INFLUENCE OF TRAINING WATER USERS COMMITTEES ON SUSTAINABILITY OF COMMUNITY WATER PROJECTS IN TSEIKURU WARD, KITUI COUNTY

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A RESEARCH REPORT SUBMITTED IN PARTIAL FULFILLMENT FOR THE REQUIREMENTS OF THE AWARD OF MASTER OF ARTS DEGREE IN PROJECT PLANNING AND MANAGEMENT OF THE UNIVERSITY OF NAIROBI

2014
DECLARATION

This research report is my original work and has not been presented for a Master degree in any other University.

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L50/60761/2013

This research report has been submitted for examination with my approval as University Supervisor.

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DEDICATION

I dedicate this study to my beloved children, Faith Bernards and Prudence Bernards for their encouragement and support. To my lovely wife Jophysine, for her moral support and understanding while working over the weekends and nights piecing this document together.
ACKNOWLEDGMENT

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<td>CBO</td>
<td>Community Based Organizations</td>
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<tr>
<td>DFID</td>
<td>Department for International Development</td>
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<td>FAO</td>
<td>Food and Agriculture Organization</td>
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<td>KII</td>
<td>Key Informant Interviews</td>
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<td>MDGs</td>
<td>Millennium Development Goals</td>
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<td>NGO</td>
<td>Non-Governmental Organization</td>
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<td>PAR</td>
<td>Participatory Action Research</td>
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<td>UN</td>
<td>United Nations</td>
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<td>UNICEF</td>
<td>United Nations Children’s Education Fund</td>
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ABSTRACT

One important means to manage effectively water resources is to build the capacities of the concerned institutions, managerial systems, and human resources. The key to sustainable water resources management is the existence of sufficiently well trained personnel in all of the disciplines needed in the planning, development, and management processes. The purpose of the study was mainly to assess the influence of training on sustainability of community water projects in Tseikuru ward, in Mwingi North constituency of Kitui County. The study was guided by the following objectives; to establish the extent to which management training influence on sustainability of community water projects, to determine how acquisition of technical operation skills training influence sustainability of community water projects, to assess the extent to which maintenance training influence sustainability of community water projects and also to determine how acquisition of resource mobilization skills influence sustainability of community water projects. The study was anchored under the behaviour change theory developed by B.F Skinner. The study also used mixed method research approach, sampling 92 committee members out of the total population of 120 committee members from 15 water projects. Descriptive survey design was employed, with all the existing water management committees in the area of study reached, through representation. Data was collected using questionnaires and Key Informant Interviews. Data analysis was done using Statistical Package for Social Sciences (SPSS). Descriptive statistics such as frequencies, percentages, means and standard deviations were used to analyze the data which is presented in tables. The findings of the study revealed that, acquisition of management skills, technical operation and maintenance skills as well as acquisition of resource mobilization skills by water uses committees highly influence the sustainability of community water projects. The study further provides recommendations on improvements and policy measures on water resources management, by calling for effective implementation of the Water Act 2002 which advocates for Human Based Rights Approach. The study recommends empowerment of people to be able to make their own decisions, rather than being passive objects of choice and also enable them claim their rights to opportunities and services through pro-poor development.
CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

According to United Nations Development Programme (UNDP) (2006) report, people need water and sanitation to sustain their health and maintain their dignity. The report further states that water beyond the household sustains ecological systems and provides input into the production systems that maintain livelihoods. This means that water permeates all aspects of human development and lack of its access at household level or for production results to peoples’ choices and freedoms curtailed by ill health, poverty and vulnerability.

The same UNDP report further reveals that, globally, an estimated 1.1 billion people in developing countries have inadequate access to water and 2.6 billion people of out the 6 billion lack basic sanitation. The above estimates concur with findings by World Bank, (2010) report which showed that water is a scarce resource with multiple interwoven uses that range from drinking water, energy, irrigation among others. The report further states that, more than one-sixth of the Worlds” population does not have access to safe drinking water, with 80% living in rural areas thus access to water cannot not be guaranteed globally.

According to the recent progress report by the Joint Monitoring Programme WHO/UNICEF, (2010), global improved drinking water coverage increased from 77% to 87%. However, the developing world including sub Saharan Africa continue to lag behind developed nations in their progress towards meetings the water related Millennium Development Goals (MDGs) WHO/UNICEF, (2008), WHO/UNICEF, (2010).
UNDP (2006) report states that deprivation in water and sanitation produces multiplier effects. These include some of the followings costs for human development. Some 1.8 million children die each year as a result of diarrhoea globally. Another critical aspect is the loss of 443 million school days each year from water related illness. The report further reveals that millions of women spend several hours a day collecting water and lifecycles of disadvantages affecting millions of people with illness and lost education opportunities in childhood leading to poverty in adulthood (UNDP, 2006).

As part of the Millennium Development Goals (MDGs), the United Nations has aimed to halve by 2015 the population that lacks sustained access to safe drinking water (UN 2011). The world is on target to meet, if not surpass, this proposed benchmark as 84% of people in the developing world now have access to improved water sources (UNICEF and WHO 2010). However, despite over a billion dollars invested in the water sector and great progress made towards the MDG, the sustainability of the various governments’ and non-governmental organizations’ actions in the water sector are poor at best.

Sub Saharan Africa accounts for about one-third of the World population without access to improved drinking water suppliers, according to a UNDP, (2008) report. Another critical aspect is that losses are greatest in some of the poorest countries in Sub-Saharan Africa with about 5% loss of Gross Domestic Product (GDP) or some $ 28.4 billion annually. The report further reveals that the amount lost exceeds total aid flows and debt relief in the region in 2003 (UNDP, 2006).
According to Sutton, (2005) large percentage of non-functioning wells and unused is a stark markers of inadequate operation and maintenance and lack of sustainable services. Further the report states in a survey conducted by Sutton in 11 countries in Sub-Saharan Africa, the percentage of functioning water systems in rural areas ranged from 35-80%. In Tanzania for example, a survey carried out by Haysom, (2006) revealed that average functionality rates among public distribution points was 45%.

1.2 Statement of the problem

Given the many challenges associated with rural communities accessing water in Kenya, the researcher has developed the topic to assess the influence of training Water Users Committees (WUCs) on promoting sustainability of community managed water projects. According to Bauman, (2005) an estimated 35% of rural water supplies in sub-Saharan Africa are non-functional an indication that people’s livelihoods are being jeopardized. According to Loucks (2009), the key to sustainable water resources management is the existence of sufficiently well trained personnel in all of the disciplines needed in the planning, development, and management processes. In regions where such a capacity is needed but does not exist, it should be developed.

There are several non-functional water projects across the region under study. according an evaluation report funded by World Vision in 2012, Tseikuru ward, which revealed some capacity limitations. In total, there were 22 boreholes in Tseikuru District constructed by various partners, where out of these, eight boreholes representing 36% boreholes are not operational, mainly due to poor sustainability planning and capacity limitations. The researcher noted that there is some hope if the loose ends are tied up to make community water projects fully sustainable. (Afullo, 2012).
Therefore, there is need for a conclusive and well researched study that will enable government, development agencies and well as other relevant and interested groups to analyse and synthesize information that will be aimed at addressing the root causes of these widespread challenges that affect the water sector. The importance of this study is aimed at furnishing with researchable data that will propel the economy as well continuity of water projects in communities and thereby increase functionality of water projects in Rural Kenya. This study therefore, seeks assess the influence of training Water Users Committees (WUCs) on promoting sustainability of Water Sanitation and Hygiene projects.

1.3 Purpose of the study

This study aimed at assessing the influence of training water users committees on sustainability of community water projects in Tseikuru ward in Mwingi North Constituency of Kitui County, Kenya.

1.4 Objectives of the study

The objectives of the study were:

1. To establish the extent to which management training influence sustainability of community water projects.
2. To determine how acquisition of technical operation skills influences sustainability of community water projects.
3. To assess the extent to which maintenance training influence sustainability of community water projects.
4. To determine how acquisition of resource mobilization skills influence sustainability of community water projects.
1.5 **Research Questions**

The research questions were:

1. To what extent does management training influence sustainability of community water projects?
2. To what level does acquisition of technical operation skills influences on sustainability of community water projects?
3. To what extent does maintenance training influence sustainability of community water projects?
4. How does acquisition of resource mobilization skills influence sustainability of community water projects?

1.6 **Significance of the study**

The findings of the study once shared will be useful for local community groups especially the WUAs, NGOs, Government of Kenya and other researchers in the field of water, sanitation and hygiene. The outcome of this study will also helpful in the lives of the water users and local communities. The findings will also be useful to policy makers and institutions of learning and management to be able to manage water projects in sustainable manner.

1.7 **Delimitation of the study**

The study was carried out on Tseikuru ward of Kyuso Sub-County in Kitui County, targeting existing community water users groups or projects, key informants and donors. The study also utilized secondary data from relevant government ministries, local community water user’s group records, and NGOs operating in the targeted area of study.
1.8 Limitation of the study

The researcher pictured a limitation that, some projects lacked a clear structure of operation and management but since all groups were targeted, significant representation was be achieved to give a general understanding of the situation.

1.9 Assumptions of the study

This study took the assumption that, the respondents who were interviewed provided reliable and accurate data which was used to arrive at conclusions and recommendations for the study. It was also assumed that a good representative number of the groups will be reached and actively participate in the study.

1.10 Definitions of Significant terms

Training in this study refers to an ongoing process through which individuals, groups, organizations and societies enhance their ability to identify and meet development challenges.

Management of water projects refers the general coordination and organization of all the activities in the project, decision making by water drawers and users, inclusiveness of women in management of water projects as well as handling the challenges facing water projects.

Operation and Maintenance is the care and minor maintenance of equipment using procedures that do not require detailed technical knowledge of the equipment’s or system’s function and design. It normally consists of inspecting, cleaning, servicing, preserving, lubricating, and adjusting, as required. Such maintenance may also include minor parts replacement that does not require the person performing the work to have highly technical skills.

Resource mobilization is the process of raising different types of support for an organization.
**Sustainability** in this study refers to the continuation or maintenance of structures or initiatives created, or benefits of inputs distributed, beyond the lifetime of the project and are key to whether a project will achieve a wider and longer-term impact.

### 1.11 Organization of the study

This study is organized into five main chapters, namely, the introduction, literature review and research methodology, data analysis, presentation, interpretation and discussion and finally summary of findings, conclusion and recommendations.

Chapter one contains 11 sub sections which include background to the study, statement of the problem, purpose of the study, objectives, research questions, significance of the study, delimitation of the study, limitation of the study, basic assumptions of the study, definition of significant terms and organization of the study. Chapter two has 5 main sections which include introduction, sustainability of community water projects, training of water users committees, theoretical framework and conceptual framework.

Chapter three has the following sections; introduction, research design, target population, sample size and sampling procedure, research instruments, data collection procedure, data analysis techniques, ethical consideration and operational definition of variables. Chapter four has the following sections, data analysis, presentation and interpretation while chapter five has summary of findings, discussion, conclusions and recommendations as well as contribution to the body of knowledge.
CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter is segmented into four main sections which include sustainability of community water projects, training of water user committees, theoretical framework and conceptual framework.

2.2 Sustainability of community water projects

Schouten & Moriarty’s (2003), says that, at its simplest, we consider successful community management to be the provision of a fully sustainable service that provides an equitable water supply to a community… by ‘sustainable’ we mean that once a community has been provided with a given level of service it should never have to revert to a structurally lower level of water in terms of quantity or quality. We also mean that it can sustain a system that will be maintained not only during its natural lifetime, but will also eventually be replaced or upgraded’. ‘By ‘equitable’ we mean that no section of the community is left with their minimum needs unmet’.

A service is sustainable when it functions and is being used, it is able to deliver an appropriate level of benefits (quality, quantity, convenience, comfort, continuity, affordability, efficiency, equity, reliability, health) and continues over a prolonged period of time (which goes beyond the life-cycle of the equipment). Such services have a management which is institutionalized (community management, gender perspective, partnership, with local authorities, involvement of formal / informal private sector), it’s operation and maintenance, administrative and replacement costs are covered at local level (through user fees, or alternative financial mechanisms), operated and maintained at local level with limited but feasible, external support (technical assistance, training, monitoring) among other characteristics (Brikké, F, 2000)
UNDP-World Bank, (2008) report in its Water and Sanitation decade reports, estimates that achieving lasting benefits from water supply interventions involves much more than building facilities. It must be focused on the importance of involving the community in all aspects of service delivery, use of appropriate technologies, and the role of governments as service promoter rather than provider. The report further revealed that governments have an assumption that communities somehow “manage” their facilities but do not help build capacities nor have any commitment to do so. This leaves communities to design their own traditional approaches towards maintaining water systems. There is need to define the roles of community members in project planning, implementation, cost recovery, operations and maintenance (O &M) and asset ownership that are poorly defined and communicated.

Sound strategies for community water supply and sanitation programmes in developing countries should be based on a clear understanding of the existing problems, the beneficial impacts achievable, and the factors which determine sustainability. The impacts of many water and sanitation programmes are limited, and many systems break down and are abandoned prematurely. Only limited impacts are achievable in the short term without greatly increased investment. Sustainability, in the sense of continued delivery and uptake of services, is threatened by numerous attitudinal, institutional and economic factors, and community participation approaches alone are no guarantee of success. The key to sustainability is that all stakeholders involved in consumption/use, maintenance, cost recovery, and continuing support perceive it in their best interests to deliver high quality services. (Carter R.C. et’al, 1999).
According to Abrams, (1998) sustainability as “whether or not something continues to work over time”. In the present context, the test of sustainability is whether water continues to be abstracted at the same rate and quality as when the supply system was designed, whether the excreta and wastewater disposal systems continue to function and be used as planned, and whether environmental quality continues to improve. As Abrams points out, “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 adequate, the design must have been properly done, and there must have been sound construction.”

2.2.1 Effectiveness of internal controls

According to DFID (1998), effectiveness is the degree to which water supply and sanitation services and interventions meet their objectives. It that implies that water supply and sanitation services reaches poor people and that poor people use the services and that facilities and services are integrated as required to deliver benefits and are kept in good operating condition. A crucial requirement for effectiveness is that programmes and projects are designed from the start in an interdisciplinary way, so that all the necessary components from the various disciplines are integrated into the programme. Without this co-operation, early decisions may impede some important options being included later, leaving inadequate preparation time for preparatory activities such as data collection on existing practices and views, and training of hygiene promoters.
2.2.2 **Equity in service provision**

Current provision of water supply and sanitation services often fails to reach the poor and other disadvantaged groups. Frequently it also fails to take account of the particular needs of women, children, old people, the sick, and people with a disability. Reaching these groups involves both practical concerns) and strategic issues of status, power, pay, etc. Gender issues in particular are crucial for the success of water supply and sanitation programmes, therefore gender perspectives infiltrate all the sections. The real needs and potential contributions of disadvantaged groups and presently unserved populations must be reflected in programme planning, through an appropriate institutional framework. (DFID, 1998).

Equity issues also arise when new approaches require communities to pay when their neighbours or urban/rural counterparts previously have not. The level of contribution of the poor is a particular concern in situations where middle/high-income users in the locality are paying tariffs which are well below the cost of water supply and sanitation. Equity objectives may require mechanisms, such as targeted subsidy or cross subsidy, to ensure that the prices that poor people pay for basic services are affordable, even where the overall thrust of sector policy is towards charging users the full costs of services provided. (DFID, 1998).

2.2.3 **Efficiency in service delivery**

Efficiency represents the output produced per unit of resources (water, staff, funds) and shortages of resources imply that high efficiencies will be needed to meet the gap in water supply and sanitation coverage. Past water supply and sanitation projects have been inefficient in a variety of ways.
In coverage terms, the focus on high-cost projects serving urban élites has severely restricted the number of people served per unit invested; neglect of sanitation and hygiene education has reduced benefits from water schemes; and poor operation and maintenance has led to high water losses and low cost recovery. (DFID, 1998).

2.2.4 Possibility of Expansion, replicability and transferability

The immediate challenge is to enable poor people to have access to water supply and sanitation. This means keeping basic services for poor people affordable, while aiming to recover a high proportion of capital and recurrent costs from users. Available public subsidy can then be used effectively to extend services to as many people as possible. Therefore it is essential that services and interventions can be replicated to provide this expansion. Services which are heavily subsidized, or not replicable for other reasons, fail to address the challenge of coverage, and may make it more difficult by establishing unrealistic expectations or standards. (DFID, 1998).

Replicability should not imply rigidity. The model needs to be flexible to meet demand for improved levels of service. describes technical replicability through standardization of a range of designs from which choices can be made (handpump standardization is an example). Similarly, approaches to tariffs and to hygiene promotion. A focus on transferability highlights the fact that technologies as well as development processes may need to be adapted to local contexts and conditions, rather than simply replicated. This can be addressed through the concept the concept of partnership. (DFID, 1998).
2.3 Training of Water Users Committees

Integrated water resources management is promoted globally as a requirement for countries to achieve sustainable water development. One important means to manage effectively the water resources is to build the capacities of the concerned institutions, managerial systems, and human resources (Alaerts et al., 1991). National capacity building programs include the updating and implementing of policies, institutional strengthening, and development of human resources, at local and national levels.

The concept of capacity building was recognized as a priority item at Mar del Plata (Biswas, 1978), even though during this United Nations Water Conference in 1977, the term capacity building did not exist. The emphasis at Mar del Plata was on human resources development in terms of education, training, and research, and institutional strengthening, all of which are now considered as integral components of the capacity building process. The UNDP Symposium on capacity building for the water sector, convened in Delft in 1991, defined capacity building as having three elements: an enabling environment with appropriate policy and legal frameworks; institutional development, including community participation; and human resources development and strengthening of managerial systems (Biswas, 1996).

In Mexico, the overall framework for water management has been established mainly in terms of legislations and institutions. Decentralization has been promoted for several years, primarily in terms of transfer of irrigation districts. Additionally, the municipalities have been handed over more responsibilities on water supply, drainage, treatment and disposal of wastewaters. Present and future improvements in efficiency of the water sector in Mexico depend on the development of a cadre of well-trained professional managers in the public and private sectors, as well as on the strengthening of the private and public sector institutions. (Tortajada, 2001)
Present efforts on capacity building, achievements, and concerns are also considered in terms of the training and education needed to build a new generation of water professionals who can meet the current challenges and the needs of the coming decades. According to Tortajada (2001), there is an urgent need to develop better educated managers and water professionals, both in terms of numbers and skills.

2.3.1 **Management training and sustainability of water projects**

Management of water projects remains critical for its operationalization as well as continuity of the project. Most projects that are managed well outlive their functions. Haysom, (2006) proposes in his study on Tanzania water projects that there could be separation of roles as purchaser, service provider, regulator and asset holder to be able to meaningfully manage the water and be able to reach many people in rural communities.

Haysom, (2006) reported that management of water projects encompasses among other critical elements, participation that is viewed as a tool for improving the efficiency of a project. It is also seen as a fundamental right that beneficiaries should have a say about interventions that affect their lives. Participation can take different forms including the initial expression of the demand for water, the selection of technology and its site, the provision of labour and local materials, a cash contribution to the project costs, the selection of the management type and even water tariff.
2.3.1.1 Records and Information management

According to the Glossary of Records and Information Management Terms, Records management (RM), also known as Records information management or RIM, is the professional practice or discipline of controlling and governing what are considered to be the most important records of an organization throughout the records life-cycle, which includes from the time such records are conceived through to their eventual disposal. This work includes identifying, classifying, prioritizing, storing, securing, archiving, preserving, retrieving, tracking and destroying of records.

Records management is part of an organization's broader activities that are associated with the discipline or field known as Governance, risk, and compliance (or "GRC") and is primarily concerned with the evidence of an organization's activities as well as the reduction or mitigation of risk that may be associated with such evidence (Tarantino, 2008).

According to UNICEF, FAO & Oxfam GB (2012), a record is defined as being something that represents proof of existence and that can be used to recreate or prove state of existence, regardless of medium or characteristics. A record is either created or received by an organization in pursuance of or compliance with legal obligations, or in the transaction of business. Keeping good records of the water committee's finances is extremely important because the money belongs to the community and therefore must be accounted for by the person(s) entrusted with it.

Primary documents are records where initial information of transaction in a WUC is indicated. They provide evidence that a transaction has taken or took place. These include receipts, payment vouchers, invoice, good received notes, petty cash vouchers among others. The recorded information is then transferred to the books of accounts, which are referred to as
secondary documents. These include Cashbook and Ledger. These records help in planning purposes, stock and asset management, to know WUC debtors/creditors, to know cash position, to be able to explain to the WUC membership the revenue and utilization of the revenue, to maintain credibility of consumers that tariffs are fair, and to be able to account for any donations to the WUC. Where the records miss, confusion, ambiguity, incompetence, lack of oversight and monitoring, non-disclosure of information, and lack of proper procedures thrives. (UNICEF, FAO & Oxfam GB, 2012).

2.3.1.2 Financial management in community water projects

Preparation of an annual operating budget is the first step an organization must take to ensure that there is an accountable and transparent financial management system in place and that the WUA operates on a financial sustainable basis. An annual budget, prepared by the finance committee is submitted to the management committee and subsequently to the membership for approval. Preparation of an annual budget requires information regarding expected income and expenditure to run the water project, and requires planning for capital costs. Expenditure should be kept within the approved budget according to each budget line.

According to UNICEF, FAO & Oxfam GB (2012), a budget helps to enhance transparency and accountability, quality of works, service provision and efficiency and effectiveness. Financial sustainability means that the project can cover its operational and capital replacement costs. Without proper agreed tariffs, the community water project will not be sustainable as either the members will feel they are paying too much money or there will be no funds to pay for operation and maintenance. It is important that members fully appreciate the reasoning behind the tariffs and why it is important that all pay their bills.
According to Tarantino (2008), water is a basic human need and is a constitutional right and the cost of building water points with safe and reliable water is expensive. The net result is that there is usually only one water service provider in any given area – there is no competition between water services providers in the way that there is competition between two shops selling the same commodity. This means that water service providers have a monopoly and could charge excessive tariffs. And since consumers do not have an alternative water supply they could be exploited. People in arid and semi-arid areas are more vulnerable to exploitation.

As elaborated by UNICEF, FAO & Oxfam GB (2012) in the *Trainer's Manual for Community Based Water Supply Management in Kenya*, a balance has to be found between setting a tariff that covers the cost of operating the project and ensuring that consumers are not exploited. To ensure that consumers are not exploited, a WUC should be transparent about the costs of operating the project and how the tariffs have been established. This approach is reflected in the preparation and approval of the annual budget and the submission of the financial and audit report to the AGM. Also, an independent government organisation is mandated to check that tariffs are justifiable. The organisation with this mandate is the Water Services Regulatory Board (WASREB). They set guidelines and use the Water Services Boards (WSBs) to make sure that these guidelines are implemented. The issue is that tariffs should be fair and justifiable with respect to meeting the genuine costs of operating and maintaining the project.

Commercialization of water services implies operating the water project on commercial principles i.e. with the intention of offering good quality service at an affordable price. This is not the same as being profit driven. WASREB is there to make sure that water service providers do not exploit the consumers. Handling funds properly is an important task within the WUC. The success or failure of the WUC may depend on whether the funds are handled accurately and
transparently. Although the actual financial recording is usually handled by the treasurer or accounts clerk, the committee members need to know the systems so that they can confirm that the proper systems are being followed. (Tarantino, 2008).

Brikké, (2000) observes that, procurement of goods and services is an important aspect of the life of any organization. Procurement rules ensure that organizations remain transparent and leaders are accountable to members. The WUC procurement sub-committee should comprise at least three persons who should not be members of the monitoring or finance sub-committees to avoid conflict of interest. Procurement is a process which is vulnerable to collusion between the suppliers/contractors and those making the decision. The WUC should take steps to ensure that procurement is done in a way that results in the best value for money for the project and in a way that this is seen to be done. Essentially this means that procurement should be done competitively and publicly.

Financial controls need to be in place regular monitoring done so that the books of accounts are properly kept and the actual cash in hand and in bank corresponds to what is described in the books, actual expenses do not exceed the amount budgeted, actual income corresponds to plans, and actual cash can cover expected expenses.

2.3.2 Operation skills and sustainability of water projects.

Operation refers to the direct access to the system by the user (e.g. operating the hand pump), to the activities of any operational staff (e.g. operators of motorized pumps), and to the rules or by-laws, which may be devised to govern who may access the system, when, and under what conditions. Local technicians and caretakers need to be trained for the proper operation of the
new infrastructure. In this case, on-hands training is desired in order to ensure the fully understanding and the implications of the new system. (Carter, 2009).

According to Brikké and Bredero (2003), community members and committee members need to have a better awareness of the proper operation tasks and be able to link this with the cost of operating and maintaining their systems. Operators or technical staff will be able to undertake the tasks specified in the operation schedule. An operation schedule is based on the understanding that performance is measured by the quality of service being provided. Indicators of performance include frequency of disruptions to supply, length of disruptions to supply, quality of water provided and cost of water production vs. payment charged or paid.

2.3.3 Maintenance skills and sustainability of water projects

Maintenance refers to the technical activities, planned or reactive, which are needed to keep the system working. Maintenance requires skills, tools and spare parts. Castro, 2009 classifies maintenance into preventive, reactive and corrective forms. Preventive maintenance: includes work that is planned and carried out on a regular basis to maintain and keep the infrastructure in good condition, such as network inspection, flushing of the well, cleaning and greasing of mechanical parts and replacement of items with a limited lifespan. It sometimes also includes minor repairs and replacement as dictated by the routine examinations. Corrective maintenance: replacing or repairing something that was done incorrectly or that needs to be changed; an example is the reallocation of a pipe route or replacement of a faulty pump.
Reactive maintenance: a reaction to a crisis or public complaints; it normally occurs as a result of failures and the malfunctioning or breakdown of equipment. In order to ensure the routine maintenance and health of the system, the technician should adhere to a routine check-up. The project manager will need to ensure that the technician is doing his/her job. If done correctly and on a regular schedule, preventive measures can reduce the risk of costly repairs. The key to ensuring effective equipment maintenance is to make certain that responsibilities are clearly defined and maintenance personnel have the tools and skills to do their job effectively. It is also essential to schedule preventive maintenance. (Castro, 2009)

Preventing a problem is also much cheaper than fixing a problem and it keeps the system working. If the objective of the system is to provide a reliable service, then it is unacceptable for the system to break down or stop working. It is better to stop the system briefly for routine maintenance than to wait until it breaks down. The Operation & Maintenance Schedule provides information on WHAT has to be done, BY WHO, and WHEN. A supervisor can then check whether this is being done according to the agreed schedule. (Brikke, 2000)

In 1995 a Participatory Action Research (PAR) project on community management for rural water supply was initiated by IRC together with partner organizations in six countries (Cameroon, Colombia, Guatemala, Kenya, Nepal and Pakistan). Local research teams worked closely with community members in 24 communities to better understand community management and to explore possible improvements.
The essence of this project is to help communities to gain a better understanding of the problems they face and to let them become a key factor in problem-solving. “The knowledge we gain from this ‘research’ is much more valuable than gifts. It is something we keep for life” a villager from Nkoundja, Cameroon mentions. Community members thus become catalysts and in beginning to understand and discuss their problems, they create the space to allow a range of actors to participate and express their views.

A first assessment of the situation in the six countries indicated that, in each country, community management of completed rural water supply systems is the accepted national policy, but implementation is not universal and each agency has its own procedures. Also, none of the governments so far treats communities as future managers in the sense that they can make their own choices from a range of options, each with their own pros and cons. Nor do they train communities for all community management aspects. Training is focused on technical tasks and book-keeping, and is mostly given to men. Another finding was that, experience with existing community managed water supply systems varies. In Cameroon, 438 projects that were built and managed by the community showed a breakdown rate of 9%, whereas many others built without community involvement are no longer operational. Other reports indicate that a number of community managed systems do not function well, partly for technical and ecological reasons, and partly because of poor administration and lack of management training and back-up support. (El-Sadek, 2011).
The study also found out that, a considerable number of community members are not served because of poor water distribution and poor network management. Several of these persons contributed to the construction of the system in cash or kind, but do not obtain the benefits. Although existing systems have technical, managerial and socioeconomic problems, the communities only mention the technical problems.

Another participatory evaluation of 40 community managed water systems in Ecuador revealed that the systems do provide water but are in need of both technical improvements and better management. On the positive side, the above-mentioned PAR project already shows that working in a horizontal way with the communities and helping them to clarify their problems is a very powerful tool for change. Communities in Kenya, for example, were initially timid but are now enthusiastic about the management of the water system, and are undertaking tasks in a transparent way. (El-Sadek, 2011).

An overall picture is emerging that communities are capable of managing their water supply systems, but they need back-up support. The agencies also clearly need support. Strategies and tools for enhancing management capacity in communities are developed and tested in the project, which now offers a flexible support approach, called Participatory Action Development for community management. This approach aims at responding to the concrete needs of communities related to the management tasks and skills in their public services, and at finding solutions to problems and conflicts in the management of rural water supply by communities.
2.3.4 Resource Mobilization/Fundraising in community water projects

Fundraising is the process of soliciting and gathering voluntary contributions of money or other resources, by requesting donations from individuals, businesses, charitable foundations, or governmental agencies. Although fundraising typically refers to efforts to gather money for non-profit organizations, it is sometimes used to refer to the identification and solicitation of investors or other sources of capital for for-profit enterprises. (Maple, 2003)

Traditionally, fundraising consisted mostly of asking for donations on the street or at people's doors, and this is experiencing very strong growth in the form of face-to-face fundraising, but new forms of fundraising such as online fundraising have emerged in recent years, though these are often based on older methods such as grassroots fundraising.

According to Cuthbert (2011) the term ‘fundraising’ is used to describe the process of raising resources (funds). These resources can be human, cash and/or any other material resource offered to your organisation as ‘in-kind’ support. Fundraising is a tool that will help your organisation to create the resources it needs in order to carry out its work and to meet the needs of your community. This means that the fundraising process should start from a clear idea of what resources are needed and why, what are the needs of the community and what plans do you have to address these needs?

2.3.4.1 Fundraising Strategy

A fundraising strategy is described by Refugee council and Refugee Action (2008) as a step by step plan of action that outlines where your organisation is now and where it wants to be in the next one, two or three years, and how it proposes to fund these plans. The fundraising strategy should be based on the organization’s business plan. It should be written primarily to help your
organisation and it is important that everyone in your organisation easily understands it. It is
good practice to repeat what your organisation is there to do, why, when and how much it will
cost. It should then show how you plan to raise the required funds, who is responsible for what,
what funding you already have and for how long.

Funders may also want to see the fundraising strategy to understand the future plans of your
organisation but the strategy is not written just for them. Do not forget that a fundraising strategy
is a working document and can be adjusted as you go along to include new ideas. You might also
have to adjust it due to any changes that might affect your organisation or the timing of a
particular project. Your organisation should aim to update its strategy every year (incorporating
new developments and achievements) and produce a revised strategy every two or three years.
(Refugee council and Refugee Action 2008).

Organizations should make adequate preparations for resource mobilization to be effective and to
ensure they are maximizing all opportunities. According to Kiiru (2010), an organization’s
resource mobilization plan should be tightly integrated with their organizational strategic and
communication plan. If an organization is well-managed and conveys its key messages
effectively to its target audiences, it will be more successful in raising resources, and this, in turn,
will contribute to the organization’s continued growth. Hence, the two strategic plans must go
hand in hand. A resource mobilization plan must follow closely the vision, mission, and goals of
the organization or be aligned with specific objectives for raising those resources. Another
reason why the resource mobilization plan must be closely linked to the strategic plan of an
organization is that the management team must be fully involved in the resource mobilization
planning (Kiiru, 2010).
2.3.4.2 Sources of funds

Resource mobilization is all the means that an organisation should acquire to implement its action plan. It goes beyond fund raising. It entails obtaining various resources from a multitude of partners, by different means. Thus resource mobilization could be seen as a combination between Resources: elements necessary for the running of an organisation. Mechanisms or means which make it possible to obtain resources directly. Partners: persons and/or institutions providing resources (McCarthy & Zald, 2007).

According to Simiyu (2004), the realm of resource mobilization is very competitive especially for the developing countries. There are numerous organizations out there which are competing for funding from a limited number of donors, who regularly receive requests for support. The use of marketing and selling techniques to generate income will need new skills, approaches and comprehensive resource mobilization strategies. Looking for and developing a strong resource mobilization strategy is not an easy task.

Broadening the fundraising base by bringing in other donors and by generating other sources of money can reduce this dependency (Norton, 1996). Developing a plan or strategy for resource mobilization can lead to creative efforts in using local resources to gain support for one’s organization. Multiple sources of funding can increase the organization’s independence and flexibility to implement programs and reduce reliance on external funding (Simiyu, 2004).

Resource mobilization can facilitate the flow of resources from various sources and catalyze the flow of additional resources from official and private institutions. For projects and programs that are too large to be handled by one funding agency, mobilizing co-financing from various funding sources can help meet these large resource requirements. Resources can be in any form such as
finances, technology, manpower both skilled and labour, knowledge, information (Khawaja, 1994). The in-cash resources include financial contributions from communities, grants from local authorities and governments, donations from individuals and bank loans. The in-kind resources comprise of community’s contribution in terms of labour, in kind material donations by community and other donors, such as building material, machinery, and in kind intellectual services such as know-how, monitoring, impact assessments, and space such as office space (Cuthbert, 2011).

2.4 Theoretical Framework

2.4.1 Learning/Behaviour theories of change

A theory is a way of thinking and a model of how things work, how principles are related, and what causes things to work together. This study will be anchored on the behaviour change theory. From behaviorists such as B. F. Skinner comes the learning theories, which state that complex behaviour is learned gradually through the modification of simpler behaviours. Imitation and reinforcement play important roles in these theories, which state that individuals learn by duplicating behaviours they observe in others and that rewards are essential to ensuring the repetition of desirable behaviour. As each simple behaviour is established through imitation and subsequent reinforcement, the complex behaviour develops. When verbal behaviour is established the organism can learn through rule-governed behaviour and thus not all action needs to be contingency shaped. (Skinner, 1974)

In his book About Behaviourism, Skinner (1974) defines behaviorism, also known as behavioral psychology, is a theory of learning based upon the idea that all behaviors are acquired through conditioning. The term behaviorism refers to the school of psychology founded by John B.
Watson based on the belief that behaviors can be measured, trained, and changed. Transformation requires us to work with humans in their social context, respond to their hopes and fears, recognize the role of power, and understand that behaviour sits in a matrix of technologies, infrastructures, institutions, norms and social structures, all of which need to be the open to strategizing and potential modification. Behaviour change is therefore a multi-disciplinary effort. It involves practices and ways of thinking that no one profession can claim expertise in, like organizational change, infrastructure design, observational and social research, regulation, design thinking, social psychology, and communication and marketing.

2.4.2 Participative Leadership

According to this theory developed by Chester Barnard in 1938, involvement in decision making improves understanding of the issues involved by those who carry out decisions. People are more committed to actions where they have been informed in the relevant decision making. People are less competitive and more collaborative when they are working on joint goals.

When people make decisions together, the social commitment to one another is greater and thus increases their commitment to the decision. Several people deciding together make better decisions than one person alone. A participative leader rather than autocratic decision seeks to involve other people in the process. Barnard looked at organizations as systems of cooperation of human activity, and noted that they are typically short-lived. According to Barnard 1938, organizations are not long-lived because they do not meet the two criteria necessary for survival: effectiveness and efficiency. This theory will just be used to enrich the behaviour change theories, unto which the study is anchored.
2.5 Conceptual framework

The conceptual framework diagrammatically describes the relationships and interconnection between the independent and dependent variables. In this study, the framework shall be based on the objectives of the study. Figure 1 below shows the influence human resource capacity building on sustainability of community water projects. It diagrammatically illustrates how the independent variables like leadership, management, operation and maintenance and resource mobilization influence sustainability of community managed water projects.
Figure 1  Conceptual framework

Independent Variables

- Management Training
  - Records management
  - Financial management

- Operation training
  - Skills
  - Service hours

- Maintenance Training
  - Skills
  - Competence

- Resource Mobilization
  - Fundraising Strategy
  - Sources of funds

Moderating Variable

Government Policies

Dependent Variable

- Sustainability of community water projects
  - Effective internal controls like constitution
  - Equity in service provision
  - Efficiency of service delivery
  - Possibility of expansion, replicability and transferability

Intervening Variable

Cultural factors
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodologies which shall be used in the study. It consists of research design, target population, sampling procedure, methods of data collection, validity and reliability of instruments, operational definition of variables and ethical considerations in the study.

3.2 Research Design

A descriptive survey was applied in the study on assessing the influence of training water users committees on sustainability of community water projects. Mugenda and Mugenda (2003) note that, the purpose of a descriptive research is to describe behaviours and characteristics. For the purposes of obtaining adequate and relevant information in a short time, the study shall conduct a survey to collect the data. Best and Khan, (2009) agreed with other scholars who argued that descriptive surveys describes and interprets phenomena and are concerned with conditions or relationships that exists, opinions that are held, processes that are going on, and effects that are evident or trend that are developing.

Isaac and Michael, (1995) say that in order to describe facts and characteristic of a given population or an area of interest, factually and accurately, the best model or design is descriptive research design. Therefore, this study used the design in order to analyse the phenomena of training water user committees in relation to sustainability of community water projects.
3.3 Target Population

The target population was picked from Water User’s Committees in Tseikuru ward, which has 12 locations and several sources of water raging from boreholes, water pans, sand dams, earth dams and rock catchments. Having a total of 15 established Water User Committees with a total membership of 120 committee members, the study targeted to reach all of them in the ward, whether well or poorly established, functional or not. Key informant interviews were also carried targeting government technical staff in the sector and NGO representative, the only NGO in the area working on community water projects.

3.4 Sample size and Sampling Procedure

According to Mugenda and Mugenda, (1999) where there is time and resources, a researcher may take a bigger sample. This means that there would be a higher level of confidence. In this study, we had 15 Water User Committees in place in the target area, comprising of a total of 120 committee members.

The Krejcie and Morgan’s (1970) sample size (s) determination formula for calculating the sample size of a given finite population(p) was used such that, the sample shall be within plus or minus 0.05 of the population proportion with a confidence level of 3.841 as provided and applied below.

\[ s = \frac{X^2 NP (1-P)}{d^2 (N-1)} + X^2 P (1-P) \]

Where:

\[ s = \text{Sample size} \]

\[ X = \text{Value of Chi-square for 1 degree of freedom at the desired confidence level (3.841).} \]
N=Population size, which in this case is the 120 committee members of WUCs.

P= Population (assumed to be 0.50 since this would provide the maximum sample size).

d= the degree of accuracy expressed as a proportion (.05).

Two key informant interviews were also done to capture some key information. The KII targeted one government official and one other stakeholder/partners working in the water sector.

Table 3.1 Sampling Frame Table

<table>
<thead>
<tr>
<th>Category</th>
<th>Population</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Committee Members</td>
<td>120</td>
<td>92</td>
</tr>
<tr>
<td>Technical Staff</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>122</td>
<td>94</td>
</tr>
</tbody>
</table>

3.5 Research instruments

Primary data was collected from the Water User’s Committees using structured questionnaires with both open and closed questions. The questionnaire was administered to the respondents by the researcher with the help of a research assistant. A questionnaire is preferred because of it is a typical method through which descriptive data can be collected (Gay, 1981). Key Informant Interviews were also carried out with County government of Kitui, Ministry of Environment, Water and Natural Resources to help provide a technical view of the issues affecting the target population. Other Key technical staff from development partners in the water sector like NGOs was also interviewed.
3.5.1 Piloting of the instruments

Once the instruments were developed, a pilot test was carried out to check on validity and reliability of the instruments. The pilot test targeted 5 respondents from the neighbouring Kyuso Ward. Once this process was done, the tools were modified to fit the context and preparation for the exercise to commence.

3.5.2 Validity of research instruments

Validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are (Joppe, 2000). In order to ascertain the extent of the research instruments, the researcher conducted a pre-test of 5 respondents from the sample to test the instrument. After the piloting, any ambiguous items were modified and some discarded altogether. Mehrens, et al., (1987) refers face validity to whether the test looks valid “on the face of it.” Content validity was also used to check on word and phrases used in the questionnaire.

3.5.3 Reliability of research instruments

This refers to the extent to which results are consistent over time and an accurate representation of the total population under the study (Joppe, 2000). The test-retest technique of assessing reliability was used to measure reliability with the purpose of improving on the instruments’ reliability. This involved administering the same instrument twice to the same group of five selected subjects from five selected respondents at two separate times and repeated on the same subjects after one week’s interval. A correlation coefficient between the two separate scores was obtained from the first and the second trials and then computed (Best and Kahn, 2005).

This same test re-test formula was also applied to check the reliability of the interview schedules by administering the instrument on one identified respondent and repeating it on the same
respondent after an interval of one week. The respondents in the pilot study were excluded from the actual study.

3.6 Data collection procedure

Before carrying out the research, proper documentation and printing of copies was done early enough. Other materials needed like a letter of introduction and permission from the National Council for Science and Technology and other relevant authorities were sought and shared with the local leaders. Leaders shall were also mobilized based on the dates for the data collection to inform the groups and communities. Letters were also be sent to the selected groups informing them of the time they were to be interviewed.

3.7 Data analysis Techniques

Data analysis involves the organization and interpretation of all the collected data so as to simplify and present it in the best way possible for easy interpretation and understanding. All data collected from the field was first checked for completeness, then categorized and coded to reduce it, and then entered into a computer for fast and accurate analysis using the Statistical Package for Social Sciences (SPSS) (Mugenda and Mugenda, 2003, and Miles and Huberman, 1994).

In this study, the data collected was analyzed using descriptive statistics such as percentages, means scores, mode, and standard deviation. Both qualitative and quantitative data was analyzed and interpreted using descriptive statistics in order to address the research objectives. For the qualitative data, patterns or themes were identified while the quantitative data was easily analyzed as it is captured in terms of numbers. Other data was also be keyed in Statistical
Programme for Social Scientist (SPSS) and its results presented in tables using percentages and frequencies to facilitate comparisons. The inferences were then made from the findings which were be discussed in relation to the literature review and consequently lead to making conclusions and appropriate recommendations from the analyzed data.

3.8 Ethical Issues

Utmost caution was exercised while administering questionnaires and conducting interviews to avoid any mistrust between the respondents and the researcher. Permission was also sought from the respondents to participate with an assurance of confidentiality and anonymity.
### 3.9 Operational definition of variables

#### Table 3.2

<table>
<thead>
<tr>
<th>Objectives of the study</th>
<th>Variables</th>
<th>Indicators</th>
<th>Method of Data collection</th>
<th>Measureme nt scale</th>
<th>Data analysis technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>To establish the extent to which management training influence sustainability of community water projects.</td>
<td>Independent ● Records management ● Financial management</td>
<td>Percentage of members reporting good record keeping practice Percentage of water users reporting to actively participate in making decisions Proportion of members reporting good accountability and transparency of income and expenditure</td>
<td>Questionnaire Key Informant interviews Secondary data</td>
<td>Ordinal</td>
<td>Percentages and Frequencies</td>
</tr>
<tr>
<td>To determine how acquisition of technical operation skills influences on sustainability of community water projects.</td>
<td>Independent ● Skills ● Service</td>
<td>No of trained personnel Service hours</td>
<td>Questionnaire Key Informant interviews</td>
<td>Ratio</td>
<td>Percentages and Frequencies</td>
</tr>
<tr>
<td>To assess the extent to which maintenance training influence sustainability of community water projects.</td>
<td>Independent ● Skills and ● Competence</td>
<td>Proportion trained on maintenance Percentage of repairs made Number of women with technical skills</td>
<td>Questionnaire Key Informant interviews</td>
<td>Ratio</td>
<td>Percentages and Frequencies</td>
</tr>
<tr>
<td>To determine how acquisition of resource mobilization skills impacts on sustainability of water projects.</td>
<td>Independent ● Fundraising strategy ● Sources of funds</td>
<td>Number of proposals raised Number of sources of financing Proportion of committees with a clear fundraising strategy</td>
<td>Questionnaire Key Informant interviews Secondary data</td>
<td>Ordinal Ratio</td>
<td>Percentages and Frequencies</td>
</tr>
<tr>
<td>Sustainability of community water projects</td>
<td>Effective Internal controls like constitution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Equity in service provision</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Efficiency of service delivery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Possibility of expansion, replicability and transferability</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Questionnaire Key Informant interviews

Nominal Ratio

Percentages and Frequencies


CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents data analysis, presentation and interpretation of the study. The data has been presented in tables, pie charts and bar graphs. The responses were analyzed using descriptive statistics.

4.2 Return rate

Out of 92 questionnaires which had been administered to the interviewees, 88 of them were returned for analysis. This translates to 96% percent return rate of the respondents. Overall, the response rate can be considered to have been very high as shown in Table 4.1;

Table 4.1 Return Rate of the Questionnaire

<table>
<thead>
<tr>
<th>Description</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Returned</td>
<td>88</td>
<td>95.7</td>
</tr>
<tr>
<td>Not Returned</td>
<td>4</td>
<td>4.3</td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td>100.0</td>
</tr>
</tbody>
</table>
From the above presentation of results the number of questionnaires not retuned was insignificant and therefore the questionnaires received were suitable for the study.

4.3 Demographic data

This section dealt with the demographic characteristics of the respondents. This was meant to provide the basis of understanding the composition of the respondents and to determine their ages, gender and education levels.

4.3.1 Distribution of the respondents by Gender

The study found it paramount to determine the respondents’ gender in order to ascertain whether there was gender parity in the positions indicated by the respondents. Majority of the respondents (77.3%) were male while (22.7%) were female as shown in Table 4.2.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>68</td>
<td>77.3</td>
</tr>
<tr>
<td>Female</td>
<td>20</td>
<td>22.7</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4.2 Distribution of the respondents by Gender
4.3.2 Distribution of respondents by age

The study sought to find out age brackets of the respondents so as to know which bracket are the majority in the committees are: The results are shown in the Table 4.3:

Table 4.3  Distribution of the respondents by age

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 25 years</td>
<td>2</td>
<td>2.3%</td>
</tr>
<tr>
<td>25-35 years</td>
<td>12</td>
<td>13.6%</td>
</tr>
<tr>
<td>36-45 years</td>
<td>30</td>
<td>34.1%</td>
</tr>
<tr>
<td>Over 45 years</td>
<td>44</td>
<td>50%</td>
</tr>
<tr>
<td>Total</td>
<td><strong>88</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

From Table 4.3, majority of the respondents who participated in the study represented by 50% were over 45 years of age, 36-45 years (34.1%), and 25-35 years (13.6%). The table further reveals that, only 2.3% were below 25 years of age.

4.3.3 Distribution of respondents by education level

The study sought to find out the highest education level of the respondent. The results are shown in Table 4.4.
Table 4.4  Highest level of education

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>71</td>
<td>80.7</td>
</tr>
<tr>
<td>Secondary</td>
<td>14</td>
<td>15.9</td>
</tr>
<tr>
<td>Diploma</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Graduate</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>None</td>
<td>3</td>
<td>3.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 4.4 reveals that, 80.7% of the respondents had attained primary level as their highest level of education. Respondents with secondary education were 15.9% while those who have never gone to school were 3.4%.

4.4 Management skills and practice

The first objective of the study was to determine how acquisition management skills influenced sustainability of community water projects. Here, decision making, inclusion of women, audit, financial management and record keeping skills are presented.

4.4.1 Decision making

The study also sought to find out who are the main decision makers in the management of community water projects and the findings were as represented in Table 4.5.
Table 4.5  Main decision makers in projects

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government officials</td>
<td>11</td>
<td>12.5</td>
</tr>
<tr>
<td>Water committees</td>
<td>47</td>
<td>53.4</td>
</tr>
<tr>
<td>Community members</td>
<td>17</td>
<td>19.3</td>
</tr>
<tr>
<td>NGOs</td>
<td>13</td>
<td>14.8</td>
</tr>
<tr>
<td>Others</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>88</td>
<td>100</td>
</tr>
</tbody>
</table>

From the above table, water committees were the main decision makers with 53.4% of the respondents in agreement. Community members, NGOs and Government officials followed with 19.3%, 14.8% and 12.5% respectively.

4.4.1.1 Inclusion of women in decision making

Respondents were also required to rate their opinions on the importance of women in decision making and analysis of the results indicated the following.
Table 4.6  Importance of women in decision making in water projects

<table>
<thead>
<tr>
<th>Description</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not important</td>
<td>34</td>
<td>38.6</td>
</tr>
<tr>
<td>Somewhat important</td>
<td>18</td>
<td>20.5</td>
</tr>
<tr>
<td>Important</td>
<td>32</td>
<td>36.4</td>
</tr>
<tr>
<td>Very important</td>
<td>4</td>
<td>4.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

From the responses in Table 4.6, 34 respondents (38.6%) agreed that, decisions made by women are not important at all while 20.5% believed women decisions are somewhat important. However, 36.4% of the respondents said women decisions were important, while 4.5% believed they are very important.

4.4.2 Acquisition of financial management skills

The study sought to assess if the respondents had acquired any financial management training in last two years. The responses were as shown below:

Table 4.7  Acquisition of financial management skills

<table>
<thead>
<tr>
<th>Description</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trained</td>
<td>48</td>
<td>54.5</td>
</tr>
<tr>
<td>Not trained</td>
<td>40</td>
<td>45.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Table 4.7 above indicates that, 54.50% of the respondents had received financial management skills within the preceding period of two years. From the responses given, the respondents were mainly trained on book keeping, pricing, accounting and procurement. The other 45.40% had not been trained.

4.4.3 Records keeping and sharing

On records keeping and sharing, the study looked at the different methods used to share project progress records with the other community members. The findings were the tabulated as follows:

Table 4.8 Methods use to share project reports

<table>
<thead>
<tr>
<th>Description</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community meetings</td>
<td>82</td>
<td>93.1</td>
</tr>
<tr>
<td>Notices/letters</td>
<td>6</td>
<td>6.9</td>
</tr>
<tr>
<td>Mobile phones/Internet</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Not informed</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Others</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

| Total                 | 88        | 100        |

As shown in Table 4.8, 82 respondents (93.1%) reported that, community meetings are the channels mostly used by the groups to share project progress records. The remaining 6.9% of the respondents mentioned notices and letters.
4.4.4 Audit of operations and records

The study also looked whether the practice of auditing project operations was being done in the target area and the results were as below:

<table>
<thead>
<tr>
<th>Description</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audited</td>
<td>24</td>
<td>27.3</td>
</tr>
<tr>
<td>Not Audited</td>
<td>64</td>
<td>72.7</td>
</tr>
</tbody>
</table>

Table 4.9 indicates that, only 27.5% of the respondents reported that their water projects were audited. The remaining 72.5% were do not practice audit as a management practice. Most of those who conducted audit mentioned government and NGOs as their auditors.

4.5 Operations and Maintenance

The second and the third objective of the study looked at these two related but different concepts. In this section, the study looked at how community water projects are run and maintained.

4.5.1 Operation of project machines and equipment

Questions were posed to the respondents on who operates water projects in the community and the findings were presented in the Table 4.10.
Table 4.10  Operators of project machines and equipment

<table>
<thead>
<tr>
<th>Description</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trained technicians</td>
<td>9</td>
<td>10.2</td>
</tr>
<tr>
<td>Untrained technicians</td>
<td>22</td>
<td>25</td>
</tr>
<tr>
<td>Untrained water committees</td>
<td>51</td>
<td>58</td>
</tr>
<tr>
<td>Trained water committees</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td>Others</td>
<td>4</td>
<td>4.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

When questioned on who operates project machines, 58% of the respondents indicated untrained water committees, while untrained technicians, trained technicians and trained water committees had 25%, 10.2% and 2.3% respectively. Other respondents (4.5%) reported hired casuals and group members as people who operate project machines.

4.5.2  Servicing of project machines and equipment

The study also sought to find out on who services and does maintenance of project machines and equipment and responses were also tabulated as follows:
Table 4.11  Maintenance of project machines and equipment

<table>
<thead>
<tr>
<th>Description</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trained technicians</td>
<td>9</td>
<td>10.2</td>
</tr>
<tr>
<td>Untrained technicians</td>
<td>18</td>
<td>20.5</td>
</tr>
<tr>
<td>Untrained water committees</td>
<td>45</td>
<td>51.1</td>
</tr>
<tr>
<td>Trained water committees</td>
<td>6</td>
<td>6.8</td>
</tr>
<tr>
<td>Others</td>
<td>10</td>
<td>11.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

As indicated in Table 4.11, 51.1% of the respondents reported that maintenance of project machines and equipment is done by untrained water committees, while untrained technicians, trained technicians and trained water committees had 20.5%, 10.2% and 6.8% respectively. However 11.4% reported others like community members, government officials and NGOs.

4.5.3  Challenges encountered in operations and maintenance

On the rating of the challenges encountered in operations and maintenance, the respondents gave the responses tabulated in Table 4.12.
Table 4.12  Challenges encountered in operations and maintenance

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of personnel to be trained</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Inadequate tools and equipment</td>
<td>43</td>
<td>48.9</td>
</tr>
<tr>
<td>Inadequate skills to undertake the work</td>
<td>29</td>
<td>33</td>
</tr>
<tr>
<td>Lack of money for service and repairs</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

From Table 4.12, 48.9% of the respondents mentioned inadequate tools and equipment as one of the major challenges they faced as a group while 33% mentioned inadequate skills to undertake work. Lack of money for service and repairs and other challenges like low community participation carried 16% and 2.3% respectively.

4.6  Resource mobilization

The fourth objective of the study was to establish if acquisition of resource mobilization skills influenced in any way the sustainability of community water projects.

4.6.1 Training on resource mobilization

The study sought to identify if the respondents had received any training on resource mobilization and fundraising strategies. The responses obtained were as follows:
Table 4.13  Respondents trained on resource mobilization

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trained</td>
<td>16</td>
<td>18.2</td>
</tr>
<tr>
<td>Not Trained</td>
<td>72</td>
<td>81.8</td>
</tr>
<tr>
<td>Total</td>
<td>88</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4.13 indicates that, only 18.2% of the respondents had been trained on resource mobilization strategies while the other 81.8% had never received any training on resource mobilization.

4.6.2 Fundraising strategies used

On the fundraising strategies used by the group under study, the responses were tabulated as follows:

Table 4.14  Fundraising strategies used

<table>
<thead>
<tr>
<th>Description</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members’ contributions</td>
<td>6</td>
<td>6.8</td>
</tr>
<tr>
<td>Raising proposals</td>
<td>11</td>
<td>12.5</td>
</tr>
<tr>
<td>Growth of revenue/income from sales</td>
<td>62</td>
<td>70.4</td>
</tr>
<tr>
<td>Borrowing from financial institutions</td>
<td>7</td>
<td>8.0</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td>Total</td>
<td>88</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 4.14 indicates that majority of the respondents, 70.4%, identified income from sales as their main source of funds to run their project while 12.5% mentioned writing proposals to potential donors for support. Borrowing and members contributions had 8% and 6.8% respectively. Other respondents (2.3%) mentioned donations as their sources of project funds.

4.7 sustainability of community water projects

The study also sought to measure the how sustainable the projects were using a few indicators to measure the composition, water quality, access and affordability as well as the challenges encountered.

4.7.1 Project membership

With an aim of assessing equity in service provision, respondents were asked on who forms the project membership and the responses were tabulated as follows:

Table 4.15 Project membership

<table>
<thead>
<tr>
<th>Description</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>All community members</td>
<td>9</td>
<td>10.2</td>
</tr>
<tr>
<td>Some community members</td>
<td>79</td>
<td>89.8</td>
</tr>
<tr>
<td>Everybody who can access the water point</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
Table 4.15 reveals that, 89.8% of the respondents agree that, the membership of their water projects are just a group of some community members while 10.2% believed the project membership came from the entire community.

4.7.2 Access to water

The respondents were also asked to estimate the average number of hours water services are offered to the clients on a single day and the responses were as follows:

Table 4.16 Access to water services

<table>
<thead>
<tr>
<th>Description</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2 hours</td>
<td>28</td>
<td>31.8</td>
</tr>
<tr>
<td>2-4 hours</td>
<td>51</td>
<td>58</td>
</tr>
<tr>
<td>4-6 hours</td>
<td>9</td>
<td>10.2</td>
</tr>
<tr>
<td>Any time during the day</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

As shown in Table 4.16, 58% of the respondents indicated that water is accessible for 2-4 hours on a single day while 31.8% mentioned less than 2 hours a day. Other responses from 10.2% of the respondents went for 4-6 hours, as the period when people access water from their projects in a single day.

4.7.3 Water affordability

On water affordability, the study sought to establish whether according to the respondents, the services offered were affordable. The responses were as follows:
Table 4.17  Affordability of water services

<table>
<thead>
<tr>
<th>Rating</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Expensive</td>
<td>16</td>
<td>18.1</td>
</tr>
<tr>
<td>Expensive</td>
<td>54</td>
<td>61.4</td>
</tr>
<tr>
<td>Normal</td>
<td>13</td>
<td>14.8</td>
</tr>
<tr>
<td>Not expensive</td>
<td>5</td>
<td>5.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Table 4.17 indicates 61.4% of the respondents reporting that the water prices charged to the clients are expensive with 18.1% indicating very expensive. However, other respondents believe the charges were normal (14.8%) and not expensive (5.7%).

4.7.4 Possibility of expansion

The study also sought to find out the possibility of expansion of the existing water projects and the responses were as below:

Table 4.18  Existing plans for expansion

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>51</td>
<td>57.9</td>
</tr>
<tr>
<td>No</td>
<td>37</td>
<td>42.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
As represented in Table 4.18, 57.9% of the respondents indicated that their projects had plans in place for project expansion while the rest (42.1%) had no project expansion plans in place.

4.7.5 Challenges faced in project management

The study also sought some responses on the challenges encountered in managing their community project and the shared challenges were tabulated as below:

Table 4.19   Challenges faced by WUCs

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mismanagement</td>
<td>11</td>
<td>12.5</td>
</tr>
<tr>
<td>Corruption</td>
<td>17</td>
<td>19.3</td>
</tr>
<tr>
<td>Poor infrastructure</td>
<td>46</td>
<td>52.2</td>
</tr>
<tr>
<td>Pricing</td>
<td>10</td>
<td>11.4</td>
</tr>
<tr>
<td>Water regulations</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Table 4.19 indicates that, 52.2% of the respondents view poor infrastructure as their main challenge while 19.3% mentioned corruption. Mismanagement, pricing and water regulations had 12.5%, 11.4% and 2.3% respectively. Other challenges like low government support and insecurity took 2.3%.
4.8 Discussion of the findings

This section gives a detailed discussion of the findings from this study.

4.8.1 Acquisition of management skills

Management of water projects remains critical for its operationalization as well as continuity of the project. According to Tortajada (2001), there is an urgent need to develop better educated managers and water professionals, both in terms of numbers and skills. Most projects that are managed well outlive their functions. Haysom, (2006) reported that management of water projects encompasses among other critical elements, participation that is viewed as a tool for improving the efficiency of a project.

It is also seen as a fundamental right that beneficiaries should have a say about interventions that affect their lives. From the findings, water committees were the main decision makers with 53.4% of the respondents in agreement. In addition, 34 respondents (38.6%) agreed that, decisions made by women were not important at all while 20.5% believed women decisions were somewhat important. Gender issues in particular are crucial for the success of water supply and sanitation programmes; therefore gender perspectives infiltrate all the sections. The real needs and potential contributions of disadvantaged groups and presently unserved populations must be reflected in programme planning, through an appropriate institutional framework. (DFID, 1998).

4.8.2 Influence of technical operation skills on sustainability

According to Brikké and Bredero (2003), community members and committee members need to have a better awareness of the proper operation tasks and be able to link this with the cost of operating and maintaining their systems.
58% of the respondents indicated untrained water committees, while untrained technicians, trained technicians took 25%. This means that, 83% of the respondents reported that, operations of the projects machines is done by untrained technicians, which is very alarming. Local technicians and caretakers need to be trained for the proper operation of any new infrastructure. In this case, on-hands training is desired in order to ensure the fully understanding and the implications of the new system. (Carter, 2009).

4.8.3 Influence of acquisition of maintenance skills on sustainability

The key to ensuring effective equipment maintenance is to make certain that responsibilities are clearly defined and maintenance personnel have the tools and skills to do their job effectively. It is also essential to schedule preventive maintenance. (Castro, 2009). From the study, 51.1% of the respondents reported that, maintenance of project machines and equipment is done by untrained water committees, while untrained technicians took 20.5%. In addition, 48.9% of the respondents mentioned inadequate tools and equipment as one of the major challenges they faced as a group while 33% mentioned inadequate skills to undertake work.

In Cameroon, 438 projects that were built and managed by the community showed a breakdown rate of 9%, whereas many others built without community involvement are no longer operational. Other reports indicate that a number of community managed systems do not function well, partly for technical and ecological reasons, and partly because of poor administration and lack of management training and back-up support. (El-Sadek, 2011).
4.8.4 Acquisition of resource mobilization skills

Broadening the fundraising base by bringing in other donors and by generating other sources of money can reduce this dependency (Norton, 1996). Multiple sources of funding can increase the organization’s independence and flexibility to implement programs and reduce reliance on external funding (Simiyu, 2004). From the findings, only 18.8% of the respondents had been trained on resource mobilization strategies while the other 81.2% had never received such training. Majority of the respondents, 70.4%, identified income from sales as their main source of funds to run their project while 12.5% mentioned writing proposals to potential donors for support.
CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction
This chapter presents summary of the findings, discussion, conclusions reached and recommendations following the objective of the study. The study sought to investigate the influence of training on sustainability of community water projects focusing on acquisition and application of management skills, operation and maintenance skills and resource mobilization.

5.2 Summary of findings
Relying on the responses given by the respondents, the researcher came up with findings which were used to make conclusions and give recommendations. The main findings as based on the result on data analysis in chapter four are given in Table 5.1 below:

Table 5.1: Summary of findings

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Majority of the respondents (77.3%) were males while (22.7%) were females</td>
</tr>
<tr>
<td>Age</td>
<td>A large number of the respondents who participated in the study represented by 50% were over 45 years of age, 36-45 years (34.1%), and 25-35 years (13.6%). Only 2.3% were below 25 years of age.</td>
</tr>
</tbody>
</table>
### Education level

80.7% of the respondents had attained primary level as their highest level of education. Respondents with secondary education were 15.9% while those who have never gone to school were 3.4%.

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Findings</th>
</tr>
</thead>
</table>
| To establish the extent to which management training influence sustainability of community water projects. | - Water committees were the main decision makers with 53.4% of the respondents in agreement.  
- 34 respondents (38.6%) agreed that, decisions made by women are not important at all while 20.5% believed women decisions are somewhat important. However, 36.4% of the respondents said women decisions were important, while 4.5% believed they are very important.  
- 54.50% of the respondents had received financial management skills within the preceding period of two years. From the responses given, the respondents were mainly trained on book keeping, pricing, accounting and procurement. The other 45.40% had not been trained.  
- 82 respondents (93.1%) reported that, community... |
meetings are the channels mostly used by the groups to share project progress records. The remaining 6.9% of the respondents mentioned notices and letters.

- Only 27.5% of the respondents reported that their water projects were audited. The remaining 72.5% were do not practice audit as a management practice. Most of those who conducted audit mentioned government and NGOs as their auditors.

To determine how acquisition of technical operation skills influences on sustainability of community water projects.

- 58% of the respondents indicated untrained water committees, while untrained technicians, trained technicians and trained water committees carried 25%, 10.2% and 2.3% respectively.

- Other respondents (4.5%) reported hired casuals and group members as people who operate project machines.

- Machine operators were reported to keep changing as many move out to look for other better paying jobs while others are sacked to mismanagement.

To assess the extent to which maintenance training influence sustainability of community water projects.

- 51.1% of the respondents reported that that, maintenance of project machines and equipment is done by untrained water committees, while untrained technicians, trained technicians and
trained water committees had 20.5%, 10.2% and 6.8% respectively. However 11.4% reported others like community members, government officials and NGOs.

- 48.9% of the respondents mentioned inadequate tools and equipment as one of the major challenges they faced as a group while 33% mentioned inadequate skills to undertake work.
- Lack of money for service and repairs and other challenges like low community participation carried 16% and 2.3% respectively.
- Frequent breakdown of pumps and pipelines was a common challenge to all water projects.

| To determine how acquisition of resource mobilization skills influence sustainability of community water projects. | • Only 18.8% of the respondents had been trained on resource mobilization strategies while the other 81.2% had never received such training.
• Majority of the respondents, 70.4%, identified income from sales as their main source of funds to run their project while 12.5% mentioned writing proposals to potential donors for support.
• Borrowing and members contributions had 8% and 6.8% respectively. Other respondents (2.3%) mentioned donations as their sources of project funds. |
5.4 Conclusion

The following conclusions were made from the findings of this study.

From the demographic characteristics of the study, Water committees seem to be dominated by men though to some minimal extend women are also elected but to junior positions. In addition to this, their highest education level is largely primary and secondary, thereby limiting their level of specialization on project management and other areas. From the characteristics above, it can be concluded that the capacity and performance of the water management committees is limited and this hinders sustainability of water projects.

Acquisition of effective management skills especially in the fields of finance and records management highly influences the extent to which the foundations of sustainability are created and maintained. Poor management happens to be of the key problems affecting the water management committees and majority do not even have expansion plans in place to enable their projects to grow.

Training of community members especially those responsible for operation and maintenance of water projects influences sustainability of water projects. Trained operators are more efficient while operating the water structures this minimizes any breakdowns during maintenance or operation. In cases of breakdowns, availability of trained community members on maintenance ensures that maintenance are done more promptly and cheaply as opposed to when community members have to depend on hired skilled labor. Skills in resource mobilization are also key in any water management project to help diversify the sources of funding and enable the project grow.
5.5 Recommendations

Based on the conclusions of this study, the following recommendations were made.

1. There is need to train water committees on proper management of water in the community. The community members also need to be sensitized on the need to put their water project committees to task over cases of corruption and cartels. This could be done through government efforts of strengthening water Users Associations through implementation of the Water Act 2002.

2. Ministry of Environment, Water and Natural Resources and other partners need to put measures in place to train community members and committees on effective operations and maintenance of water projects this will reduce challenges faced by communities.

3. The right to water provides basis for individuals and groups to hold states and other actors to account. Communities can use the right in lobbying the state for water services or to be allowed permission to manage their own water programmes without arbitrary interference from the state or demands for bribes.
5.6 Suggestions for further research

The following areas are suggested for further research:

1. The researcher proposes the need to carry out further research on the level other factors that have not been studied here like cultural factors and also the level of project financing should be investigated.

2. From the findings above, there is also to investigate the possible livelihoods that can be initiated around the water projects from which community members can raise income for maintenance of water projects.
REFERENCES


Brikké, F. 2000 *Operation and Maintenance of rural water supply and sanitation systems: A training package for managers and planners*. WHO, Geneva, Switzerland


DFID, 1998. Guidance manual on water supply and sanitation programmes, WEDC, UK


UN, (2000) *We the peoples: The role of UN in the 21st Century*. New York, USA


APPENDICES

APPENDIX 1  LETTER OF TRANSMITTAL

Kivuva Bernard
P.O. Box 390, Mwingi
Tel: 0724415056
kivuvabk@gmail.com

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

I am a student at the University of Nairobi and I am carrying out a research study as requirement for the award of Master of Arts Degree in Project planning and Management.

I am conducting a survey with the sole purpose of gathering information on “The influence of training of water user committees on sustainability of community water projects in Tseikuru ward, Kitui county”. You have been selected to assist in providing the required information as your views and ideas are considered important to this study.

I am therefore kindly requesting you to fill this questionnaire. The information and data required is needed solely for academic purposes and will be treated with a very high degree of confidentiality.

Your cooperation will be highly appreciated

Thank you.

Yours faithfully

Kivuva Bernard
APPENDIX 2 QUESTIONNAIRE FOR COMMITTEE MEMBERS

Instruction: Please tick appropriately.

Section A Demographic Data

1. Please indicate your gender
   a. Male [ ]  b. Female [ ]

2. Kindly indicate your age?
   a. Below 25 years [ ]  b. 25-35 years [ ]
   c. 36-45 years [ ]  d. Over 45 years [ ]

3. What is your highest level of education
   a. Primary [ ]  b. Secondary [ ]
   c. Diploma [ ]  d. Graduate [ ]  e. Not schooled [ ]

4. What is the name of your project?
   ..........................................................................................................................

5. Which year was the project established?.........................................................

6. How many years have you been a member of the management committee?
   ..........................................................................................................................

7. Which position(s) have you held so far?.................................................................

8. How many members comprise your Water Management Committee?..............

Section B Management training

9. Who manages the water?
   a. Water committee [ ]  b. NGOs [ ]  c. Government [ ]
   d. Church [ ]  e. Village committee [ ]
10. Who mainly constitutes the management of the water?
   a. Both men and women [ ]
   b. Men only [ ]
   c. More men and few women [ ]
   d. More women and few men [ ]
   e. Others…………………………

11. For how long are committee members supposed to hold office?
   a. Less than one year
   b. 1 – 2 years
   c. 2-3 years
   d. Above 3 years

12. Who are the main decision makers in your water project?
   a. Government officials [ ]
   b. Local administration [ ]
   c. Community members [ ]
   d. Water committees [ ]
   e. Youth [ ]
   f. Others…………………………

13. How do you rate decision making of women in water projects?
   a. Not important [ ]
   b. Somewhat important [ ]
   c. Important [ ]
   d. Very Important [ ]

14. What can you say about the management capacity of water services by water committees……………………………………………………………………………………………………
……………………………………………………………………………………………………
…………………………………………………………………………………………………….

15. How are the local communities informed on the income accrued on water services and expenditure
   a. Through community meetings
   b. By notices or letters
   c. Through mobile phones/internet
   d. Not informed
16. Have you received any financial management training in the last two years?

Yes [ ]  No [ ]

Kindly list some of the areas you were trained on

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

17. In your own opinion, what are the qualities of a good management team?

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

18. What can you say are the benefits of water services management under community management systems

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

19. Who keeps records for the group? (Tick one)

   a) Chairman   [ ]
   b) Treasurer   [ ]
   c) Secretary   [ ]
   d) Other (Specify) .................................................................

20. How frequently are group records shared and discussed with other group members

   a) Through community meetings
   b) By notices or letters
   c) Through mobile phones/internet
   d) Not informed
   e) Others .................................................................

21. Are the operations of the group audited?

   Yes [ ]  No [ ]

22. If yes, by who?

   a) The management committee
b) Community members  
c) Other partners like government and NGOs  
d) External auditor hired by the group  
e) Not audited  
f) Others…………………………………

23. How frequent is the audit done?  
a) Annually  
b) Every two years  
c) Twice a year  
d) Not done  
e) Others…………………………………

Section C  Operation and Maintenance of the project

24. How many water projects are managed by your group?  
a) One project  
b) Two projects  
c) Over three projects  

25. What is the estimated number of Households reached by the project(s)  
a) Less than 50  
b) 50 – 100 Households  
c) 100 – 200 Households  
d) Over 200 Households  

26. Who operates the water projects in your community?  
a. Trained technicians [ ]  
b. Untrained technicians [ ]  

c. Untrained water committee members [ ]  
d. Trained water committee members [ ]  

e. Others…………………………………

27. In your own estimation, what percentage comprises women technicians/operators?  
a) None
b) Less than 10%
c) 10% - 30%
d) 30% - 50%
e) Over 50%

28. When systems or machines breakdown, who repairs them?
   a) Trained technicians hired by the group
   b) Untrained technicians
   c) Trained committee members
   d) Untrained committee members
   e) Others

29. Who services and maintains water equipment or machines?
   a) Trained technicians hired by the group
   b) Untrained technicians
   c) Trained committee members
   d) Untrained committee members
   e) Others

30. Do you have tools to undertake repair or maintenance works?
   Yes [ ]
   No [ ]

31. How much does it cost a 20 litre container?
   a. Kshs 2 [ ]
   b. Kshs 3 [ ]
   c. Kshs 4 [ ]
   d. Kshs 5 [ ]
   e. Kshs 10 [ ]
   f. Kshs 20 [ ]
   g. > Kshs 20 [ ]

32. How do you rate affordability of water sources in your community?
   a. Very expensive [ ]
   b. Expensive [ ]
   c. Normal [ ]
   d. Not expensive [ ]

33. What makes water expensive, if this is the case?
   a. Middle men [ ]
   b. Expensive operation [ ]
   c. Not Applicable [ ]
34. How do you rate the quality of the water you use?
   a. Potable and safe [ ]
   b. Moderately safe [ ]
   c. Fair quality [ ]
   d. Poor Quality [ ]

35. What can you say about general water supply and demand in the area?

36. What are the main operation and maintenance challenges facing you as a group?
   a) Lack of personnel to be trained
   b) Inadequate tools and equipment
   c) Inadequate skills to undertake the work
   d) Lack of money for service and repairs
   e) Others…………………………………………………………………………….

Section D Resource Mobilization

37. Have you been trained on resource mobilization in the past two years?
   Yes (     )
   No (     )

38. How do you maintain existing water pipelines and other sources?
   a. Seek for financial support [ ]
   b. Involve community [ ]
   c. Hire casuals [ ]
   d. Leave it to waste [ ]

39. Does your group employ adequate resource mobilization strategies?
   Yes (     )
   No (     )

40. If yes, what strategies do you use?(you can choose more than one)
   a) Members contributions
   b) Raising proposals
   c) Growth of revenue/income from sales
   d) Borrowing from financial institutions
41. Do you have a fundraising strategy in place?

Yes ( )  No ( )

If yes, describe it briefly.

Section E  Sustainability

42. Who forms the membership of the group?
   a) All community members
   b) Some community members
   c) Every body who can access the water point
   d) Others…………………………………………………………………………

43. Do you have any membership charges?
   a. Yes [ ]  b. NO [ ]

44. Is the water restricted to group members only?
   a. Yes [ ]  b. NO [ ]
   If yes, explain why…………………………………………………………………………

45. How many hours can people access water services in a day?
   a) Less than 2 hours
   b) 2-4 hours
   c) 4-6 hours
   d) Any time during the day
   e) Other……………………………………………………………………

46. Since the project started, what can you say about its growth?
   …………………………………………………………………………………

47. Are there plans to further expand this water source?
   a. Yes [ ]  b. NO [ ]

48. Are water projects faced by problems
49. What are some of the challenges facing water projects? Select more than one.

a. Mismanagement [ ]

b. Corruption [ ]

c. Dilapidated infrastructure [ ]

d. Pricing [ ]

e. Water Regulations

f. Others [ ]

50. In your own opinion, how can these problems be solved?

51. Comment on what should be done to achieve sustainability of water schemes under community managed systems.
APPENDIX 3  INTERVIEW GUIDE FOR TECHNICAL GOVERNMENT AND NGO STAFF

1. What are the main sources of water in Tseikuru?
2. In your own words, how is the quality of water for drinking in the sub-county?
3. How do you rate water pricing in in the sub-county?
4. Who manages water in the area?
5. Who finances establishment, expansion and maintenance of water resources in the area?
6. How are women involved in water projects?
7. Explain the approach used in implementing water related projects in the area?
8. What can you say about management capacity of water committees in the area?
9. What can you say about community participation in establishment and management of water projects?
10. Explain your participation or support to community water projects, if any
11. How are operation and maintenance activities done?
12. Is school attendance affected by water scarcity? And How?
13. What are some of the challenges faced by water projects in the sub-county?
14. What can you say about transparency and accountability of income accrued from water sources and expenditures?
15. How is sustainability of community water projects?
16. What are your strategies to ensure long term sustainability of water projects?
## APPENDIX 4  KREJCIE AND MORGAN TABLE

### Table for Determining Sample Size for a Given Population

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<th>N</th>
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**Note:**

"N" is population size

"S" is sample size.

**Source:** Krajcie & Morgan, 1970
APPENDIX 5
NACOSTI RESEARCH CLEARANCE PERMIT

CONDITIONS:
1. You must report to the County Commissioner and
the County Education Officer of the area before
embarking on your research. Failure to do so
may lead to the cancellation of your permit.
2. Government Officers will not be interviewed
without prior appointment.
3. No questionnaire will be used unless it has been
approved.
4. Excavation, filming and collection of biological
specimens are subject to further permission from
the relevant Government Ministries.
5. You are required to submit at least two (2) hard
and one (1) soft copy of your final report.
6. The Government of Kenya reserves the right to
modify the conditions of this permit including
its cancellation without notice.

THIS IS TO CERTIFY THAT:
MR. BERNARD KITHOKA KIVUVA
of UNIVERSITY OF NAIROBI, 0-90400
Mwini, has been permitted to conduct
research in Kitui County
on the topic: THE INFLUENCE OF
TRAINING WATER USERS COMMITTEES
ON SUSTAINABILITY OF COMMUNITY
WATER PROJECTS IN TSEIKURU WARD,
KITUI COUNTY, KENYA
for the period ending:
31st August, 2014

Applicant's
Signature

Date of Issue: 4th June, 2014
Fee Received: Ksh 1,000

Secretary
National Commission for Science,
Technology & Innovation

Permit No: NACOSTI/P/14/6777/1855

Republic of Kenya
National Commission for Science,
Technology and Innovation

Serial No. A 1846

CONDITIONS: see back page
APPENDIX 6  NACOSTI RESEARCH AUTHORIZATION LETTER

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacost.go.ke
Website: www.nacost.go.ke
When replying please quote

Ref: No.

4th June, 2014

NACOSTI/P/14/6777/1855

Bernard Kithoka Kivuva
University of Nairobi
P.O.Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “The influence of training water users committees on sustainability of Community Water Projects in Tseikuru Ward, Kitui County, Kenya,” I am pleased to inform you that you have been authorized to undertake research in Kitui County for a period ending 31st August, 2014.

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

On completion of the research, you are expected to submit two hard copies and one soft copy in pdf of the research report/thesis to our office.


Said Hussein
For: Secretary/CEO

Copy to:

The County Commissioner
The County Director of Education
Kitui County.