prematurely; even where full community participation or management has been planned in from the start, community-level committees and caretakers have lost interest or trained individuals have moved away. This can be a particular risk if community-level organization is on a voluntary basis.

Habtamu (2012) in his study on factors affecting sustainability of rural water supply systems in Mecha-Woreda, Amhara region, Ethiopia, defines sustainability as the functionality of a water point over a long period of time.

2.3 Influence of community participation on sustainability of community water projects.

Community participation refers to an active process whereby beneficiaries influence the direction and execution of development projects rather than merely receive a share of projects benefits.

Korten, (2010) says that authentic participation enhances the sustainability of community development projects and thus can only be achieved through a people centered developments. Effective community participation may lead to social and personal empowerment, economic developments and socio-political transformation, Kaufima and Alfouso (2011)

Donor organizations and development workers are concerned that aid being delivered seems to give few positive impact to the recipient countries. In most cases, the benefits of the development projects or programs also seem to end with the withdrawal of government or foreign assistance from the projects or programs. The USAID and World Bank's post evaluation show that the majority of development interventions have low level of sustainability after the completion of the project, Gold Smith & Brinkerhott (2012 pg. 369). This has created the demand for governments and donors to finance the project that help beneficiaries become independent at some point in the future, rather than giving them charity which is sustainable which leads to dependency on government and donors, Bossert (2010 pg.1016)

The increasing capacity of community to be able to fulfill their own needs and maintain the benefits of the project also contributes to the eradication of hunger and poverty in the long-term, picciotto (2002 pg3)

For sustainable development to be realized, the community must play a role, Pearce, (2014). Sustainable developments should be defined by people themselves, to represent an ongoing process of self-realization and empowerment. The community is supposed to be brought into focus through participation. Without the community becoming both the architects and engineers of the concept, sustainability of the project may not be achieved since community is unlikely to take responsibility for something they do not own themselves, Redclift (2012).

A majority of programs rely on community participations for daily implementation of activities, while the overall management of the supply chain is often undertaken by external partner, helpdesk report (2016).

An examination of literature on community participation suggest it leads to development project that are more responsive to the needs of the poor, more responsive government and better delivery of public goods and services better maintained community assets and a more informed and involved citizenry, measure and Rao, (2003).

Participation plays an important role as a means of providing and accessing information about it preferences, participation, it both provides information about preferences and gains information's that may influence its optimal choice. Both types of information are likely to increase welfare for the community and better development projects, Wasilwa, (2015).

To ensure sustainability, a cross-section of the community must be involved and participate actively in water development process. Community participation in which the community takes the responsibility of managing the water supply systems by themselves is one of the key indicators for sustainable community management in rural water supply. It has become evident that community participation is essential for success of any water and sanitation project. Although community participation is now days an essential foundation-stone of water and sanitation projects in developing countries, this alone is no automatic guarantee of success. The only way of approaching such a guarantee is to build in at all stages, in as many aspects as possible, and for all stakeholders, a perception that participation is more worthwhile than non-participation is more. Without the motivation of community to utilize the new source, sustainability is doomed. The users must believe that the new source is preferable to the traditional source. The obvious and immediate benefit of an improved water source is usually access, or proximity. Although this may be a time-consuming activity at the beginning of a programme, it is common for demand, and levels of motivation, to grow rapidly as the benefits of clean water become more visible. A significant further obstacle to the motivation of a community to use a new source may be the change “free” water to some system of cash payment. Motivation, value, worthwhileness, or self-interest is essential features of the involvement of all stakeholders, not only the individual consumers. Project sustainability can be ensured when community members are included in the project design are seriously committed to the programme delivery, and try to put such commitment and zeal into practice. The community must also show a high level of dedication and ensure careful monitoring of the project. Thus, the community must see the programme as their own and find ways of keeping

it to improve their lives, Bins wager (2013). In order for such projects like water delivery to be sustainable, there is need to include plans for the communities to manage both internal and external resources to provide greater sense of ownership.

Sustainability could be achieved when the development process is owned and managed by the local community itself and not from outside help, Rubin and Rubin (2016).

According to Davis and Lyer, (2002) involving the users in the planning, implementation, operation, protection and maintenance of water supply systems meaningfully is the key to sustainability. Community members contributions or participation in project-related decision-making and meetings.

Research studies have found that community support for a project, as manifested in the cooperation of community bodies such as community organization and Government agencies with the project implementation is a major predictor of its sustainability. Savaye and Waysman (2008) stressed the importance of strengthening the sense of ownership among those who benefit from the project in the community to increase their motivation to sustain it.

2.4 Influence of leadership skills on sustainability of community water projects.

A simple definition is that leadership is the art of motivating a group of people to act towards achieving a common goal. This leadership definition captures the essentials of being able to inspire others and being prepared to do so. Effective leadership is based upon ideas (whether original or borrowed) but won't happen unless those ideas can be communicated to others in a way that engages them enough to act as the leader wants them to act. Put even more simply, the leader is the inspiration and director of the action. He or she is the person in the group that poses the combination of the personality and leadership skills that make others want to follow his/her direction, Susan Word (July 2017).

The main function of the water committee is to manage community water system: by overseeing day to day operations and setting policies such as whether and how much to charge for usage to cover future maintenance cost. Water management committee also promote health and sanitation education in the community by passing on the knowledge gained during trainings to members. The role of water committee also serve to elevate the position of women within the community, as they require the composition of the committee to be at least 50% female, Voss Foundation, 2012

Community leadership in turn is usually less hierarchical, Onyx and Leonard (2011) and often based on volunteer action, Zanbar and Itzhaky (2013), involving the creation of social capital, R.Lay, (2012)

One of the key for the success of the development of the rural communities is the presence of an effective leader, Freddie et al (2013). Without the presence of community leaders, it will be very difficult to implement all of the programs planned by the government smoothly. In a real context, success is influenced by the leadership role in the local community.

In reality, a leader's effective leadership and effective functioning lies in the way he uses his power to influence the behavior of others, especially the people he leads, Yukh (2010). Hence, leadership is a process of influencing others to work with them. Influential leaders are always on the ground, meet and ask about the problems faced by the villagers, and their influence will indirectly be stronger as they constantly communicate with the public.

Fieldler and Garcia, (2013) a leader's leadership skills will determine the extent to which a person is able to operate and develop the vision, Mission, goals and direction of the organization.

2.5 Influence of creation of awareness on sustainability of community water projects.

According to Wikipedia, community education, also known as community-based education or community learning and development is an organisation programs to promote learning and social development work with individual and groups in their communities using a range of formal and informal methods. A common defining feature is that programmes and activities are developed in dialogue with communities and participants the purpose of community learning and development is to develop the capacity of individual and groups of all ages through their action, the capacity of communities to improve their quality of life. Central to this is their ability to participate in democratic processes, Wikipedia. The water committees established through 'our projects with water. Org in Ethiopia' participated in a comprehensive, two- part training, which included extensive hand pump maintenance, hygiene and sanitation Education, recording of financial flows, planning of weekly and monthly meeting about progress, and managing community use of water systems, including arbitration of any disputes and prevention against damage, Voss foundation(2012).

According to the United Nations Economic and Social council, commission on sustainable Development, (2015) in promoting and facilitating sustainable water development and management. It is paramount to promote social stability and adaptability to environmental

change, raise awareness and to build human and institutional capacity, provide access to safe water supply and protect the quality of surface and groundwater and aquatic ecosystems and strengthen the enabling role of Government to enact and enforce water legislation at local water management capacities.

Staff training or expertise building in a range of matters, including strategic planning skills, knowledge of needs assessment and logic model construction, leadership skills and financial management is important to project sustainability, Johnson et al (2014).

According to Fagen (2009), Projects that included staff preparation and training, especially training in creative and flexible problem solving, had greater sustainability than projects that did not. Chances of sustainability increase where staff and other stakeholders feel that they or their clients can benefit from the project.

Mengesha et al (2013) in their study of sustainability of drinking water supply projects in Ethiopia recommended that building adequate skills and capacity to maintain water sources is an essential factor to ensuring sustainability of the water system. Training educates and creates awareness among the community members giving them an opportunity to participate in the development process.

Mary Mwangi, (2014) in her study of Determinants of sustainability of water projects in Kieni East, Nyeri noted that it is imperative that community members should be trained on subjects such as operations and maintenance, record keeping, tariff setting, financial management and conflict resolution to build capacity at local level. Training on operations and maintenance build technical skills at community level to operate and repair the water projects infrastructures. This promotes long term functionality of the water projects since the trained personnel are fairly efficient and reliable.

2.6 Influence of financing the project on sustainability of community water projects.

Project financing is nothing but sourcing funds to a long term infrastructure projects and using the cash flow generated from the project to pay back the financing procured, IMS Initiative, (2016) simply put, community and economic development project need funding to move forward. In a day of tighter budget and rising cost ,putting ideas into action is even more of a challenge .But project financing doesn't have to be a road block :communities can find opportunities by pursuing outside funding including grants ,bonds ,state revolving and private funds, Ojeh,V.N, (2015). According to Daniel L. Bond.at al (2012) some of the potential sources of financing for small scale infrastructure in developing countries can come from a

number of sources: public sector budget official development assistance (ODA) and private sector. According to Community Action Global Impact report, CWI supports decentralized, demand-driven, innovative, low-cost and community-based water resource management and water supply and sanitation in rural areas. It is rooted in the strong belief that local management and community initiatives play a key role in ensuring and sustaining the success of enhancing water supply and sanitation services to poor communities. CWI channels funds directly to local communities in need of support.

Funds for sanitation and water projects can come from various sources. In a very schematic way, at the level of a given project, funds may come from four main source; users of the service, Taxpayers via the government budget, private participation and external sources (such as international lending institutions, NGOs and philanthropic organisation) providing ‘free’ money in the form of grants or subsidised loans, TREMOLET et al (2007). The need for external funding arises when no other approach-like payments by the beneficiaries, government or public private partnership would be feasible. “However, it should always be kept in mind that tapping external sources usually means financing for a limited period of time and according to the rules of an external organisation. If the issue of long term financial viability has not been taken into consideration, many projects may collapse once the external finances are no longer available”, Philip et all (2008).

Donor Agencies identified include: Danish international Development Agency (DANIDA), UK Department for International Development (DFID), Swedish Development Cooperation (SIDA), United Nations Children’s Fund (UNICEF), and United States Agency for International Development (USAID) and the World Bank.

10th Malaysia plan (RMK10) showed that 30.3% of the overall rural communities still receive government financial support and aids, Malaysia (2012). Element of community contribution to capital and recurrent cost of running and maintaining the system is critical to sustainability, Ayo (2016). The cost MVP packages are estimated at about \$120 per person per year for a five-year period. These are expected to be co-funded by grants from governments and community based contribution. The breakdown of cost per person indicates down funds \$60; local and national government funds \$30; partner organization funds \$20 and village members’ funds (time and expertise) \$10.

According to ARDE (2014) on his study of factors influencing sustainability of water projects in Rwanda noted that sources of funds for project financing are donors (53%), government

(2%) and community members (45%). If we spend money on managing and developing our water resources, it is money better spent than on lawsuits arguing or defending management and development decisions.

Money will be spent on updating infrastructure, to make it last longer and more efficient. Money will be spent on projects make use more efficient and beneficial. Mostly importantly, money will be spent on figuring out what money should be spent on to ensure a sustainable water supply. It would not be a wise use of taxpayer funds to throw money at projects that have not been carefully prioritized and a part of a bigger water management plan for the benefit of the state as a whole, Eric Luebehusen (2014).

Water Services Trust Fund (WSTF) is a state corporation established under the water Act (2002) with the mandate to assist in financing the provision of water services to areas of Kenya which are without adequate water services. WSTF is mandated to finance water and sanitation services for the poor and underserved communities in rural and urban areas in the water Act (2016). The mandate/object of the fund is to provide conditional and unconditional grants to the counties and to assist in financing the development of and management of water services in the marginalized and underserved areas including; community level initiatives for the sustainable management of water resources. Development of water services in rural areas considered not being commercially and development of water services in the under-served poor urban areas, WSTF (2017).

Water lines cost-shares on all projects with local communities, normally providing a grant of 75%, with the recipient providing 25%. In a typical year, waterlines funds about 30 new projects in Kenya and completes detailed monitoring and action plans on another 30 projects at schools with older rainwater harvesting systems, Mark and Diane Rermers board members, (2016).

The African water Facility (AWF) is an initiative led by the African ministers' council on water (AMCOW) aimed at mobilizing resources to finance water resources development activities in Africa. The African Development Bank (AFDB) hosts the facility on the request of AMCOW. The recipients of AWF could be: Central or local African Governments; African Municipalities; NGOs and CSOs; community based organizations CBOs; Regional and sectorial organization (e.g. River Basin organizations). There is no application deadline to request AWF funding, AWF, (2010).

The African Development Bank (AFDB) will fund a sh. 2 billion water project in Bomet, Geoffrey Rono (2011). The project to supply water to residents of Chepalungu, Sotik, Konoin, Bomet East and Bomet Central constituencies.

The Kenya Red Cross Society (KRCS) attended a ground breaking ceremony for the Sigor water supply project under Bomet Integrated Development programme (BIDP). The project will address significant social challenges of the residents in Sigor and Chebunyo wards in Chepalungu and Bomet East sub-counties on access to clean water for both domestic and irrigation purposes. This is to be achieved through key intervention aimed at contributing to improved community member's Livelihood, accessibility to water, health and nutrition and food security. This programme presents a unique public/private partnership, Kenya Red Cross (2016).

According to Bomet ICT, (2016), use of unsafe water in Chebunyo market and its environs will soon be a thing of past after Bomet County governor Isaac Ruto commissioned the extension of water lines to the market. The project funded by Water Services Trust Fund in conjunction with the county Government of Bomet will benefit 17,000 residents in the area who hitherto have been using water from a water pan.

2.7 Theoretical framework

In 1943, Abraham Maslow developed one of the earliest theories of human motivation commonly referred to as Maslow's hierarchy of needs. In his classical article "A theory of human motivation" Maslow utilized the term "Proponent" to express the theory that in the human being who is missing everything in life in an extreme fashion, it is most likely that the major Motivation would be the physiological needs rather than any other (Maslow 1943, pg.5). Whittington and Evans (2005), referring to that same article stated that Maslow presented a proponent hierarchy in which at least five sets of needs compose the framework (p114). The five sets of needs were divided into two categories: basic needs and higher order needs. The best human needs represented by food, water; shelter and safety are considered essential for human existence. Higher order needs are those associated with social activities, esteem building and self-actualization or constant self-improvement. Elaborating further on this theory, Whittington and Evans (2005) stated that each of these needs operates at all times, although one deficient set dominates the individual at any one time and circumstance (P114). Maslow hierarchy is commonly displayed in a pyramid fashion with the basic need at the bottom. The needs were depicted in this way to show the significance of each need on the others, with the most important and broadest category being physiological needs at the base,

Redmond (2010). O'Connor and Y balle (2007) indicate that Maslow intended his theory to be an ongoing process that involves dozens of little growth choices that entail risk and require courage (P 720). Maslow believed that in order for the higher order needs to be successfully met and not affect basic needs, an individual must first acquire the basic order needs referred to as fulfillment progression, Redmond (2010).

I have chosen this theory for my study because water is within the first of the physiological needs or the lower order needs which should be met before the higher needs are met as stated by Maslow's theory and more so as water is life. Hence the need for community water projects to be sustained. Furthermore it has several benefits attached to it namely; boosting the economic, agricultural, industrial hence key in the country's development. It also foster unity, collaboration and networking among the different stakeholders involved in the project.

2.8 Conceptual framework of the study

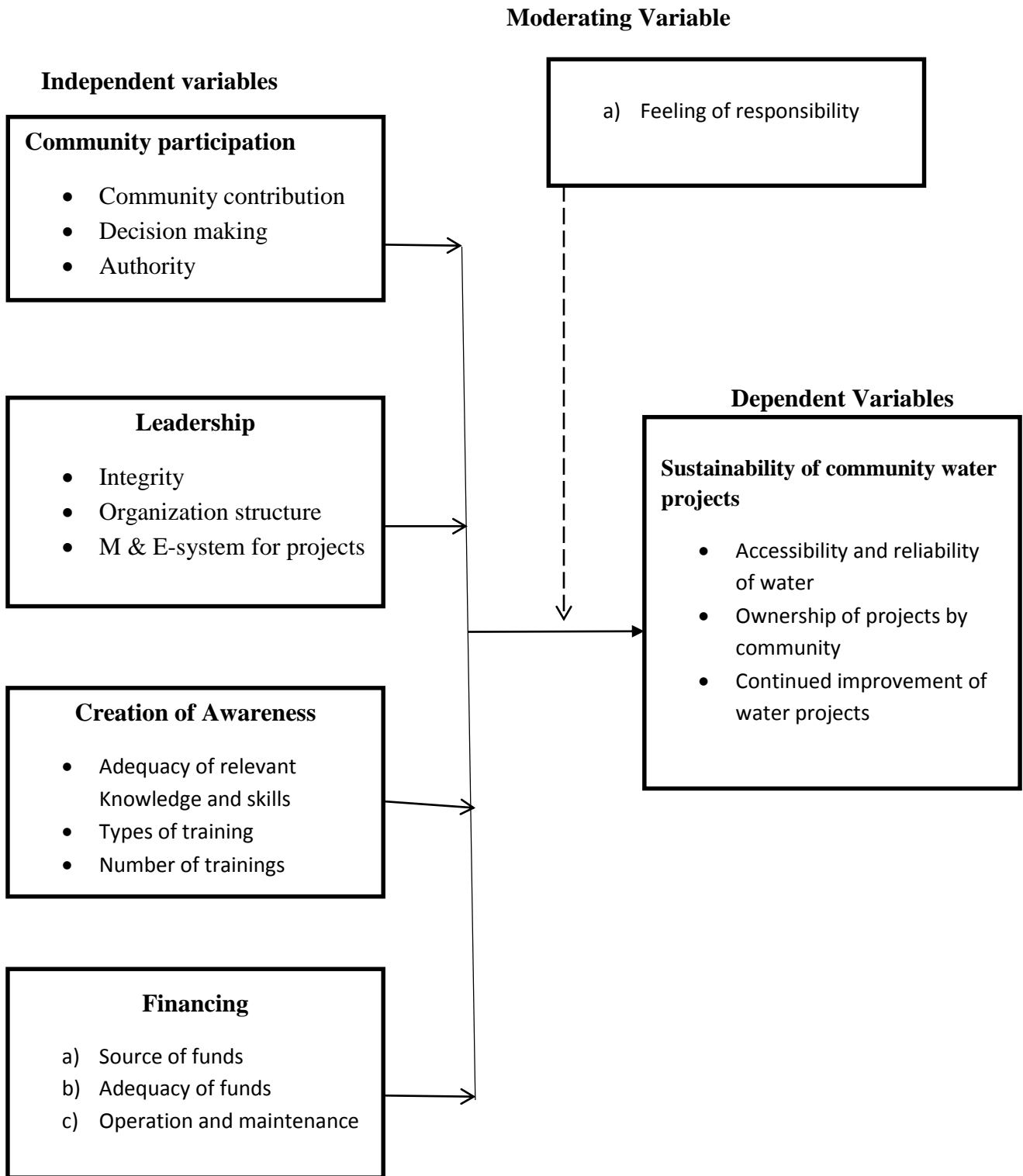


Figure 1: Conceptual framework of the study

2.9 Summary of literature review

Sustainability has been seen to be influenced by several determinants. From the review, determinants such as community participation, Leadership skills, community creation of awareness and project financing affect sustainability of community water projects greatly.

Community participation plays an important part in project sustainability. It is the act of involving the community members to sustain the project through opinions and ideas, material support, finance, repair and maintenance. This makes them own the project hence sustain it.

On the influence of leadership skills, it was found out that the leader skills such as trustworthiness, integrity, communication, delegating, honest, commitment, creativity among others are key in project sustainability. Leaders have to influence the followers to sustain the project.

Community creation of awareness was also revealed to play an important role in sustainability of project. Community members have to be sensitized on importance of safe clean and empowered on the skills of repair and maintenance of projects.

It was also found out that without finance or money, a project cannot be sustained. Money is used to buy materials for repair, service the machines and sometimes labor while aids are succeeding in contributing to human development, dependency on aids can be more problematic. Aids are expensive and make countries unlikely to develop or fund their own development hence no ownership, no sustainability of projects.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presented aspects of research methodology that would be used in the study. These include research design, target population, sample size and sample procedures, besides it also featured data collection instruments, piloting of research instruments, instrument validity and instruments reliability. In addition it also outlined procedure of data collection, methods of data analysis, ethical consideration in research and operationalization of study variables.

3.2 Research design

According to Kothari (2004), states that research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual or of a group. Descriptive survey design was used in this study. This is because as Kothari (2004) says, the descriptive design assists the researcher in collecting data from a relatively larger number of cases at a particular time. The descriptive survey design helps answer the question like who, what, where and how on describing the phenomenon on study. This design was appropriate for the study because it enabled data collection from the sample on the determinants influencing sustainability of community water project.

3.3 Target population

Target population is that population that the research wants to generalize the result of the study. Mugenda and Mugenda (2003) define target population as the entire group a researcher wishes to draw conclusion.

According to the records from the Directorate of Immigration and Registration of persons (Ministry of Interior and Cordination of National Government, 2017). Chepalungu sub-county, the location has a population of 4,000 people by the year 2017. The target population for this study was 4,000 household families and 40 Officers working in various water projects.

3.4 Sample size and sampling procedures

This section described sample size and sampling procedures.

3.4.1 Sample size

Sample size refers to a subset of a target population,(Kothari 2005).

The sample used in the study was made up of 386 respondents according to V. Krejcie and W. Morgan 1990.

3.4.2 Sampling procedures

Sampling is the process of selecting a number of individual or objects from a population such that the selected group contains element representative of the characteristics found in the entire group (Orodho and combo, 2002)

Table 3.1: Sample size of a given population.

	Total population	Sample	Percentage
Household families	4000	351	90.9
Water committee	40	35	9.1
Total	4040	386	100.0

The researcher used a systematic random sampling technique to sample 19 villages out of 20 in Chebunyo location. Sample above was determined using Robert V. Krejcie and Daryle W. Morgan table.

3.5 Research instruments

To obtained data, two types of questionnaires were used; one for households and one for officers and committee members working in various water projects. Questionnaires which are devices with lists of questions which respondents are required to respondent (Mugenda 1999). Questionnaires were taken to sampled population by the researcher assisted by trusted officers. Researcher's questionnaires were used to collect data from illiterate respondents. Kothari (2008) observes that questionnaires are more objective as compared to interviews because they gather responses in a standardized while ensuring confidentiality.

Both close-ended and open-ended questions were used. Close-ended questions were presented on a like art scale, which allowed participants to respond with degree of agreement or disagreement.

3.5.1 Piloting of Research Instruments

Pilot study was done in Chelelach where the actual study was not carried out. According to Mugenda and Mugenda (2003) a tenth of the total sample with homogenous characteristics

would be appropriate for the pilot study. Questionnaires designed for the pilot study was therefore administered to 25 households and 1 officer. The instrument was administered to the same respondents twice without prior notification. Data collected gave the researcher a clue of the nature of expected results after the research was completed. The researcher was assured of the validity of the instruments by studying the responses and identifying gaps in the instrument in relation to the research objectives. Necessary adjustments were made prior to the study.

3.5.2 Instruments validity

It is the extent which a measuring instrument yields the desired outcome,(Othari 2005). Validity is appropriateness of research instruments. The validity of the questionnaires was ensured by going through peer review and expert judgement.

3.5.3 Instrument reliability

Reliability is the consistence of the scores obtained by using different instruments. Reliability of instruments shall be stable if it gives consistent results with repeated measurements of the same object with the same instruments. This stability shall be determined by comparing result of repeated measurement. To ensure that the instruments used are reliable, reliability coefficient of the instrument shall be calculated. A reliability coefficient expresses a relationship between scores of the same individual on the same instrument at two different times or two parts of the instruments.

The split-half method was used in this study. This involves two-halves of a test separately for each person and then calculating a correlation coefficient of the two sets of scores. The researcher splited the instrument into odd and even items.

The reliability coefficient was calculated using Pearson's Moment Correlation. A coefficient correlation of 0.7 and above was realized.

3.6 Procedures of data collection

After getting sample population, the researcher collected the data from selected respondents after seeking permission from the relevant authority. The researcher went further and requested the respondents to fill in the questionnaires as honest as possible. Thorough check of the questionnaires was made to ensure that they were dully filled, at the same time researcher's questionnaires were used in data collection. The respondents were able to complete the questionnaires in time. Data collected were tallied and presented using frequency tables.

When the proposal was approved, transmittal letter was obtained from the head of department of the college of education and external studies school of continuing and distant education. The letter was taken by the researcher to the assistant chief who recommended for further assistance in the sub-location. Questionnaires were then delivered to various respondents.

3.7 Data analysis techniques

The study employed descriptive statistical methods in order to analyse the data collected. These were cross checking of the questionnaires to ensure that the questions were answered properly. The computer statistical package for social sciences (SPSS) was used to process all the responses from the questionnaire. The questionnaire was sorted, coded and fed into the SPSS program to generate frequency tables and percentages. Owing to the fact the study was descriptive in its major characteristics; descriptive statistics were used in data analysis. Such descriptive statistics that were used for analysing data were frequencies and percentages while data was presented in frequency distribution table.

3.8 Ethical issues in research

Ethics in research refers to a code of conduct or societal norm of behavior while conducting research. Three main ethical principles were considered namely beneficence, respect, and justice.

The researcher ensured that the research was scientific and avoided unnecessary risks, harm or wrong. All respondents both autonomous and non-autonomous were treated with respect and courtesy. The researcher ensured that community in which the research was conducted benefits from the study.

The study ensured that the norms of scientific research were adhered to. This was done by using valid research design; the researcher was competent and used experts where necessary. The sample selected was sufficient for the purpose of study. Furthermore the participants agreed to participate through voluntary informed consent.

3.9 Operationalization of the study variables

Table 3.9 Operationalization Table

Dependent Variables

OBJECTIVES	VARIABLE	INDICATORS	MEASURE	SCALE
Factors influencing the sustainability of Community water project in Chebunyo Location, Chepalungu Constituency, Bomet County	Sustainability of community water projects	-Clean water -Sustainable water projects -Improved water supply and sanitation	-If there is clean water -If there is sustainable water projects - If there is cheap and clean water	Nominal -Nominal -Nominal

INDEPENDENT VARIABLES

OBJECTIVES	VARIABLE	INDICATORS	MEASURE	SCALE
1. To assess influence of community participation on sustainability of community water projects.	Community participation	-Opinion and ideas -Special groups	-If opinion and ideas of community are respected. -How frequently are special groups elected/appointed	-Nominal -Ordinal

<p>2.To examine how leadership skills influence sustainability of water project in Chebunyo Location, Chepalungu Constituency, Bomet County</p>	<p>Leadership skills</p>	<p>-Teamwork -Integrity/honesty -Active and committed community leaders</p>	<p>-If leaders/managers belief in team work -How frequently leaders/managers display financial records -If leaders/managers are active and committed.</p>	<p>-Nominal -Nominal</p>
<p>3.To investigate the influence of community Creation of awareness on sustainability of water projects in Chebunyo Location, Chepalungu constituency, Bomet county</p>	<p>Community creation of awareness</p>	<p>-Adequacy and efficiency of information. -Knowledgeable water committee</p>	<p>-If community members have adequate knowledge and skills. -If community members have capacity on maintenance and repair</p>	<p>-Nominal -Ordinal</p>
<p>4.To investigate the extent to which project financing influence the Sustainability of water in Chebunyo Location, Chepalungu Constituency, Bomet county</p>	<p>Project financing</p>	<p>Availability of funds at appropriate time Adequacy of funds for sustainability of water projects. Management of funds</p>	<p>-If funds are available at the appropriate time -If funds are adequate for sustainability -If funds are well managed</p>	<p>-Nominal -Ordinal -Nominal</p>

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION.

4.1 Introduction

This chapter focuses on in-depth data analysis, presentation, interpretation and discussion. Data analysis was done against the background of the key study variables. Community participation, leadership skills, community creation of awareness and project financing on sustainability of water project in Chebunyo location, Chepalungu Constituency, Bomet County, Kenya.

4.2 Questionnaire return rate

Questionnaire return rate is the percentage of the questionnaire that were returned to the researcher and which were deemed well completed for the sake of analysis. In this study 380 questionnaires were issued to households out of which 302 were returned giving a return rate of 78.24%. A response rate of 50% is deemed adequate for analysis and reporting, however, a response of 60% is good whereas a response rate of 70% and over is very good (Mugenda and Mugenda, 2003). Furthermore, Necamaya (1996) noted that a response rate of more than 75% is enough for the study to continue.

In this respect, the study's instrument return rate was excellent. This was attributed to the fact that copies of the questionnaire were administered and collected back by two trained and motivated research assistants, who distributed the questionnaire to the respondents in batches of ten until all were administered. The research assistants emphasized to the respondents the need to fill the questionnaire as instructed as well as assisting some in completing the questionnaire.

4.3 Demographic characteristics of respondents

This section features the respondents' demographic characteristics that were considered significant to the study. Such demographic features include sex, age, level of education, marital status and position of the respondents were considered significant to the study on the basis that variations on such orientations would depict different attitudes towards sustainability of water project.

4.3.1: Characteristics of the respondents by sex

The distribution of the household respondents by sex was as shown in table 4.1

Table 4.1: Distribution of the Household Respondents by sex.

Sex of respondent	Frequency	Percentage
Male	130	43.0
Female	172	57.0
Total	302	100.0

The statistics in table 4.1 show that out of 302 respondents interviewed 43.0% of the respondents were male and 57.0% were female. The survey results indicated that the female respondents were slightly more than the male counterparts. The high percentage of women respondents may be attributed to the household gender roles that confine women to household related chores such as fetching water, thus making it possible to be easily reached during household surveys such as the current study. However, a significant 43.0% male respondent may be an indicative that, this findings may also be significant for enhancing sustainability of water projects as more men begin to share in the burden of household collection and management.

4.3.2: Distribution of the respondents by Age

The distribution of the respondents by their age was as shown in table 4.2.

Table 4.2: Age distribution of the respondents.

Age	Frequency	Percentage
Below 25 years	20	6.6
26-35 years	47	15.6
36-45 years	102	33.8
46-55 years	97	32.1
56 and above	36	11.9
Total	302	100.0

Reflected in table 4.2, the highest percentages (33.8%) of the household respondents in the study were aged between 36-45 years and they were the majority. The study area is majorly a rural set up and people own their farms where they lived with their families. The high percentage of respondents above 36 years (77.8%) may be due to some reasons that older people are more likely to volunteer for community services rather than young people in sustainability of water projects.

4.3.3: Characteristics of the respondents by level of education.

Education is one of the most important characteristics that might affect a person’s attitude and understanding of social phenomena. Table 4.3 shows the distribution of the respondents by their level of education.

Table 4.3: Distribution of respondents by level of education.

Level of education	Frequency	Percentage
Never attended school	16	5.3
Primary level	133	44.0
Secondary	107	35.4
University	46	15.3
Total	302	100.0

The statistics in table 4.3 indicated that majority (44.0%) of those interviewed had completed primary school, (35.4%) had completed secondary level, (15.3%) had completed University while (5.3%) of the respondents had no education at all. Larson et al, (2006) indicated that the level of education especially the mother is very vital in influencing community sustainability to water projects in many parts of the world. This is because the literacy levels of the members of the family strongly influence the community’s sustainability of water facilities as more and more people with higher education participate in management of common services at the community level in sustaining water projects.

4.3.4: Characteristics of the respondents by Marital Status.

The distribution of the respondents by marital status was as shown in Table 4.4

Table 4.4: Marital status distribution of the respondents.

Marital	Frequency	Percentage
Single	12	4.0
Married	243	80.5
Unmarried	16	5.3
Widowed	31	10.2
Total	302	100.0

From the findings in table 4.4 of the study, it is observable that majority of the respondents (80.5%) were married, 10.2% were widowed, 5.3% were unmarried and 4.0% were single. Those who said that they were single were either daughters or sons in the family or mothers who had children while in their father's home but never been married. The high percentage of married family (80.5%) may be an indicative that there is high sustainability of water projects in Chebunyo location as married people are more responsible in their families.

4.3.5: Position of the respondents in the family.

The researchers targeted the spouses and in case both the father and mother were absent, a son or a daughter whoever was available was interviewed. The study observed that among the respondents, there was no single male parent family and after further probing was alone it was established that there were unmarried men who had children. These children however lived in their grandmother household hence were interviewed.

Table 4.5: Position of the respondent in the family.

Position	Frequency	Percentage
Male headed	131	43.4
Female headed	167	55.3
Child headed	4	1.3
Total	302	100.0

Implied by the statistics in table 4.5 is that over half of the respondents were female headed at 55.3%. Male headed followed at 43.4% while child headed accounted for 1.3%. The studies observed that majority of the position hold by the respondents in the family were female headed at 55.3%. This might be due to the fact that male are out working in towns or the single and widowed women majorly formed the majority in the interview.

4.4 Community Participation and Sustainability of water Project.

The first objective of the study was to investigate how community participation influences sustainability of community water projects. This section presents and discusses the findings and analyses the interaction between the respondents' opinion on community participation and sustainability of water project.

4.4.1: Community Members activities participate in conception, design and implementation of water projects.

Household respondents were required to indicate whether the community members had actively participated in conception, design and implementation of water projects. On the other hand, the respondents were asked to indicate the degree of agreement to which they thought the community had participated in conception, design and implementation. All the households' respondents confirmed that the community had participated. The respondents' responses were as shown in table 4.6

Table 4.6: Community participation in conception, design and implementation.

Community participation	Frequency	Percentage
Strongly Agree	157	52.0
Agree	136	45.0
Disagree	05	1.7
Strongly Disagree	03	1.0
Neutral	01	0.3
Total	302	100.0

The implication of this statistics in table 4.6 is that majority of the respondents (52.0%) strongly agreed that the community participated in conception, design and implementation of their water projects compared to (45.0%) who agreed while (1.7%) disagreed, (1.0%) strongly disagreed and (0.3%) were neutral. The high percentage of the respondents (52.0%) implies that the community is well aware of the need for the community members to be actively engaged in identifying and resolving the problems affecting the community and take charge of their own destiny, an imperative for sustainability of community development projects whose ultimate goal is to improve the living standards of the community. This is in line with Korten (2010) who noted that authentic participation enhances the sustainability of community development projects.

4.4.2: Representation of women in management committees of the water projects.

The respondents were asked to indicate whether women are well represented in the management committee of water project. The findings were presented as in Table 4.7.

Table 4.7: Representation of Women in management committee

Representation of Women	Frequency	Percentage
Strongly Agree	125	41.4
Agree	148	49.0
Disagree	18	6.0
Strongly Disagree	08	2.6
Neutral	02	1.0
Total	302	100.0

Implied by the statistics in table 4.7 is that majority of the respondents (49.0%) agreed that women are well represented in the management committees of the water projects. Similarly, (41.4%) strongly agreed and (6.0%) disagreed with a significant (2.6%) who strongly disagreed and (1.0%) neither agreed nor disagreed. This is a significant finding as it points to changing attitudes and values in the community with respect to gender roles in water management.

4.4.3: Community members frequently in operations and maintenance activity of the water projects.

The respondents' responses on the degree of agreement of community members' participation in operation and maintenance activity of the water projects were tabulated as shown in table 4.8.

Table 4.8 Community members' frequency in operation and maintenance activity of the water projects.

Degree of community members' frequency	Frequency	Percentage
Strongly Agree	106	35.1
Agree	101	33.4
Disagree	27	8.9
Strongly Disagree	65	21.6
Neutral	03	1.0
Total	302	100.0

From the findings in table 4.8 of the study, it is observable that the respondents strongly agreed (35.1%) that community members are frequently in operation and maintenance of the water projects. Also (33.4%) were in support that community frequently maintains activities of the water projects. On the other hand, a significant (21.6%) strongly disagreed and (8.9%) disagreed. Those who had no idea were (1.0%).

4.4.4: Community members make contribution in kind and cash towards operation and maintenance of the water projects.

Households respondents were asked to indicate the extent to which community members make contributions in kind and cash towards operations and maintenance of the water projects. Their responses were as shown in Table 4.9

Table 4.9: Members Contribution.

Members contribution	Frequency	Percentage
Strongly Agree	04	1.3
Agree	108	35.8
Disagree	136	45.0
Strongly Disagree	53	17.6
Neutral	01	0.3
Total	302	100.0

Reflected in table 4.9 is that majority of the respondents (45.0%) disagreed that members make contribution both in kind and cash towards operation and maintenance of the water. The findings also indicated that changes in attitudes towards making contribution were agreed by (35.8%). This has significant implications for the future sustainability of rural water projects particularly in the study where women traditionally played greater roles especially in fetching water distant away from homes.

4.5: Leadership skills on sustainability of community water projects.

The second objective of the study was to examine how leadership skills influence sustainability of community water project in the study area. This section presents findings on management of water facilities, displayment of financial records, adequacy of the skills and training of the leaders on operations, maintenance and management of water systems.

4.5.1: Management of water facilities.

The respondents were asked to indicate the degree to which leaders manage their water facilities. Their responses were as shown in table 4.10 below

Table 4.10: Management of the water facilities.

Management of water facilities	Frequency	Percentage
Strongly Agree	112	37.1
Agree	116	38.4
Disagree	63	20.9
Strongly Disagree	07	2.3
Neutral	04	1.3
Total	302	100.0

Implied by this statistics in table 4.10 was that the majority of the respondents (38.4%) in Chebunyo location agreed that water facilities were managed by leaders well. This was followed by (37.1%) who strongly agreed. However, (20.9%) and (2.3%) disagreed and strongly disagreed respectively. Only (1.3%) were neutral.

4.5.2: Leaders frequently display financial records.

The respondents were asked to indicate the degree to which leaders frequently display financial records. Their responses were as shown in Table 4.11 below

Table 4.11: Frequency of leaders displaying financial records.

Financial Records	Frequency	Percentage
Strongly Agree	03	1.6
Agree	12	4.0
Disagree	103	54.1
Strongly Disagree	182	60.3
Neutral	02	1.0
Total	302	100.0

It is therefore deductible in table 4.11 that the vast majority (60.3%) of the respondents in Chebunyo location strongly believed that leaders do not display financial records to the household respondents. This was followed by (34.1%) who supported that leaders do not show the households financial records on management of water facilities and hence this might affect sustainability of water projects.

4.5.3: Leaders have adequate skills to manage their water facilities.

The respondents were required to indicate the degree of adequacy of skills to manage their water facilities. Their responses were as shown in Table 4.12.

Table 4.12: Adequacy of leadership skills.

Adequacy of leadership skills	Frequency	Percentage
Strongly Agree	58	19.3
Agree	175	57.9
Disagree	60	19.9
Strongly Disagree	08	2.6
Neutral	01	0.3
Total	302	100.0

Accumulatively the highest percentage of the respondents (77.2%) indicated that their leaders have adequate skills. (19.9%) disagreed and (2.6%) strongly disagreed while (0.3%) did not indicate whether they had or did not have such skills. This is in line with Fieldler and Garcia (2013) who noted that leader’s leadership skills will determine the extent to which a person is able to operate and develop the vision, mission and direction of the organization.

4.5.4: Leaders are trained on operations, maintenance and management of water systems.

The respondents were asked to indicate the degree to which leaders are trained on operations, maintenance and management of water systems. Their responses were as shown in Table 4.13 below.

Table 4.13: Training of leaders.

Training of leaders	Frequency	Percentage
Strongly Agree	60	19.9
Agree	186	61.6
Disagree	33	10.9
Strongly Disagree	10	3.3
Neutral	03	1.2
Total	302	100.0

It is therefore deductible in table 4.13 that the vast majority of the respondents (61.6%) agreed that leaders had been trained on operations, maintenance and management of water systems. This was followed by (19.9%) who strongly agreed. However, (10.9%) and (3.3%) disagreed and strongly disagreed respectively. Only (1.2%) did not indicate whether their leaders had been trained.

4.6: Community’s Creation of awareness and sustainability of community water projects.

The third objective of the study was to determine how community’s creation of awareness influence sustainability of community water projects in the study area. This section presents and discusses findings related to the respondents’ views on community’s creation of awareness and relates the same to sustainability of the community water projects.

4.6.1: Community members frequently trained on operations and maintenance of water systems.

The respondents were asked to indicate the degree to which community members are frequently trained on operations and maintenance of water systems. Their responses were as shown in Table 4.14

Table 4.14: Training of community members.

Training of community members	Frequency	Percentage
Strongly Agree	181	59.9
Agree	97	32.1
Disagree	20	6.7
Strongly Disagree	04	1.3
Neutral	00	0.0
Total	302	100.0

From the findings in table 4.14 majority of the respondents (59.9%) responded affirmatively that members are frequently trained on operation and maintenance of water systems. This was supported by overwhelming (32.1%) of the respondents who indicated that they are trained for operating and maintaining water facilities. However, a significant (8.0%) disagreed with the idea that community members are trained on operations and maintenance of water systems. The high percentage (59.9%) indicated that members are trained and hence may influence the sustainability of water projects.

4.6.2: Trainings were facilitated by trainers with highly technical background in water resources

The respondents were asked to indicate the extent to which trainers facilitate the training. Their responses were as shown in Table 4.15

Table 4.15: Appropriateness of trainers provided

Appropriateness of trainers	Frequency	Percentage
Strongly Agree	111	36.8
Agree	116	38.4
Disagree	69	22.8
Strongly Disagree	03	1.0
Neutral	03	1.0
Total	302	100.0

The statistics in Table 4.15 reveal that the majority (38.4%) of the respondents responded affirmatively on the appropriateness of the trainers in providing technology for their water facilities. This was supported by respondent (36.8%) who strongly agreed that trainers had highly technical backgrounds. However, (22.8%) indicated that the technology provided by trainers were not appropriate with (1.0%) who strongly indicated that they were of the view that there could be still be better technology provided by other trainers than what they adopted so as to sustain water facilities.

4.6.3: Training has been very useful in operation and maintenance of water system.

The respondents were asked to indicate the degree of training provided for their respective water facilities. Their responses were as shown in Table 4.16

Table 4.16: Usefulness of training

Usefulness of training	Frequency	Percentage
Strongly Agree	120	39.7
Agree	176	58.3
Disagree	00	0.0
Strongly Disagree	00	0.0
Neutral	06	2.0
Total	302	100.0

The findings indicated that majority of the respondents (58.3%) agreed training have been very useful in operation and maintenance of water system. This was followed by (39.7%) who strongly agreed that training were useful and sustainable to maintenance to water system.

4.6.4: Trained Members of the water committee are actively involved in the operation and maintenance of the water projects.

The study sought to establish whether the water committee had been involved in operation and maintenance of the water projects. The findings were as shown in Table 4.17.

Table 4.17: Water committee participation on maintenance of water projects.

Water committee participation on maintenance of water projects	Frequency	Percentage
Strongly Agree	47	15.6
Agree	122	40.4
Disagree	89	29.5
Strongly Disagree	42	13.9
Neutral	02	1.0
Total	302	100.0

The findings indicate that (40.4%) of the household respondents agreed that water committee had participated in operations and maintenance of the water projects with (15.6%) who strongly agreed that committee members are actively involved in operation. Accumulatively (43.4%) disagreed that water committee are actively involved in maintenance of water facilities.

4.7: Project financing on sustainability of community water project.

The fourth and final objective of the study was to determine how project financing influence sustainability of community water project in the study area. This section presents and discusses adequacy of funds, availability of funds at appropriate time and management of funds.

4.7.1: Adequacy of funds.

The household respondents were asked to indicate if they got adequate funds for sustainability of water projects. The responses were as shown in table 4.18.

Table 4.18: Adequacy of funds

Adequacy of funds	Frequency	Percentage
Strongly Agree	72	23.8
Agree	166	55.0
Neutral	02	1.0
Disagree	53	17.5
Strongly Disagree	09	3.7
Total	302	100.0

Implied by the statistics in table 4.19 is that majority of the respondents (55.0%) they had received adequate funds that meet the sustainability of water projects. This was supported by (23.8%) who strongly agreed that funds are adequate for sustainability of water facilities. However, these findings were not supported by the respondents (17.5%) and (3.7%) who were of the views that funds are inadequate and does not support sustainability of water facilities. Only (1.0%) neither agreed nor disagreed.

4.7.2: Availability of funds at appropriate time.

In measuring the influence of project financing on sustainability of community water project, the researcher sought to establish if the households respondents in Chebunyo location had required funds at appropriate time. In the light of this, the respondents were asked to complete the questionnaire indicating whether funds were available in their location at the right time and their responses captured as depicted in table 4.19.

Table 4.19: Availability of funds

Availability of funds	Frequency	Percentage
Strongly Agree	94	31.1
Agree	115	38.1
Neutral	00	0.0
Disagree	82	27.2
Strongly Disagree	11	3.6
Total	302	100.0

It is deductible in table 4.20 that majority (38.1%) of the respondents in Chebunyo location agreed that funds were available at appropriate time. This was followed by (31.1%) who strongly agreed that funds were availed at the right time. The (27.2%) and (3.6%) responded that they did not get the funds at appropriate time.

4.7.3: Management of funds.

The respondents were asked to indicate if funds are managed well in the location in sustainability of water facilities. Their responses were as shown in the table 4.20.

Table 4.20: Management of funds

Management of funds	Frequency	Percentage
Strongly Agree	20	6.6
Agree	20	6.6
Neutral	01	0.3
Disagree	196	64.9
Strongly Disagree	65	21.5
Total	302	100.0

The impression created by these statistics in table 4.21 is that majority of the respondents (64.9%) disagreed that funds received for water facilities were not managed well by water committees. A significant (21.5%) supported the majority that water supply facilities funds were not managed well by the committees, while accumulatively (13.2%) responded that funds are managed by the responsible persons well. This construct with Rono (2011) who stated that African Development Fund funded Ksh. 2 billion to water project and was expected to supply water to residents of Chepalungu, Sotik, Konoin, Bomet East and Central Constituencies.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The purpose of the study was to investigate the influence of determinants on Sustainability of community water projects in Chebunyo location, Chepalungu Constituency, Bomet County. This chapter covers summary, conclusion and recommendation based on the study findings and suggestions for further research.

5.2 Summary of the study findings

The study sought to find out the influence of determinants on sustainability of community water projects in Chebunyo location. In chapter one of the project, the background of the study was well outlined. It covered determinants both in developed and developing countries, in Kenya and single out to Chebunyo location, Chepalungu Constituency, Bomet County. The statement of the problem was that there was lack of sustainability of water projects as demonstrated by water shortage during the dry season.

The purpose of study was well outlined and objectives to guide study were developed. These were to establish the influence of community participation, leadership skills, community's creation of awareness and project financing on sustainability of community water projects. Research questions were derived from the objectives of the study. The significance of the study was well outlined. Limitations and delimitations were well stated.

The basic assumption, definitions of significant terms and organization of the study were well outlined.

Literature was reviewed in chapter two under the following sub-topics; Influence of community participation on Sustainability of community water project, influence of leadership skills on sustainability of community water project, Influence of community's creation of awareness on Sustainability of water projects and influence of project financing on sustainability of community water projects, theoretical framework, Conceptual framework and summary of literature review.

Chapter three presented a descriptive survey design to the study. The target population was 4,000 household respondents in Chebunyo location, Chepalungu Constituency. Descriptive statistics were used to analyze data using statistical package for social sciences (SPSS). The research questions were answered. Frequencies and percentages were used to show the

relationship between the Independent variables such as community participation, leadership skills, creation of awareness and project financing on sustainability of community water project. The researcher tried to answer the following questions. Does the community participation, leadership skills, community's creation of awareness and project financing influence sustainability of community water projects?

Out of the 380 questionnaires administered, 302 questionnaires from the respondents were returned representing a 78.24% return rate. Fifty seven per cent (57.0%) of the household respondents were female while 43.0% were male.

The highest percentages of the household respondents (33.8%) were of age between 36-45 years of age. There were more respondents aged above 45 years (44.0%) than there were respondents aged 35 years and below (22.2%).

A high percentage of respondents had primary education (44.0%) while (35.4%) had secondary level of education and (15.3%) had completed University while (5.3%) had no education at all. Of the household respondents (80.5%) were married, (10.2%) were widowed, (5.3%) were unmarried and (4.0%) were single.

On the position of the respondent in the family, over half of the respondents were female headed at 55.3%, male headed family followed at 43.4% while child headed accounted for 1.3 %.

The first objective of the study was to establish the influence of community participation on sustainability of community water project in Chebunyo location, Chepalungu Constituency. The study found out that majority of the households respondents (52.0%) strongly agreed that the community participated in conception, design and implementation of their water projects. Also (45.0%) agreed while (1.7%) and (1.0%) disagreed and strongly disagreed respectively.

On representation of women in the management of high percentage of (49.0%) and (41.4%) agreed and strongly agreed that women are highly represented in the management.

The second objective was on influence of leadership skills on sustainability of community water project in Chebunyo location. The study revealed that majority of the respondents (38.4%) believed that water facilities are managed well by the leaders. This was followed by (37.1%) who strongly agreed. Only (20.9%) and (2.3%) disagreed and strongly disagreed respectively.

On displayment of financial records, vast majority (60.3%) of the respondents strongly believed that leaders did not display financial records. It was followed by (34.1%) who supported that leaders did not show the financial record.

A high percentage of respondents (77.2%) believed that their leaders have adequate skills to manage their water facilities. This was supported by the number of respondents (61.6%) who agreed that leaders are trained on operations, maintenance and management of water systems.

The third objective was on community's creation of awareness on sustainability of community water project. The study established that most household respondent (59.9%) responded affirmatively that members are frequently trained on operations and maintenance of water system. This was supported by (32.1%) respondents. A high percentage of the respondents (58.3%) indicated that training offered to community were very useful in operation and maintenance of water system. This was highly supported by a high percentage of (39.7%) that was of similar opinion. There were no respondent who disagreed.

The fourth objective was on project financing on sustainability of community water project. The study established that most household respondents (55.0%) agreed and (23.8%) strongly agreed that funds got were adequate. However, a significant (17.5%) and (3.7%) were of the view that funds got were inadequate.

On availability of funds at the appropriate time, majority of the respondents (38.1%) agreed that funds were availed at appropriate time. This was supported by (31.1%) who strongly agreed that funds were availed at the right time. The study was further responded by the majority (64.9%) who noted that though funds are adequate and availed at the appropriate time, disagreed that funds received were not managed well by the water committee or the responsible persons.

5.4 Conclusion

The study based on influence of determinants such as community participation, community creation of awareness, project financing and leadership skills in Chebunyo location, Chepalungu Constituency.

The study established that community participation was important for achieving sustainability of community water projects in the area. The study further found the representation of women desirable for achieving sustainability. More importantly, the community was found to contribute in kind and cash towards operations and maintenance of the water projects. These

findings suggest changing attitudes on gender based roles assigned at the household where contributions for sustainability of water sources at the households were traditionally associated with female.

Sustainability of community water project is associated with high level of leadership skills of the water committees. The high number of members of community with secondary and university level of education has increased capacity of water committees to develop and utilize management, operations and maintenance skills required for enhancing sustainability. The study shows evidence of increasing community's creation of awareness in both women and men. This may be a reflection of changing attitudes and redefinition of long traditional values arising from increased gender mainstreaming in water project that may enhance future sustainability of water facilities.

Finally the study established that funds were adequate and received at the appropriate time but the management committee mismanaged.

5.5 Recommendation

From the study findings, recommendation both for policy formulation and further research are drawn.

5.5.1 Recommendation

Based on the findings of the study, it is recommended that:

- 1) People of Chebunyo location should ensure that policies are established to ensure continuous provision of a service that is fundamental to improved health, reduced burden of carrying water for long distances and improved households.
- 2) The water committee should ensure that they formulate policies that provide practical solutions to water project and also ensuring continuity of the project for long term benefits.
- 3) Non-governmental organizations should ensure that targeted region that is characterized by perennial drought should give funds so as to improve the source of water.
- 4) The government through the ministry of water and irrigation should formulate policies that enhance sustainability of environmental and water source.

5.5.2 Recommendation for further Research.

The study recommends the following areas to be considered for further research so as to achieve sustainability of community water project. The regulatory framework for an enabling environment for creation of accountability among water committee is absent. Further research on areas requiring displayment of financial records is also recommended.

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APPENDICES

APPENDIX I: TIME TABLE

PHASE/ACTIVITY	TIME(MONTHS)	DATES
Identifying problem	1	July 2017
Development of proposal	2	August- September 2017
Typing/editing/submission	1	October-November

APPENDIX II:
TRANSMITTAL LETTER

ALICE C MUTAI,
P.O BOX 52,
CHEBUNYO.
CELL: 0718 115 544

TO:

THE CONSTITUENCY WATER OFFICER,
CHEPALUNGU CONSTITUENCY.

Dear Sir/Madam,

REF: REQUEST FOR RESEARCH DATA COLLECTION

I am a student doing my Master of Arts in Project Planning and Management, in the University of Nairobi. I am required to submit a research project as a part of my assessment. I have written a proposal on factors influencing Sustainability of Community Water Projects in Chebunyo location, Chepalungu Constituency, Bomet County.

As part of my proposal, I have developed a questionnaire to help me collect data among the household in the location. I therefore seek your permission to collect relevant data. The information obtained will be used for academic purposes. Findings of the study shall upon request be made available to you. Your assistance and cooperation will be highly appreciated.

Thank you in advance

Yours faithfully

Alice Mutai

APPENDIX III: MORGAN’S TABLE FOR DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION

Population Size	Sample Size	Population Size	Sample size
10	10	300	167
20	19	400	197
30	28	1500	306
40	35	2000	322
50	44	3000	341
60	52	4000	351
70	59	5000	357
80	66	6000	361
90	73	7000	364
100	80	10000	370
150	108	20000	377
200	132	50000	381
250	162	10000	384

APPENDIX IV: QUESTIONNAIRE FOR MEMBERS OF HOUSEHOLDS AND WATER OFFICERS

I am Alice Mutai pursuing a master's degree at the University of Nairobi. As part of my master's studies I am conducting research on FACTORS INFLUENCING SUSTAINABILITY OF COMMUNITY WATER PROJECTS IN CHEBUNYO LOCATION IN CHEPALUNGU CONSTITUENCY, BOMET COUNTY. You have been randomly chosen to participate in this study and I therefore kindly request that you kindly provide accurate information. Your participation is VOLUNTARY and information you provide will be treated with high CONFIDENTIALITY. You are also assured that information you provide will be used for the sole purpose of this research. Your support is highly appreciated. Thank you.

SECTION A

Demographic characteristics.

Please answer the questions by ticking (✓) where appropriate.

- Gender: Male Female
- Age: Below 25 years
26-35 years
36-45 years
46-55 years
56 and above
- Highest level of education
Never attended school primary level
Secondary University
- Marital status
Married Unmarried

Single []

Widowed []

- Position of the respondent in the family.

Male headed

female headed

Child headed

SECTION B

Please consider the statement and tick (√) where your opinion is applicable

KEY:

SA- Strongly Agree

A-Agree

D-Disagree

SD-Strongly Disagree

N-Not having idea

1. Community Participation on sustainability of community water project.

STATEMENT		OPINION				
		SA	A	D	SD	N
i.	Community members actively participate in conception, design and implementation of water projects					
ii.	Women are well represented in the management committees of the water project.					
iii.	Community members frequently in operations and maintenance activity of the water projects					
iv.	Community members make contributions in kind and cash towards operations and maintenance of the water projects.					

2. Leadership skills on sustainability of community water projects.

STATEMENT		OPINION				
		SA	A	N	D	SD
i.	Leaders manage water facilities well					
ii.	Leaders frequently display financial records					
iii.	Leaders have adequate skills to manage their facilities.					
iv.	Leaders are trained on operations, maintenance and management of water systems.					

3. Creation of Awareness on sustainability of community water projects.

STATEMENT		OPINION				
		SA	A	D	SD	N
i.	Community members frequently trained on operations and maintenance of water systems.					
ii.	Trainings were facilitated by trainers with highly technical background in water resources.					
iii.	The trainings have been very useful in operations and maintenance of water systems.					
iv.	The trained members of the water committee are actively involved in the operation and maintenance of the water projects.					

4. Project financing on sustainability of community water project

STATEMENT		OPINION				
		SA	A	N	D	SD
i.	Funds are adequate for sustainability of water projects.					
ii.	Funds are available at appropriate time					
iii.	Funds are well managed					

5. Suggest steps that all stakeholders should take to influence sustainability of community water projects in the location.....