COMMUNITY PARTICIPATION FOR SUSTAINABILITY OF RURAL WATER SCHEMES: A CASE OF CHAMAVITA WATER SCHEMES IN LUSHOTO DISTRICT

By

Mdendemi, Patience Placid

A Dissertation Submitted in Partial Fulfillment of the requirements for the Degree of Master of Science in Environmental Management (MSc. EM) of Mzumbe University

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CERTIFICATION

We, the undersigned, certify that we have read and hereby recommend for acceptance by the Mzumbe University, a dissertation entitled **Community Participation for Sustainability of Rural Water Schemes. A Case of CHAMAVITA Water Schemes in Lushoto District,** in partial fulfilment of the requirements for award of the degree of Master of Science in Environmental Management (MSc. EM) of Mzumbe University.

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I, **Patience Placid Mdendemi,** declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

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ABBREVIATIONS

AfDB	Africa Development Bank
AIDS	Acquired Immune Deficiency Syndrome
AusAID	Australia Aid
CBO	Community Based Organisation
CHAMAVITA	*Chama cha Maendeleo Vijijini Tanga*
DC	District Council
DFID	Department for International Development
DWE	District Water Engineer
e	Level of precision
FAO	Food and Agricultural Organisation
GoT	Government of Tanzania
GWA	Gender and Water Alliance
H/H	Household
HIV	Human Immune Virus
IDA	International Development Association
IMF	International Monetary Fund
ISS	Institute for Social Studies
LGRP	Local Government Reform Program
MASAF	Malawi Social Action Fund
MDGs	Millennium Development Goals
MKUKUTA	*Mkakati wa Kukuza Uchumi na Kupunguza Umaskini*
n	Sample size
N	The population size
NAWAPO	National Water Policy
NGOs	Non Governmental Organisations
NRWSSP	National Rural Water Supply and Sanitation Program
NSGRP	National Strategy for Growth and Reduction of Poverty
O & M	Operation and Maintenance
PHAST	Participatory Hygiene and Sanitation Transformation
PRA	Participatory Rural Appraisal

PRSP	Poverty Reduction Strategy Paper
RP	Research Paper
RUA	Rural Appraisal
RWS	Rural Water Supply
RWSSI	Rural Water Supply and Sanitation Initiative
SAPs	Structural Adjustment Programs
SDIA	Supply Driven Implementation Approach
SPSS	Statistical Package for Social Science
TANGO	Tanzania Association of Non-Governmental Organizations
TASAF	Tanzania Social Action Fund
TC	Town Council
Tshs.	Tanzanian shillings
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNESCO	United Nations Education and Scientific Organisation
UNICEF	United Nations Children's Fund
URT	United Republic of Tanzania
USAID	United States Agency for International Development
VC	Village Council
VWC	Village Water Committees
VWF	Village Water Funds
WASH	Water, Sanitation and Hygiene
WB	World Bank
WC	Water Committee
WDC	Ward Development Committee
WEDC	Water Engineering and Development Centre
WHO	World Health Organisation
WSDP	Water Sector Development Program
WUA	Water Users Associations
WUG	Water Users Groups
WWAP	World Water Assessment Program

ABSTRACT

This study assesses community participation for sustainability of rural water schemes in rural areas. Two villages of Emao and Nkelei were taken as a case study. The methodology applied to assess community participation was thoroughly discussed to see the extent of community involvement at different stages of the project. The techniques used included interviews, questionnaires, focused group discussions, physical observation and literature review. A total of 100 respondents were interviewed 92 of whom were project beneficiaries.

The study found that community participation in the study area took different forms at the different stages of the project cycle. The nature and extent of participation for the majority of local communities was generally limited to information giving, consultation and contribution. Local communities were generally not involved in decision making, planning, monitoring and evaluation. The key factors in participation are staff with knowledge and skills on participatory approaches, continuous community sensitisation and mobilisation. Poverty was found to be the main inhibitor of local community participation. Other factors are contradicting policies and approaches of different agencies inflexible organisational policies, poor community leadership and dependency.

The study also found that participatory approach leads to water project sustainability only when the elements of project sustainability are considered at the early stages. Capacity building was significant when it trained community water attendants and when it formed local communities or water user groups to carry out project activities for immediate intervention. The study concluded that little attention was given to community involvement at different stages of project implementation and that this threatened future sustainability of the water schemes. There was ineffective community participation in both villages.

Lastly the study recommends firstly that water attendants and WC members should be trained, secondly that there should be periodic sensitization seminar on O &M, finally that the community should be involved in all stages of project development.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Overview

Water is crucial for sustainable development. However, limited access to clean and safe water associated with poor water supply, hygiene and sanitation at household level is widening the poverty gap, gender inequalities and the prevalence of water borne diseases (Gender and Water Alliance - GWA, 2006). This is contributing to 3.7% of the total global disease burden and 2.2million death each year with women and children in the developing countries being the most affected (WHO/UNICEF 2008). Although the Millennium Development Goals (MDGs) target 7(c) seeks to "*halve by 2015 the proportion of people without access to safe drinking water and sanitation*" (UNDP, 2005), it is anticipated that Sub-Saharan Africa will only reach the MDGs water target by 2040 (Sutton, 2008). But still, some 400 million of the people living in Sub Saharan Africa will be left without access to safe water with a majority of them being women and children living in rural households (Sutton, 2008).

1.1.1 Global Water Crisis and the Need for Stakeholders Participation

The cause of the global water crisis is believed to be far from a scarcity problem but rather a result of poverty, inequality, unequal power relations and flawed water management policies evident in most of the developing countries (UNDP, 2006). However, the fact that the voices of the marginalized groups especially women, are rarely heard by the policy makers illustrates another truth behind the water crisis (Perkins, 2008). Governments do not prioritize the needs of the marginalized and without support, even the Non Government Organisations activities become unsustainable (Perkins, 2008). As a result, 1.1 billion People across the globe as reported in 2004 had no access to an improved drinking water source with a majority of them living in the rural areas (UNDP, 2006; Alford, 2007).

Interest in stakeholder participation has significantly increased from early 1980s in a multiplicity of sectors, spanning from health care to environmental planning (SED,

2004). It is now generally accepted that stakeholders should be involved in policy making procedures (Innes & Booher, 2004). Motivated by considerations of social justice (of both procedural and distributive versions) and ethical practice (House, 1996), a number of formal approaches have emerged to support the engagement of stakeholders (including lay communities) in both planning and governance processes. This is reflected in a number of national and international declarations which now regard wider participation to include previously excluded parties, as essential in safeguarding the environment via adequate planning and management for example the Ramsar Convention of 1971 was the first international agreement to promote the idea that since societies are an inextricable part of nature, and that human use of ecosystems, on a sustainable basis participatory approaches are inevitable; the Rio Earth Summit of 1992 and the Johannesburg summit of 2012 called *Rio+20 Summit* all emphasise the need for participation for sustainable development (Johannesburg Summit, 2012)

Approximately 1.3 billion people in the developing world lack access to adequate quantities of clean water and estimated 10,000 people die every day from water and sanitation related diseases an thousand more suffer from a range of debilitating illness (Klugman, 2002). Statistics across the world especially in the third world countries indicate that rural water supply facilities are falling out of use at an alarming rate (Musonda, 2004). The majority of those without adequate water services live in Asia, while in Sub Saharan Africa have the highest proportion of people without water (AfDB, 2003) coverage varies substantially by countries, but over one third of rural populations in lower income countries lack access to safe water and sanitation. The latest figures indicate that 27 million people in sub Saharan Africa do not have access to safe drinking water, and four fifths of them or more than 80% of the 1.1 billion people who lack water live in rural communities (Millennium Water Alliance, 2003; Musonda, 2004)

About 80% of Tanzania's population of 40 million people live in rural areas. Despite significant investment in the Rural Water Supply Services since the early 1970s,

presently only about 50% of the rural population has access to a reliable water supply services. However, due to poor operation and maintenance, over 30% of the rural water supply schemes are not functioning properly (National Water Policy-NAWAPO, 2002).

A review of the water sector carried out in 1995 identified a number of shortcomings in the NAWAPO (1991) amongst which are: the under estimation of the role that could be played by the private sector, a necessity of a stronger involvement of the various stakeholders especially the communities and an inadequacy of the legal and institutional framework. ‘‘The government of Tanzania is aiming to increase access of water supply to 79% and adequate qualitative acceptable sanitation facilities to 90% by 2015’’ (NRWSSP, 2000).

Community participation type of management of rural water supply and sanitation schemes is now entering its second decade as a key paradigm for water supply development and management. Community participation approaches did not appear spontaneously, nor do they exist in a vacuum. They emerged from a long history of trial and error in the rural water supply sector, and are linked to and affected by developments in many other sectors, particularly those related to more general rural development, but also natural resource management, and specifically water resource management (Schouten and Moriarty, 2003).

According to UNDP (2006) The Dublin conference of 1992 on water and environment came out with a water declaration, commonly known as the Dublin Statement which since then has been a landmark in recent history of water resources management. The Dublin Statement established four major principles: Water development and management should be based on participatory approach, involving users, planners and policy makers at all levels; Women play a central role in the provision, management and safeguarding water; Water has an economic and social value in all its competing uses and should be recognized as an economic good; Fresh

water is a finite and vulnerable resource, essential to sustain life, development and the environment.

1.1.2 Background of Community Participation in Water Sector

The problem of community participation in water service projects is a historical phenomenon. In Tanzania it can be traced back to the early 1960s, when Tanzania gained its independence. During that period, the government formulated a free water policy for all. The policy was put in place in 1969. Hence, rural people were no longer required by law to pay for their water services. In 1971, this policy was consolidated and the government declared to provide rural people an easy access to water facilities and free water services, within 400 meters from their household by the year 1991 (Kasiaka, 2004).

Despite the good intention of the government, most of the constructed water schemes between 1970s and 1980s failed to achieve sustainability. This was due to a number of factors, among them being the practice of Supply Driven Implementation Approach (SDIA). In this approach, the government became the sole initiator, planner and provider of water service interventions. Therefore, water scheme operations and maintenance were seriously affected (Brikke, 1995).

The economic crisis forced the government to introduce cost sharing strategies in construction, operation and maintenance of water services schemes; hence, community-based water systems, following the 1991 National Water Policy (NAWAPO). NAWAPO (1991) required communities to actively participate in water project cycles (Kasiaka, 2004; Boko, 2002). Cost sharing strategies were to be effected through establishment of Village Water Committees (VWC) and Village Water Funds (VWF). It was through Village Water Committee that communities were to participate in the initiation phase, planning, construction, operation and maintenances of water project activities. However, free water services did develop in the peoples' minds a no commitment syndrome. Hence, it became difficult to

convince the community to engage and participate in water project activities and particularly, paying for water service charges.

1.1.3 The efforts of Tanzanian government in water sector

Since 1990`s World Bank (WB) has been funding several water projects in Tanzania. Before 1990`s water projects were under the management of central government, and were later shifted to the local government authorities (URT, 2008). Neither central government nor local authorities had been successful in improving water availability especially in rural areas. The reason why rural water did not improve was that beneficiaries were not involved in planning, implementing and managing the water systems. Community members were not accountable and they believed that the water projects belonged to the government and donors, even if there was manipulation of water systems like theft of water facilities and equipment, villagers thought that those thieves were manipulating government properties and not theirs. Community participation promotes villagers who are the main beneficiaries, to feel that the water project belongs to them and anyone who manipulates the water systems treated as against the community interests and not the government and/or donors.

The access of water in rural areas is insufficient and inadequate despite several management approaches applied to improve access, and the currently adopted approach of involving the community. Department for International Development (DFID) points out that throughout human history, water resources has been a source of conflict. As demand for water rises, the potential for conflict may increase. Many international commentators argue that water will be an increasing cause of dispute in the years ahead. This may be more serious in rural areas (DFID, 2004).

All World Bank funded water projects supported through TASAF are community managed schemes. TASAF is a government funding facility organisation that provides a mechanism that allows local and village governments to respond to community demands (TASAF Projects Handbook, 2008). The water supply and sanitation projects in most villages in Tanzania are facilitated and funded by TASAF

which receive loans from World Bank on behalf of the government. According to WB press release of 30th December, 2000, states that ‘‘The WB Board of Executive Directors approved an International Development Association (IDA) credit of US$129 million and a grant of US$21 million to improve social infrastructure and enhance access to essential public services by poor communities in Tanzania”. The funds were remitted to TASAF on behalf of the government and part of it financed water projects.

There is no clear evidence or little has been done to assess the effectiveness of water supply and sanitation under Community Participation as an alternative way of managing water resource with specific to rural setting. Many projects sustainability are uncertain, they work for short periods and collapse after funding institutions cease to provide support both financially and technically. In Tanzania WB had been implementing many water projects, however most of them last only for a short period due to a number of factors like system failure, lack of regular maintenance, lack of funds, manipulation of the systems, lack of accountability, control and legitimacy.

By the year 1996, it was estimated that water supply facilities installed in the country, had a capacity to cater for only 48% of the rural population. Moreover, about 30% of all installed water schemes were deemed broken down or some being partially out of action’’ (Kasiaka, 2004). All these shortcomings happened due to a lack of the community’s commitment and a sense of ownership. According to the NAWAPO (2002) weaknesses of the NAWAPO (1991), the government made to be the sole implementer and manager of water schemes. These weaknesses led to the policy being reviewed and a new one introduced in 2002. The new NAWAPO (2002) came up with a comprehensive framework for sustainable development and management of water resources. The framework aimed at ensuring that beneficiaries of water projects participate fully in planning, construction, operation, maintenance, and management of community-based domestic water supply.

1.2 Statement of the problem

Many rural water supply and sanitation services argue that community participation could replace some of the lost state's implementation capacity brought about by the implementation of International Monetary Fund Structural Adjustment Programs (SAPs) (Kasiaka, 2004). Most development projects donors identify community participation as one of the prerequisite for the improved performance of water sector. Many projects started by involving community members in trench digging, system maintenance and water committees.

However, it soon turned out that sustainable water supply and sanitation services could not be achieved without involving the community "not just in manual work, but also in the planning of programmes and the selection of technology" (Therkildsen, 1988). Community participation in water supply sector in Tanzania were more pronounced in 1990`s. Since then many water projects were implemented in various districts, but inadequate sustainability and ineffectiveness of management approaches have been the main impediments in improving water access in rural areas.

Although quite a lot of research studies which have been conducted on community participation approach of management in social services in Sub-Saharan Africa has been done (Felix, 2004; Elizabeth, 2008; William, 2008), none of the studies attempts to provide empirical evidence related to the effectiveness of water supply under community participation as an alternative way of managing water resource in rural setting. Apparently, the absence of effective water management projects resulted to much projects uncertainty in sustainability, they work for short periods and collapse after funding institutions cease to provide support both financially and technically. This study was therefore explored the linkage between Community Participation and rural water schemes sustainability in Lushoto District particularly in the two selected villages.

1.3 Objectives of the study

1.3.1 Main objective

The main objective of this study was to analyze the role community participation in water supply for sustainability of rural water schemes. A case of selected CHAMAVITA water schemes in Rangwi ward Lushoto district.

1.3.2 Specific Objectives

1. To assess how beneficiaries of water schemes are involved in the different stages of water project
2. To assess the way sustainability of the project is being addressed at the initial stage of the project
3. To assess community involvement in project implementation
4. To assess community involvement in the project management
5. To assess community empowerment process in water resources management

1.4 Research questions

1. How were the communities mobilized during the initial stage of water project?
2. How was sustainability addressed during the initial designing stage of the projects?
3. To what extent does community participate in the implementation of water projects?
4. How does the community participate in the management of rural water project?
5. How were the communities empowered to manage water resources?

1.5 Scope of the study

This study covered two selected villages of Emao and Nkelei, Rangwi ward in Lushoto district and the study itself was based on the analysis of community participation in water supply and sanitation services projects managed by Lushoto Environmental Trust (CHAMAVITA)

1.6 Significance of the study

i. This study is very important for me as student of social science and social relationships in seeking answers to various social problems. Also it will inculcate scientific and inductive thinking, promote new skills as well as development of logical habits of work and organization.

ii. It will facilitate government's efforts of promoting community participation in sustainable water and sanitation projects in the rural areas as articulated in the new National Water Policy of 2002.

iii. The study's findings will also bridge the gap existing between studies in community participation, poverty alleviation and sustainable development in Tanzania in the ten years of implementation of NAWAPO 2002.

iv. The findings will additionally help policy makers and planners in understanding how to address issues of community involvement in the management of the social services provided in their areas.

v. Lastly the study is very important for me as partial fulfilment of the requisites for the award of Master of Science degree in Environmental Management of Mzumbe University

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter deals with two parts of literature review. The first one, theoretical literature review, is about the principles, policies, procedures proposed or followed as basis of action in efficient and effective management of rural water schemes. The second, empirical literature review is about the said principles, policies, procedures proposed or followed as basis of action in the observed experience of community participation for sustainability of rural water schemes in Lushoto district

2.2 Theoretical Literature Review

2.2.1 The concept of water resource management

According to Thomas

> ‘‘[T]he studies of water resources is a fascinating, but too often frustrating, process. It is fascinating because involves a wide range of disciplines such as mathematics, science, geography, geology, biology, political science, meteorology, and even psychology. Water resources management includes the construction of physical features, such as dams and other storage projects, to conserve water during wet period for later use. It can take the form of cooperative legal agreements, negotiated over many years, between neighbours, states, or countries to share scarce water resources. Water management even involves volunteer community groups the inventory a watershed to protect a local drinking water supply’’ (Thomas, 2003).

Over a billion people in the world lack access to safe water supply. The operational mistakes of the 1960s and 1970s have now long been recognised and there has been a significant paradigm shift which puts more responsibility for implementing, managing and paying for their water supply in the hands of communities. The belief is that by instilling a sense of ownership, promoting participation and sharing costs, the water supply services will be sustainable. Hard evidence to support the success of this new paradigm on a large scale is difficult to find. There are numerous small-scale models of successful sustainable community managed water supply projects, but most remain models, and are not scaled up. (Thomas, 2003)

Two huge challenges now confront the sector. The first is ensuring community projects are sustainable and that adequate institutional arrangements are put in place to support community participation in the long term. The second is finding ways to increase coverage from the current islands of success to larger areas, reaching entire populations. The reason these challenges are so large, is because experience has shown that it is precisely the things that make a project more sustainable that also make it more difficult to scale up

Community

According to United Nations Development Programme (UNDP), community development fell out in the late 1960s and early 1970s; primarily because of the wide spread disenchantment with the top down bureaucratic approach to development and its failure to distribute benefits. During this era community came to be associated with coerced labour, although it was then called voluntary.

> .....community therefore is defined as a group of people with common needs, while UNDP defined community as a group of people living in a geographically defined area, or a group that interacts because of common social, economic, or political interests (TASAF Projects Handbook, 2005).

TASAF and UNDP have given very simple definitions of community, but communities are fluid, and difficult to define, but they do exist. “If sliced finely with analytical razor, a community may look like the sum of individuals who make it up, yet to suggest that `community` does not exist is completely counter –intuitive to anyone who has experienced a rural community. Community do contain interest groups and they are made up of individuals, but they are more than interest groups and are more than the sum up of the individuals who make them up. The individual men, women and children, some rich, some poor, do not just co- exist in a shared space. They interact in many different ways, some visible, some invisible. The existence of community is not something that can be demonstrated, it is a philosophical point of departure that is shared, albeit implicitly, by most of the key players’’ (Schouten and Moriarty, 2003:55-56).

According to TASAF Project handbook community responsibilities in water project to include providing required contribution, owning the projects, participating in project security, participating in the implementation of the project activities, monitoring of project activities, receiving and discussing reports, and attending meetings in order to give suggestions and ideas to improve project performance.

Stakeholders

According to Department for International Development - DFID (2002, p. 21), a stakeholder is "any individual, community, group or organisation with an interest in the outcome of a programme, either as a result of being affected by it positively or negatively, or by being able to influence the activity in a positive or negative way". Stakeholders can be divided into three broad categories as primary, secondary or key stakeholders. Primary stakeholders are individuals and groups who are ultimately affected by an activity, either as beneficiaries (positively impacted) or non-beneficiaries (adversely impacted). Secondary stakeholders include all other individuals or institutions with a stake, interest or intermediary role in the activity. Key stakeholders are those who can significantly influence or are important to the success of an activity (Dalal-Clayton *et al*., 2003; DFID, 1995).

Empowerment

Empowerment has been defined by Slocum *et al*., (1995) as

> ''..... a process through which individuals, local groups and communities, identify and shape their lives and the society in which they live". It is a "measure of people's capacity to bring about change, which is concerned with analysing and addressing the dynamics of oppression and assisting groups and individuals to play an active role in the decisions which affect their lives'' (Slocum et al., 1995, p.12).

In the context of development work, empowerment means that people are able to organise and influence change on the basis of their access to knowledge, to decision making processes and to financial, social and natural resources (Dale, 2004; Slocum *et al*., 1995)

Sustainability

In the context of development programmes and projects, sustainability can be defined as "the continuation of benefits for an extended period of time after financial, managerial and technical assistance from a donor has been withdrawn" (Brikke, 1995; AusAID, 2000). The focus of this definition is on the flow of development projects' benefits into the future which need to be appropriate, owned by stakeholders and supported on an ongoing basis with locally available resources.

Sustainability in this study refers to the ability of project beneficiaries to maintain and sustain project activities, services and any measure initiated by a project so as to last long after the expiring of the funding period. In water projects, we cannot talk of sustainability without mentioning operation and maintenance issues (Kasiaka, 2004).

Safe and clean drinking water supply is sustainable only if, the water consumed is not overexploited but naturally replenished, facilities maintained in a condition that ensures reliable and adequate portable water supply. The benefits for the water supply should continue to be realized over a prolonged period of time (Brikke, 1995).

Richard (1999) defined sustainability as a continued delivery of a particular service. Richard emphasized on the need to involve all stakeholders in consumption and cost recovery strategies to ensure delivery of high quality services and sustainable development projects. Abraham (1998) on the other hand, views sustainability of water projects as a continued flow of water at the same rate and quality, as when the supply system was designed. To him if water flows, then all elements of sustainability would be in place.

Kimberly (1998) maintains that sustainability in water projects means, ensuring water supply services and interventions continue to operate satisfactorily and they generate benefits over time as expected. He further pointed out that, sustainability is all about ability to operate and maintain initial project service standards. However, to achieve this it has to be planned from the very beginning of the project, so as to

ensure prerequisites for long-term sustainability and strategies are aimed at seeing that sustainable projects are in place and are in good working order.

Participation

Participation is a rich concept that means different things to different people in different settings. This study uses the definition adopted by the World Bank's Learning Group on participatory development which defined participation as "a process through which stakeholders influence and share control over development initiatives and the decisions and resources which affect them" (World Bank, 1996). The broad aim of participation in development is to actively involve people and communities in identifying problems, formulating plans and implementing decisions over their own lives (DFID, 2002; Guijt and Shah, 1998).

Participation to development have been proliferating in third world countries since 1980`s, and they are now accepted components of projects design among mainstream donor agencies. The advocates and practitioners of the concept proclaim that people's empowerment, local knowledge and community ownership are indispensable ingredients of project success and sustainability. Under label such as `people's participation`, public involvement `, community participation`, social mobilization`, self help development`, and `grassroots development`, projects have been initiated on smallholder crop and livestock development, irrigation and water supply alike (Bastian and Bastian, 1992: 46-47).

2.2.2 Conceptualising participation

A review of literature on the ways in which participation is operational in different interventions reveals multiple conceptions of participation. Pretty *et al*., (1995) and Pretty (2000) for example, argue that:

> ''.....the term participation has been used to build local capacity and self reliance, but also to justify the extension of control of the state. It has been used to devolve power and decision making away from external agencies, but also to justify external decisions. It has been used for data collection and also for interactive analysis. But more often than not, people are dragged into participating in operations of

> no interest to them, in the very name of participation.'' (Pretty et al., 1995, p.60)

Participation in development interventions have been proliferating in third world countries since 1980`s, and they are now accepted components of projects design among mainstream donor agencies (Clayton *et al*, 1997). The advocates and practitioners of the concept proclaim that people's empowerment, local knowledge and community ownership are indispensable ingredients of project success and sustainability. Under label such as `people's participation`, public involvement `, community participation`, social mobilization`, self help development`, and `grassroots development`, projects have been initiated on smallholder crop and livestock development, irrigation and water supply alike (Bastian and Bastian, 1992 46-47).

In assessing participation, it is argued that the adoption of participatory orientation in contemporary mainstream development is a somewhat peculiar turn of events. Demand for participation has their origin in radical politics. The democratization in development has been a long standing objective of radicals in both the developed and the developing world. The aim of this is to prevent adverse impact of normal development on disempowered actors and to generate receptiveness to the interests of the people. In the third world countries there is widespread resistance to development projects that serve the interests of national elites and donor nations or foreign policy. This has precipitated grassroots movements demanding participation in project planning and decision making (Bastian and Bastian, 1992).

According to Kasiaka

> ''Participation is an approach through which beneficiaries and other stakeholders are able to influence project planning, decision-making, implementation and monitoring phases. On the other hand, participation is considered to be a prerequisite for project ownership, successful implementation and sustainability of the projects in question. Participation does not mean acceptance of all ideas from diverse groups. In participation, there is a need to combine indigenous and intellectual knowledge. However, care must be taken so that intellectual

> knowledge does not influence that of the indigenous'' (World Vision, 2003; Kasiaka, 2004: 9)

Community Participation

According to Schouten and Moriarty

> ''If we accept that communities exist, then it becomes meaningful to talk of them owning and sharing things and then to speak of the equity with which these are owned or shared. Equity includes both a sense of equality and a sense of being entitled to a share in ownership. Equity is crucial to community management. It implies that, although communities are diverse, everyone in the community should profit in the same manner from a water supply system. It accepts that communities must mean more than rich getting together to buy themselves an expensive water supply system. To deal with this view of community means to acknowledge diversity'' (Schouten and Moriarty, 2003:55).

People covered by a project, irrespective of gender, caste or class have access to clean water. However, they may not all have equal access to all the benefits which are part of the work. Many important decisions made during project implementation are made by well-off and influential men in the village. Women and poor men are not equally involved, both at times are poorly represented in project management committee. Those who probably have the most to gain from these water supply and sanitation systems, mainly poor women and men should be involved in the management of the water system. Figuere (1991) argues that those projects which involve the widest possible participation of people whose needs are addressed are mostly likely to be effective.

Community participation is taken to mean that community plays an active role in its own affairs by sharing and exercising political and economic power. The term community participation is sometimes used interchangeably with community management to refer to community full involvement in development projects (Mc-Common *et al.,* 1990)

Community participation defined as a process by which individuals, families or communities assume responsibility for local problems and develop a capacity to contribute to their own community development (Singh ISS RP, 2005:15). World Bank experience with community participation has given rise to the following definition: an active process whereby beneficiaries influences the direction and execution of development projects rather than merely receive a share of a project's benefits. This definition places participation by beneficiaries rather than external personnel, stressing the involvement of beneficiaries in groups, and refers to a process rather than a product. Recent reports of World Bank, U.S. Agency for International Development (USAID) and Water, Sanitation and Hygiene (WASH) point out that community participation may have considerable potential for improving development planning and sustainability (Schouten and Moriarty, 2003).

The objectives of community participation in the context of water projects and for the purpose of this study includes; sharing project cost, increasing projects efficiency, increasing project effectiveness, and increasing community empowerment.

Indicators of community participation

Many and different organizations have specific processes and standards for requesting and evaluating a project. There will often be norms for assessing the financial benefits, for example, the payback period, internal rate of return, discounted cash flow etc. There may also be standard procedures for presenting a business case and obtaining approval for the capital investment. The overriding objective of *Chama cha Maendeleo Vijijini Tanga* (CHAMAVITA) is empowerment of communities. A project is considered successful if its implementation facilitates community empowerment which can be assessed on factors such: community participation in decision making; accountability and organizational capacity is enhanced at the community level; operational and maintenance arrangements are in place, and whether communities are accessing information to make informed decisions.

According to Tanzania national water policy of 2002 “water supply facilities provided without the active participation of the beneficiaries in planning and management are often not properly operated and maintained and hence are unsustainable” (NAWAPO, 2002). Ownership of the facilities including water wells is neither perceived to be, nor legally vested in user communities. These factors lead to a lack of commitment to maintenance of the facilities by the users. Communities should be empowered to initiate, own and manage their water schemes including water wells. In order to ensure that communities become legal owners of water supply schemes the following should be undertaken: legal registration of water user entities should be instituted to ensure that communities are the legal owners of their water supply schemes including water wells; Roles, responsibilities, rights and limits of authority of water user entities should be clearly defined; and communities should be facilitated in acquiring technical and management skills (NAWAPO, 2002; Kasiaka, 2004).

Preconditions for community participation

Despite the rather complex nature of community participation in the management of water resources, it is possible to identify the preconditions that create the enabling environment in which community management can occur. WASH identified the important preconditions for community participation which is likely to include: there must be community demand for improved system. The information required to make informed decisions must be available to the community; technologies and levels of service must commensurate with the community’s needs and capacity to finance, manage, and maintain them; the community must understand its options and be willing to take responsibility for the system; the community must be willing to invest in capital and recurrent costs; the community must be empowered to make decisions to control the system and effective external support must be available from governments, donors, and the private sector (training, technical advice, credit, construction, contractors etc) (Mc-Common, 1990).

Levels of community participation

Community participation discourse described different levels in which beneficiaries of any development initiative should be involved. This can be typically applied in rural water and sanitation projects (Schouten and Moriarty, 2003). The Table 2.1 below shows five levels of community participation in the four major aspects of responsibilities, authorities, control and management capacity.

Table 2.1: Levels of community participation

Levels	Responsibility	Authority	Control	Management Capacity
1	External agency, little community responsibility	External agency; informal Community consultations	External agency; Limited community participation	Insufficient
2	External agency, community is responsible for operation	External agency; limited formal role for community institutions	External agency ; Moderate community Participation	Limited
3	Joint; Community responsible for operation and maintenance	Joint; limited formal role for community and agency	Joint; strong community participation and limited community management	Moderate
4	Community; external support	Community; external support	Community; external support	Sufficient
5	Full community responsibility	Full community authority	Full community control	High

Source: Adapted from WASH Technical Report No. 67, (1990)

Factors affecting community participation and sustainability of projects

Parameswaran (1999) argues that a range of characteristics such as technology used to implement project activities can affect community participation. The more complex the technology, the less participation. The question of technology has direct link with sustainability of project services especially when operational and maintenance costs are to be met by the beneficiary communities. Another factor according to Parameswaran is on human and financial resources, as they are vital when it comes to meeting operational and maintenance costs. Furthermore, transparency accounts for the degree of community participation. For this matter community members will actively participate if benefits are clearly articulated and

obtained immediately at the beginning of the project design. For the case of the water project, people expect to see domestic water points installed or boreholes drilled and in operation. Moreover, administration structure is equally important. Thus, if projects allow users' contribution and if they are flexible, well coordinated and managed well at the local level, with free flow of information then people will automatically participate. Women's involvement in project activities and capacity building are also essential to sustain project-initiated services. This is because in water projects women are the main stakeholders. Therefore, women participation and leadership positions in WC are inevitable for sustainable water projects (Mbugua, 1993).

Participation as Means or as End

One of the common distinctions made by authors and development practitioners is that of 'participation as a means' and 'participation as an end' (see for example Burkey, 1993; Cooke and Kothari, 2001; Dalay-Clayton *et al*., 2003; Kumar, 2002; Nelson and Wright, 1995; Oakley, 1991). Participation as means implies the use of participation to achieve some pre-determined goals. It is a way of harnessing rural people's physical, economic and social resources to achieve the aims and objectives of development programmes and projects more efficiently, effectively or cheaply (Burkey, 1993; Nelson and Wright, 1995; Oakley, 1991).

Participation as an end is viewed as an active, dynamic and genuine process which unfolds over time and whose purpose is to develop and strengthen the capabilities of rural people to intervene more directly in development initiatives (Cooke and Kothari, 2001; Oakley, 1991). As an end, participation is seen as the empowerment of individuals and communities in terms of acquiring skills, knowledge and experience, leading to greater self-reliance (Burkey, 1993; Karl, 2000). The proponents of this view often maintain that development for the benefit of the poor cannot occur unless the poor themselves control the process, the praxis of participation. It is argued that by establishing a process of genuine participation, development will occur as a direct result (Burkey, 1993; Cooke and Kothari, 2001).

Table 2.2 provides a comparative analysis which summarises the differences between these two concepts.

Table 2.2: Comparative analysis: Participation as Means vs. End

Participation as Means	Participation as End
• It implies use of participation to achieve some predetermined goals or objectives.	• Attempts to empower people to participate more meaningfully.
• It is an attempt to utilise the existing resources in order to achieve the objectives of programmes/projects.	• The attempt is to ensure the increased role of people in development initiatives.
• The stress is on achieving the objective and not so much on the act of participation itself.	• The focus is on improving the ability of the people to participate rather than just in achieving the predetermined objectives of the project.
• It is more common in government programmes, where the main concern is to mobilise the community and involve them in improving of the delivery system.	• This view finds relatively less favour with the government agencies. NGOs in principle agree with this viewpoint.
• Participation is generally short term.	• Viewed as a long term process.
• Appears to be a passive form of participation.	• Relatively more active and long term.

Source: Adapted from Kumar (2002, p.26).

However, the distinctions between these concepts are neither clear-cut nor mutually exclusive. They represent different purposes and approaches to promoting participatory development. While many development agencies give equal weight to both, some emphasise on one or the other. Burkey (1993) for example, observes that until recently the notion of 'participation as means' dominated development practice. Although he concedes that some economic development was achieved as a result of this strategy, he also argues that, only a few development projects achieved meaningful participation and benefits by this means. In his view, this strategy has not resulted in meaningful participation of the poor. Nelson and Wright, (1995) believe that the extent of empowerment and achievement of the local population is more limited in 'participation as means' than it is in 'participation as an end'.

Participation as Contribution or as Empowerment

Drawing on Oakley (1991) and Dale (2004), perspectives on participation in development work may also be captured by juxtaposing two notions, participation as contribution and as empowerment. Participation as contribution may be enlisted primarily in the implementation of programmes and projects or in the operation and maintenance of created facilities. The contribution may be entirely voluntary, induced to various extents or even enforced. It may be provided in the form of ideas, judgements, money, materials, or unpaid or lowly paid labour (Dale, 2004). Indeed, this notion may also be seen as 'participation as means' to get things done.

According to Bretty (2003), participation is an empowering process in which "people, in partnership with each other and those able to assist them, identify problems and needs, mobilise resources, and assume responsibility to plan, manage, control and assess the individual and collective actions that they themselves decide upon". As a process of empowerment, participation is concerned with "development of skills and abilities to enable the rural people to manage better, have a say in or negotiate with existing development systems" (Oakley, 1991). As Eade and Rowlands (2003) argue, powerlessness is a central element of poverty, and any focus on poverty, inequality, injustice, or exclusion involves analysis of and/or challenging or changing power and power relations. Participation as empowerment can therefore help to amplify unacknowledged voices by enabling the rural people to decide upon and take the actions which they believe are essential to their development (Oakley, 1991; Slocum *et al*., 1995). According to some FAO (1997) studies, small informal groups consisting of members from similar socio-economic backgrounds are better vehicles for participation in decision making and collective learning than heterogeneous, large scale and more formal organisations.

2.2.3 Levels of participation as a concept

Development agencies and authors distinguish different dimensions, spaces, degrees and levels of participation. The typology of participation (see Table 2.3), which positions participation on a seven step ladder is useful in analysing these degrees

(Bretty, 2003; Kumar, 2002; Pretty *et al*., 1995; Wilcox, 1994). Comparing these levels with the 'participation as means and ends' analysis shown in Table 2.2, the first four levels on the ladder can be interpreted as 'participation as means' while the last three levels fall under 'participation as an end'. Some suggest that the 'manipulation' which is often central to types one to four implies that they should be seen as types of 'non participation' (Pretty, 1995).

Bretty (2003) conceptualises these levels in terms of 'weak and strong participation'. According to his views, weak participation involves "informing and consulting" while strong participation means "partnership and control". He argues that, in practice agencies managing complex projects find it hard to move from the 'weak end' of the continuum and tend to assume that, intended beneficiaries will be consulted during the project design to take into account their felt needs and aspirations. Wilcox (1994) cautions that, information giving and consultation are often presented as participation leading to disillusionment among community interests.

However, the problem with levels of participation is that they imply coherence, when most development organisations operate simultaneously in a wide range of participatory modes (Mosse, 1996). One level on the continuum is not necessarily better than any other as different levels are appropriate at different times and contexts to meet the expectations and interests of different stakeholders (Wilcox, 1994). Oakley (1991) cites an analysis of a Danish funded rural water supply project in Tanzania, where he observes that participation had ranged from non-participation and manipulation over information and consultation to some degree of partnership and delegation of power. In another study of Malawi Social Action Fund (MASAF) projects, Dulani (2003) concluded that, the level of community participation was limited to being informed what had already been decided by other key players which implied "passive participation by consultation".

Table 2.3: Typology of participation

Level	Characteristics of each type
1. Passive Participation	People participate by being told what is going to happen or has already happened. It is a unilateral announcement by leaders or project management without listening to people's responses or even asking their opinion.
2. Participation in Information Giving	People participate by answering questions posed by extractive researchers using questionnaire surveys or similar approaches. People do not have opportunity to influence proceedings, as the findings of the research are neither shared nor checked for accuracy.
3. Participation by Consultation	People participate by being consulted, and external people listen to views. These external professionals define both problems and solutions, and may modify these in light of people's responses. Such a consultative process does not concede any share in decision-making, and professionals are under no obligation to take on board people's views.
4. Participation for Material Incentives	People participate by providing resources, for example labour, in return for food, cash or other material incentives. It is very common to see this called participation, yet people have no stake in prolonging activities when the incentives end.
5. Functional Participation	People participate by forming groups to meet predetermined objectives related to the project, which can involve the development or promotion of externally initiated social organisation. Such involvement does not tend to occur at the early stages of project cycles or planning, but rather after major decisions have been made. These institutions tend to be dependent on external initiators and facilitators, but may become self-dependent.
6. Interactive Participation	People participate in joint analysis, which leads to action plans and the formation of new local institutions or the strengthening of existing ones. It tends to involve interdisciplinary methodologies that seek multiple perspectives and make use of systematic and structured learning processes. These groups take control over local decisions, and so people have a stake in maintaining structures or practices.
7. Self-Mobilisation	People participate by taking initiatives independent of external institutions to change systems. They develop contacts with external institutions for resources and technical advice they need, but retain control over how resources are used. Such self-initiated mobilisation and collective action may or may challenge existing inequitable distributions of wealth and power.

Source: Adapted from Pretty (1995, p.1252) and Kumar (2002, pp.24).

From the foregoing discussion, it is clear that there is a myriad of aspects of participation. This means that great care must be taken when using and interpreting the term. It should always be qualified by reference to the type of participation. In addition, observers seem to agree that the application of participatory approaches further calls for an appreciation of the social dynamics and diversities such as gender, age, social status, ethnicity, disability and power amongst others.

Gender and participation

Gender relations define amongst other things, how both men and women have access to control of resources in the community. According to Shepherd (1998), gender analysis comprises: "information to access and control over resources for men and women; division of labour within the household and community; and the participation of men and women in public decision making and organisations". Despite the importance placed upon people's participation in development programmes, many agencies still experience poor participation of women (Guijt and Shah, 1998; World Bank, 1996). According to Slocum *et al*., (1995), many participatory approaches such as Participatory Rural Appraisal (PRA) do not explicitly address issues of social relations including gender. Rarely do these methodologies take into account gender analysis, gender based differences in labour allocation, and gender differences in access to and control over resources and their benefits. Gender is usually hidden in seemingly inclusive terms, 'the people', or 'the community' while in most cases what is referred to as 'the community' actually means 'male community' (Guijt and Shah, 1998). Oakley's (1991) analysis of the rural water supply project in Tanzania for example, showed that despite efforts to mobilise women to take an active part in all project activities, this was only successful with respect to self-help labour contributions as most women in the village water committees kept a low profile.

According to World Bank (1996), gender biases in participatory development projects may exist in the form of customs, beliefs, and attitudes that confine women mostly to the domestic sphere; women's economic and domestic workloads that impose severe time burdens on them; and laws and customs that impede women's access to credit, productive inputs, employment, education, information, or medical care. Since women comprise the majority of rural inhabitants, and they are the major contributors in agricultural production in Tanzania, there arises an urgent need to encourage their involvement in water development activities. Burkey (1993) recommends that participatory development projects should seek to improve gender inequalities through providing a means by which women can take part in decision

making processes. As Guijt and Shah (1998) argue, greater involvement of women and attention to gender-differentiated needs holds the promise of more effective and equitable processes of participatory development.

2.2.4 Evaluating participation

There is now a growing recognition that if participation in one form or another is an objective of development projects and programmes, it must be evaluated (DFID, 1995; FAO, 1997; Karl, 2000). Karl (2000) has identified three main aspects of participation in rural development projects and programmes that need to be evaluated namely, the extent and quality of participation, costs and benefits of participation to the different stakeholders, and the impact of participation on outcomes, performance and sustainability. DFID (1995) suggests that, in evaluating participation, it is important to consider the quantitative, qualitative and time dimensions of participation. This is because participation is a qualitative process that cannot be measured using only quantifiable indicators. While quantification in relation to project outputs may be sufficient, the qualitative dimensions of participation should also be evaluated because project success depends on empowering participants to take on greater responsibility and control.

2.2.5 Barriers to effective participation

A host of factors have been identified as obstacles to effective participation in development programmes and projects. Oakley (1991) discusses three major obstacles to people's participation which are structural, administrative and social barriers. Structural obstacles form part of the complex and centralized organisational systems that control decision making, resource allocation and information, and are not oriented towards people's participation. This situation is usually typified by a 'top-down' development approach. Administrative obstacles relate to bureaucratic procedures, operated by a set of guidelines and adopt a blue print approach, providing little space for people to make their own decisions or control their development process. The social impediments include mentality of dependence,

culture of silence, domination of the local elite, gender inequality, and low levels of education and of exposure to non-local information (White, 1996).

Another obstacle is “standardization of approaches” (Guijt and Shah, 1998) which contradicts the original aims of participation, to move away from the limitations of blue print planning and implementation towards more flexible and context-specific methodologies. According to Cooke and Kothari (2001), participation has been translated into managerial “toolboxes” of procedures and techniques. This limited approach gives rise to a number of critical paradoxes: projects approaches remain largely concerned with efficiency, and focus attention only on the highly visible, formal, local organisations, overlooking the numerous communal activities that occur through daily interactions and socially embedded arrangements. Dale (2004) identifies other barriers such as power structures within local communities, rigid professional attitudes among programme and project staff, little awareness among people of rights they may have or opportunities they may exploit, and little emphasis on qualitative achievements of participation. These barriers are situation-specific, and need to be carefully analysed in particular contexts.

Shortcomings of participatory approach

Claud (1998) observes that though community participation is essential in ensuring sustainability of rural development projects, it has its own shortcomings. Participatory planning is time consuming and a complex process. The process takes about six months or more to be understood. As a result, beneficiaries expecting to get quick results get discouraged and, that participatory planning is a threat to experts and the community they are serving. The reason for this tendency being that some development experts tend to feel they know better than the community they are serving.

Community participation is never homogeneous. There are a number of problems that emerge in the cause of participatory approach, such as conflicts of interest among different social groups, cultural, and political constraints (Mbugua, 1993;

Ngujiri, 1998). Moreover, suggested that too much mass involvement in decision-making impedes development growth of the ongoing project. The argument is that it delays decision-making. Thus, participatory planning needs to be facilitated by appropriate expertise so as to determine who should participate, how, what will be the scope of participation and also how much weight should be given to wishes and demands expressed as compared to priorities already set by official authorities (Martinusen, 1999; Wilcox, (1994) also had the view that participation does not mean that all views from people should be taken into account when setting project activities.

There is also the fact that, both regional secretariat and districts councils do not have the capacities to support participatory planning at the lower council level. This situation arises from the fact that most of the staff at the Regional and District levels, have become used to a top- down approach to development. Hence, they are used to planning for and not with the people (Kasiaka, 2004).

2.2.6 Non Governmental Organisations and participatory development

The role of Non Governmental Organisations (NGOs) involved in relief and development work has received increasing attention in recent years, to such an extent that some scholars (Nelson and Wright, 1995) have termed the 1980s “the decade of the NGOs”. This reflects a widely held opinion by many authors and development agencies that NGOs are in some way better at relief and development work than other bilateral/multilateral aid agencies. The World Bank (2001) estimates that over 15% of total overseas development aid is now channelled through NGOs. Since the 1990s, Tanzania has experienced a rapidly growing number of NGOs. According to Reuben (2002), between 1961 and 1980, there were only 25 registered NGOs in Tanzania. By 2000, this number had risen to over 10,000. The Tanzania Association of Non-Governmental Organizations (TANGO) currently has a proxy membership of 1500 NGOs most of which are regional and district networks (TANGO, 2006).

Analyses of NGOs have identified several reasons why it is thought that NGOs might be better able to put participation into practice than the public sector. According to Nelson and Wright (1995), NGOs claim to be innovative, flexible, not weighed down by bureaucracy and they are independent/autonomous. This may allow them to follow non-conventional policies when compared to governments and official aid agencies. Most NGOs are already operating at the grassroots level, close to the poorest of the poor. This 'people first' orientation may enable NGOs to have a clearer understanding of poor people's livelihoods strategies and perceived needs and better rapport with the poor (Shepherd, 1998; Nelson and Wright, 1995). Further, many NGOs have experience in participatory project design and skills in participatory research, community mobilisation, facilitation skills and group dynamics (World Bank, 1996).

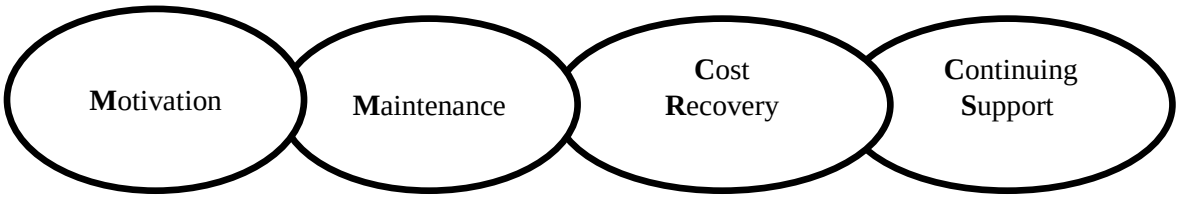
Some limitations of NGOs as vehicles for participatory development have also been identified although it is difficult to generalise about the sector as a whole. According to World Bank (1996), some NGOs have limited financial and management expertise and institutional capacity. Others work in isolation, communicating or coordinating very little with other organisations (including government agencies). Many may be confined to small scale interventions and may not fully understand the broader social and economic context in which they are working. Another limitation of NGOs is that most of them are resource constrained organisations, dependent on external funding. This poses what Craig and Porter (1997) call the problem of "double accountability", to the beneficiaries and to the source of funds. Balancing these two aspects is challenging for most organisations, as most NGO funded projects tend to be more 'managed' than 'participatory'. As a result, NGOs may end up being more accountable to the donors than to the stakeholders (Shivji, 2004). Blackburn and Holland (1998) argue that, "NGOs face difficulties when adopting participatory approaches if their funding agencies are not sufficiently flexible to accommodate the changes, especially if such changes entail adjusting funding policies and procedures accordingly".

The World Bank (1996) identifies some indicators for participatory effectiveness in NGOs. They include a flat management structure with decentralized authority; organizational structures at the community level to which funding and/or other decisions are delegated; use of iterative planning, involving consultation with local communities, contributions of cash, labour, raw materials, or local facilities by community members and organizations, making them clients rather than beneficiaries of the NGO; staff recruitment criteria, incentives, and training that support participation; strong field presence outside metropolitan areas with a high proportion of staff of local origin; and community leaders and members have a positive perception of the NGO.

Sustainability of rural water supply and sanitation as a concept

Sustainability pertains to multiple aspects of a rural water supply, with institutional, social, technical, environmental and financial dimensions (Water Engineering and Development Centre - WEDC, 1998). This accounts for the fact that understanding and measuring sustainability is so difficult, and why solutions are highly context specific. Sustainable rural water supplies ensure the ongoing provision of a service that is fundamental to improving health, reducing the burden of carrying water long distances, and enabling users to live a life of dignity (Haysom, 2008). Therefore, in this context, sustainability is best defined pragmatically as "whether or not something continues to work overtime" (Abraham, 1998).

Figure 2.1: The sustainability chain



Source: Adapted from Carter *et al* 1999

According to Carter *et al* (1999) to achieve sustainability for rural water supply and sanitation services four things are needed as depicted in Figure 2.1 above; these are

motivation, maintenance, cost recovery and continuing support. According to these authors, a motivated community is the one that needs the service more and therefore considers the scheme as its own property. As a result schemes constructed by community motivation are likely to be sustainable. Effective Operation and Maintenance is essential for sustainability and village level Operation and Maintenance is one of the ways through which sustainability can be achieved. In cases of scarce government resources the money collected from cost recovery can be used for capacity building such as sanitation education and village level maintenance training which can play great role in sustaining the water services in the area. Services can't be always managed by the community alone. For example at times where village level maintenance trainees are lost from the community new training should be given to the trainees. Village level rural operation and maintenance has limited success if ongoing support is not provided.

Water supply development projects need to extend their scope beyond simply the provision of sustainable water supply infrastructure. The greatest beneficial on the health of the local population is derived from an integrated multidisciplinary approach that works in close collaboration with the local population (Gleitsmann *et al,* 2005). Demand-driven approaches are effective since communities are capable of making decisions, maintaining services, and making their contributions to capital costs, operations and maintenance. In addition, a strong and well-structured information campaign is necessary to empower communities to make an informed choice (UNESCO- WWAP, 2003).

Livingstone *et al.* (1993) explained that poor program conceptualization, unimaginative planning, use of inappropriate technologies, and rigid management approaches had contributed to high rates of program failure. Implementation approaches which resulted in non-sustainability of water supply projects should be identified so that they would not be repeated in the future. At the same time implementation approaches, which resulted in sustainability of water supply projects

should be identified so that they can be used as a base for future project implementations.

The chances of achieving the Millennium Development Goals by halving the proportion of people without access to safe water by 2015 will be seriously hampered unless levels of sustainability can be greatly improved, (Haysom, 2008). Therefore, it is necessary to follow approaches which can lead to the sustainability of rural water supply and sanitation through full community participation.

Based on Thomas, (2003) the study of water resources is a fascinating, but too often frustrating, process. It is fascinating because involves a wide range of disciplines such as mathematics, science, geography, geology, biology, political science, meteorology, and even psychology. Water resources management includes the construction of physical features, such as dams and other storage projects, to conserve water during wet period for later use. It can take the form of cooperative legal agreements, negotiated over many years, between neighbours, states, or countries to share scarce water resources. Water management even involves volunteer community groups the inventory a watershed to protect a local drinking water supply

Over a billion people in the world lack access to safe water supply. The operational mistakes of the 1960s and 1970s have now long been recognised and there has been a significant paradigm shift which puts more responsibility for implementing, managing and paying for their water supply in the hands of communities. The belief is that by instilling a sense of ownership, promoting participation and sharing costs, the water supply services will be sustainable. Hard evidence to support the success of this new paradigm on a large scale is difficult to find. There are numerous small-scale models of successful sustainable community managed water supply projects, but most remain models, and are not scaled up. Two huge challenges now confront the sector. The first is ensuring community projects are sustainable and that adequate institutional arrangements are put in place to support community participation in the

long term. The second is finding ways to increase coverage from the current islands of success to larger areas, reaching entire populations. The reason these challenges are so large, is because experience has shown that it is precisely the things that make a project more sustainable that also make it more difficult to scale up.

2.2.7 Community management

Community management refers to the capabilities and willingness of the beneficiaries to take charge and determine the nature of development affecting them. In water scheme systems, community management means that the community exercises responsibility for decision making and control over the subsequent execution of these decisions during project development. Schouten and Moriarty defined community management to mean that a community took on the full range of management tasks related to maintaining (and some cases developing) a domestic water supply. These tasks include, setting tariffs and collecting payment, carrying out routine maintenance, and making decisions about system extension (Schouten and Moriarty, 2003).

Community management as defined above, is concerned with all issues pertaining to responsibility (ownership), decision making authority, and control over development project and system operations.

Components of community management

Community Management mentioned three basic components for effective management of water systems:

1. ***Responsibility*:** The community takes on the ownership of and attendant obligation to the system.
2. ***Authority*:** The community has the legitimate right to make decisions regarding the system on behalf of the users.
3. ***Control*:** The community is able to carry out and determine the outcome of its decisions

2.2.8 Community dynamism

Community dynamics is a phrase that suggests that communities are active, not passive, that they change all the time and that they are full of energy, and perhaps of tensions. Rural communities are not homogeneous; they change over time, context, and political situation (Schouten and Moriarty, 2003). Schouten and Moriarty further argue that communities exist but this does not mean that they are homogeneous or static entities. Rather, they are melting pots of continuous negotiations, discussion and conflict. They are dynamic and change constantly on their power, balance, size, water availability and so on. Within one community there are rich and poor people, people with high and low status, women and men, old and young people, people from low and high caste, ethnicity, ethnic minorities and majorities, high and poorly educated, powerful and powerless, farmers and cattle raisers, land owners and landless. Diversity and unclear boundaries are characteristics of communities and they are arguably the characteristics that have the most important impact on Community Participation (Schouten and Moriarty, 2003)

The outside world constantly intrudes on the community. Opinions of religious leaders or national party politics change the opinions and objectives of the groups in the community. There are numerous cases where local politicians, part of patronage, give away water projects to win votes. Numerous also are the cases where politicians use the slogan `water for free` as a way to gain sympathy and votes among rural dwellers. Water supply in rural areas is one of the top political agendas of Tanzania. Community participation in all matters relating to the water project is currently sought to help improve the situation of rural water supply in rural areas.

2.3 Empirical Literature Review

Over 2 billion people gained access to improved water sources and 1.8 billion people gained access to improved sanitation facilities between 1990 and 2010. This is impressive, particularly when the gains of countries that started at a low baseline and faced high population growth are considered. Over 780 million people are still without access to improved sources of drinking water and 2.5 billion lack improved

sanitation. If current trends continue, these numbers will remain unacceptably high in 2015: 605 million people will be without an improved drinking water source and 2.4 billion people will lack access to improved sanitation facilities (WHO/UNICEF, 2008). While coverage of improved water supply sources is 90% or more in Latin America and the Caribbean, Northern Africa and large parts of Asia, it is only 61% in Sub-Saharan Africa. Coverage in the developing world overall stands at 86%, but it is only 63% in countries designated as 'least developed'. Similar disparities are found within countries between the rich and poor and between those living in rural and urban areas.

According to the World Health Organization and the United Nations Children's Fund rural water coverage in Africa was 45% in 2000, compared to 40% in 1990, still leaving 237 million people unnerved (WHO/UNICEF, 2008). Meanwhile, urban water coverage in Africa was much higher at 83% in 2000, with only 37 million urban dwellers unnerved. It is clear that rural areas of Africa are lagging significantly behind urban areas in water supply. This fact, coupled with high poverty levels in many rural areas and depressed levels of service sustainability, indicates a critical need for focused attention to the provision of potable water to rural communities in Africa.

For the first time, data on the use of unimproved sources have been disaggregated into two categories: surface water and other unimproved sources. The latter includes unprotected dug wells, unprotected springs and water delivered by cart or tanker. Surface water includes water collected directly from rivers, lakes, ponds, irrigation channels and other surface sources. The use of surface water stands at a surprisingly high 3% of the global population, or 187 million people. Most of these people – 94% are rural inhabitants, and they are concentrated in Sub-Saharan Africa. In fact, 19% of rural dwellers in Sub-Saharan Africa and 39% cent of rural residents in Oceania rely on surface water for drinking and cooking.

As far as the use of clean water is concerned two clear groupings emerge. The first is a set of regions in which the use of piped water to a dwelling, plot or yard is low (30% or less). It includes Sub-Saharan Africa, Oceania, Southern Asia and South-Eastern Asia. Although gains in the use of piped water on premises have been made in these regions, progress is mostly in the 'other improved' category of water sources. Of note is the fact that 65% of the population in Southern Asia are using other improved sources rather than piped water on premises.

The second group consists of Eastern Asia, Northern Africa, Western Asia and Latin America and the Caribbean, where at least 70% of the population are using piped water on premises. Eastern Asia (dominated by China) has seen a dramatic increase in piped water supplies since 1990, gaining 35 percentage points in coverage in this category in 20 years; 562 million new users have been added during a period in which the world as a whole added only 9 percentage points. Eastern Asia is also the region with the most dramatic increase in the use of improved drinking water sources overall, starting at 68% in 1990 and moving to 91% coverage in 2010. This represents a 23 percentage-point increase, far higher than any other region. Significant proportions of the population in Oceania and Sub-Saharan Africa are still using surface water. Countries that still have less than 50% coverage in water supply are almost all in Sub-Saharan Africa.

It is estimated that 35% of all rural water supplies in Sub-Saharan Africa are not functioning (Ballabh, 2008). Women and children in developing countries suffer most from water related diseases and the damaged environment (WHO/UNICEF, 2008). People do their laundry and bathe in the same places that they water their animals and get their drinking water. 80% of health problems in Africa are attributed to poor sanitation and inadequate safe water.

Providing access to safe water and sanitation to combat poor health is an integral part of the strategy to alleviate poverty in many countries according to the United Nations Development Assistance Framework (UNDAF, 2006). However, unless strategies

are found to motivate rural communities and create a demand for water and sanitation, we cannot achieve the United Nations Millennium Development Goal of halving the proportion of the global population without sanitation and access to safe water by the year 2015 (UNDP, 2005). Clearly, more resources need to be applied to solving the water supply and sanitation problems of rural people.

The widespread failures in water supplies in Sub Saharan Africa have been attributed by Carter *et al*. (1999) to a number of factors in a project: (1) the intervention was not desired by the community, (2) the capital and/or recurrent costs are too high for the community, (3) lack of ownership results in neglect of maintenance and repairs, (4) the promised benefits do not materialize, (5) education programs are too short, and (6) trained members of the community move away or lose interest (Carter *et al*, 1999).

It became obvious that the different approaches followed by the organizations in the study area included adoption of a demand-driven approach based on empowerment of villagers to ensure their full participation in pre-planning, planning and implementation; decision-making in the choice of scheme; focus on village level capacity building; and 10% capital cost sharing by users. Each organization also followed different methods in addressing the approaches followed.

2.3.1 Background of water supply and sanitation

Water is one of the most important natural resources because access to safe water is vital for survival. However, despite significant investments in the water sector, the outlook on access to safe water remains grim in many of the developing countries (World Bank, 2001). Rural Africans have the lowest level of access to clean water and sanitation when compared to other developing areas of the world (UNESCO-WWAP, 2003). This holds also true in Tanzania because about 80% of Tanzania's population of 42 million live in rural areas. Despite significant investment in the Rural Water Supply (RWS) since the early 1970s, presently only about 50% of the rural population has access to reliable water supply service. (Claud, 1998).

Lack of access to clean water and proper sanitation is a major cause of water borne diseases, which in turn account for a large fraction of childhood morbidity and mortality (Janvier *et al*, 2002). It is generally accepted that lack of potable water and basic sanitation services remains one of the world's most urgent health issues (Onesmo and Holmes, 2006). Inadequate access to sufficient good quality water and appropriate sanitation will exacerbate already difficult situations, for example where people are being treated for chronic and/ or possibly fatal illnesses such as HIV/AIDS (Ngwenya and Kgathi, 2006). In a review of over 60 studies, Esrey *et al*. (1985) found that the largest benefits of service improvements in reducing morbidity-related diarrhea were improved water availability (25%), improved excreta disposal (22%), and water quality (16%).

2.3.2 Water Supply and Sanitation services in Tanzania

Within the context of the Poverty Reduction Strategy Paper (PRSP) the Government of Tanzania (GoT) has made considerable efforts in developing the water sector especially in the rural areas. The policies and strategies of the sector are clearly linked with the first PRSP and National Strategy for Growth and Reduction of Poverty (NSGRP-2005) which is the current Tanzania PRSP. NSGRP II also recognizes the integral of the water sector. The National Water Policy (NAWAPO), introduced in 2002, incorporates the principles of the Government's Development Vision 2025, PRSP and phase II of the Local Government Reform Program (LGRP) (2005-2009), in recognition of the need to ensure the sustainability of facilities provided and to make those facilities more equitable. Currently, the population of Tanzania is estimated at about 42 million of which 20% live in urban areas and 80% in rural areas. The water supply coverage is estimated at 73% for urban areas and 53% for rural areas and sustained sanitation coverage is estimated at around 50%.

In 2005 the GoT finalised the National Rural Water Supply and Sanitation Program (NRWSSP) as part of a Water Sector Development Program (WSDP). The main objective of the NRWSSP is to improve access to safe water and adequate sanitation

in the rural areas. The NRWSSP is to increase access to water supply to 79% and adequate qualitative acceptable sanitation facilities to 90% by 2015.

The African Development Bank's (AfDB) Rural Water Supply and Sanitation Initiative (RWSSI) have strongly influenced the development of the Program. The RWSSI addresses the challenge of increasing water supply and sanitation services to the continent's population living in the rural areas and is a major contribution to achievement of the Millennium Development Goals (MDGs) for water supply and sanitation within the context of the African Water Vision (AWV) (AfDB, 2003). RWSSI's promotion and strong support for the program approach, use of national procedures for procurement and disbursement, use of demand responsive approach, and decentralised implementation by communities and local government structures have been important in developing the NRWSSP.

2.3.3 Sector participation

Initiatives for water supply and sanitation include the transformation of rural water and sanitation projects and programme into a harmonized nationwide programme; the National Rural Water Supply and Sanitation Programme (NRWSSP) in all rural Tanzania mainland districts by July 2006. The initiative aimed to ensure active participation of communities in planning, implementation and taking full responsibilities in operation and maintenance for sustainability of rural water schemes. It also aimed to strengthen the capacity of all actors at all levels especially at district level and ensure the participation of private sector in all stages of rural water projects (NRWSSP, 2000).

Water supply development and delivery has been dominated by the public sector. The private sector is at infancy and its involvement has been limited and hence its slow growth. Involvement of the private sector in the delivery of water supply services will improve efficiency and effectiveness and enhance development and sustainability of service delivery. In order to promote Private Sector Participation in rural water supply and sanitation services the following should be undertaken:

Participation of the private sector in service delivery should be promoted; An enabling environment for increased private sector involvement, including incentives and legal recognition, should be created; Assistance should be given to private sector and Districts councils to strengthen their capacities and communities should be educated on the importance of the private sector participation in the provision of rural water supply and sanitation (NAWAPO, 2002).

Private investment does not just include that from large international operators. It also comes from local investors in all parts of the sector, at all levels. Governments and water authorities should recognise the present and potential role of the local private sector and provide a legal framework to encourage greater long-term investment from this source. Governments should include small local operators in their national water supply strategies and service development plans, including incentives for them to improve their services and receive better access to finance. The prospect of private sector participation in its various forms can be a powerful spur to the reform of public water agencies, whether it actually happens or not. Where reforms are being considered or tenders of various kinds are being drawn up, private participation should be included as an option, to be decided on specific grounds of efficiency, cost and effectiveness. Contract and procurement decisions should, as a rule, be made through open and transparent competition, typically on the basis of bidding.

Water committee

Water Committee is essential in strengthening and sustaining established water structures and service. Also Water Committee is important to enable detailed monitoring and finding solutions to various problems confronting the proper functioning of the installed water infrastructures. In this perspective water committees are elected to manage projects on behalf of the whole community. The committee deals with issues such as preparing budgets, procurement of goods and services, and developing necessary action plans. Such activities are normally best

done by asmall group of people who then are able to give necessary feedback to the entire community members (Claud, 1998).

2.3.4 Water supplies and sanitation in perspectives

Wilderer (2004), pointed out that serving the world population with adequate drinking water and sanitation is an important prerequisite, not only to hygienic safety, but to prosperity and political stability as well, and will foster the adaptive capacity of the societies in the developing countries and beyond. Research and experience continually confirm that a safe water supply is not sufficient and that adequate sanitation facilities and hygiene practice are essential to improving the health of the local population (Van Derslice and Briscoe, 1995). It is estimated that currently more than one billion people do not have access to safe drinking water (UNESCO-WWAP, 2003). About 2.4 billion people are not served by any type of reasonable sanitation, and one-half of the world's hospital beds are occupied by people suffering from water-borne diseases (Wilderer, 2004; UNESCO –WWAP, 2003).

Water supply and sanitation problems cannot be solved with concrete and pipes and that integrated approaches to water supply and sanitation that put people at the centre need to be used. This means from a social development perspective understanding and involving users and responding flexibly towards their concerns.

On the other hand, Brikke (1995) argues that sustainability of project services are to be realized if water sources are not overexploited, facilities for operation and maintenance are in place, and funds are readily available. And that both women and men are involved in the design, planning and management of the scheme, and technology choice corresponds to needs desires. Also projects are culturally accepted, spare parts are available and affordable, and support system is in place. Others include capacity building, technical assistance and availability of well-established institution for legal framework.

2.3.5 Tanzania National Water Policy and Legal Framework

Water legislation is one of the instruments used to streamline social behaviour towards water resources management. Within the context of its poverty reduction efforts the Government of Tanzania has made commendable strides in developing the water and sanitation sector. In 2002 the new NAWAPO was formulated with a mission of "integrated and sustainable management, development and use of water resources in Tanzania". National Strategy for Growth and Reduction of Poverty (*MKUKUTA*) has recognized that adequate water supply and improved sanitation are necessary ingredients in promoting economic growth and fighting poverty. In order to operationalise the NAWAPO of 2002 and to achieve the Millennium Development Goals for water supply and sanitation, Government of Tanzania formulated NRWSSP. The NRWSSP aimed at 69 % coverage for rural water supply and adequate sanitation by the year 2010 and 90% coverage by the year 2025 (NRWSSP, 2000).

The Ministry of water and irrigation has started to restructure its institutions to be compatible with the requirements of the country's decentralisation and reform policies through measures that are in line with the National Water Policy of 2002, taking into account the provisions of the local government reform policy. The national water sector development strategy has been developed to support re-alignment of the water related aspects of other key sector policies (for example, energy, irrigation, industry, mining, and the environment) with the new NAWAPO, and to provide a focus on specific roles of the various actors through clearly defining roles and responsibilities and hence the removal of duplications and omissions. Further, the institutional framework underscores separation of service delivery and regulation to ensure fair play among the various actors and sectors.

The National Water Sector Development Strategy is, therefore, a blueprint for prioritised timely and appropriate interventions to address the Water Sector challenges in the process of achieving all the targets narrated in the national strategy for growth and reduction of poverty by 2010, the MDGs by 2015, and contribute towards achieving the Tanzania development vision targets by 2025. Furthermore,

the strategy leads to reshaping and increasing sector financing through a smooth and manageable institutional arrangement. Tanzania is now in the process of preparing new pieces of legislation that will govern the Management of water resources as well as rural water supply and sanitation. The process of preparing new pieces of legislation was preceded by the adoption of a new NAWAPO.

The Government of Tanzania in 2002 adopted the policy recommendations contained in NAWAPO which has a whole part dealing with rural water supply and sanitation. Tanzania has since 1974 been governed by the water utilization (Control and Regulation) Act, 1974. Since then new concepts and approaches to governance and utilization of water resources have emerged that need to be taken on board. NAWAPO 2002 replaces the Water Sector Policy of 1991 which addressed sources, use of water in the urban and rural areas, planning and quantity of water supply, financing and maintenance of water operations, authorities responsible for water, and enforcement and coordination policies of the water sector (Kabudi, 2005).

Furthermore the regulatory and institutional framework for water resources management is provided for under the water utilization (Control and Regulation) Act. No.42 of 1974 as amended by the Water Laws (Control and Regulation) Act of 1997 and the Water Laws (Miscellaneous amendments) Act of 1999. They stipulate that all water issues in Tanzania is vested on GoT and the Minister responsible for water development is empowered to regulate the use of water from any source in any area of the country on a national basis, to declare such a source to be a national water supply for the purpose of the Act. The Law sets conditions on the use of water and appoints the Principal Water Officer, to be responsible for setting policy and allocation of water rights at the national level. The Water Act is currently under review. The new Act is expected to establish a mechanism for a more participatory management of water resources. With irrigation an important economic activity in most if not all of the river basins of the United Republic of Tanzania, a more balanced approach will probably be adopted.

2.3.6 Tanzania's rural water supply policy

In National Water Policy (2002) stipulates that communities are responsible for full cost recovery, which means the recovery of the complete cost of the installation of the system, as well as covering costs for operation and maintenance. Therefore, sustainability is not just reaching the design life of a technology, but about the ongoing availability of clean, affordable and accessible water. Approximately 80% of Tanzania's population live in rural areas (NA WAPO, 2002). Only 50% of people living in these areas have access to an improved water supply, as defined by the UNICEF and WHO Joint Monitoring Programme (2000). The National Water Policy (2002) identifies seven pre-requisites for sustainable rural water supply: management at the village level; communities owning and managing their schemes; communities achieving full cost recovery for operation and maintenance of the scheme, as well as replacements; availability of spare parts and expertise; the protection of water sources; compatibility of technology and service level with the capacity of the beneficiaries and the recognitions of women as key players

The Village Water Committee (VWC) was the product of the 1991 National Water Policy, which shifted responsibility for rural water supplies from the government to the village. In recognition of the poor performance of the VWC the latest National Water Policy offers six options for management; Water User Associations (WUA), Water User Groups (WUG), Board of Trustees, Company, Cooperative Society and Corporation. These can each be registered at the Ministry of Water (except the WUG, that must register at the district) to become autonomous legal entities. These management entities are not founded on experience and therefore their viability has not yet been tested. Despite the introduction of the National Water Policy over ten years ago, the new management entities have not been widely established and the VWC remains the default management option.

The six management options from the National Water Policy of 2002

1. ***Water User Association***: A committee usually constituted of members of each WUG in the village, responsible for managing the village water supply.

Registered with the Ministry of Water and Livestock Department under the Water Utilization Act, amendment no.8, 1997

2. ***Water User Group***: The group of users of any one DP, represented by an elected committee, members of which often form the WUA. Registered with the local District Councils, Local Government Act. No. 8, 1992
3. ***Board of Trustees***: An independent, elected and unpaid board of villagers that directs a delegated management structure. Registered with the Ministry of Justice and Constitutional Affairs, Trustee Act Cap.375
4. ***Company***: A company limited by guarantee registered with the Ministry of Finance, Companies Act no. 212, Section 3(1), operating for profit
5. ***Cooperative Societies***: Member-owned and-controlled society registered with the Ministry of Cooperatives and Marketing, Cooperative Societies Act No. 14, 1982
6. ***Corporations***: As with company, but can also operate like an NGO. Registered with the Ministry of Home Affairs, Corporation Act No.25, 1974

Legal registration of the water user entity results in ownership of the water scheme being vested in the community. Without registration, communities have ownership over the management of the scheme, but it is the district that owns the hardware. In order to cultivate a greater sense of ownership, communities are obliged by the National Water Policy of 2002 to make a 5% cash contribution to initial capital costs.

The targets for the minimum service level are a year-round supply of 25 litres of potable water per capita per day, from water points at no greater distance than 400m from the dwelling and which serve no more than 250 people. In sparsely populated areas, achieving both of these latter targets requires a huge investment of resources, and significantly increases the per capita cost of the service. Each of Tanzania's districts has a District Water Engineer (DWE) who is responsible for the provision of improved water supplies in the area.

2.3.7 Research area experience

The objectives of both Emao and Nkelei water projects were to ensure access to improved and sustained water and sanitation services. Rural water supply and sanitation projects were within the joint initiative of the Lushoto district council and CHAMAVITA as funding facility. The projects started to be implemented in year 1990 and completed in 1995 and they costed a total of 60 million, (CHAMAVITA Project Hand Book, 2005).

The stated objectives of Emao and Nkelei village's projects were the following: To assist the local government in identifying and implementing an appropriate policy framework to promote long term sustainability of water supply, to test an alternative to the current supply driven supply mechanisms, to improve rural income through income generating opportunities for both men and women, to deliver sustainable health and hygiene benefits to the rural population through improvements in water supply and sanitation services, and lastly the projects sought to ensure quantity, quality, equity, reliability, coverage and access of water supply and sanitation services (CHAMAVITA Project Hand Book, 2005).

Community participation in Emao and Nkelei water projects

Stakeholder's participation in water resources management has not been effectively implemented in the past and even identification and categorisation of stakeholders has not been carried out in most parts of the country. The ministry of water has usually been implementing activities without adequate involvement and participation of stakeholders including local communities in planning, management and decision making at all levels on issues related to water resources. This was the case for water projects in Emao and Nkelei villages.

Salient feature of these water projects is that they are `demand – responsive and community-driven` as the funding agency (CHAMAVITA) requires, and ensures community participation of the project development. They should be demand responsive because water projects should be the community's priority. CHAMAVITA as a funding facility should not decide on behalf of the community

but the community itself should make the decision in priority of other social priorities. Schouten and Moriarty (2003) argues that the role of community is pivotal in any project as initialized following an expression of demand from the community and a continuing commitment for active engagement through planning, construction, management, and maintenance of the system.

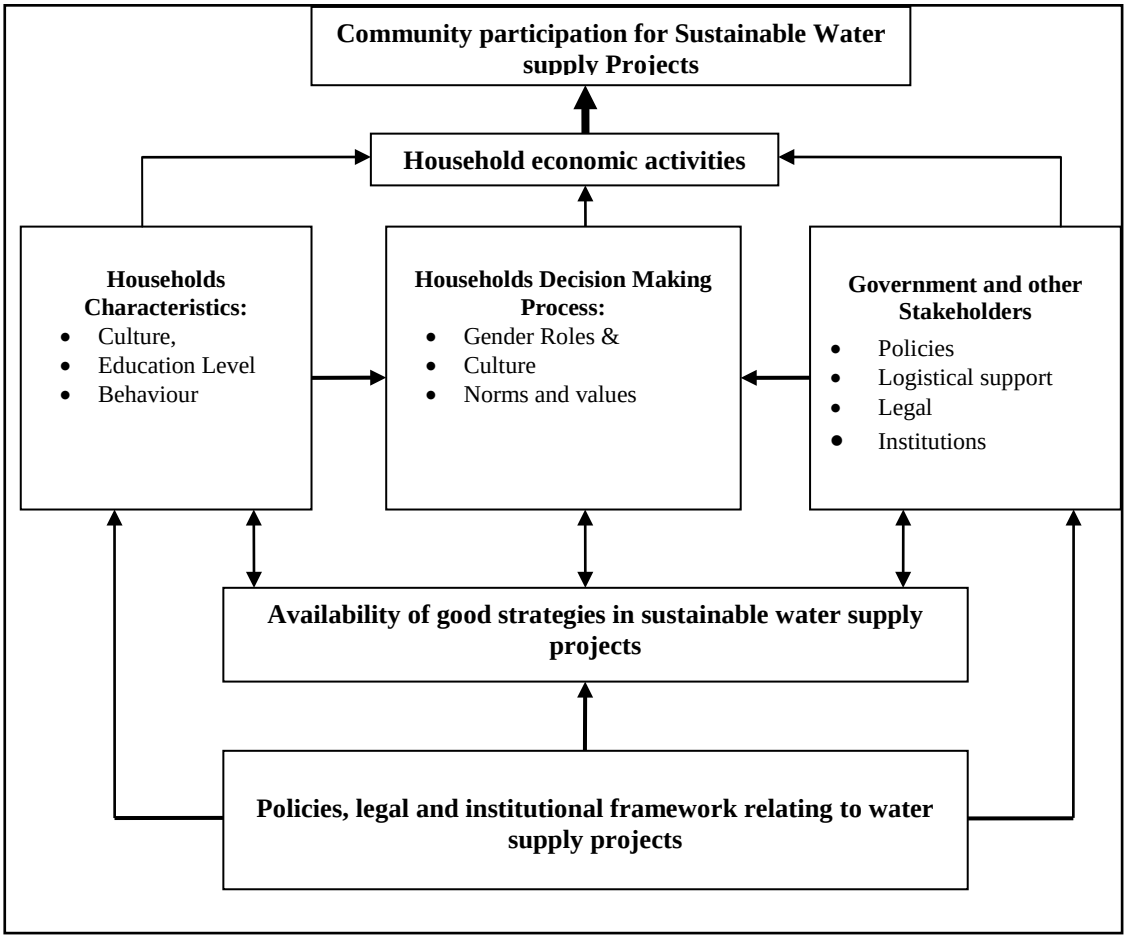
2.3.7 Conceptual framework and research model

To fulfil the aim of this research which is to analyze the implications of community participation for sustainability of rural water supply in the Emao and Nkelei villages of Rangwi ward in Lushoto district and to increase the understanding of how the community can be empowered through recognizing their wisdom and input in the decision making process, a simple analytical framework has been developed. As seen in Figure 2.2, it is simply based on the assessment of how the current domestic water supply system fits the needs of the different groups in the rural communities. The needs are related to improved water quality and treatment, quantity of water used in the household, distance to the water source, time they take to collect water, cost of construction and maintenance, technology used in supply construction and management, seasonal reliability of the water sources, the number of households using the same water source and women involvement in management.

Figure 2.2, presents the conceptual framework of the study. It is worth to note that the role of community participation in water supply and sanitation services project is determined by the culture, behaviour, knowledge and households' economic activities. However, economic activities are influenced by many interrelating factors, which include the household decision-making process, households' characteristics and cultural system. Specifically, households' decision-making process located at the centre of this framework partly because decisions about the allocation of work among household members in the study areas will be influenced by the role of women in making household decisions (Figure 2.2). Empirical evidence indicates that households in which women have more control over resources (partly due to legal rights; greater inheritance; high share of assets or absence of the husband) or

higher social status tend to place a higher priority in allocating household resources. Gender is amongst the intra-household decision-making process, which influences community participation in water supply and sanitation services in Lushoto District. In this study, it is assumed that age of the household heads; household income and education level, household size, and awareness about environmental issues are some of the characteristics influencing the community participation in sustainable water supply and sanitation services projects (Figure 2.2).

Figure 2.2: C**onceptual framework for analyzing community participation**



Source: Author's Construction, 2012

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents briefly the social - economic profile, the environment, administration and population of Lushoto district as well as the research methodology used. Lushoto District is situated in the northern part of Tanga Region within 4^o 25' to 4^o 55' latitude South of Equator and 30^o 10' to 38^o 35' Longitude East of Greenwich. The District has an area of 3,500 km^2 and accounts for about 12.8% of Tanga Region. It borders with Korogwe District in the South and Mkinga District further East, Same District in the Northwest, and Republic of Kenya in the Northeast. Lushoto Town is the district headquarters and according to the population census of 2012 its population was estimated at 496,917 persons, the largest in the Region.

3.1.1 Physical Features

The Western Usambara Mountains dominate the landscape of Lushoto district which lies between 300 metres to 2,100 meters above sea level. The main physical features are highlands covering about 75% (2,625 km^2) of the total District area, with altitude of 1,000 metres to 2,100metres above sea level.

The lowlands cover about 25% (875km^2) of the total District area between an altitude of 300 meters to 600metres above sea level. The mountains and their lower slopes occupy about 90% of the total area of Lushoto district. The slopes are moderately steep to very steep and there are many narrow valleys as well as rock outcrop in the terrain.

The main drainage of the Lushoto district comprises of the Umba and Soni rivers that flow East and South respectively into the Indian Ocean. There are several small springs and streams that form local micro-drainage systems and which are important sources of water for domestic and agricultural use.

3.1.2 Climatic and Rainfall

3.1.2.1 Temperature

The mountainous areas of Lushoto district are cooler and less humid than the coastal areas of Tanga Region. The high temperature is experienced in the period of October to February and lowest temperature occurs in the period of June to August. In general the agro-ecological zones described below have different temperature and rainfall patterns.

3.1.2.2 Rainfall

Lushoto District receives rainfall on a bimodal pattern, with short rains from October to December and long rains from March to June. The highlands get an average of 800 - 2,000mm rainfall per annum and the lowlands get about 500 - 800 mm per year from October to December and long rains from March to June with heaviest period of long rains in April. The short rains are less reliable than the long rains but they are the most important for growing seasonal and annual crops like maize and beans adapted to temperature greater than 20^0C because such temperature is prevalent in Lushoto from October to March. Thus, Areas in the lee of the mountains sheltered from the prevailing winds from the Indian Ocean get lower rainfall than the windward slopes. Thus, five main climates can be identified: humid warm in the lowlands facing the Indian Ocean, dry hot and dry warm in the low but rain shadowed areas, humid cold in the windward facing highlands, and dry cold in the rain shadowed lee ward slopes of the highlands.

3.1.3 Agro-ecological zones

Lushoto district can be zoned into five agro-ecological zones that are humid warm, dry hot, humid cold, dry warm and dry cold. The categorization is based on the altitude, rainfall, temperature and humidity. Based on such characteristics, such zones offer different cropping patterns/possibilities.

3.1.3.1 Humid warm zone

This zone is found in an altitude between 800 - 1,500 meters above sea level. Areas in this zone receive about 800 - 1,700 mm of rainfall and are characterized by having long rains between March and June, with mean temperature of about 18^0C. This zone is generally found in areas around Bumbuli and Soni divisions. The crops grown include tea, coffee, vegetables and sugar cane.

3.1.3.2 Dry hot

The zone is elevated at an altitude between 300 to 600 meters above sea level. The area is in lowland and experience little amount of rainfall ranging from 400 to 600 mm that cannot support most of agricultural activities. The crops grown are cotton, sisal, rice and cassava. This area covers most of the Umba division and is dwelt by pastoralists. It is the hottest zone as its temperature goes up to 30^0C.

3.1.3.3 Humid cold zone

The zone has an altitude between 800 to 1,500 meters above sea level. The areas receive rainfall of about 600 - 1,200 mm with an annual mean temperature of 22^0C. The crops grown are coffee, vegetables, bananas, potatoes and fruits. The areas are found in Lushoto division.

3.1.3.4 Dry warm zone

It covers an area which lies at an altitude between 800 – 1,800 meters above sea level and get a mean temperature of 20^0C and amount of rainfall that ranges 500 - 800 mm. The area has four periods of dry period and northeast trade winds, which causes short rains between October to December. Due to the nature of climate (low amount of rainfall) only subsistence farming is practiced and crops grown are maize, beans, cassava and vegetables (mainly at the valley bottom). A zone covers two divisions of Mlola and Mgwashi.

3.1.3.5 Dry cold zone

The areas found in this zone include Mtae division and Upper Mlalo. It lies between 1,700 - 2,100 metres above sea level. The zone has rainfall ranging between 500 - 800 mm. The annual mean temperature is 16^0C. The crops grown includes, vegetables, fruits and Irish potatoes and are found in areas of Rangwi and Shume wards.

3.1.4 Administrative units

Lushoto District is one of the eight Administrative Districts of Tanga Region. Others include Korogwe Town Council, Korogwe District Council, Muheza District Council, Mkinga District Council, Handeni District Council, Pangani District Council, Kilindi District Council and Tanga Municipal. The District has 8 divisions, 44 wards (previous 32) with a total number of 207 villages (previous 176) and 1669 hamlets. The district headquarters is allocated at Lushoto town and there are two other urban centres, Soni and Mlalo.

3.1.5 Population size, growth and structure

The demography of Lushoto is important because the district has the largest and most densely populated, and defines the labour resources in the agriculturally most productive part of Tanga Region. The population of Lushoto district increased almost by thrice in size since 1957 from about 150 thousand to about 400 thousand in 2002.

According to the 2012 National Population census, Lushoto has 496,917 people (227,300 male and 269,616 female) the majority of whom (about 96%) live in rural areas, in 207 villages of variable sizes in 44 wards. Only 4.33 % of the total population is in the urban centres of Lushoto, Soni, and Mlalo. Lushoto town has more than half of the urban population. More people lived in urban centres in 2002 than in 1988, with the highest growth having occurred in Soni.

3.2 Research design

The study was a case study research design. Data were collected for multiple cases at a single point in time. Due to that, it offered to the researcher an opportunity to do an in-depth examination of the study population as it covered a variety of characteristics ranging from individuals to the community level. Different methods of data collection like structured questionnaires, interviews, discussions and personal observations were employed to produce primary data. Moreover, secondary data were collected from existing documents, books, journals, reports, and others sources from sector offices and from concerned bureaus inside and outside the ward.

3.3 The study area

The study was conducted in Lushoto district in Tanga region, specifically in Nkelei and Emao villages of Rangwi Ward in Mtae division, about 80 kilometres from the district headquarters. The location of two villages are shown in the Appendices (Lushoto District Profile, Vol. IV, NBS 2004, p. 62).

3.4 Study population

The population of this study considered the respondents from the two selected villages (Nkelei and Emao). Also primary school teachers and village officials in two villages and district level officials were involved. The two villages were purposely chosen because they are implementing the water supply and sanitation services projects under CHAMAVITA in Lushoto district council. Also purposive sampling method was used for water department official(s), heads of institutions in the villages, and CHAMAVITA official since these officials are the reliable persons in providing data related to their Institutional they head. Random sampling method was used to pick respondents at household level.

3.5 Sampling techniques and sample size

Due to the nature of the study, both probability and non probability sampling techniques were used. These villages were selected purposely because they are under the project of water supply and sanitation services as well as the presence of

economic activities leading to the destruction of catchment areas and their accessibility in terms of transport.

The sample size was determined using the formula by Yamane (1967). That is,

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

where **n** = sample size, **N** = the population size and ***e*** = level of precision

The study population at Nkelei and Emao villages is estimated to be **15,682** (URT, 2012). By using the above formula at **0.1** level of precision, the sample size was one hundred respondents (**100),** falling in the categories indicated in Table 3.1 below

Table 3.1: The major categories of respondents

S/N.	Category of Respondents.	Number of Respondents.
1.	Nkelei Respondents	46
2.	Emao Respondents	46
3.	Village Executive officers.	2
4.	Primary School Teachers	4
5.	District Water Engineer Official(s)	1
6.	CHAMAVITA Official(s)	1
	TOTAL	**100**

Source: Generated from Research Data, 2013

3.6 Types and sources of data

The study used both primary and secondary data. Primary data were obtained directly from the field and secondary data were obtained from reports and other documents from CHAMAVITA Office and Lushoto district council

3.6.1 Secondary data

Secondary data were obtained from different sources both published and unpublished documents and relevant literatures such as reports, journals, pamphlets, newspapers, publications and internet sources. These documents were obtained from libraries, different governmental and non- governmental institutions and offices including VEO's offices and CHAMAVITA's office, District water engineer, environment and

forest departments of Lushoto District Council and other books were included in the study.

3.6.2 Primary data collection

Primary data were obtained from the respondents directly in the study area of the two selected villages whose people are implementing the project rural water schemes under the assistance of CHAMAVITA. Tools used in this group of respondents were filling questionnaires, interview and personal observation. Also other primary data sources were obtained from District water engineer, village executive officers from Emao and Nkelei villages and Primary Schools teachers from Rangwi primary school and Nkelei primary school.

3.7 Data collection methods

Data collection was done through structured questionnaires, interview, observation and documentary review was used to collect secondary data .The interview was conducted to a variety of people specified in the sample size above. The interviewees were guided by the already prepared questionnaires designed for respondents. Secondary data were collected through documentation by reading both published and unpublished materials such as reports

3.8 Data processing and analysis

The collected data were edited, coded and processed by using Statistical Packages for Social Sciences (SPSS) Version 16.0. Under this, codes were developed and templates created (That is, variables were designed and given labels). Editing and coding of the questionnaires was done and data were entered following the developed codes. Data analysis was done using Statistical Package for Social Science (SPSS) Version 16.0 where as presentations have been done using percentage, tables, graphs and charts.

3.9 Limitations of the study

Several limitations were encountered in the course of this study as follows:

i. Some respondents were not ready to expose some of the data concerning their activities due to fear of being charged for environmental destruction.

ii. Some respondents were ignoring answering the questionnaires until they were paid some money or unless extra effort was used through village leaders.

iii. Other respondents participated little in water schemes and other environmental issues in the area.

iv. Data collection in the two villages was done during the rainy season in most of the parts of Lushoto district which made it difficult to meet some of the targeted respondents as many of them were in their farms in day hours

v. Another limitation was the time allocated for the fieldwork and financial constraints, which however did not reduce the number of respondents that were aimed to be interviewed.

CHAPTER FOUR

4.0 PRESENTATIONS OF FINDINGS

4.1 Introduction

This chapter presents the findings of the study. The study uses community participation for sustainability of rural water schemes. A comparative approach was undertaken to compare data obtained from two CHAMAVITA community supported water projects of Emao and Nkelei villages. The findings are based on research objectives and questions which were used to guide the investigation.

4.2 General respondents

Total of 100 participants responded to the questionnaires of whom 92 were water schemes beneficiaries from two selected villages and the remaining local government and project leaders. In addition, 2 officials dealing with the water project one from CHAMAVITA and the other Lushoto district council were interviewed, 2 village executive officers one from each village and 4 primary school teachers two from each village. Likewise, some beneficiaries were also interviewed after filling in questionnaires, particularly when the researcher felt that some respondents might have further useful information. The data from the respondents in this study are presented in descriptions, and charts and table form. However, the charts contain only the findings from project beneficiaries' totalling 92 respondents. The information obtained from officials' responses was presented in descriptive form to clarify issues.

4.3 Socio-demographic characteristics of respondents

The following sub-sections describe the general characteristics of the respondents in terms of age, educational level, marital status and economic activities.

4.3.1 Age of respondents

The respondents from this study were both men and women aged 15 to 80 years. Table 4.1 shows that, the majority of respondents (20.4%) were aged between 35 and 44 and 21.9% were aged between 25 and 34 years old. Most of the respondents were

economically productive as they all fell within the range of 15 to 75 years old. People in this age range (15 and 75 years old) could participate in economic activities and were able to produce for the community.

Table 4.1: Age of respondents (n=92)

Age group	Frequency	Percentage	Cumulative Percentage
15 - 24	14	15.6	15.6
25 - 34	20	21.9	37.5
35 - 44	19	20.8	58.3
45 - 54	17	18.8	77.1
55 - 64	7	7.3	84.4
65 - 74	6	6.3	90.6
75+	9	9.4	**100**
Total	**92**	**100**	

Source: Research findings, April 2013

4.3.2 Sex of the respondents

Respondents from this study were both men and women. Men formed 53.2% and women 46.7% of the total respondents (Table 4.2). Men and women were considered due to the fact that they are both involved in the different socio economic activity that needs water and are required to support water schemes for its sustainability; also for the purpose of providing clear picture of their participation in water schemes. On the other hand women were taken into consideration due to the fact that they are the most affected by water related problems in their areas.

Table 4.2: Sex of respondents (n=92)

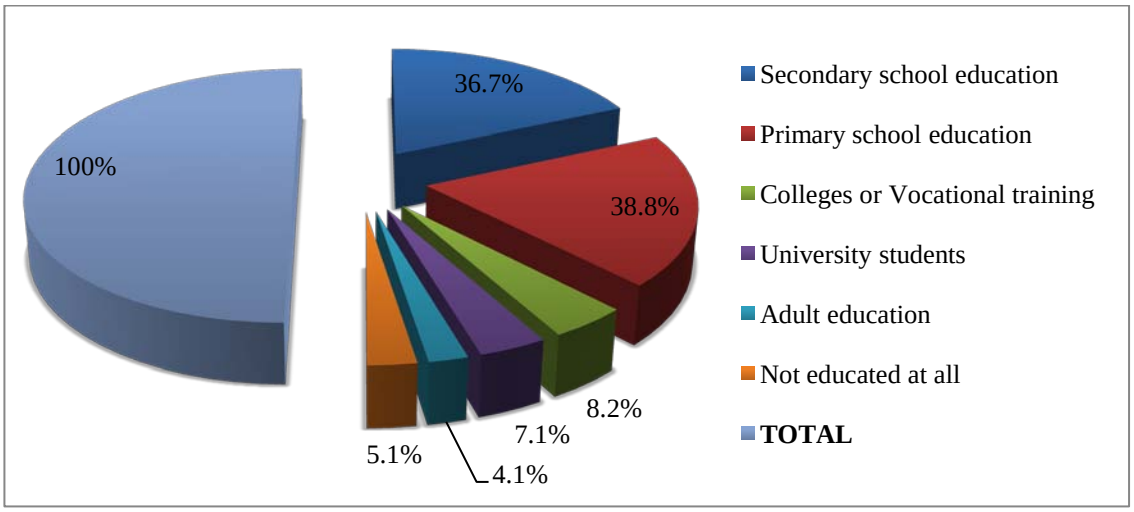
Villages	Men frequency	%	Women frequency	%	Total (n=92)
Emao (n = 46)	27	58.7	19	41.4	46
Nkelei (n = 46)	22	47.8	24	52.2	46
Total	**55**	**53.26**	**43**	**46.74**	**92**

Source: Research findings, April 2013

4.3.3 Educational level

The findings of the study shows that majority (38.8%) of the respondents presented in Figure 4.1 had reached primary school level. Another good number of respondents (36.7%) had attained secondary school education, 8.2% had been in colleges or vocational trainings, 7.1% university students, 4.1% adult education and the rest 5.1% were not educated at all. Of the forty-three (43) women covered, 68% of them were in their reproductive age but had a very low educational level; only 67% have had basic education. Lastly 70.8% were engaged in food crop farming, 18% in civil services and the rest engaged in miscellaneous income generating activities.

Figure 4.1: Level of education of respondent (n=92)

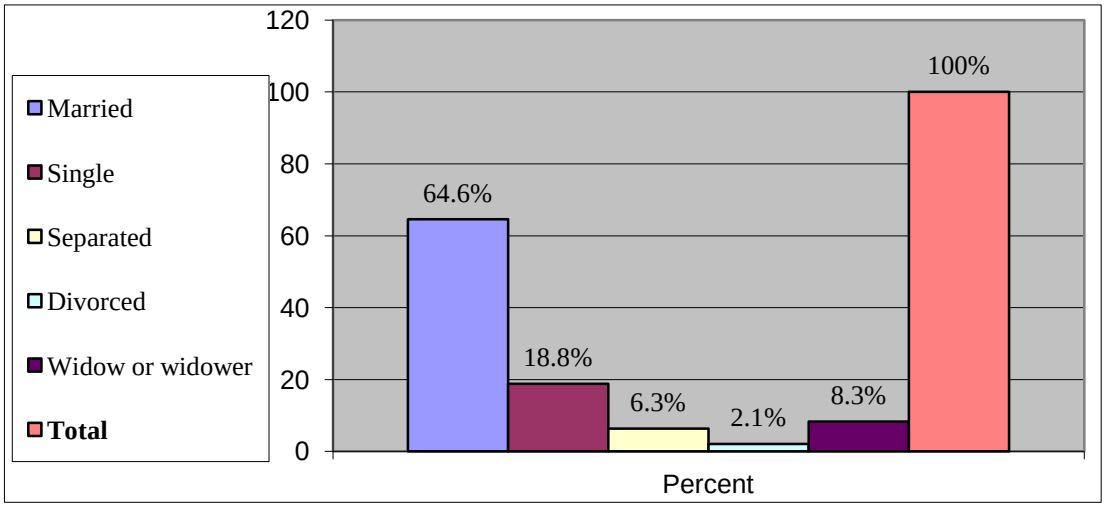


Source: Research findings, April 2013

4.3.4 Marital status

As shown in Figure 4.2 majority of the respondents (64.6%) were married. According to Rangwi Ward Executive Officer an average household in the two selected villages had 4 to 8 members leading to an increased demand for water services. Historically Rangwi ward had experienced a series of water problems in Mtae division for a long time. Married people with young children were severely affected by a series of family problems.

Figure 3.2: Marital status (n=92)



Source: Research findings, April 2013

4.3.5 Economic activities of the respondents

Table 4.3 shows distribution of respondents according to economic activities. The major economic activity carried out in the study area is on farm production (56.1%). On farm production enabled the farmers to get food as well as earn an income for their households. It is through this economic activity that environmental degradation takes place in the two selected villages. The non-farm production that mainly involves petty business such as food vendors, lumbering and other civil services enables the family to earn additional income for their households. From the respondents it was revealed that non-farm income generating activities has enabled the households engaged therein to generate an additional income.

Table 4.3: Distribution of Respondents According to Economic Activities (n=92)

Economic activity in the area	Emao (n=46)	Nkelei (n=46)	Total frequency (n=92)	%
Farmers	29	25	54	56.1
Livestock keepers	3	5	8	9.2
Businessman/ woman	3	-	3	3.1
Civil servants	7	7	14	15.3
Lumbering	4	1	5	5.1
Still in school/College	5	3	8	9.2
TOTAL	**46**	**46**	**92**	**100**

Source: Research findings, April 2013

4.3.6 Respondents' time in the village

The time in which the respondents stayed in Emao and Nkelei villages is shown in the Table 4.4. 30.4% of the respondents in Emao and 41.3% of the respondents in Nkelei villages have been living in these villages for more than 9 years continuously. This indicates that they were able to give clear information on the status of the role of community participation for sustainability of water schemes in the two villages from the time when the project started

Table 4.4: Respondents' time in the village (n=92)

Duration in the village (in years)	Number of respondents				Total (n=92)
	Emao (n=46)	%	Nkelei (n=46)	%	
<1 year	1	2.2	3	6.5	4
1 year	2	4.3	-	0	2
2 years	-	0	3	6.5	3
3 years	-	0	-	0	-
4 years	2	4.3	-	0	2
5 years	4	8.7	-	0	4
6 years	3	6.5	-	0	3
7 years	16	34.8	12	26.1	28
8 years	4	8.7	9	19.6	13
9+years	14	30.4	19	41.3	33
TOTAL	**46**	**99.9**	**46**	**100**	**92**

Source: Research findings, April 2013

4.4 Condition of water services in the two villages

The findings of the study show that 12 (13%) of the respondents said that water services in the two villages were very good, 9 (9.8%) that they were good, 17 (18.5%) that they were bad, 22 (23.9%) that they were satisfactory, 10 (10.9%) that they were very bad and the rest 22 (23.9%) that they did not know the condition of water services before. However progressive report from Lushoto district water engineer shows that water services in the district particularly in Rangwi ward was inadequate due to high population pressure and drastic environmental problems

accelerated by fire wood and charcoal making, illegal lumbering and poor agricultural practices.

4.5 Awareness of the people on CHAMAVITA activities in the areas

Information obtained from focused group discussions and questionnaires on the level of awareness on CHAMAVITA activities in the two villages of Emao and Nkelei is shown in the statistics below. The findings of the study revealed that most of the respondents in the two selected villages are aware of CHAMAVITA activities in the two villages. 97% of the respondents from Emao and 83% from Nkelei are aware of organization activities. Only 2.2% of the respondents from Emao and 14% were not aware; however 3% of respondents from Nkelei village did not know the presence of the organization activities in the village.

The level of community participation in organization activities in the two villages shows that 84.8% and 91.3% of the respondents from Emao and Nkelei villages respectively participate. These activities include planting trees in catchment areas, manual works, paying the agreed contributions to the Water User Group (WUG) in the village, attending seminars and observing by laws. Other respondents 15.2% in Emao and 8.7% in Nkelei village do not participate in organization's water schemes activities for various reasons, as some of the respondents were too mobile.

4.6 Participation of villagers in water schemes activities by gender

Villagers in Emao and Nkelei participate in water schemes activities in various ways shown in the Table 4.5 below; the results shows that most of the villagers participate through provision of labor (43.5% and 58.7% for Emao and Nkelei villages respectively) community financial contributions ranks the second in Nkelei village. 17.4% agreed to contribute mean while 15.2% of the respondents in Emao village agreed to report all the illegal activities that threatens the sustainability of water project. Few respondents in the two selected villages plant trees for conserving catchment areas (6.5% and 4.3% for Emao and Nkelei village respectively).

Table 4.5: Participation of villagers in water schemes activities by gender (n=92)

Village	Category of participation	Sex of respondent		Total number of respondents	%
		Males	Females		
EMAO (n = 46)	Tree planting in catchment areas	3	-	3	6.5
	Providing a plot of land for the project	2	-	2	4.3
	Community financial contributions	1	3	4	8.7
	Reporting all activities in water scheme	2	5	7	15.2
	Attending project related meetings	-	4	4	8.7
	Following bylaws of water scheme	3	3	6	13
	Manual works	8	12	20	43.5
NKELEI (n = 46)	Tree planting in catchment areas	1	1	2	4.3
	Providing a plot of land for the project	-	1	1	2.2
	Community financial contributions	5	3	8	17.4
	Reporting all activities in water scheme	3	1	4	8.7
	Attending project related meetings	-	3	3	6.5
	Following bylaws of water scheme	-	1	1	2.2
	Manual works	19	8	27	58.7

Source: Research findings, April 2013

4.6.1 Community participation at the planning phase of the project

The types of community participation activities during the planning phase of the projects in each village are tabulated in Table 4.6 below. Each type of participation activity is briefly described below. It was found that most of the respondents in Emao participated on most of the activities specified in Table 4.6. However, none of the respondents in Nkelei village took part in any of the activities, except in selecting place of construction.

Table 4.6: Participation of the respondents during the planning phase (n=92)

Type of participation	% within the village respond was given	
	Emao (n=46)	Nkelei (n=46)
Asking for demand	15.6%	9.8%
Selecting construction site	13.5%	13.4%
Selecting the type of technology	12.1%	.0%
Decide amount of money need to be contributed by each H/H and how	12.9%	.0%
Decide how kind contribution could be performed	12.3%	30%
Quantity of sand & stone each H/H should contribute	2.7%	.0%
Deciding division work	10.6%	.0%
Scheduling project work	10.4%	.0%
Did not participate at planning stage	.0%	46.8%
TOTAL	**90.10%**	**100.00%**

Source: Research findings, April 2013

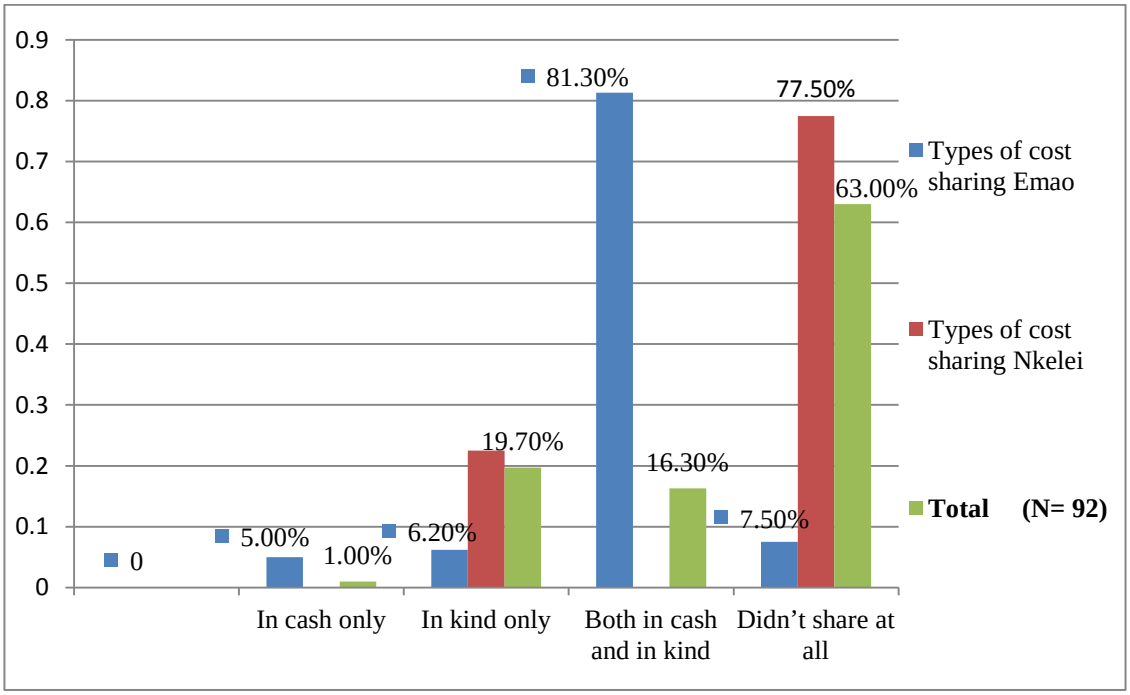
4.6.2 Community participation through cash and kind contributions

In Emao village, over 90% of the respondents have agreed to contribute cash, in kind or both, as shown in Figure 4.3 below. The other village (Nkelei) contributed significantly less for the water supply system and the contributions were only in kind (19.7%). The reasons why the majority of the respondents in Nkelei village did not contribute to project cost in cash or in kind is that they were not asked by the village authorities and were not trusted by some of the project leaders. The other reasons given were that they were poor, old and unable to contribute in kind, and that the scheme was far and unreliable.

Information obtained from the focus group discussion with the leaders of WUGs in the two villages, indicated that each household was obliged to contribute 5% of the construction cost. This amounted from 1,000/= female headed household and 2,000/= for male headed households. There were also differences in payments among households within a village because the very poor members were unable to pay. The shortages were made up by the rest of the community members. In kind

contributions consisted of fencing the water points, removing excavated material, providing locally available construction materials such as sand and stone, inserting pre-casted concrete rings in to the well shaft and installing pump.

Figure 4.3: Cash and kind contributions by the community (n= 92)



Source: Research findings, April 2013

4.6.3 Community participation in village water scheme meetings

Community participation in village meetings to address and discuss water supply and basic sanitation services in each village were assessed. Findings shown in Table 4.7 depict community participation in the village water scheme meetings. Fully 100% of the respondents in four hamlets of Nkelei village namely Magagai, Mbaru, Kingamoi and Usichome moto had not participated to the village meetings; they said that meetings were not conducted by the village government leaders or the respective organization giving service in each of these hamlets however the information obtained from village executive officer and primary school teachers have shown that the village has political problems that retards development initiatives. In Emao village the situation is different, 92.6% of the respondents said that they attended meetings for the improvement of water services in their village with representatives

from CHAMAVITA; however some had contributed some ideas while others did not, whereas 27% of respondents in Emao village did not attend the meeting at all. Generally 14.6% of all the respondents agreed to participate in water scheme meetings

Table 4.7: Community participation in water scheme meetings (n=92)

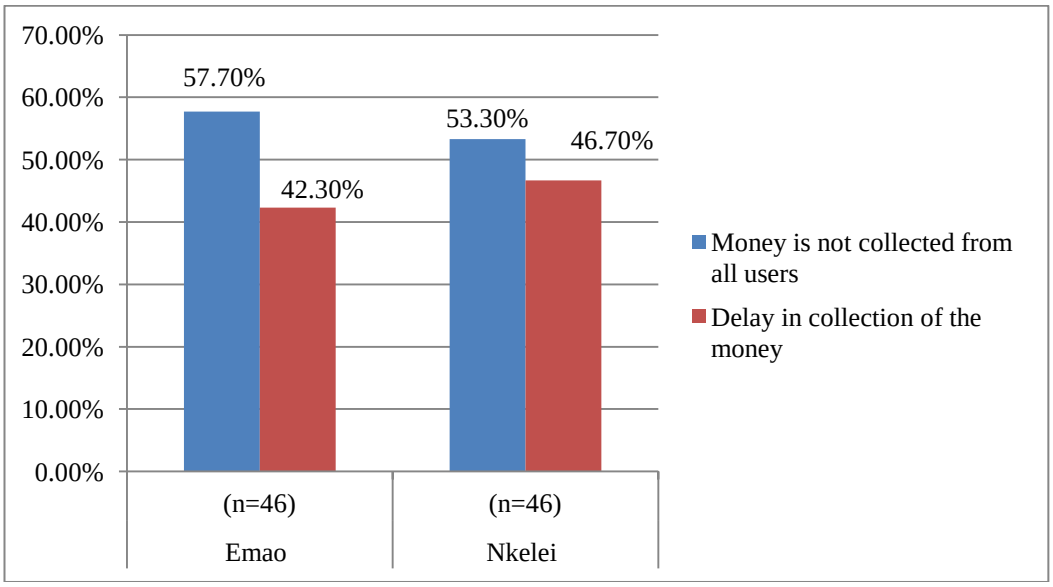
Mode of participation	% of responses within the village		
	Emao (n=46)	Nkelei (n=46)	Total
Attended the meeting and contributed ideas	26.3%	-	5.3%
Attended the meeting and didn't contribute ideas	46.3%	-	9.3%
Didn't attend the meeting	23.4%	-	5.4%
No meeting at all	4.0%	-	80.0%
	100.00%		**100.00 %**

Source: Research findings, April 2013

4.7 Satisfaction with collection and use of operation and maintenance funds

Respondents in the two villages where operation and maintenance costs were collected were asked about their satisfaction with how the funds were collected and used. Only 22% of the respondents in Emao village while 45% in Nkelei village were dissatisfied with the collection of the funds. The reasons given were that not all users paid and that the collection was late. In Emao village 23% of the respondents were dissatisfied with how the O & M funds were managed, and 40% were not content in Nkelei village. The dissatisfaction resulted from not putting funds in the bank and the lack of (or minimal) reporting on income and expenditures of the funds. The latter resulted in low trust by the respondents due to reasons depicted in Figure 4.4 below

Figure 4.4: Factors affecting effective collection of money in the villages (n= 92)



Source: Research findings, April 2013

Other factors examined during the study were as shown in Table 4.8 and Table 4.9 below. Table 4.8 shows factors affecting good management water project funds in the two selected villages while Table 4.9 shows reasons affecting quantity of water supplied by the water schemes in the two selected villages of Emao and Nkelei

Table 4.8: Factors affecting good management of water project funds (n=92)

Reasons	% within the village respond is given	
	Emao (n=46)	**Nkelei (n=46)**
Money collected not kept in the bank account	23.5%	34.1%
Corruption among WUGs leaders	14.2%	19.7%
Low reporting rate of incomes and expenditures to the community	62.3%	46.2%
Total	**100.00%**	**100.00%**

Source: Research findings, April 2013

Table 4.9: Respondents' beliefs for no or low quantity of water supplied (n= 92)

Reasons given by respondents	% within the village respond was given		Total (n=92)
	Emao (n=46)	Nkelei (n=46)	
Corruption among the leaders	6.8%	14.0%	5.1%
Destruction of the catchment areas	5.7%	27.30%	10.0%
Destruction of water infrastructures	0.0%	31.40%	12.4%
Carelessness of the technicians and supervisors	14.8%	2.50%	4.2%
Presence of hard rock made deepening of wells difficult	5.7%	0.00%	2.0%
Rapid increase of the population in the village	67.0%	20.70%	63.2%
I do not know the reason	0.0%	4.10%	3.1%
	100.00%	**100.00%**	**100.00%**

Source: Research findings, April 2013

4.8 Community satisfaction with the quantity of water supplied

The respondents were asked to scale their level of satisfaction with the quantity of water they got from the water schemes they were using. The level of satisfaction on the scale the respondents were given to choose were: completely unsatisfied, unsatisfied, somewhat satisfied, satisfied and completely satisfied in increasing order of satisfaction level. It was found as it is shown in Table 4.10, below that only 45.5 % of the total respondents were highly satisfied by the quantity of water supplied by the scheme they were using.

Table 4.10: Community satisfaction with the quantity of water supplied (n= 92)

Level of community satisfaction	% within the village respond was given		
	Emao (n=46)	Nkelei (n=46)	Total (n= 92)
Completely unsatisfied	-	12.5%	2.3%
Unsatisfied	-	16.3%	4.3%
Somewhat satisfied	-	22.4%	7.0%
Satisfied	26.3%	46.3%	40.5%
Completely satisfied	73.7%	2.5%	45.5%
	100.00%	**100.00%**	**99.60%**

Source: Research findings, April 2013

CHAPTER FIVE

5.0 DISCUSSIONS OF THE FINDINGS

5.1 Introduction

This chapter deals with the discussions of the findings. Each research question has been discussed by the use of data. The study covered two villages, which are located in Umba river catchments forests, Rangwi ward of Mtae division in Lushoto district. The catchment area is important for its water source which supplies to the rest of the water users and the national grid at large.

5.2 Clarification of Analysis

For the purpose of analysis in this research, community participation is conceptualized as the process of community involvement to be achieved when the community has been engaged in the planning and decision making of the water project and has revealed increasing potential to sustain the project's proper functioning after the said project is handed to the community. The activities mentioned below are in line with the concept of participation in rural water supply and sanitation services.

5.2.1 Community participation in planning and decision making

According to this research paper, this entails consultation with the community before the water projects are implemented and also involvement of the community in decision making in terms of designing the project, location of water standpoints and so on.

5.2.2 Water Committee (WC)

WC is the most common form of rural water systems through which beneficiaries are supposed to contribute to the costs of the project and share the benefits. According to CHAMAVITA the function of WC are in principle, to represent the community in contact with the development partners, organize community contribution in term of both labour and cash, keeping project records of expenditure and payment, collecting water tariffs, convening WC meetings to discuss and decide on issues and problems,

and informing the community on regular basis on the decisions reached (CHAMAVITA Projects Handbook, 2005).

5.2.3 Community contribution

Many writers on rural community participation and the area of water resource consider monetary contributions as amounting to community participation (Claud, 1998). This study considered also any contribution by community members such as cash, labour, ideas contribution in meetings, planning, materials support and many other forms of community involvement also amounts to community participation.

5.2.4 Water user charges

It means paying anything for the water consumed. This is not only associated with the operation and maintenance aspect of the water project, but also with its sustainability in the sense that the community has enough funds to carry out the required operation and maintenance costs. According to NAWAPO the community which pays charges to the water services gives a good signal that the water supply project will operate for a long period of time (NAWAPO, 2002).

5.3 Analysis and discussion of major findings

In establishing a linkage between the participatory approaches for the sustainability of water project services, the researcher examined the planning procedures as well as the management and implementation strategies applied by CHAMAVITA in two projects in Emao and Nkelei villages. More specifically this entailed examining the methodologies used for people's participation, respondents' knowledge about the projects, rationale for prioritizing water projects, and the extent of people's participation. Other issues examined were, the existing WC, people's participation in public meetings, procurement of project materials and finally, the people's participation in covering operational and maintenance costs.

5.3.1 Community mobilization at initial stage of water project

CHAMAVITA applied participatory methodologies to enhance people's participation. This approach was used in both projects of Emao and Nkelei villages. The researcher posed a question to a CHAMAVITA official representative at the district level on what procedures were followed by CHAMAVITA in enhancing and mobilizing people's participation in water projects. Moreover, to eliminate the mistrust that existed in government and other development agencies, CHAMAVITA Officer pointed out that the organisation would ensure that they implemented the community's needs on time. In an interview with village leaders, it was learnt that PRA team from the district stayed with villagers of Emao and Nkelei for about seven days.

From the above, it can be seen that CHAMAVITA's supported projects in these two villages, participation started at the identification stage of the projects. A number of participatory methodologies were employed among them being Rural Appraisal (RUA), Community Mapping as well as Participatory Hygiene and Sanitation Transformation (PHAST). Generally findings of the study show that 81.5% of 92 respondents agreed that there was community participation at the initial planning of the water projects (Table 4.6). This indicates that people were involved in the initial stage of the project. However, 18.4% of 92 respondents said they had not participated, and also argued that CHAMAVITA and Lushoto district officials were using them as rubber stumps to get funds from donors. Consequently, they were arguing that there was ineffective participation.

5.3.2 Issues discussed during the initial meeting of the project

During the initial meeting, people discussed various issues that face their community, and water was given high priority among other social problems. In these meetings communities were facilitated to identify major problems. The first four problems were ranked using pair-wise ranking methodology to prioritize the most pressing needs and water was most selected. In the meeting they discussed issues such as:

location of water points, community contribution and the election of WC, constitutional affairs, and project management after implementation and so on.

In an interview with Lushoto District Water Engineer, Participatory Rural Appraisal (PRA) was carried out for four days in each village. On the other hand two Village Executive Officers and Primary school teachers pointed out that after the communities prioritized water as the most needed, they were facilitated to elect the project management committee, which oversees project implementation to completion. The committee comprised of six members, with at least three (3) or more representation of women. The leaders further explained that sector experts from District Council facilitated communities to undertake detailed planning, budgeting, filling application forms, training on project management and simple book keeping.

5.3.3 Knowledge of water project and rationale for prioritising projects

One area of interest that the researcher wanted to establish was people's knowledge about water projects. On this aspect it was clearly spelt out through evidence collected from questionnaires, focused group discussions and interviews held that the majority of respondents were aware that water projects did exist in their areas of residence. They also revealed that the people were aware of CHAMAVITA financing the water projects (97% and 83% of the respondents in Emao and Nkelei villages respectively).

Moreover, beneficiaries who responded through questionnaires, pointed out that despite the fact that they participated in identifying and prioritizing the water project, they were not consulted to locate the positions of new water wells; the decision was done by CHAMAVITA and Local Government leaders (District Water Engineer and Ward Development Committee) instead, hence their requirements were not taken into consideration. They further pointed out that new water wells to some hamlets were located far from their residence leading to only a few households utilizing the service. This shows clearly that the interest of vulnerable groups especially women were not taken on board during project implementation and management. When the DWE was consulted he agreed that some of the wells were located far away from the

residential areas but pointed out that this was due to some technical reasons and availability of underground water.

According to Kimberly (1998) sustainable rural livelihood is an appropriate approach to any development project. He insisted further that the approach is inherently responsive to people's own priorities, which makes participatory analysis inevitable. This study investigated how communities came to choose water project as their first priority. As far as prioritisation of projects was concerned, it was found that water projects were given first priority in both cases, due to severity of the problem in the two selected villages of Emao and Nkelei. Many respondents had the opinion that water in their area, was a major problem thus, making it a first priority to many respondents who filled questionnaires and of those interviewed, Local Government leaders and CHAMAVITA official. Seventy five (81.5%) out of 92 respondents who were water beneficiaries said that water was their priority among other social problems. However, only 6.5% community members who were interviewed said that water was not their first priority. Those who responded against other respondents argued that their societies had other problems which could also be given priority like roads and health services (dispensary). It has been learnt that water was the priority of the community among other problems. This is due to the fact that Rangwi ward is among the areas within the district where there is water shortage.

Moreover, CHAMAVITA coordinator for Lushoto district confirmed that the district experienced severe water shortage, and that this made the government seek donor's assistance in 2000. Lushoto district engaged CHAMAVITA to develop community managed water schemes in some selected villages including Emao and Nkelei. It was observed through questionnaires as well different reports available on Lushoto profile, that before CHAMAVITA intervention, the area had no public water supply put in place apart from that put by the Missionaries of Roman Catholic Church in early 1970s. This forced community members to draw water from a privately owned borehole. A similar point was made by the CHAMAVITA Project leader for Emao and Nkelei water schemes who confirmed that a major water problem had existed

before CHAMAVITA`s intervention. CHAMAVITA used pair wise ranking technique of PRA to confirm this and thus the community priority area.

5.3.4 Community participation during the construction stage of the project

The findings of the study show that water committees in Emao village were involved in decision making during the construction phase of the project. The committees in Nkelei village however were not involved in making decision during the construction phase of the projects due to their internal political problems. Water committees in Emao participated in ensuring that they are provided with sufficient water; supervising the quality of construction; and approving the works of the contractor for payment. This might explain why the distribution of community satisfaction with the quantity of water supplied by the scheme is the highest for Emao village as compared to Nkelei village (Table 4.10 above).

5.3.5 How sustainability was addressed during the initial stage of water projects

Claud (1998) suggests that the design of projects should include elements of sustainability at initial stages, to ensure their later sustainability. The study sought to verify whether sustainability issues were addressed at the initial stages, and sustainability involved three strategies: community contribution in form of labour and/or cash; community participation in operation and maintenance costs; and enhancement of locally based administrative structures. The three strategies have been discussed below.

5.4 Forms of community contribution as a commitment

> ‘‘.....developing sustainable water projects require adequate financial resources. Donor and government dependency as the sole provider for most water services has led to poor sustainability of water projects. Although the Government and donors like WB can provide support whenever possible, the communities are encouraged to demonstrate efforts in sustaining their water schemes.’’ (URT, 2000)

In this context, the community was required to contribute a portion of capital to water schemes. Water project coordinators revealed that community members contributed both in cash and labour. Cash contributions were required for the initial

opening of bank accounts, as well as a way of demonstrating the community's commitment. This was done in both villages where CHAMAVITA supported water projects.

According to the two Village Executive Officers interviewed, in order make sure everybody contributed manual labour; house-to-house visit were made at times by the WC leaders to mobilize people to come forward and participate in the project activities. In such situations each ten-cell leader was required to mobilize his/her people to work on the nearby water points.

Each male headed household contributed a flat rate of Tshs. 2,000/= while female headed household contributed Tshs. 1,000/=. As can be seen from respondents on Figure 4.3, 6.2% and 19.7% of respondents in Emao and Nkelei villages respectively contributed labour while 81.3% and 16.3% for Emao and Nkelei villages contributed both cash and labour; this is an additional cash contribution apart from flat rate contribution per household. Nevertheless, labour contribution in water projects covered some of the project cost, according to the respondents the main contribution of the community members were in the form of labour. The project activities done by communities for the two projects were the same. In both cases, the activities included preparation of ditches for laying pipes, fetching water for construction, carrying building blocks and other building materials, painting well housing, and cleaning areas for drilling boreholes. Procurement of building materials was an activity done by the communities through their WC. This study revealed that community members contributed to the project implementation in both cash and labour. Labour contribution was specifically during construction phase.

5.5 Operation and maintenance

According to National Water Policy of 2002, to achieve sustainability of water projects in the rural areas, the communities are required to pay the operational and maintenance costs. The plans to cover operation and maintenance should be discussed during the project formulation stage, to enable communities to choose

appropriate technology that corresponds to their ability to operate, maintain and manage the water projects effectively in their areas (NAWAPO, 2002).

5.5.1 Existing village level operation and maintenance practice

Sustainability invariably depends upon communities taking financial responsibility for their schemes, which if achieved will enable scarce resources from government and donors to be targeted specifically on areas where there is no improved water supply, (Haysom, 2006; Mbugua, 1993). Communities are normally expected to finance and manage the operation and maintenance of a system. This requires capacity building in money management and organization and planning. However, funds for O & M were not collected in most of the households included in this study. Only in the ten hamlets out of fifteen of Emao village and five hamlets out of eleven in Nkelei O & M fees were collected.

Operation and maintenance training was given to all Water User Groups in the two villages. The trainings were given by the organization that installed water supply system. The training was given by Nyanza Environmental and Sanitation Organisation (NESO) Water Resource Office one year after the construction of the schemes were finished (note that in these villages the training was not given by the organization which constructed the scheme but NESO water resource office gave the training).

It was found that 74% of the respondents in Emao and 83% in Nkelei did not believe the operation and maintenance trainees had the capacity to maintain the scheme, based on the trainees' performance. None of the trainees the researcher interviewed even tried to maintain the pump. Ninety percent (90%) of operation and maintenance trainees were not confident to maintain the systems by themselves if failure occurs in the future. Representatives of CHAMAVITA explained that the cost for maintenance was covered by the respective organization which maintained the schemes. A scheme in each village was maintained only once since the schemes had given service. No

village had started using the money collected for maintenance purpose in the schemes where the community was contributing operation and maintenance cost.

During the focus group discussion with the workers of the organization (CHAMAVITA) it became obvious that one of the bottle necks in village level maintenance practices was lack of spare parts in both the local and ward markets. Important parts of the hand pump are made of plastic and are worn out easily by the up and down movement and need to be replaced on a yearly basis. This issue was also raised by maintenance trainees.

5.5.2 Operations and Maintenance Cost

> ‘‘.....to achieve sustainability of water projects, the communities are required to pay fully the operational and maintenance costs. The plans to cover operation and maintenance should be discussed during the project formulation stage, to enable communities to choose appropriate technology that corresponds to their ability to operate, maintain and manage the water projects effectively’’ (NAWAPO, 2002).

Findings from both Emao and Nkelei water projects, indicates that operation and maintenance strategies were predetermined factors before the projects took off. This commitment was an important condition before CHAMAVITA approves the project’s implementation. Amount of money collected in each project was used to cover operational and maintenance costs. Communities in both Emao and Nkelei projects paid Tsh.20/= per 20-litre bucket of water drawn. However, not all people, especially the old and marginalized groups were able to pay the agreed amount.

The study found that although water committees had started collecting money for water service charges, the amount collected was small. Only a few people paid the charges as most villagers draw water from the traditional water sources in the river. This was the source they used before the project implementation. Some community members interviewed in Emao village argued that they did not see the relevance of paying for water services since they had offered free labour during the project construction. Others wanted to know why they should pay for the water service now

as opposed to previous days when water services were offered free. However, it was stated clearly in NAWAPO of 2002 that water users have to pay for water services to cover operation and maintenance costs. It can be assumed that people were not willing to pay the water service charges simply because they were not told right from the beginning of the project. Issues of water user charges were introduced just after the completion of the project. This approach contradicted with the CHAMAVITA's principles, which requires sustainability issues to be addressed at the appraisal stages of the project development. This includes the commitment from the relevant department (for this case Lushoto District Water Department) to show how operational and maintenance costs would be addressed.

Generally, it was clear that lack of strategies to address sustainability issues on one hand, and free water policy on the other hand, lowered the morale of people paying for the water services. Previous water policies had encouraged free access to safe water. After the government introduced cost sharing in social services people were to pay for water services. Some people had adjusted to cope with these changes especially those living in village centres. However, people in remote areas still thought that the government is responsible for the provision of social services. Similarly Brikke (1995) asserts that people may be unwillingly to pay for something that they feel should be freely provided. It was learnt that the community were not aware that they were supposed to pay for water user charges. For example, some were not aware of who was supposed to cover the operation and maintenance costs, others suggested that there was a need to convene public meetings to discuss how to cover the operational and maintenance cost. Yet others suggested that the available VCF may perhaps be used for that purpose. Some villagers thought that CHAMAVITA should cover those costs since they receive free money from World Bank, others even wanted to wait until the projects started failing. This implies that these projects had not shown signs of sustainability, efforts needed in community sensitisation towards collecting water service charges to cover operation and maintenance cost. Even if few villagers pay user charge of Tsh.20/= per bucket, this amount is insufficient realistically to meet operations and maintenance costs. It is

high time now that GoT to sensitize people on issues of cost sharing due to their long time syndrome of free services.

5.6 Strategies to enhance local based administrative structures

Building of appropriate institutional structures for administration of water services is yet another crucial aspect to achieve water projects sustainability (Richard, 1999; Claud, 1998). These may be in the form of either water committees, Community-Based Organizations (CBOs) or Water User Groups (WUGs). For the purpose of this study, the administrative structure was viewed in terms of WC as discussed in the next section.

5.6.1 Water Committee (WC)

> ‘‘.....WC is essential in strengthening and sustaining established water structures and service. WC is important to enable detailed monitoring and finding solutions to various problems confronting proper functioning of the installed water infrastructures. In this perspective WC members are elected to manage projects on behalf of the whole community. WC deals with issues such as preparing necessary budgets, procurement of goods and services, and developing necessary action plans. Such activities normally are best done by a small group of people who then are able to give necessary feedback to the entire community’’ (Claud, 1998: 41).

Interviews with CHAMAVITA official revealed that the organisation operated through village WC. The members of WC were democratically elected in the village general assembly attended by over 70% of eligible voters. Data obtained from officials revealed that they operated directly from the beginning with the village level based water committees, and this was confirmed by the projects coordinator. The study further showed that with the presence of community water committee, community participation merely remained at the level of providing un-skilled labour and cash contributions when required. For this matter, the WC dealt with technical issues and became accountable to their community through feedback meetings. Through interviews however, one of the beneficiaries of the water project

complained that: As far as feedback to the community is concerned, rarely meetings were held. The reason for not convening public meetings was because WC members did not want to be questioned, so meetings were often postponed. That is, once there was an embezzlement of project funds, no meetings would be convened regardless of whether they were scheduled or not.

It was observed (through questionnaires) that among the criteria used to select water committee members were education (basic education), residence, gender, job accountability, age, participation in project activities, trustfulness, and willingness to volunteer. This is because most work was done on voluntary basis. Payments were only made when members travelled and it was in form of allowances and transport assistance. Though the mentioned criteria were observed, the right candidates were obtained by voting in the public meeting. As stated above, Nkelei water project worked with WC, right from the beginning as compared to Emao which did not. This implied that Nkelei were the advantaged project, since it involved the WC during the implementation phase, in WC members shared their experiences, knowledge and skills on water project management as opposed to that of Emao project.

5.7 Community participation in project public meetings

In both water projects, public meetings were held periodically to enable community members identify major challenges in the project. This can be evidenced by available meeting minutes for both water projects found at Emao and Nkelei village offices. Respondents who provided extra explanations about the project public meetings said that though they participated in the water scheme meetings they had no final say in decision making in every meeting. In other words they attended the meeting but they had no authority to affect decisions. CHAMAVITA coordinator for Lushoto district and Village Executive Officers told the researcher that low levels of education of some community members made CHAMAVITA and Lushoto district prefer to opt expertise advice than agree with local people concerns on some of the scheme's issues.

5.7.1 Contribution to public discussions

The level of effective participation in public meetings depends on the extent to which the people have been empowered to contribute to discussions (Kasiaka, 2004). In CHAMAVITA water projects, the study found that individual contributions in public meetings indicated that community members contributed to public discussions. Findings from the CHAMAVITA supported water projects in both projects indicated to have low contribution of ideas in the public meetings conducted in Emao village and there was no response for community participation in Nkelei (Table 4.7), while some respondents mostly women said they had no courage to contribute in public meetings although they attended. This was also confirmed by the meeting minutes found at CHAMAVITA office and the response of project coordinator as well as village local government leaders. However, 35 (38%) respondents said there was no freedom of airing views, 15 (16.3%) said they attended the meetings but had no courage to contribute towards the discussion. Since not all people can air their views orally, it could be better for the project leaders to introduce a form of written contribution however not all villagers were able to read and write.

5.7.2 Follow up of agreed actions from public meetings

Investigation was made through focus group discussions to see whether actions were taken on the agreed points and recommendations during the water schemes public meetings. The study revealed that the majority of respondents were not satisfied with their recommendations and proposed actions. This was revealed by the minutes recorded at Lushoto district water engineer office, CHAMAVITA Office, Village offices both at Emao and Nkelei as well as through interviews conducted for selected beneficiaries. However, issues which were raised by the community members during meetings were not adequately attended by the responsible authorities. When the researcher asked why CHAMAVITA official said that low levels of knowledge on the party of local people was a contributing factor for not taking some of their concerns into consideration.

5.7.3 Village Government (VG) participation

The study's findings have shown that the VG through its leaders participated in the community water project activities. While VG leaders took the organizing role, community mobilization, and physical participation in the project implementation, the district level departments (water department and community development) were responsible for the provision of technical experts together with CHAMAVITA. District level involvement in the process of project implementation is crucial to sustain established structures because VG leaders being part and parcel of water project stakeholders should know what takes place at every stage of project. These leaders have the capacity to mobilize resources, coordinate and support people's initiatives for social and economic development. Moreover, it is these leaders who are authorized to convene community public meetings as scheduled. In this connection, Water Committees in Emao and Nkelei villages had no power to organise different activities with the community without the involvement of village government leaders.

5.7.4 Community capacity building

Beneficiaries' capacity building, especially on technical, financial and management aspects is important for the sustainability of water projects. The community should be empowered with technical and managerial skills to enable them to own and manage their water project through establishing Water User Groups (NAWAPO, 2002: 21; URT, 2000). In this context, the study examined whether training was offered to villages to build up their capacities, and to identify the groups involved as discussed below.

5.7.5 Training for WC Members, LG Leaders and Water Attendants

The study found that WC, the VG leaders and water attendants received trainings. These trainings were conducted during the implementation phase to prepare them to carry out the projects once completed. On the other hand, trainings for the CHAMAVITA supported water projects also included Village Council and WDC members. This was done before the implementation of the projects to prepare the

WDC and VC members to manage the projects. The subjects covered during the trainings for the CHAMAVITA supported projects included simple book-keeping, report writing, health, hygiene and management of project resources. In both cases, training lasted for one week except for book keeping which took two weeks. More focus was on health, hygiene, and sustainability issues. However, ordinary community members did not receive any training at all in both cases, which contradicts with the National Water Policy of 2002, which emphasizes that training is to be given to community members for the project management (NAWAPO, 2002).

Training for water attendants

Service training to water project attendants is an equally important component to achieve project sustainability (Claud, 1998). Water attendants should be selected among community members for convenience of providing water services to the communities. Hence, they need to be equipped with basic knowledge and skills on how to operate the water system in case of breakdown.

The study conducted in the two villages revealed that training of water attendants was done and the training focused on how to operate the system, and how to do minor repairs in case of breakdown. They were however advised that for the major repairs an expert from DWE should be sought. However, it was observed that the water attendants were not equipped with enough training as when there was water breakdown, technicians brought from Lushoto district council as if there were major system breakdown.

According to CHAMAVITA official, there are six water attendants three from each village who are paid Tshs. 30,000/= each per month. It was learnt that, despite inadequate training, low payment to water attendants receives makes them uncommitted to the business of water projects. They also received inadequacy training of just less than a month, while water engineers from Lushoto district council are graduates and receive good salaries.

5.8 Training challenges for WC members and Water Attendants

It was revealed from the study that WC members and water attendants were not adequately trained. There is a need to increase training of water attendants from one month training to more than that, as well as provide regular and relevant trainings. It was observed that most water attendants were not committed due to inadequate training on basics of water operations.

5.8.1 Funds management

For effective operations and maintenance of water projects, it is important that financial management be in the hands of community members by opening bank accounts (Brikke, 1995). In this regard, the study examined how funds were managed after the project implementation phase to cover operation and maintenance cost. The study revealed that financial management was in the hands of community members. Money collected from user charge fees is used to cover operation and maintenance cost.

At Nkelei water scheme, the money obtained from water user fee charges were under the control of the community through WC. However, the WC was not holding regular meetings with the rest of community members to disclose the financial matters to the community members. Many respondents said that information was known only by WC members and VG leaders. In both projects it was learnt that money was not kept in the bank as NAWAPO 2002 directs. However many respondents said that they were not involved in financial matters, income and expenditure were not disclosed to them during the public meetings. Findings of the study in Table 4.8 have shown that 23.5% and 34.1% of respondents in Emao and Nkelei villages respectively knew that money were kept in bank, 15.2% of respondents had no idea while 50 respondents out of 92 thought that may be the money was kept in the village safe and complained of the low reporting rate of income and expenditures. This is contrary to one of CHAMAVITA pre-conditions for the community project to have active bank account in order to construct water scheme and provide technical assistance.

5.8.2 Functioning and quality of water infrastructures

The study observations found that, most water infrastructures were available and functioned properly with few exceptions of infrastructures in Yandaughu, Mtimule, Kagulio and Magagai hamlets of Emao village on one hand and Usichome moto in Nkelei village. This was also revealed through interview with water beneficiaries and CHAMAVITA official. However it was learnt that the infrastructure was of very good quality but the major problem learnt from both villages as far as participatory approach was concerned that there is low level of knowledge among the people involved in procurement of materials and poor management of the installed infrastructures. Most community members were sometimes cheated by the businessmen. Hence, they ended up purchasing low quality construction materials. Generally, the quality of repaired infrastructure was poor.

5.8.3 Technology used and communities' ability to maintain water services

The researcher in assessing whether or not technology used corresponded to the ability of the community to operate and maintain the installed water infrastructure found that in CHAMAVITA water projects, there was appropriate and friendly technology used. Regardless the technology used in water projects still some respondents claimed that there were such abilities while the others were not sure if they could maintain the water facilities. The study indicated that the technology used in water projects was appropriate. However, power sources remain a common problem in rural Tanzania.

5.8.4 Quantity of water flow

Findings of the study shows that 41.7% of 92 respondents were not satisfied with the volume of water flow from the hand pump shallow wells to some hamlets both in Emao and Nkelei villages. However, 35.4% of respondents claimed that the number of installed hand pump shallow wells were not enough compared to the demand of community members, so the quantity of water was not enough, 21.4% respondents were uncertain. For those areas receiving water from Umba river catchment area the quantity of water flow is satisfactory with exception in the months of August, September, October and November. Another problem was water accessibility and

distance to some hamlets; women and children had to go long distances just to fetch water. It was also learnt that frequent breakdown of generators was one of the causes that affected the quantity of water flow.

5.8.5 Quality of water

It was learnt through the interviews with some beneficiaries that the quality of water was good as it was not salty. This was further evidenced by CHAMAVITA coordinator that usually they sent water experts so as to test the quality of water before they start implementing the project. Usually the quality of water is tested through minerals content. According to District Water Engineer, Emao and Nkelei sources of water are not yet contaminated, but there is danger that in future due to economic activities (mostly illegal mining activities in Umba catchment forests) in a nearby village of Goka. From that point of view, the water sustainability cannot be guaranteed, and the government should be prepared in terms of other resources if the water will no longer be used for human consumption.

5.9 Major problems encountered in water supply service

The case study villages in which community participation was examined several problems were observed which threatens the sustainability of water schemes, especially after the project began to be implemented. Critical problems for stakeholder's participation are lack transparency about income and expenditure, low quality and quantity of water supplied, corruption, unsuitable structural design and non functionality of the schemes.

5.9.1 Low quality of water supplied

Two villages reported that water quality problem exists in the schemes they are using due to agricultural activities especially the use of fertilizers, pesticides and insect sides. They reported that the test and smell of the water they are using has been changed after the schemes have served only five years. This might be due to lack of frequent chlorination of the wells and rapid increase of economic activities, mostly crop production.

5.9.2 Low quantity of water supplied

Most of the respondents in Emao and Nkelei villages (95% and 87.5% respectively) reported as there is low quantity of water supplied by the scheme they were using especially during dry seasons. This was the case in areas where the community didn't participate in planning, construction, and operation phase of the project. The health extension agents in these villages stated that they had had very limited success with hygiene education because the residents used to complain that they did not have enough water to satisfy their primary needs and hygiene was a distant secondary concern. It is obvious that with low quantity of water supplied to the community building sustainable sanitation practices will be impossible. The beliefs of the respondents for no or low quantities of water supplied by the scheme they are using are due to the following reasons:

Corruption: Respondents believed corruption between the contractors who constructed the schemes and the supervisor was one of the reasons for no or low quantity of water supplied by the schemes they were using. They believed that the existing depths of each of the wells they are using are not enough to give enough quantity of water to the community. They said that the wells needed to be deepened during construction. The respondents explained the relation between corruption and deepening of well as follows.

After the contractors were selected based on tendering, payment agreement was made between the contractor and the organization. The agreement explains that the contractor would be paid the amount of money that he won during bidding up on finishing the construction work regardless of the depth of the well he dug. In other words the contractor will be paid the same amount of money whether he dug a shorter or longer depth of well. To the contractor deepening the well more adds some extra cost to him. The respondents said that they suspected that the contractor and the supervisor had negotiated for gaining the extra cost of deepening the well for them. Corruption is also caused by some few water attendants who receive money in order

to release water to some areas to serve the purpose of irrigation of gardens contrary to the schedule of water allocation.

Low reliability of the schemes: This was the reason given by the respondents in all of the two villages. This is because the respondents have seen a lot of hand dug wells constructed in different villages are not functioning. They said that the non-functionality of these schemes is due to pump breakage. As a result they are in fear of pump breakage of the schemes they are using now. As a result the respondents who raised this issue are not certain about the sustainability of the schemes they are using as they have seen a lot of the similar technologies in different villages not functioning due to pump breakage.

Structural design not suitable to the village conditions: Problems related with design of structures were the case in villages where flooding problem is high in the rainy season. These are the two hamlets of Chasase and Kagulio in Emao village and three hamlets in Nkelei village (Mtimule, Shaghayu and Kwezamo). The flooding problem is due to overflow of Umba River. The respondents said that the height of the well head structure should be higher than the depth of the pond that will be created during flooding so that the well head structure can't be submerged.

Structural design is a part of a project work needed to be done at the planning stage. The villagers in these villages especially Nkelei village didn't participate at the planning stage at all. The fact that the primary reasons given in these villages for not satisfied by the schemes were design related shows the importance of appropriate design for the sustainability of a water supply intervention. Based on Gleitsmann, (2005) it is clear that appropriate design depends upon the communities' needs and preferences and without input from the diverse members of the communities it is unlikely that an externally chosen infrastructure will be appropriated. The studied communities in these villages were not consulted during the design phases of the water supply development projects and thus the dissatisfaction with the design of the pumping infrastructure is not surprising. In this realm careful strategic ways of

engaging community through authentic participation in all processes involved in water supply works is needed.

Non functionality of the schemes: Three hamlets in Emao village were not functional. The non-functionality in Belle is due to pump breakage. The non-functionality in Chasase was due to pump breakage also and dried well while that of Bara was due to dried well.

CHAPTER SIX

6.0 OBSERVATIONS, RECOMMENDATIONS AND CONCLUSION

6.1 Introduction

This chapter presents observation, conclusion basing on research questions, interviews, and observations and finally presents recommendations. The purpose of this study was to assess the community participation management approach for sustainability of CHAMAVITA community supported water schemes in the two selected villages of Emao and Nkelei villages in Lushoto district.

Observations

The case study villages examined community participation, especially after the project began to be implemented and generally three issues were observed to be a problem for the project sustainability namely financial issues, transparency and lack of periodic capacity building to the beneficiaries. Finance was the area which had critical problems for stakeholder's participation. There was no transparency about income and expenditure which were not disclosed by relevant authorities during community public meetings. It was observed that there were misuse and embezzlement of water project funds. Also it was observed that sustainability was at risks due to the fact it was not well addressed at the initial stages of water projects.

Also little attention was given to the community involvement in different stages of projects implementation. Hence community participation management approach was ineffective in the case study of both water projects. Dissemination of information, community member's involvement in all stages of water project implementation and use of local knowledge in implementation of water projects was not taken into considerations.

6.2 Conclusions

Literature review and case studies revealed that the failure of many development projects including that of water is due to ineffective participation of key stakeholders, low capacity of the communities in operation and maintenance of water system as

well as management of water resources. Moreover the literature review revealed that demand responsive projects were more sustained than supply driven projects. Similarly NAWAPO (2002) emphasizes demand responsive elements in order to realize sustainability of water projects. Additionally, NAWAPO insists on hygiene education and environmental sanitation in the implementation of water projects and that in order for the community to function as legal owners of water projects, it should form legal entities to manage the water resources was necessary(NAWAPO,2002).

Participation must take place at all stages of implementation of the water scheme, from the initiation to planning stage, to implementation, management and monitoring. Singh (2005) suggested that all development programmes should demonstrate a highly proficient *modus operandi* concerning people's participation. That would be unrealistic. Therefore what is needed in Emao and Nkelei water project is to ensure that water supply programmes are seriously feeling their way towards such participation the community should be capacitated enough

Community participation contributes to all important enabling environments that community requires in order to function. Eventually, the responsibilities of the community should be present at every stage of the project implementation. In this way the community assumes responsibility, authority and control over its own development.

This research set out to answer research questions, aiming at assessing community participation as management approach which attempts to improve the water supply schemes in the two selected villages. In order to answer the research questions the researcher came up with some parameters of community participation which helped the study to arrive at the following conclusion:

From this study it can be concluded that little attention was given to the community involvement at different stages of projects implementation. Hence there was

ineffective community participation in both villages as discussed below basing on sub research questions.

6.2.1 Communities mobilization at initial stage of the project

Study revealed partial involvement of the community as the communities were mostly involved at project identification stage. During the subsequent stages, they were not consulted which resulted into finished water projects that were not accessible. For example, the final decision on where to locate the infrastructure and what form of the infrastructure to be fitted was made by the local authorities' leaders without consulting targeted beneficiaries especially women and other groups vulnerable to water supply shortage. Diversified analysis based on the different stakeholders should be central to any rural water plans. In this study's case the communities were not mobilized enough.

6.2.2 Communities' capacity building

The mechanism used in insuring community empowerment was training of WC members, water attendants and LG leaders. Based on the interviews and discussions made, it can be concluded that they were not given adequate training and when the trainings were given, their duration was too short and the water beneficiaries were not capacitated enough.

6.2.3 Sustainability issue during the initial design stage

The study has shown that sustainability issues were inadequately addressed during initial stage of project identification. Although there were some improvements in water and sanitary services still its sustainability was not promising due to regular water systems breakdown, which were caused by low technical capacities of water attendants though the technology used in construction of water systems was friendly and appropriate. Water projects in both case study projects indicate that they are not sustainable and will stop to operate within short period of time. It is considered that for water supply systems to be sustainable three actions from the LG have to be rightly in place: instilling a sense of ownership, promoting participation and sharing

costs. All these three actions were not adequately addressed well in advance and hence sustainability was at risk. Due to low level of income, communities will have no capacity to maintain the water systems and also there is no sense of ownership. Local people still have a syndrome of treating water projects as belongs to the government as it was in the past.

6.2.4 Quantity and quality of water

It has been established that there were no reliable data available on the magnitude and extent of the quantity and quality of water required due to partial involvement of the communities which was done deliberately in order to please donors. From the findings it can be concluded that both quantity and quality of water were not improved even after the implementation of water projects. The objective of the government to provide clean and safe water for rural population by year 2015 as stipulated in NSGRP might be difficult to achieve if immediate interventions are not taken right now.

6.2.5 Extent of participation in projects

Communities participated through public meeting, WC and contribution in forms of labour and cash as well as other forms of participation. Community participation in meeting was ineffective on one hand while on the other the communities contributed cash and labour to render their commitment to the water project effective. But since the chairman and other leaders dictated the decisions in the meeting, it can be concluded that there was ineffective community participation.

6.2.6 Community participation in management of water projects

Findings show that the communities were participating in management of implemented water projects. However there were some partial involvements in funds management. The community members were not involved in financial matters of the two water schemes. Although people were at least involved in management of water projects, financial matters were not disclosed to them which indicated that projects funds were embezzled.

6.3 Recommendations

The following recommendations are drawn from the findings of the study: since little attention was given to the community involvement in different stages of projects implementation, community participation management approach was ineffective in the case study of both water projects. Therefore dissemination of information, community member's involvement in all stages of water project implementation and use of local knowledge in implementation of water projects should be taken into considerations, as this would make the projects more sustainable.

Concerted efforts should be initiated during the planning stage to collect information on the magnitude and extent of water shortage and number of beneficiaries; this will help to sort out the low level of water supply. Sufficient information should be used in formulating policies and also in measuring progress towards the achievements of set targets and objectives.

Legal measures should be taken against project and grassroots local leaders who swindle project funds; this will serve as deterrence to other future corrupt and dishonest leaders. The study conducted shows that there was no transparency on the expenditure of project funds which gave an indication of embezzlements of funds, a critical problem for many development projects in developing countries like Tanzania. In order for water projects to be sustainable there is a need reliable financial sources to cover operation and maintenance costs.

Capacity Building. Proper training and technical support at all levels and for all groups engaging in water project implementation and management should given priority. Water attendants should be given basic technical training to enable minor repairs in system breakdowns.

Mobilization. People should be mobilized to build interest in sustaining the initiated project services. Mobilization should start at the initial stage of project implementation. Community members should be well briefed at the beginning of

water project about cost sharing. Cooperation among the key stakeholders is important especially among the LG leaders and WC, and between WC and the community, as well as technical experts at the municipal and institutional level.

Monitoring. Frequent facilitation, support and monitoring from relevant institutions at different levels of project implementation are important and highly recommended so as to guarantee project sustainability.

Each community participation aspect (WC, public meeting, election of WC members, water tariffs etc) should be considered individually as suitable pro-poor. Affordable and sustainable solution should be found to fit the community needs. The decision making processes should be transparent and consultative, involving all key stakeholders, to determine how these services will be provided and managed to the standards expected. A point also emphasized by NAWAPO (2002) to realize sustainability of community managed water projects.

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APPENDICES

Appendix 1: Questionnaire for villagers

Introduction

My name is Mdendemi, Patience P and I am a Master's student at Mzumbe University, Morogoro, pursuing Master of Science in Environmental Management. The Research general title `Community Participation` focusing on CHAMAVITA supported water and sanitation projects in Lushoto district. I am writing to invite you to participate in research in the form of a questionnaire. This questionnaire is only for academic purposes only. The questions herewith can be responded by CHAMAVITA water project(s) and local authorities' leaders as well as beneficiaries.
Thanking you in advance for your cooperation.

Mdendemi P.

A. Personal Particulars

1. Name of respondent.....……..
2. Age of respondent .....
3. Marital status .....
4. Sex…….....
5. Ward…….....…….....
6. Village/Sub village .....……....
7. Education level .....……..……....
8. Occupation…….....……..……...
9. Position in the project…….....……..…….....
10. Phone and/or Mobile…….....……..

B. General Questions

1. For how long water has been problem in this village?
2. Do you know that CHAMAVITA is supporting water project in your village?
   Yes [ ] No [ ]
3. Was water a first priority among other social problems? Yes [ ] No [ ]
4. What motivated CHAMAVITA to implement water and sanitation project in your village?

C. Community Participation in the Project

1. Did you participate in the initial stages of water project planning Yes [ ] No [ ]
2. Were you forced to participate? Yes [ ] No [ ]

D. Community Contribution

1. What was the community contribution in the project? Labour [ ] Cash [ ] Both [ ]
2. If cash how much per household?

E. Community Project Committees

1. Is there any water project committee in this village? Yes [ ] No [ ]
2. How many members in terms of sex? Women [ ] Men [ ]
3. Which ways and/or method used to choose the committee members?
   Democratic election [ ] Appointment [ ] None of the above [ ]
4. What are the responsibilities of the Community water Project Committee?
5. Does the Committee still working effectively? Yes [ ] No [ ]
   No idea [ ]

F. Financial and Physical Resources Management.

1. Who are responsible in handling project resources (money, tapes, channels, dams etc)
   Donor [ ] Community [ ] Village government/water committee leaders [ ]
2. Where the project money kept?
   Bank [ ] In the Village safe [ ] Home of one of the project leader [ ]
   No idea [ ]
3. Do you know the cost of the project? Yes [ ] No [ ]
4. Are you aware of the project budget? Yes [ ] No [ ]
5. Who was responsible with the project budget?

CHAMAVITA [ ] The community [ ] Water committee [ ] None of the above [ ]

6. Who did the procurement of project required materials?
   Water committee [ ] CHAMAVITA [ ] Established procurement unit [ ] No idea [ ]

G. Community Meetings

1. Were there any community meetings? Yes [ ] No [ ]
2. What were discussed in those meetings?
   Water Project issues [ ] Non Water issue [ ] No idea [ ]
3. Are you still participating in such meetings? Yes [ ] No [ ]
4. Is every one free air his/her views in the meeting? Yes [ ] No [ ]
5. Is everyone free to contribute to the public meetings discussion? Yes [ ] No [ ]
6. Are opinions of every one heard and respected? Yes [ ] No [ ]
7. Who has the final say in the public meeting?

H. Sustainability Issues

1. Is the quantity of water the same as the time project started?Yes [ ] No [ ]
2. Who is responsible to monitor the project after the donor contribution phase out?
   The community [ ] Village government [ ] District council [ ] Central government [ ]
3. Do you have the capacity to maintain this project especially after sponsors or donors phase out? Yes [ ] No [ ]
4. If you do not have the capacity where do you get assistance in case there is break down of the system?
5. (i) Does the community contribute any user fees to cover maintenance cost services? Yes [ ] No [ ] If Yes how much?
   (ii) Do all people contribute the same amount? Yes [ ] No [ ]
6. Is the amount collected enough to cover the operations and maintenance services?

Yes [ ] No [ ] If no then where do you get money to cover these costs?

I. Problems in Participation of Beneficiaries

1. Are there any problems encountered in participation of the community?
   Yes [ ] No [ ] If yes then what are those problems?
2. Do you think community participation in planning, implementation and management of water project leads to the effective and sustainable of water and sanitation services?
   Yes [ ] No [ ]

Thank you very much!

Appendix 2: Questionnaire for CHAMAVITA and district water engineer officials

Introduction

My name is Mdendemi, Patience P and I am a Master's student at Mzumbe University, Morogoro, pursuing Master of Science in Environmental Management. The Research general title `Community Participation` focusing on CHAMAVITA supported water and sanitation projects in Lushoto district. I am writing to invite you to participate in research in the form of a questionnaire. This questionnaire is only for academic purposes only. The questions herewith can be responded by CHAMAVITA water project(s) and local authorities' leaders as well as beneficiaries.

Thanking you in advance for your cooperation.

Mdendemi P.

INTERVIEW QUESTIONS

A. Personal Particulars

1. Name of respondent ……..…….....……
2. Education level.....……..……..…….....
3. Occupation…….....…….....……..……
4. Position in the project…….....…….....……..…….....……
5. Phone and/or Mobile…….....…….....…….....…….....…….
6. Email…….....…….....…….....…….....…….

B. An overview about the project

1. How many water projects in Emao and Nkelei?
2. How the communities did came about selecting a water project to be supported by CHAMAVITA?
3. What is the role of the community in planning stage at the village level?

C. Participation in project activities

1. To your understanding what does it mean by community participation?
2. What steps have been taken by the funding agency to make sure that the project is understood, accepted and institutionalized?

3. What communication methodologies are employed to communicate with the people during all stages of the project implementation?
4. How do community participate in the planning processes?
5. Are there enough resources to facilitate participatory planning? Explain
6. Are there any problems associated with community participatory planning in this project?

D. Management of Project Funds

1. Who manage the project funds?
2. Is there any Bank account for the WUA?
3. Who are the Bank signatories? Who select them and what are the Selection criteria?

E. Sustainability of the project

1. Was sustainability of the project adequately addressed during the designing stage of the project? How?
2. What strategies in place to ensure sustainability of the project?
3. Do you think participatory approach alone leads to sustainability of water project?
4. What do you think are the other important factors to achieve sustainability of project?
5. Are there any resources set aside to monitor the project performance after the expiry of funding period?

F. Capacity building

1. Is there any capacity building /training done to the community/ project leaders to enable them sustains project interventions?
2. What kind of training and who were involved?
3. Do you think the community have been empowered enough to carry on the project activities? Give reasons.
4. Why some of the development projects fail after the expiry period of funding?

Thank you very much!

Appendix 3: Lushoto District Map showing Emao and Nkelei villages