

ST JOHN'S UNIVERSITY OF TANZANIA



MASTER OF ARTS IN COMMUNITY DEVELOPMENT

**CONTRIBUTION OF COMMUNITY PARTICIPATION IN WATER PROJECTS
IN PERI-URBARN TANZANIA: A CASE OF DODOMA MUNICIPALITY**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE MASTER OF ARTS IN COMMUNITY
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CERTIFICATION

I, the undersigned, certify that I have read and hereby recommend for acceptance by St. John's University of Tanzania a dissertation entitled "The Contribution of Community Participation in Water Projects in Peri-Urban Areas of Tanzania: A Case of Dodoma Municipality" in fulfilment of the requirements for the Master of Arts in Community Development.

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Date.....

DECLARATION

I, **Fatuma Kitojo Daudi** declare that this dissertation is my own work. It has not been and will not be presented for any other course of study. I confirm that appropriate credit has been given where reference has been made to the work of others.

Signature

Date.....

DEDICATION

This work is dedicated to my parents **DAUDI HAMZA KITOJO** and **MARIAM GIDEON ACLEY** for sending me to school

AND

My husband **DR. FADHILI HAMZA MGUMIA** and my children **SABRI, SABRA** and **SAJJID** for their patience, moral support and encouragement throughout the period of my study

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LIST OF ABBREVIATIONS

DMC:	Dodoma Municipal Council
FAO:	Food and Agricultural Organization of the United Nations
FGD:	Focus Group Discussion
LGAs:	Local Government Authorities
MCC	Mennonite Christian Church
MDC:	Managing Director Council
MDGs:	Millennium Development Goals
O and M:	Operation and Maintenance
SPSS:	Statistical Package for Social Sciences
TLP:	Tanzania Livelihood Project
UN:	United Nations
UNEP:	United Nations Environment Programme
UNESCO:	United Nations Educational, Scientific and Cultural Organisations
URT:	United Republic of Tanzania
VEO:	Village Executive Officer
VWC:	Village Water Committees
VWF:	Village Water Fund
WAMMA:	Wawezeshaji Miradi ya Maji na Afya
WCDO:	Ward Community Development Officer
WEO:	Ward Executive Officer
WSDP:	Water Sector Development Program

ABSTRACT

The paradigm shift from supply to demand oriented planning in rural water projects necessitated the need to involve community in water project management for sustainable water projects. This study was conducted in Dodoma Peri-Urban Areas with the objective of assessing contribution of community participation in water projects in Mkonze ward. A cross-sectional research design with a combination of methods was employed. Both quantitative and qualitative data were collected. Household questionnaire survey, key informant's interview, focus group discussion and field observation were main methods used in data collection. A total of 126 respondents were randomly selected from two villages; seven key informants were purposeful sampled; and two focus group discussions were conducted. Data analysis involved descriptive and inferential statistical analysis, and content analysis. The study revealed that water is among a major problems and priority in development agendas. Major forms of community participation were attending meetings, contribution in form of cash and/or labour, and user fees, while level of community participation was found to be low to moderate. Results further showed that major challenges faced community participation in water projects including breakdown of water systems, lack of commitment in participation, poor leader's accountability and lack of compensation on property loss due to water projects. Factors such as age, education, household size, and sense of ownership were found to enhance community participation, while sex and user fee affordability were found to

constrain community participation. The study recommended the following: The community should be involved from the very onset of the water projects; more training related to water project management should be provided to the community; Local government should establish a water basket funds for supporting O & M of water projects; and Community and local government in particular should design mechanisms for compensation of property loss due to water projects.

Key words: community participation; water projects; peri-urban; Tanzania; Dodoma; forms of community participation; challenges; factors influencing community participation

CHAPTER ONE

INTRODUCTION

1.1 Chapter Overview

This study intended to examine the contribution of community participation in water projects in Dodoma Municipality. This chapter presents a brief introduction of the study. It begins by providing the background information of the study, statement of the problem, research objectives and research questions. It also presents significance of the study, conceptual framework and ends with summary of the chapter.

1.2 Background of the Study

Water is the source of life and of extreme importance for development. Living organisms depend on water, air and food for their livelihood. Furthermore, plants as a source of food depend on water for its growth. While water is an important resource for living, water shortage is becoming a global issue of concern due to increasing population, economic growth and climate change (Population Action International (PAI), 1997). For centuries people took the gift of using fresh water for granted. It seemed to people that mother earth had inexhaustible resources of water, so it was treated as an infinite free good. But as time goes on, fresh-water deficiency disaster has become tremendous. This is making people to realize that, water is not only essential for human life, development and environment; it is a finite and vulnerable resource which has quantitative limitations and qualitative vulnerability.

PAI (1999) estimates that 31 countries with a total population of 458 million faced water stress in 1995. More seriously over 2.8 billion people in 48 countries will face water stress by 2025. Apart of water being scarce and finite resource, Biswas (1983) discovered that today the world is faced with a major water problem which is management of water resources systems. This is especially so in regards to the provision of safe drinking water; water required for agriculture, hydroelectric and industrial development and sustainability of water resources shared by two or more states. All these problems increase water vulnerability and make it to be a finite resource. These problems differ in different areas. For example, the provision of safe drinking water is primarily relevant to developing countries, where large number of people do not have access to clean water. This is however not a problem among advanced industrialized nations. Similarly, the problem of shared water resource is especially for countries bordered by water bodies and both use water for their daily activities (Cosgrove, 2000).

According to United Nations (UN) (2012), over 40 per cent of all people in Sub Saharan Africa are without improved drinking water. They use unimproved sources of water such as household connections, protected dug wells, public standpipes, protected spring, boreholes and rainwater collections. Despite of the fact that, generally the world has met the Millennium Development Goal (MDG) drinking water target, five years ahead of schedule, still some countries have not achieved the target (UN, 2012). This is because it is not possible to measure water quality, safety and reliability globally and sustain progress. Thus, the work of provision of safe and clean water is not complete especially for developing

countries. About 40% developing regions, 90 per cent or more of the population now uses an improved drinking water source, but this is opposite in sub-Saharan Africa where coverage remains very low and neither of which is able to meet the MDG drinking water target by 2015 (UN, 2012).

In Tanzania freshwater is a basic natural resource, which sustains life and is used for various social and economic needs. Despite of the importance of safe drinking water for human health, water is still unevenly distributed in time, space, quantity and with great variations in quality. It is also a finite and a vulnerable resource. The nature of social and economic activities of today threatens sustainability of water resource in Tanzania (United Republic of Tanzania (URT), 2008). Indeed, it is urged that by 2025 Tanzania will experience water stress-declined as average per capita water resources below 1 500m³ due to population growth and the resulting increase in consumption, consequently, low access to water and sanitation. A bit more than half the population of Tanzania is estimated to have access to improved water source, with unbalance between urban areas and rural areas (81%) and (46%), respectively. In rural areas, access is defined as households that have to travel less than one kilometre to a protected drinking water source in the dry season (URT, 2008).

In an attempt to address challenges related to water services provision and sustainability of rural water infrastructure, planners have shifted in recent decades from a centralized, supply-driven paradigm toward a more flexible, demand-oriented strategy (Briscoe & Ferranti 1988; Garn 1997). This shift was a

result of assessments done by the International Drinking Water Supply and Sanitation Decade (1981–1990) which criticized supply-driven approach for the premature failure of infrastructure installed during the decade (Therkildsen, 1988). In particular, governments and donors had largely prioritized rapid construction and expert advice over community engagement and water users' input on key planning decisions. This approach often resulted in investments that did not reflect communities' felt needs and preferences, and assets that they were unwilling and/or unable to operate and maintain. By contrast, demand-oriented planning theoretically targets communities that truly want and need water supply improvements, requires water users' participation throughout planning and implementation, and vests them with key decisions about the project.

1.3 Problem Statement

It is now more than twenty years since the 1991 National Water Policy was launched in Tanzania. During this period, many changes have taken place in the sector with major emphasis on active participation of communities, private sectors and local governments as the role of central government in services provision diminishes (URT, 2002). This was in line with establishment of Water Sector Development Programme (WSDP) with the immediate aim to increase access to clean and safe drinking water to at least 90 per cent of urban dwellers and 65 per cent for rural dwellers. The role of central government was left to lower level governments hence; local governments were responsible for administration and accountable in local utilities provided in their areas.

Decentralization focuses on enhancing service users' participation and improving service delivery. The government believes that through decentralization, citizens, politician and policy makers will be more responsible, accountable as well as build the sense of local people ownership regarding different project introduced in their areas (Masanyiwa, 2014).

However, in Tanzania, the shortage of water provision and water supply to the majority of Tanzanians is a major challenge. Water provision remains a number one problem particularly in the rural areas, despite progress made in the recent years since the commissioning of the water sector development programme in Tanzania. To date only 51 % of rural and 80% of urban have access to clear and safe water (URT, 2014). This implies that access to water is still a problem in rural areas.

Apart from all the good initiatives of WSDP, Tanzania like many other poor nations, still people suffers from serious lack of clean and safe water. People are increasing being forced to use surface water which is contaminated by pollution and human waste, hence endangering their health through water-borne diseases such as malaria and cholera. Limited community participation in the implementation and management of projects has been one of the reasons for poor water project sustainability (URT, 2008; 2014). Lack of reliable data on effective community participation in development projects constitutes a major constraint to rural development practitioners such as policy makers, planners and managers. This frequently leads to incorrect assessment of the

development needs of rural people hence, making it difficult for governments and development agencies to properly measure progress achieved by development projects in improving livelihoods of rural communities (Food and Agriculture Organisation of United Nations (FAO), 1991; Karki, 2001). For example, few studies have so far been done in Africa on people's participation in water projects in terms of how water projects were initiated in a community, their ability to make informed choice, and their level of contribution to the projects (Sara & Katz, 1998). In addition, forms of community participation which is equally important for water project performance and sustainability is also generally lacking (Marks, Komives & Davis, 2014). While there are some studies conducted in Tanzania (see Mwakila, 2008) and in Dodoma (Kongwa and Kondoa Districts) by Masanyiwa (2014), information on forms of community participation and level of community participation in water projects by communities is not well documented, and particularly in rural urban areas of Dodoma.

The work of Masanyiwa (2014) showed that most districts suffer from weak financial and technical capacity to implement water services delivery under decentralization. Despite of the fact that most development project are initiated by villages through village plans, in most cases are influenced by national priorities and directives, and local priorities and sometime change if budget exceed available funds. In addition, Cleaver & Toner (2006) in Moshi Rural district found that community participation does not necessarily led to community ownership of water project and hence may led to unsustainable water projects.

Furthermore, syndrome of local elite capture usually tends to dominate in community participation, hence jeopardize the general essence of community participation in water project (Masanyiwa, 2014; Cleaver & Toner, 2006). This implied that unless people are fully involved from identify, designing and implementation of water project, community water project are subject to fail. However, the information on the role of the community participation in water projects, forms of participation, their level of contribution to the projects and factors influencing community participation in water project is generally lacking especially in Dodoma Peri- urban areas. This study therefore intends to investigate the contribution of community participation in water project.

1.4 Objectives

1.4.1 General Objective

The general objective of the study was to examine the contribution of community participation in water projects focusing on water projects in Mkonze ward in Dodoma Municipality.

1.4.2 Specific Objectives

Specific objectives were to:

- i. Examine existing role of community participation in water projects in Mkonze ward
- ii. Examine challenges faced by the community in the participation of water projects in Mkonze ward

iii. Determine factors influencing community participation in water projects in Mkonze ward

1.5 Research Questions

The study was guided by the following research questions:

1. How is the community involved or participating in the implementation of water project in Mkonze ward?
2. What challenges do the community faces in participation of water projects in Mkonze ward?
3. What are the factors affecting community participation in water projects in Mkonze ward?

1.6 Significance of the Study

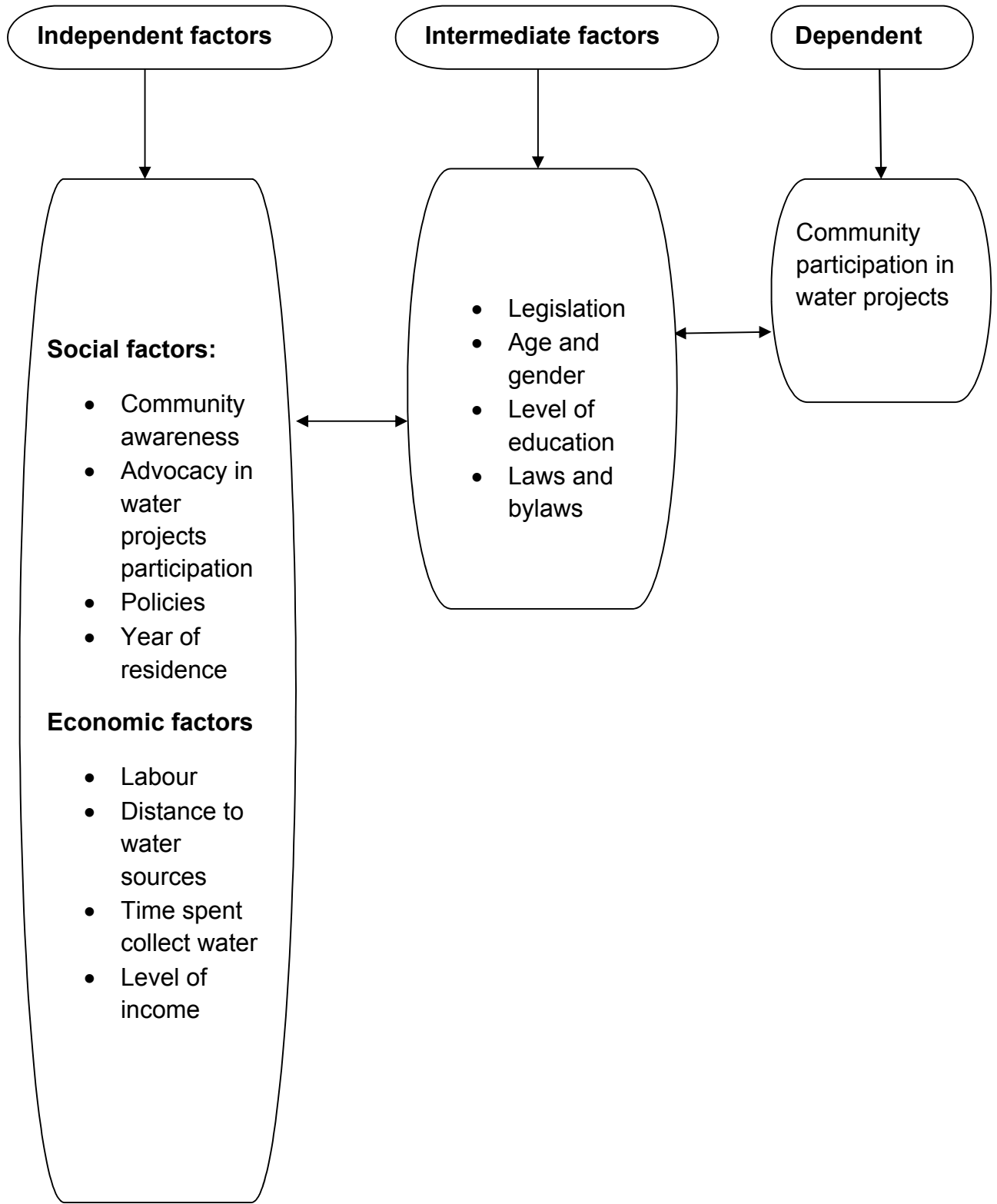
Decentralization in water services delivery was meant to improve provision of the services more effective and efficiently to people. Water service delivery is among MDGs and Tanzania Vision 2025. Tanzania is among the countries which have yet to archive this goal. However, despite of all government efforts, until this year 2014, majority of people in Tanzania, especially rural ones, still lacks access to clean and safe water (UN, 2012). Although the government had promoted community participation in water service delivery through water policy (URT, 2002) and WSDP initiative with objective of improving provision and access to water to the people, still people don't access safe and clean water. Therefore, information on role of community participation in water project, challenge faces community participation in implementation of water projects,

and factors influencing community participation in water projects are important for improving water service delivery to the community, hence meeting development goals. This study will help policy and decision makers in redesigning appropriate policy and strategies in order to achieve MDG and Tanzanian Development Vision 2025. Therefore, the study has policy implication. In addition, the study will provide knowledge to professionals, who are dealing with water service delivery, and hence contribute to the general body of knowledge of water service delivery in Tanzania and developing countries in general.

1.7 Conceptual Framework

A conceptual framework is a narrative outline or diagrammatic presentation (or a combination) of variables to be studied and hypothetical relationships between and among the variables. A conceptual framework is important to the researcher because it helps to bind the facts together. Also it is used as a guide to the researcher on the type of data to be collected (Kajembe, 1994). The conceptual framework for this study is presented in Fig. 1.1. Decentralization assumes that giving power and responsibility to the community in designing and implementation of community development projects including water projects will lead to effective and efficient use of resources, hence sustainability of water projects.

FIGURE 1.1 THE CONCEPTUAL FRAMEWORK FOR THE STUDY



Source: Researcher's Own Construct, 2015

However, despite of decentralization in water services provision, still the target of supply of water services to the community especially rural areas has not been achieved. The work of Masanyiwa, Niehof & Termeer (2014a) among others showed that demographic and socio-economic factors have influence on the community participation on water project.

The study assumed that community participation in water projects (as dependent factor) will be influenced by several factors both independent and intermediate factors (Fig. 1.1). Independent factors such as policy, laws and bylaws and advocacy may influence individual and the community to participate in water projects. On the other hand, intermediate factors such as age, sex and level of education of individual may influence individual, hence community to participate in water projects, consequently improve provision of water services to community.

1.8 Chapter Summary

Water as a resource is important for both human life and development. However, a water resource is faced with challenges of population increase, economic growth and climate change as a result the resource becomes scarce and finite resource. Consequently, almost 40% of Sub Saharan Africa population lacks access to clear and safe water. Failure of centralized water management to provide water to the communities, necessitate the shift from centralized supply driven strategy to demand driven strategy which require the need to involve community who need the services. Tanzania as other developing

countries adopted community participation in water projects as a strategy to improve provision of water services to her community. Despite of these efforts, access of safe and clean water is still a major challenge in Tanzania. Limited community participation in the implementation and management of water projects has been one of the reasons for poor water project sustainability. Therefore, this study aimed at examining the contribution of community participation in water projects focusing on water projects in Mkonze ward in Dodoma Municipality. Specific objectives were to: examine existing role of community participation in water projects; examine challenges faced by the community in the participation of water projects; and determine factors influencing community participation in water projects. The information from this study are important for improving water service delivery to the community, hence meeting development goals; will help policy and decision makers in redesigning appropriate policy and strategies in order to achieve MDG and Tanzanian Development Vision 2025. Therefore, the study has policy implication.

CHAPTER TWO

LITERATURE REVIEW

2.1 Chapter Overview

This chapter presents the theoretical literature review related to the study. Issues described includes definitions of key terms and concepts, participatory theory, the water sector in Tanzania – historical perspective, community participation in water projects in Tanzania, forms and level of community participation in water projects, and factors influencing community participation in water projects. The chapter ends with chapter summary and knowledge gap.

2.2 Definitions of Key terms and Concepts

2.2.1 Community

Communities are defined on the basis of their geographical foundations, as occupying a particular geographical space (Dalby & Mackenzie, 1997). On the other hand, Fortmann & Roe (1993) defined communities by focusing on characteristics that members share, such as culture, language, tradition, law, geography, class, and race. While Shaeffer (1998) argues that, some communities are homogeneous while others are heterogeneous; and some united while others conflictive. Some communities are governed and managed by leaders chosen democratically who act relatively autonomously from other levels of government, and some are governed by leaders imposed from above and represent central authorities. According to Bray (1996) communities are of three types, the first is geographic community, which is defined according to its

member's place of residence, such as a village or district. The second type is ethnic, racial, and religious, in which membership is based on ethnic, racial, or religious identification, and commonly cuts across membership based on geographic location. The third one is communities based on shared family or educational concerns, which include parents associations and similar bodies that are based on families, shared concern for the welfare of students. This study adopted the first definition, that communities are defined as people who are living the villages selected for the study.

2.2.2 Participation

Is the involvement of people in community development projects and differs from one society to another due to differences in social, economic, education and other condition (Whyte, 1986). According to Agarwal (2010), participation range from the narrow perspective where it is defined in terms of nominal membership in a group, to a broader perspective where participation is seen as dynamic interactive process in which different groups have voice and influence in decision making. The World Bank defines participation as a process through which stakeholder's influence and share control over development initiatives, decisions and resources that affect them (World Bank, 1996).

2.2.3 Community Participation

Ofuoku (2011) defines community participation as a process whereby stakeholders and community share control over development initiatives which results in how to utilize the resources in a way that, they can affect the

community. These make resources of the community to be directed in different programs or activities according to community needs. Communities needs can be involved in different plans through, their attendance at public meetings and share their needs and problems with government officials who will incorporate their needs and problems in the plan, for further implementation. On the other hand, Burns & Taylor (2000) defines community participation as a social process whereby specific groups with shared needs, often but not always living in a defined geographical area, actively pursue identification of their needs, make decision and establish mechanism to meet these needs for the whole development of their society. People's participation in community participation is viewed as a process by which individuals are involved in initiating, deciding, planning, implementing and managing the group and its activities. It is also a process of social development in which people, as subjects in their own environment, seek out to develop. As a result, Agarwal (2001) developed a set of typology of community participation in development.

2.2.3.1 Typology of Community Participation in Development

- i. Passive participation - a form of charity where beneficiaries are only made aware about the occurrence of project.
- ii. Participatory by consultation beneficiaries are not include in only decision making but given the opportunity to voice the opinion or they may involve in labor.

- iii. Participation by collaborating - beneficiaries involvement is for the satisfaction of the donors thus any discussion or analysis is based on pre-determined objectives.
- iv. Empowerment participation - ownership and control of the development process rest in the hand of beneficiaries who are capable and willing.

2.2.4 Fresh Water

Water can broadly be separated into salt water and fresh water. Salt water which is referred as water that is salty constitute about 97% of all water and is found mostly in our oceans and seas. Fresh water referred to the water that is not salty, constitute the remaining 3% and is found in glaciers, lakes, reservoirs, ponds, rivers, streams, wetlands and even groundwater. Despite their importance to life as a drinking water source, sustaining crops through irrigation, providing food in the form of fish, powering homes through dams and moving goods by barges –freshwater habitats are disappearing at an alarming rate (<http://www.worldwildlife.org>). Fresh water is vital to life and yet it is a finite resource. Although critical to natural and human communities, fresh water is threatened by a myriad of forces including overdevelopment, polluted runoff and global warming.

The greater portion of this fresh water (68.7%) is in the form of ice and permanent snow cover in the Antarctic, the Arctic, and in the mountainous regions. About 29.9% exists as fresh ground waters. Only 0.26% of the total amount of fresh waters on the Earth is concentrated in lakes, reservoirs and

river systems where they are most easily accessible for our economic needs and absolutely vital for water ecosystems (<http://webworld.unesco.org>). In this study, freshwater referred to underground water whereby water projects harvests this type of water through digging well and drilling well.

2.2.5 Community Development

According to United Nations (2012), community development refers to the process whereby people unite themselves with those of the governmental authorities. The purpose of this is to improve the economic, social and cultural conditions of communities; by integrating these communities into the life of a nation and to enable them contribute fully to national progress. The idea of citizen participation is deeply inherent in the concept of community development, which enjoins that whatever is done to improve the welfare of a people by whole hearted participation of such people. The principle of participation in community development therefore implies that, success is assured where the effort of a local community is supplemented by the direction of governmental authorities (Akinbile, Oladoja, Awoniyi & Adisa, 2006). On the other hand, Phillips & Pittman (2009) defined community development as a process through which groups and communities determine through inclusive dialogue and consensus on their development priorities and the design of solutions that address their priority needs. The responsibility of implementation of a solution lies with the participants. Community development has been broadly conceived to embrace the idea that all “stakeholders” who are affected by a decision have a right to be

involved in the decision-making process. It has been more narrowly described as the extraction of local knowledge to design programs off-site.

The concept of people's participation in community development was realized after the failure of supply driven approach, due to failure of many of infrastructure installed (URT, 2014). Under supply driven approach government and expert advice the community on what issues to be considered in planning decision, these plans did not reflect community needs. Thus, make them unwilling or unable to operate different projects implemented in their areas including water projects. Therefore, the need of shift to demand-oriented planning which targets communities who want and need water supply improvements was important. Hence water users' participation in planning and implementation was considered necessary (Marks *et al.*, 2014). Therefore, for community sustainable development, community participation is important from early stage of planning up to the stage of monitoring and evaluation. This enhances the sense of ownership of projects to the community. Thus, taking care and ensure sustainability of different development programs implemented in their areas.

2.3 Theoretical Perspectives of the Study

2.3.1 Participatory Theory and Critics

Participatory theories and principles condemned the modernization theories on the argument that they promoted a top-down, ethnocentric and paternalistic view of development. The argument by participation theorists insists that the diffusion

model proposed a conception of development associated with a western development vision (Quarmyne, 1991). The top-down approach believed that the knowledge of governments and agencies was always correct, and that local communities either did not know or had incorrect understanding. Because programmes that came from outside the villages, communities felt that innovations did not belong to them but to the government and thus expected the latter to fix things when they went wrong. The sense of disempowerment was also rooted in the fact that local communities did not have the choice to reject interventions or introduce some modifications (Servaes, 1989). Modernization theories also criticized traditional approaches for having been designed and executed in the cities by local elites with guidance and direction from distant experts (Mody, 1991). Local communities were not involved in preparing and implementing development interventions. These interventions were considered by local residents as passive receivers of decisions made from outside. It is the governments which decided what was best for farmers, without giving them a sense of ownership in the introduced systems (White, 1994).

Participatory practitioners and theorists agree that development communication required sensitivity to cultural diversity and specific context that were ignored by modernization theories (Gumucio, 2001). The lack of such sensitivity caused problems and failures of many development projects. Modernization projects undermined the importance of local knowledge and the consequences of the interaction between local cultures and new ideas.

Participatory theories considered it necessary a redefinition of development communication (Quarmyne, 1991). One set of definitions stated that, the systematic utilization of communication channels and techniques to increase people's participation in development and to inform, motivate, and train rural populations mainly at the grassroots. For others, development communication needed to be human rather than media centered (Agunga, 1997). This implied the abandonment of the persuasion bias that development communication had inherited from propaganda theories, and the adoption of a different understanding of communication.

According to Kavinya, Alam & Decock, (1994), communities should be encouraged to participate in decision-making, implementation, and evaluation of projects. This would give a sense of involvement and provide them with a sense of ownership and skills that they can use beyond the span of development projects. Community empowerment has become one of the main contributions of participatory theories to development. Empowerment is possible only if community members critically reflect on their experiences and understand the reasons for failure and success of interventions (Purdey, Adhikari & Robinson, 1994; Bradford & Gwynne, 1995).

However, it is argued that the models were elaborated at a theoretical level and did not provide specific guidelines for interventions (White, 1994; Bradford & Gwynne, 1995). One problem in participatory models is the fact that, it is not clear when and at what levels communities needed to be involved for certain

results to be achieved. In some cases such as epidemics and other public health crises, quick and top-down solutions could achieve positive results. Participatory communication ignores that expediency may also positively contribute to development. Going through grassroots decision-making process is slower than centralized decisions, and thus not advisable in cases that require prompt resolutions. Participation might be a good long-term strategy but has shortcomings when applied to short-term and urgent issues (Purdey *et al.*, 1994).

Another thing particularly for Asia and Africa is that, participatory models are premised on western ideas of democracy and that it does not fit political cultures elsewhere. Individualism rather than community and conflict rather than consensus lie at the heart of participatory models developed in the West (White, 1994). Participation can also promote division, confusion, and disruption that do little to solve problems. It may privilege powerful and active members of the community (local elite) at the expense of the community as a whole. To these criticisms, advocates of participatory models admitted that divisions and conflicts might result but, they argue, the answer should be teaching negotiation and mediation skills rather than opting for interventions that disempowered people in the name of consensus-building. Although advocates of participatory theories view their critics as favouring government centralization and leaving power inequalities intact, they admit that some original premises need to be revised (White, 1994).

2.3.2 The Water Sector in Tanzania: A Historical Perspective

The history of water services delivery in rural areas can be traced back to 1960s whereby the government and development partners implemented large water investment scheme aimed at delivering improved and safe water services to rural areas (Larbi, 2005). Failure of local government to manage and maintain water infrastructure in 1970s, forced the central government to take over responsibility of water services operation and maintenance. A 20 year Rural Water Supply Programme was launched in 1971 with the target of providing access to adequate, safe and reliable water supply to the whole population by 1991 (URT, 2008). However, the target was not attained as only 46 percent of the population had access to clear and safe water, and was due to lack maintenance and repair of infrastructure; lack of user's participation; use of inappropriate technology and use of top-down approaches (World Bank, 1999; URT, 2008).

In 1991 a water policy was launched with emphasise on community participation, use of appropriate technology and introduced cost sharing for rural water supply as a way to address the problem faced earlier initiatives (URT, 2002). However, this water policy failed to address those earlier problems as the coverage of water supply to rural areas reached about 50% by 2002 (URT, 2002). A new water policy as launched in 2002 in order to solve the shortfall identified in 1991 policy. The policy recognised access to clean and safe water as a basic need to all people, and aims at providing adequate, affordable and sustainable water supply services to rural people (URT, 2002). It involves the

concept of decentralization and subsidiary in managing rural water supply. Therefore, delivery of rural water supply has been decentralised to Local Government Authorities (LGAs) and the role of the central government has been confined to policy making, regulation, monitoring and performance assessment (URT, 2002). In addition, a 20 year nation-wide Water Sector Development Programme (WSDP) was launched which is implemented at village level (URT, 2008). Currently, rural water supply coverage in Tanzania had improved to 58% in 2010 from 48% in 1990 (URT, 2008).

2.3.3 Water as an Important Resource

Fresh water is important to sustain human life as it provides various social and economic needs. This makes water a vulnerable resource and this has become a globe issue due to the increase in population, economic growth and climate change, more of world population lack access to safe and drinking water (URT, 2002; Simonovic, 2000). Simonovic (2000) estimated that more than 1 billion people, equivalent to 20% of the world's population, lack access to safe drinking water, while 3 billion people, which is 50% of the world's population lack access to sanitation (Cosgrove, 2000), and almost 80% of all illnesses and more than one third of all deaths in developing countries are related to water born diseases.

According to Gleick (2000), there are five major drivers which demanded a huge expansion of water resources in the 20th century. These demands includes; population growth, industrial development, expansion of irrigated agriculture,

massive urbanization and rising standards of living. These demands are continuing to grow over times, thus world is facing severe water-related problems. On the other hand, Millennium Development Goals Report (UN, 2012), reported that 783 million people, or 11 % of the global population, remain without access to an improved source of drinking water. Such sources include household connections, public standpipes, boreholes, protected dug wells, protected springs and rainwater collections. In East Africa conflicts over water are increasing as the population level rises and the use of different technologies in agricultural production changes water flows in the streams and rivers.

Over the past 15 years water demand has increased with the increase in population growth and economic activities which requires water for their development. These activities include domestic uses, livestock keeping, irrigated agriculture, hydropower generation, industries etc. Water scarcity is observed in Tanzanian many places due to unreliable rainfall and multiple uses. The consequences of over use of water are degradation of sources and catchments, which can result to food insecurity. More worse there is water use conflicts between sectors of the economy which endangers peace among Tanzanian societies (URT, 2002). Apart from it, the use of contaminated sources poses health risks to the population as evidenced by the incidences of water borne diseases such as diarrhoea and cholera.

2.3.4 Community Participation in Water Projects in Tanzania

The problem of participation in water projects is a historical phenomenon. It can be traced back to the early 1960s, when Tanzania gained its independence; during that period water service was free to all people (Kasiaka, 2004). This was done purposely to comply with a free water policy for all, which was put in place in 1969. Therefore, rural people were not required by law to pay for their water services. Water policy was consolidated in 1971, whereby the government declared to provide rural people with free water services accessible within 400 meters from their household by the year 1991 (Kasiaka, 2004). But this didn't work as by 1970s and 1980s most of constructed water scheme failed to achieve sustainability. This was a result of different factors, including the practice of Supply Driven Implementation Approach (SDIA), whereby the government became the sole initiator, planner and provider of water service, with a very centralized system allocations in such a way that decision made concerning water were not felt by the community.

In this case, all activities related to operations and maintenance of water projects were done by the government instead of village water scheme. After economic crisis in 1980s, the government initiated community participation in water project, as a way of reducing cost to the government and to enhance water project's sustainability. Thus, Village Water Committees (VWC) and Village Water Funds (VWF) were established as a result of introduction of community-based water systems. Thus, the responsibility of the government was handled over to VWC which includes: planning, implementation, and

operation and maintenances of water project activities. However, community participation in water project's activities was generally poor especially, payment for water service charges as people were still affected by the free water service policy to all (Mwakila, 2008).

Masanyiwa (2014) argues that decentralization has the potential to improve water service delivery especially in rural areas after the failure of central government to provide reliable water services. As decentralization goes together with participation approach, this enables users, planners and policy makers at all levels to play their role in providing water service, at the same time service users are expected to initiate demand, implement and finance the service. In this way sustainable delivery of water service can be achieved. On the other hand, experience gained over many years shows that in water supply and sanitation project, the best result are obtained only when communities are involved in planning and running of the projects and when other sectors such as education and health contribute simultaneous to the development effort (Whyte, 1986).

Due to the importance of community participation in water services within their own areas of residence, the National Water Policy of 1991 was reviewed to incorporate community participation in the new National Water Policy (URT, 2002) which stated clearly that communities/beneficiaries should be encouraged to participate fully in planning, operation and management water project in their areas. Through this way water project's sustainability can be attained in many communities where government implements these project, as a result, there will

be proper utilization of resources due to the fact that resources will be used once for a specific task and not used several times for the same activity.

2.3.5 Causes of Water Services Problems: A General Overview

Water is essential for all socio-economic development and for maintaining healthy ecosystems. However, in recent years, water security has become a global issue. Demand for water is rising every year as the result of the rapid increase of the world population. This is due to world's population increase, which eventually increases pressure on water resources. Furthermore, socio-economic development requires increased allocations of groundwater and surface water for domestic, agriculture and industrial sectors, which intensifies pressure on water resources. The increasing stress on freshwater resources is currently a great issue of concern. It was estimated that roughly 166 million people in 18 countries are affected by water scarcity and another 270 million people in 11 countries are water-stressed. It was also reported that almost 900 million people worldwide lack access to an improved water supply and 2.6 billion to basic sanitation. It has been estimated that more than 2.8 billion people in 48 countries will lack access to adequate water supplies by 2025 (Ahmed, Siwar & Begum, 2014).

Access to improved water supplies is lower in rural sub-Saharan Africa than in any other region. One in two people depend on unprotected sources such as traditional wells and rivers for their domestic needs (Joint Monitoring Programme, 2012). Low access to improved water supplies in this region is the

result of many reasons among them is poor sustainability of water infrastructure. For example, most of all funds for rural water supply development in Africa are dedicated to communal water points such as bore wells with hand pumps, but still, it is estimated that 36 percent of these are not working at any given time (Rural Water Supply Network, 2009).

The United Republic of Tanzania, like in any other countries of Africa faces serious constraints to meet the challenge of providing water and sanitation for both rural and urban residents. Sanitation is particularly serious, as there is still a very big gap with only 7% of rural residents and 20% of urban residents with improved sanitation facilities in 2010. As for drinking water, there has been a decrease since 1990, with 56% of the rural population and 21% of the urban population (UN, 2012).

Furthermore, there is insufficient capacity to access and store water in both rural and urban areas. Few households have access to clean drinking water from a piped source. Only a small fraction of rural households can access water to the community water pumps, but still majority of rural people use more of their time in searching water. In addition, there has been a negligence of maintenance of existing water infrastructures as well as the development of new delivery mechanisms, such as partnerships with private operators and communities. Thus, there is a destruction of most of water infrastructure and most of them are not working. Hence, there is a need to rethink the distribution of responsibilities

between the central and local governments and to be clearer on who will pay for water use (URT, 2014).

2.4 Empirical Perspectives of the Study

2.4.1 Forms and level of community participation in water projects

More recently, there has been emphasising in participatory planning in water projects. Communities can participation in several forms and stages in water projects. Community can participate from initiation of the project to monitoring and evaluation. Also can participate in several forms such as contribution in money and in-kind like manpower to participation in decision making (Marks *et al.*, 2014). Community participation can be categories into two groups: breadth and depth. Breadth of community participation is measured by the percentage of households that participate in particular activities, for example, percentage of households participate in meetings, contribution of cash. On the other hand, depth of community participation is measured by the household's extent of engagement, for example number of meetings a community/households attended, amount of money the community/households contributed as construction cost of the project or as user fee (Marks *et al.*, 2014).

Several studies have reported a number of forms of community participation. For example, in Ghana, community participated in meetings (87%); in labour (25%) and cash (52%) contributions. In terms of depth of participation, community attended meetings with a mean of 3.6 (about 3 meetings); about one day per

household in planning and construction of water projects, and capital contribution of about 0.6 USD per households (Marks *et al.*, 2014).

In Tanzania, community participate in several forms ranging from attending meetings to contribution in forms of cash and labour. Attending meetings is one of the common forms of community participation in water projects (Cleaver & Toner, 2006; Mandara, Niehof & van der Horst, 2013; Masayanyiwa, 2014; Masayanyiwa *et al.*, 2014a; Mandara, 2014). In Kongoa and Kongwa districts, Tanzania community participate through attending meetings that related to water projects, deliberating on initiation of water projects and how community will participate in those projects (Mandara *et al.*, 2013; Masayanyiwa, 2014; Masayanyiwa *et al.*, 2014a; Mandara, 2014;). Community participate in identification of areas with water potential, location of distribution of water points, and choice of technology were also forms of community participation in Tanzania. Initial capital contribution to the water scheme was another form of community participation (Mandara, 2014). Community participate through contribution of cash, while others contribute through provision of labour by collecting sand and stone, fetching water and digging trenches as part of building activities of water projects. Other forms of community participation including contribution or payment of user fees, clearing of water project's areas and reporting of faulty as part of Operational and Maintenance of project (O&M).

2.4.2 Factors affecting community participation in water projects

Community participation is very important for the sustainability of the water projects. However, several factors have been put forward to influencing community participation. Community participation takes place in a socio-economic context (Kumar, 2002), Therefore, participation is influenced by the overall circumstances and the unique social context in which action is being taken. Variable such as population size and density, economic conditions, religious, traditions, literacy, health status, land arrangements, government structures and effectiveness that differ from community to community (Dayal & Mukherjee, 2000) are important for sustainable community participation in water projects. Therefore, community participation and its sustainability and effectiveness can well be understood in the socio economic context in which it takes place.

Good leadership is also an important factor for enhancing community participation. Aspects such as transparency, accountability and responsibility are part of leadership. This helps to bring trust, understanding and support for the group. If the project proceeds too far before community are informed there may be problems with rumours and the spreading of misinformation. Open public participation is one communication strategy that has proven to be successful (Community Development Society, 2000). The level of the transparency has the effect on community participation. For this matter community members will actively participate if the benefits are clearly articulated and involved immediately at the beginning of the project design. For example in water

projects people expect to see domestic water points installed or boreholes drilled are in operation. Not only that but administration structure is very important as especially when users can have the information on how the project is operated including users' contribution. With free flow of information then people will automatically participate (Parameswaran, 1999). Lack of good leadership in terms of accountability and transparency especially in funds, to some extent reduced not only community participation but satisfaction on water projects (Mandara, 2014). Therefore, in order to have community support, it is important to involve the community from the start of the project such as identification of the project, planning, implementation and monitoring and evaluation. The community participation process provides participants with the information they need in order to participate in a meaningful approach (Kumar 2002).

Community awareness is another factor. Awareness-raising is important to community participation as it break barriers among the community through information - sharing and dialogue. Once these barriers have come down, communities are able to express themselves more freely; both as individuals and collectively, internalize the underlying need for development projects and the expected returns (Dayal & Mukherjee, 2000). Public education means informing and motivating a large number of citizens in order to solve a problem that affects them. The first important step in this process is developing an education campaign. A public education campaign is a method whereby information is sent to a large number of citizens to increase their awareness of a

problem and, as a result, encourage them to change their behaviour. An awareness-raising process ideally aims to boost the commitment of society beyond the simple acquisition of knowledge and skills. As the awareness raising takes many forms like demonstrative/practical training of communities, continuous dialogue and information sharing, participatory planning and monitoring including regular assessment of progresses and constraints allows communities to enhance their analytical skills and implementation capacity (Okello, Beevers, Douven & Leentvaar, 2009).

Sense of ownership has been claimed to enhance community participation. Community participation motivates the sense of ownership of development initiatives by the members and eventually ensures the sustainability of the initiatives (Mahama & Badu-Nyarko, 2014). Communities that participate in projects find out that, not only do they derive more satisfaction from the joy that comes from open community involvement, but they also achieve more results, more rapidly which benefit the community as a whole. When people participate in ongoing projects, it increases their sense of control over issues that affect their lives and motivate their participation in water projects.

Technology has been outlined as another factor that can affect community participation especially, during implementation of project activities (Parameswaran, 1999). This is because, the more the technology become complex, the less the likelihood of community participation. It is urged that, technology has direct relationship with project service's sustainability especially,

when beneficiary communities are required to pay for operational and maintenance costs. Despite of the fact that community are involved in selection of technology of water projects in Tanzania, community influence is generally low due to the fact that community do not have expertise on water technology such as water pump (Mandara, 2014).

Gender issues such as 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. Masanyiwa *et al.* (2014a) also argued that, though in Tanzania, attendance of women in public meeting is greater than men, their participation is generally passive, this is due to the fact that, most of African culture and traditions tend to prevent/prohibit women to voice their views in the meetings (Mandara, 2014), hence their comments and needs are not taken on for necessary action. Therefore, women as main and potential stakeholder, their participation and leadership positions in water committee are inevitable for sustainable water projects (Githendu, Mbugua, Hartung & Peter, 1993; Mwakila, 2008).

2.5 Summary of the Chapter and Knowledge gap

It is clear that water as a resource is important for community development. Literature showed that community participation in water project is important for the sustainability of water project. While several studies that has been conducted in assessing community participation and water projects in general (see Masayanyiwa, 2014; Ofuoku, 2014; Mahama & Badu-Nyarko, 2014), few

studies have so far been carried out in Tanzania, particularly in semi arid areas of Tanzania. Furthermore, while some studies have been dealing with community participation and water projects (see Masanyiwa, 2014), studies related to the forms of community participation, their level of contribution to the projects and factors affecting community participation which are important for both sustainability of community participation and water projects themselves is generally lacking in developing countries (Kamuiru and Mbwisa, 2014), and particularly in semi arid of Tanzania. This study aims at filling such a gap.

CHAPTER THREE

METHODOLOGY

3.1 Chapter Overview

The chapter presents the research methods that were used in data collection. The chapter starts with presentation of the description of the study area. This was followed by description of the research design, methods and tools that was used in data collection, and data analysis. The chapter ended up with summary.

3.2 Study Area

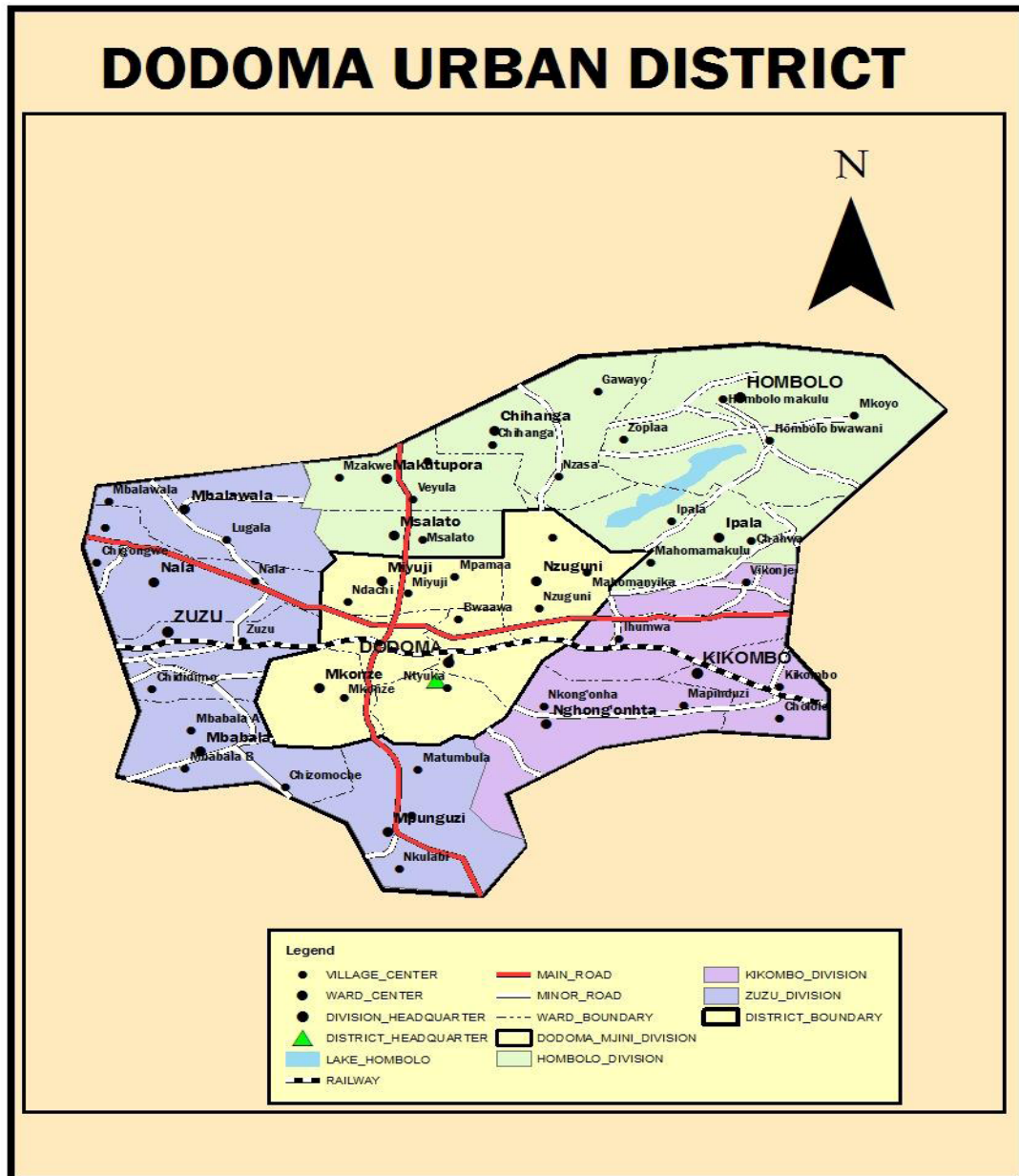
3.2.1 Selection of the Study Area

The study area was selected because of the three reasons: the ward has urban-rural characteristics and located in semi-arid which usually suffer water shortage; second the ward is implementing water projects through community participation namely: water pump project supported by World Bank, Water Barriers (*Makinga Maji*) supported by Mennonite Church, and Windmill water project supported by CCPS; third despite of community participation, still water shortage persists in the area (Dodoma Municipal Council (DMC), 2014).

3.2.2 Location of the Study Area

The study was conducted in Dodoma Municipal. The Municipality is located in the centre of the Country. It lies between Latitudes 6.00° and 6.30° South, and Longitude 35.30° and 36.02° East (Fig. 3.1). It is boarded by Chamwino district in the East and Bahi district in the West.

FIGURE 3.1: LOCATION OF THE STUDY AREA



(Dodoma Municipal Council (DMC), 2014, p. 2)

It is about 456 km from Dar es Salaam and 426 km from Arusha. The Municipality covers an area of 2,769 square km. It is characterized with both

Urban and rural qualities. It stands on broad up land plateau with an altitude ranging between 900-1000 meters above sea level, with beautiful stony hills such as Image, Isanga and Mlimwa. The study was conducted at Mkonze ward and covered two villages: Mkonze and Michese. The ward is located about 10 km from Dodoma Municipality on main road to Iringa Region.

3.2.3 Climate

The climate of Dodoma is semi-arid, characterized by a marked seasonal rainfall distribution with a long dry season starting from late April to late November and a short wet season starting late November to the end of April. Average rainfall ranges from 550 to 600mm per annum. The minimum average temperatures vary from 20°C in July to 30°C in November. July is the coldest month whereas November is the hottest month, with mid-day temperatures exceeding 30°C (DMC, 2014).

3.2.4 Administration

Dodoma Municipality is administratively divided into 4 divisions, 37 wards, 39 villages, 100 mitaa and 222 hamlets. The Municipality is represented by two members of parliament, one being elected and the other obtained from special seats reserved for women, and by virtue of their positions they are also councillors (DMC, 2014).

3.2.5 Population

The current population of Dodoma Municipality is 4 410 956 based on the Population and Housing census of 2012 whereby males are 199 487 and females are 211 469 representing 24% and 1% of Dodoma region and national population, respectively. The total number of household is 76 112 with an average population growth rate of 2.4%. With such growth rate, the population of Dodoma Municipality is exponentially projected at 420 938 in 2013 and 522 428 in 2022 (DMC, 2014).

3.2.6 Economy

About 75% of the Municipal income comes from Agriculture and Animal husbandry. About 25% of the population is engaged in petty businesses such as retail shops, carpentry and food vendors. Other activities include small and medium industries, consultancy and construction work. Main industrial products are wine, mattress and packed water. From forestry, there are honey, wax and herbs. Per capita income are 270 000.00 (DMC, 2014).

3.2.7 Socio economic services available

Dodoma Municipal Council has 98 pre-primary classrooms, among which 83 are owned by the government, and 15 are owned by religious institutions and private organizations. Dodoma Municipal Council has 107 Primary Schools. Among them 92 are public owned Schools and 15 are private owned Schools. In terms of secondary school, Dodoma Municipal Council has 52 Secondary Schools of which 36 are Public and 16 Private Schools. 3 Secondary Schools among 36

Public Secondary Schools are boarding and the rest are day schools (DMC, 2014).

Health wise, Dodoma Municipal Council has 3 Hospitals, 2 of which are owned by the Government and 1 hospital owned by a Religious Institution. There are 8 health centres, 4 owned by the Council and 3 are privately owned. However there are 48 Dispensaries, 23 owned by the government, 15 belong to religious institutions and 10 are privately run (DMC, 2014).

In terms of water services, Dodoma Municipality depends on several sources including charcoal dams, shallow wells, open spring, rainwater harvesting and boreholes. Dodoma urban areas are mostly served by ground water from Mzakwe Basin. This basin is 30km north of Dodoma town and has a potential of producing 72 000m³ of water per day from 21 boreholes (100-130m deep). However, the current supply of water is 40 000m³ per day, this is produced from 8 boreholes only against the 21 boreholes available. Compared to urban areas, water supply in rural areas is limited; about 39 villages in the municipality have 25 deep water wells, 70 shallow water wells, 2 dams, 1 natural spring and 4 wind mills. It is about 51% of people in the Municipality have an access to safe and clean water. The management of water supply in Dodoma urban is under DUWASA. In general access to safe water in Dodoma municipality is poor and the situation is aggravated by prolonged downtime of water points in urban area. A higher percentage of rural household are using unsafe water. A total number

of 238 383 people live in the rural areas, of which 166 868 (70%) people have access to unclean and unsafe water (DMC, 2014).

3.3 Methods

3.3.1 Research design

This study adopted cross sectional research design. The nature of the study requires one to collect both qualitative and quantitative data by using several methods (mixed methods) in order to have a deeper insight of subject under study (Creswell, 2003), in this case is community participation in water projects, which is possible under cross sectional research design. The choice of cross sectional research design is based on the fact that it allows to collection data in natural and real setting using probability sampling procedures, therefore increases validity of data collected (Kothari, 2004). Also it allows collecting data at a single point in time by using mixed methods, hence suitable in situation where resources are scarce.

3.3.2 Sampling procedures

Both probability and non probability sampling procedures were adopted by this study in sample selection. Probability sampling was used to select respondents randomly from selected villages. Simple random sampling provided equal chance of every household in the village to be selected hence increases validity of the data (Kothari, 2004). Non probability sampling was used to select key informants. This included WEO, VEO, village leaders and Municipal engineer.

3.3.2.1 Sampling frame

Sampling frame is a list of population whereby the sample for the study was drawn from (Kothari, 2004). Sampling frame for this study was all households in the selected villages. Village register was used as a sampling frame. Sampling unit for the study was head of household.

3.3.2.2 Sampling size

According to Boyd, Wesfall & Stasch (1981) a random sample should at least constitute 5% of the total population under study, while Bailey (1998) recommended that minimum required sample size to draw statistical validity is 30 respondents. Mkonze ward has two villages: Mkonze and Michese. Mkoze village has 2 906 households while Michese has 1 777 households, totalling to about 4 683 households (DMC, 2014). Therefore, based on 5%, sample size for this study was supposed to be 234 households: Mkonze 146 and Michese 89 households (Table 3.1). However, due to scarce of resources, especially funds, this study adopted a 2.7% sampling size intensity, hence sample size was 126 respondents whereby 80 and 46 respondents were randomly selected from Mkonze and Michese villages, respectively (Table 3.1). Therefore, 126 respondents were sufficient enough to draw statistical validity and to represent the perception of the whole population (Bailey, 1998).

TABLE 3.1: DISTRIBUTION OF RESPONDENTS

Villages	Streets	Population	Households	5% intensity	2.7% intensity
Mkonze	Chisichili	1539	312	16	9
	Muongano A	1501	793	40	21
	Chinyika	2305	426	21	12
	Miganga	1813	872	44	24
	Chidachi	2429	503	25	14
Subtotal		9587	2906	146	80
Michese	Nzinje	1006	429	21	11
	Bwawani	2017	690	35	18
	Muongano B	2528	658	33	17
Subtotal		5551	1777	89	46
Grand total		15138	4683	234	126

3.3.3 Types of Data and collection methods

3.3.3.1 Type of data

Both qualitative and quantitative data related to community participation in water projects was collected using combination of methods (mixed methods).

- *Primary data*

Primary data are data that are collected for the first time and has never analysed or documented (Kothari, 2004). In this study primary data was collected through household questionnaire survey, key informant interviews, Focus Group Discussions (FGDs) and field observation. This involved data related to role of

community in water project, level of participation on water project and problems related to community participation in water project.

- *Secondary data*

Secondary data are data that has been already collected and/or analysed and documented by other researchers (Kothari, 2004). In this study, secondary data was collected through key informant interview by using checklist; and documentary review whereby several sources were consulted such as district and ward office whereby several reports and publications were reviewed. In addition, internet and library search was performed for securing secondary data. This involved data such as description of the study area, number and type of water projects, implementation of the water project and constraints related to implementation of the water projects.

3.3.3.2 Data collection methods

The study used a combination or mixed methods to collect data. The combination of methods helped in cross checking reliability and validation of information collected from other methods. Also since each method has strength and weakness, combination helped to counterbalance the weakness of each method, while taking the advantages of strength of each method, hence enhance validity, reliability and accuracy of collected data (Creswell, 2003; Axinn and Pearce, 2006).

- *Primary data collection methods*
 - *Household survey questionnaire*

The questionnaire survey was conducted to selected head of households (respondents) in each selected villages, totalling to 126 (see section 3.2.2.2). The survey involved the use of structured questionnaire with both closed and open ended questions (Appendix B). Open question provided a room for the respondents to express themselves freely in answering question, therefore provided details information, while in closed question respondents required to select answers from the given option. The objective of using household questionnaire survey was to quantify the perception of local people on participation in water projects in terms of forms of community participation, level of community participation and problems the community faced in the implementation of the projects, and factors influencing community participation in water projects.

- *Focus Group Discussion*

The discussion was conducted in each village. This method is useful when researcher wants to secure feedback from services users (in this study water as service) such as their participation in water projects; and to secure immediate outcome from the respondents about a topic (Abumere, 2014). In order to have effective Focus Group Discussion (FGD), a size of the group should be manageable. Chawla & Sondhi (2011) recommended a group between 8 and 10 members for effective FGD. Average number of 10 members or villagers was involved in focus group discussion in each village. The discussion based on

issues related to community participation on water projects such as how, why and when the community was involved in water projects, and their challenges. Checklist was prepared to guide discussion (Appendix C). The main purpose of using Focus Group Discussion was to get general understanding of the local people's perception and opinion on participation on water projects in their area.

- *Key informant interviews*

Key informant is a member of the community who has particular knowledge about certain matter under study (Nichols, 2000). This involved people who were knowledgeable and involved in water projects including leaders. Information such as when the projects initiated, who were donors and their contribution in water projects were solicited from key informants. Checklist was prepared to guide the interview (Appendix C). In this study, key informants were village and government leader such as VEO, WEO, community water committee; and professionals such as WCDO and district water engineer. A total of seven key informants were involved: 1 WEO; 2 VEO; 2 Community water committee members; 1 WCDO and 1 District water engineer.

- *Field observation*

This involved collection data based on actual situation. A research observed what is happening on the ground and take note. Observing operation in the field gave an opportunity to a researcher to discuss with respondents on what and how things were happening and cross checking with what ones was told against what is happening on the ground (Metttick, 1993).

- *Secondary data collection methods*

Literature survey on issues related to community participation in water project was collected in various ways .Secondary data are data collected by others and already available (Kothari, 2004). This data were collected through documentary review from different sources such as ward and village report, and municipal engineer's offices.

3.4 Data analysis

3.4.1 Qualitative data analysis

Content analysis was used to analyse qualitative data collected through Focus Group Discussion and key informant interview. Qualitative data analysed by contents analysis were related to how, why and when community participate in water projects. Content analysis helped to reduce the verbal information from FGD and key informants' interviews into smallest meaningful units of information (Kajembe, 1994; Kothari 2004). Furthermore, more analysis and synthesis was done through documentary review so as to get information that could help to explain the situation on the ground regarding water projects and community participation. This involved review and synthesis of research reports, annual reports, and policies such as water policy.

3.4.2 Quantitative data analysis

Data collected through structured household survey questionnaires was coded, summarized, and entered into Microsoft Excel (2007) and Statistical Package for Social Sciences (SPSS) computer programme version 16 for analysis.

Descriptive statistical analysis was used to explore the data for distribution of response, central tendencies and dispersion. Cross tabulation was also performed to ascertain distribution of responses (frequencies) and percentages by categories. Cross tabulation is a powerful way of communicating information and the commonest data presentation mode (Pallant, 2005). Information or data that were analysed through quantitative data analysis includes forms of community participation, challenges faced community participation in water projects and factors influencing community participation in water projects.

3.4.3 Statistical analysis

Inferential statistical analysis was employed. In order to detect whether responses differ significantly between or among respondents; and between villages; Chi square test was employed at 5% level of significant.

In addition, in order to determine factors that influencing community participation on water projects, multiple regression analysis was employed:

$$Y = a + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + e_i$$

Whereby:

Y_1 = community participation in water projects

X_1 to X_8 = independent variables, i.e. socio economic and governance factors that influences ability of households to participate in water projects.

a = a constant showing intercept for regression equation

β_1 to β_8 = independent variables coefficients which indicate how much a 1 unit increase or decrease in X_n changed community participation.

e = error term

$i = 1, 2, 3 \dots n$

n = Sample size (total number of respondents i.e. 126 for the purpose of this study)

The explanatory power of the regression was assessed by its coefficient of determination (R^2). The coefficient of determination showed the strength of relationship between dependent and independent variables.

Dependent variable (Y)

Community participation (mean score): level of community participation was estimated in three stages of water project: planning, implementation and operational and maintenance stages. In each stage respondents were required to rate their level of participation in likert scale: 1 being very poor to 5 being very good/high participation. Community participation was estimated as summation of individual score in each stage divided by number of stages (3) and number of respondents (126).

Independent variables (X_s)

X_1 = Age of respondent (years): Age is one of the factors that determine community participation. It is assumed that age will have positive relationship with community participation, hence have positive sign ($+\beta$).

X_2 = Sex (1 = male; 2 = female): Sex of the respondents has a profound influence on how men and women differ in the participation in natural resources management including water projects. It was assumed that women will likely to participate in water project than men, as water as resources constitute part of their daily activities (e.g. cooking, washing clothes) Therefore, the expected sign for Beta value was positive ($+\beta$).

X_3 = Education level of the respondents (1 = no education; 2 = primary; 3 = secondary; 4 = college): It is assumed that increased in educational level of local people enhance their awareness on development issues, hence motivate their participation development activities. Therefore, high level of education was expected to have positive sign ($+\beta$).

X_4 = Household size: Household is defined as a group of people who eat from the common pot, share a dwelling house and have a unit of command from the head of the household, be men or women. Family size determines per capita water consumption, income and labour availability. The number of members in the household has an important implication on household's participation through cash and/or labour contribution. Therefore, household size was assumed to have positive sign of ($+\beta$).

X_5 = Family affordability to pay for water services (user fee) (1 = Yes; 2 = No): It is assumed that when the family can pay for water services will be willing and ready to participate in water projects. The expected sign for Beta value was negative ($-\beta$).

X_6 = Reliability of water supply (1 = very poor to 5 = very good): The hypothesis in this case was that, reliability of water supply motivates community to participate in water projects. Therefore, reliability of water supply was assumed to have positive sign of ($+\beta$).

X_7 = Good leadership (mean score): Good leadership would motivate community to participate in water projects. Good leadership was measured by using the following indicators: Trust; Transparency; Accountability; and Flow of information related to water projects. Respondents were required to rate indicators in likert scale form: 1 being very poor to 5 being very good. Good leadership was estimated as summation of scores of each individual in each indicator divided by number of indicators (4) and number of respondents. The hypothesis was that increasing/improvement in good leadership will increase the likelihood of the community to participate in water projects. Therefore, the expected sign for beta value was positive ($+\beta$)

X_8 = Ownership (mean score): Ownership of development projects is important for community participation, and subsequently sustainability of projects.

Ownership was measured by three statements: I feel I am one of the owners of the project; My family is one of the owner of project; and the water project is owned by the community. In each statement the respondents were required to rate in likert scale: 1 being strongly disagree to 4 strongly agree). Ownership was estimated as summation of scores of each individual in each statement divided by number of statements (3) and number of respondents. Therefore, the expected sign for Beta value was positive (+ β).

As Kajembe (1994) argues, in postulating relationship among dependent and independent variables, linearity is normally assumed. Linear model was predicted in this study because first, numerous relationships have been found empirically to be linear, second, the linear specification is generally the most parsimonious; third the theory is often so weak we are not at all sure how the non-linear specification will be (Kajembe (1994).

3.5 Methods for ensuring validity and reliability

According to Kothari (2004), validity refers to the extent to which a test measures what is actually wish to be measured the study. Using a combination of methods (triangulation) such as household questionnaire survey, key informant's interview, focus group discussion and field observation; and collection of qualitative and quantitative data ensured and enhanced the validity and reliability of data. According to Creswell (2003) and Axinn & Pearce (2006), use of a combination of methods tends to offset weakness of each methods

while take advantages of each method, hence ensures and increase the validity, quality, reliability and assurance of data collected.

3.6 Ethical considerations

All procedures for research ethics were considered. This involved collection of research permit from the university and submit to the municipal office for permission to conduct the research. In the ward, leaders were informed (Appendix A). There was no vulnerable group that was involved; rather adult male and female were involved. Participants were informed about the aim of the study and what was expected from them. Furthermore, they were given an informed consent and had a choice to participate and withdraw when deemed necessary.

3.7 Dissemination of research results

Results will be disseminated through production of MA thesis which will be available at the University library. Summary of the report and its policy implication will be produced and submitted to responsible offices such as ward, village and municipal with recommendation on how to improve community participation on water project.

3.8 Overall limitations of the study

Limitations of the study included:

Language barrier: Since Mkonze ward had rural setting, and is habituated by indigenous people who speak *Gogo* language, then communication was

somehow problem. This limitation was addressed by working together with local people as translator whenever communication barriers arose.

Another limitation was respondents to asking for honoraria during data collection: is a common issue for people to ask money as payment for providing information. This was solved by working together with village leaders who educated the respondents on the objective of the research.

3.9 Chapter summary

This chapter presented description of study area and methods used to collect data. The study was conducted at Mkonze ward in Dodoma Municipality. Both primary and secondary data was collected using a combination of methods such as household questionnaire survey, focus group discussion, key informant's interview and field observation. Using of a combination of methods and collection of different types of data enhanced validity and reliability of data collected. Data were analysed through both descriptive and inferential statistical analysis.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Chapter Overview

This chapter presents results and discussion on the study. The chapter starts with presentation of water as a problem, followed by water projects initiated in the project area. This is followed by forms of community participation in each stage of water projects. Challenges facing community participation in water projects follow. It ends with factors influencing community participation in water projects and a summary of the chapter.

4.2 Existing role of community participation in water projects

4.2.1 Water as a problem

Table 4.1 shows community perception on water as a problem. Majority of respondents (84.9%) perceived shortage of water as a major problem in their areas while 12.7% claims to be not a problem with a mean score of 2.7, and their perception differs significantly ($\chi^2 = 151.024$; $p = 0.0001$) implies that water is a problem. As a result, the majority of respondents (97.6%) admitted that water is a priority in their development agenda.

TABLE 4.1: RESPONDENT'S PERCEPTION ON EXTENT OF WATER AS A PROBLEM IN THE STUDIED VILLAGES

Variables	Village names		χ^2	p	Total (n = 126)
	Michese (n = 46)	Mkonze (n = 80)			
Level of water problem					
Not a problem	6 ¹ (13.0) ²	10 (12.5)			16 (12.7)
Problem	3 (6.5)	0			3 (2.4)
Major problem	36 (78.3)	70 (87.5)	151.024	0.0001	106 (84.9)
Water as priority one					
Yes	46 (100)	77 (96.3)			123 (97.6)
No	0	3 (3.7)	234.333	0.0001	3 (2.4)

¹ Number of respondents; ² Percentage of respondents; 5% level of significant χ^2 = Chi-square test; p = probability value

A study by Magut, Kipkorir & Daudi (2014) in Kenya found that the community of Marigat perceived water as major problem. Availability and access of clean and safe water is one of the major problems in most developing countries. For example, about 40% of developing countries have no reliable access to water (United Nations Environment Programme (UNEP), 2010), while in Tanzania almost 54% of rural dwellers do not have access to safe and clean water (URT, 2008).

4.2.2 Water projects available in the study area

As a result of a problem of water in the studies villages (Table 4.1), several donors had initiated water projects in order to improve access of water to rural communities. Table 4.2 shows number of donors and water projects initiated in the studies villages.

TABLE 4.2: TYPE OF WATER PROJECTS AVAILABLE IN THE STUDIED VILLAGES

Types of water projects	Organisation involved	Michese (n = 46)	Mkonze (n = 80)	Total (n = 126)
Borehole with pumps	World Bank, WAMMA, TLP			
Yes		43 ¹ (93.5 ²)	67 (83.3)	110 (87.3)
No		3 (6.5)	13 (16.3)	16 (12.7)
Water Windmill	CCPS			
Yes		3 (6.5)	26 (32.5)	29 (23.0)
No		43 (93.5)	54 (67.5)	97 (77.0)
Traditional well				
Yes		1 (7.2)	0	1 (0.8)
No		45 (97.8)	80 (100)	125 (99.2)
Water barriers (<i>makinga maji</i>)	Mennonite C. Church			
Yes		0	16 (20.0)	16 (12.7)
No		46 (100)	64 (80.0)	120 (77.3)
Traditional well and Dam				
Yes		0	1 (1.3)	1 (1.8)
No		46 (100)	79 (98.7)	125 (99.2)

¹ Number of respondents; ² Percentage of respondents

There are about three borehole water projects, one water wind mills, three water barriers, one traditional dam and several traditional wells. Several boreholes had been established by several donors at Marigat in Kenya (Magut *et al.*, 2014), Dodoma, Tanzania (Masanyiwa, 2014; Mandara, 2014) and Nigeria (Oloruntade, Konyeha & Alao, 2014). It is estimated that almost 75% of rural dwellers are served by borehole worldwide (Auckhinleck, 2013). Therefore, borehole has been a common water project established by donors in order to improve access of water to rural communities. The following is the brief description of the water projects and donors involved.

4.2.2.1 Borehole with pumps

There are about three boreholes with water pump. Two are located at Michese villages; one was sponsored WATER AID under *Wawezeshaji Miradi ya Maji na Afya* (WAMMA) project and another by World Bank (Fig. 4.1a; b). A well established by WAMMA distributes its water through pipes to the water points at Michese village only. There are about 9 water points located at primary school, dispensary, nurse's house and six for public use, out of those, only four are functioning at the time of study (Fig. 4.1c). The total cost for the project was 115 408 964 TAS (1 USD = 2060 TAS) with the following contribution: donor contributed 105 646 964 TAS; community 6,762,000 TAS and the Municipal 3 000 000 TAS. Water well established by World Bank distributes its water to Michese and Mkonze villages through pipes to water points (30) with 15 water points to each village. However, the project is at final stage at Michese village.

FIGURE 4.1: WATER PUMPS SPONSORED BY (A) WAMMA (B) WORLD BANK (C) ONE OF THE WATER POINTS, ALL LOCATED AT ZINJE MATAA, MKONZE WARD (D) WATER PUMP SPONSORED BY TLP LOCATED AT CHISICHILI MATAA, MKONZE WARD

(A)



(B)



(C)



(D)



Currently, the project is not working as a result of failure of the water pump (broken down/not functioning). The total cost for the project was 497 263 970 TAS. Also Tanzania Life Project (TLP) initiated another borehole well at Chisichili Mtaa in Mkonze ward (Fig. 4.1d). This water project supplies water to Chisichili Mtaa only, with 20 water points: six for public and 14 connected to individual houses.

4.2.2.2 Water Wind Mill

This water project was initiated by CCPS, an Italian project. The donor established wind mill to draw water from bottom. This project is situated at Miganga Mtaa and serves this Mtaa only (Fig. 4.2a).

4.2.2.3 Traditional well and dams

There are a number of traditional well in the studies villages which were constructed by the community themselves. Most of these traditional wells were found at Michese villages (Fig 4.2b). Also there is one traditional dam which supplies water seasonally. This dam collects water during rainy season, and become source of water during drought season for people and livestock.

FIGURE 4.2: (A) WATER WIND MILL SPONSORED BY CCPS LOCATED AT MIGANGA STREET, MKONZE WARD (B) ONE OF THE TRADITIONAL WELL LOCATED AT MICHESE VILLAGE, MKONZE WARD

(A)



(B)



4.2.2.4 Water barriers

Mennonite Christian Church (MCC) established a number of water barrier projects (*Makinga Maji*) in Miganga Mtaa (Fig. 4.3). This church established water reservoir by creating barriers across river in order to broke water and sand from flowing. In this case water are retained in sand and reserved for community to use them during drought. Focus group discussion revealed that this water were use for farming irrigation. However, during long drought spell they are used for domestic purposes including watering animals. There are about 3 barriers. In addition, central government provided 60 000 000 TAS for another five barriers, 2 in Miganga Mtaa which are yet finished and 3 in nearby ward, Zuzu.

**FIGURE 4.3: WATER BARRIERS (*MAKINGA MAJI*) SPONSORED BY MCC
LOCATED AT MIGANGA MTAA, MKONZE WARD**



4.2.3 Forms of community participation in water projects by stages of project

4.2.3.1 Community participation in planning stage

- *Attending meetings*

A significant number of respondents (52.1%) agreed to be involved in meetings related to initiation of water projects, while 45.5% did not attend ($\chi^2 = 52.628$; $p = 0.0001$) (Table 4.3). In response to a question of how many meetings had attended, majority (45.5%) claimed to attend meetings but did not remember number of meetings they attended; about 35.3% attended few meetings while 18.4% attended many meetings, and only one person (0.8%) did not attend any

meetings during water project initiation stage with a mean score of 2.7 (cutting point being 2).

TABLE 4.3: FORM OF COMMUNITY PARTICIPATION IN THE PLANNING STAGE: ATTENDING MEETINGS

Variables	Villages names		χ^2 value	p value	Total (n = 126)
	Michese (n = 46)	Mkonze (n = 80)			
Participation in meetings for water projects initiation					
Yes	24 ¹ (55.8) ²	39 (50.0)			63 (52.1)
No	19 (44.2)	36 (46.2)	52.628	0.0001	55 (45.5)
Don't Know	0	3 (3.8)			3 (2.5)
How many meetings you have attended					
Not attended	1 (2.5)	0			1 (0.8)
Don't remember	12 (30.0)	42 (53.2)			54 (45.4)
Few	18 (45.0)	24 (30.4)			42 (35.3)
Many	9 (22.5)	13 (16.5)	54.613	0.0001	22 (18.5)

¹ Number of respondents; ² Percentage of respondents; 5% level of significant χ^2 = Chi-square test; p = probability value

Their perception on number of meetings attended differs significantly among respondents ($\chi^2 = 54.613$; $p = 0.0001$). This implied that majority had attended few meetings during initiation of water projects. Similar findings were observed by Marks *et al.* (2014) from Ghana. These authors reported that almost 90% of respondents claimed to be involved in planning meetings related to water projects in Ghana. Marks & Davis (2012) found about 26% of respondents were involved in meetings before water system construction, while Masayanyiwa *et al.*, (2014a) in Tanzania, found almost 92% of respondents attending public meetings related to development issues in water projects.

Furthermore, about 36.9% participated on the meetings that decided on how the community will contribute to the water project (Table 4.4). About 45.7% respondents claimed that it was decided that the community will participate through provision of manpower, 43.5% through contribution of money; community mobilization and advice (4.3% each); this was mainly for leaders. Marks & Davis (2012) reported that in Kenya, community were involved in identification of key actors in water projects, decision on household contribution level and water tariffs. In Tanzania, Mandara (2014) found that community decided to participate in contribution in form of cash and manpower, pay of water use fees and learning and provide security to the water project (water pump).

**TABLE 4.4: FORM OF COMMUNITY PARTICIPATION IN THE PLANNING
STAGE: COMMUNITY CONTRIBUTION TO WATER PROJECTS**

Variables	Villages names		χ^2 value	p value	Total (n = 126)
	Michese (n = 46)	Mkonze (n = 80)			
Participation on how the community will contribute to water projects					
Yes	19 ¹ (44.2 ²)	26 (32.9)			45 (36.9)
No	24 (55.8)	53 (67.1)	1.520	0.218	77 (63.1)
Community contribution to water projects					
Manpower	14 (30.4)	7 (15.2)			21 (45.7)
Money	1 (2.2)	19 (41.3)			20 (43.5)
Meetings	0	1 (2.2)			1 (2.2)
Mobilization	1 (2.2)	1 (2.2)			2 (4.3)
Advice	0	2 (4.3)	19.036	0.001	2 (4.3)

¹ Number of respondents; ² Percentage of respondents; 5% level of significant
 χ^2 = Chi-square test; p = probability value

- *Participation in selection of technology and site for a water projects*

Table 4.5 shows community participation in selection of technology water project and site for a water project. A few number of respondents (11.4%) claimed to be involved in selection of technology of water project and their perception differs significantly ($\chi^2 = 73.374$; $p = 0.0001$). In terms of selection of site for a project, a few number (16.3%) claimed to be involved, while 83.7% claimed not be involved and their perception differs significantly ($\chi^2 = 56.008$; $p = 0.0001$). In most cases, matters related to technology and selection of site for water project are technical aspects, as a results most decision related to technical issues were handled and decided by technical personnel from municipal and donors with low local community participation.

Similar findings were observed in a study conducted by Marks *et al.* (2014) in Ghana, and Ofuoku (2011) and Akinbile *et al.* (2006) in Nigeria. Mandara (2014) in Dodoma, Tanzania reported that it was only local leaders and professionals from the Municipal were involved in the selection of the site for the project. In Tanzania, local leaders were using their experience and local knowledge in the identification of appropriate areas of water/site for the project (Mandara, 2014). Khwaja (2004) and Marks *et al.* (2014) urged that community participation in management related decisions are likely to lead to more sustainable water projects than community involved in technical related decision.

**TABLE 4.5: FORMS OF COMMUNITY PARTICIPATION IN THE PLANNING
STAGE: SELECTION OF TECHNOLOGY AND SITE FOR A PROJECT**

Variables	Villages names		χ^2 value	p value	Total (n = 126)
	Michese (n = 46)	Mkonze (n = 80)			
Participation in selection of technology					
Yes	7 ¹ (15.9 ²)	7 (8.9)			14 (11.4)
No	37 (84.1)	72 (91.1)	73.374	0.0001	109 (88.6)
Participation in selection of a site for water projects					
Yes	10 (22.7)	10 (12.7)			20 (16.3)
No	34 (77.3)	69 (87.3)	56.008	0.0001	103 (83.7)
Extent of your participation					
Very low	21 (51.2)	52 (65.8)			73 (60.8)
Low	1 (2.4)	2 (2.5)			3 (2.5)
Moderate	8 (19.5)	6 (7.6)			14 (11.7)
Good	2 (4.9)	6 (7.6)			8 (6.7)
Very good	9 (22.0)	13 (16.5)	133.417	0.0001	28 (18.3)

¹ Number of respondents; ² Percentage of respondents; 5% level of significant
 χ^2 = Chi-square test; p = probability value

When the community were asked to rate their participation in planning stage of the water projects, majority perceived to be very low (60.8%) and 18.3% of respondents rated as very good (Table 4.5) with mean score of 2.2 (cutting point is 3); and their perception differs significantly ($\chi^2 = 133.417$; $p = 0.0001$). This implied that local community were not much involved (poor to moderately involved) at this stage. Low community participation can be due to the nature of activities related to the planning stage such choose of technology and site for establishment of a project which are more technically oriented for the community to participate. Ofuoku (2011) found low level of community participation (mean score 2.2) in Nigeria and urged that when community participation is low, executives such as water committee usually decides on their behalf. Mandara (2014) in Tanzania found that in some cases such identification of site for the water project and distribution of water points only leaders and professionals were involved.

4.2.3.2 Community participation in implementation stage

- *Contribution through manpower and money*

Local community were involved in several forms in the implementation of water projects (Table 4.6). About 42.2% of respondents participated through manpower while 48.8% did not participation through manpower and perception did not differs significantly ($\chi^2 = 0.962$; $p = 0.327$). Manpower contribution was through digging trench for distribution of pipes to the water points. On the other hand, a significant number (65%) contributed to water project through cash, while 35% did not contribute money ($\chi^2 = 9.000$; $p = 0.0003$).

**TABLE 4.6: FORMS OF COMMUNITY PARTICIPATION IN THE
IMPLEMENTATION STAGE: CASH AND MANPOWER**

Variables	Villages		χ^2 value	P value	Total (n = 126)
Participation of implementation water projects	in Michese (n = 46)	Mkonze (n = 80)			
Man power					
Yes	30 ¹ (81.1 ²)	17 (25.4)			47(45.2)
No	7 (18.9)	50 (74.6)	0.962	0.327	57 (54.8)
Money					
Yes	3 (9.4)	62 (91.2)			65 (65.0)
No	29 (90.6)	6 (8.8)	9.000	0.0003	35 (35.0)

¹ Number of respondents; ² Percentage of respondents; 5% level of significant χ^2 = Chi-square test; p = probability value

According to qualitative data from focus group discussion, initially every household was supposed to contribute about 10,000 TAS as part of initial capital for the projects. However, due to poor level of income, most household failed to contribute such amount of money. As a result, villages decided to sell part of their land (part of river) as a source of sand to house and road contractors. The money obtained was used as a community contribution (initial capital) to water projects. Marks *et al.* (2014) reported almost half of respondents contributed in form of cash towards construction cost of water project and one quarter

contributed in form of labour in Ghana. In communities of Kenya, majority of community members contributed in form of cash and almost half in form of labour to water system construction (Marks & Davis, 2012), and likewise in Dodoma, Tanzania (Masayanyiwa *et al.*, 2014a; b; Mandara, 2013). This implied that contribution through money and manpower are among common forms of community participation in development projects, including water projects.

- *Contribution through providing advice and attending meetings*

Provision of advice and attending meetings were mentioned as another forms of community participation in water projects (Table 4.7). A few number of respondents (19.4%) provided advice, while majority did not provide advice (80.6%) ($\chi^2 = 36.735$; $p = 0.0001$). In most cases, only influential and leaders were involved in provision of advices as a result only few people participated in provision of advice. In addition, significant number of respondents (59.6%) claimed to attending meetings related to implementation of the projects ($\chi^2 = 105.462$; $p = 0.001$). Similar findings were observed by Marks & Davis (2012) in Kenya; Marks *et al.* (2014) in Ghana; Oloruntade *et al.* (2014) in Nigeria; Masanyiwa *et al.* (2014a; b) in Dodoma, Tanzania. Mandara (2014) in her study in Dodoma, Tanzania found that leader were providing advices on areas with water potential and appropriate water technology for the project.

TABLE 4.7: FORMS OF COMMUNITY PARTICIPATION IN THE IMPLEMENTATION STAGE: GIVING ADVICE AND ATTENDING MEETINGS

Variables	Villages		χ^2 value	P value	Total (n = 126)
Participation of implementation water projects	in Michese (n = 46)	Mkonze (n = 80)			
Providing Advice					
Yes	7 ¹ (21.9 ²)	12 (18.2)			19 (19.4)
No	25 (78.1)	54 (81.8)	36.735	0.0001	79 (80.6)
Attending Meetings					
Yes	24 (66.7)	38 (55.9)			62 (59.6)
No	12 (33.4)	30 (44.1)	105.462	0.001	42 (42.8)
Extent of your participation					
Very low	22 (55.0)	41 (53.2)			63 (53.8)
Low	1 (2.5)	1 (1.3)			2 (1.7)
Moderate	7 (17.5)	15 (19.5)			22 (18.8)
High	4 (10.0)	10 (13.0)			14 (12.0)
Very high	6 (15.0)	10 (13.0)	92.786	0.0001	16 (13.7)

¹ Number of respondents; ² Percentage of respondents; 5% level of significant χ^2 = Chi-square test; p = probability value

When the respondents were asked to rate the extent of their participation in the implementation stage of water projects, 53.8% of respondents rated very low participation, while 18.8% perceived their participation as moderate with means score of 2.3 (cutting point is 3) (Table 4.7), and their perception was significantly different ($\chi^2 = 92.768$; $p = 0.0001$). This implied that community participation was poor to moderate. Ofuoku (2011) in Nigeria found a moderate level of community participation in water system construction (mean score of 2.9).

4.2.3.3 Community participation in Operational and maintenance stage

- *Attending meetings*

Few number of respondents (31%) claimed to participate in meetings related to operational and maintenance (O & M) of water projects, and their perception differs significantly ($\chi^2 = 17.633$; $p = 0.0001$) (Table 4.8). On the other hand, almost 46% of respondents claimed to attend few meetings, while 15.9% attended many meetings, and 36.3% did not attend with a mean score of 1.8. This means on average community attended moderate number of meetings. Meetings during O & M stage are very important for sustainable management of water projects. A work of Marks *et al.* (2014) in Kenya found that community do meet regularly with water committee, while in Tanzania, Mandara (2014) found that village water committee do meet once a month and conduct adhoc meetings whenever necessary.

TABLE 4.8: FORM OF COMMUNITY PARTICIPATION IN THE OPERATIONAL AND MAINTENANCE: ATTENDING MEETINGS

Variables	Villages names		χ^2 value	p value	Total (n = 126)
	Michese (n = 46)	Mkonze (n = 80)			
Participation in meetings for establishment of O & M of water project's regulations					
Yes	10 ¹ (24.4) ²	27 (34.2)			37 (30.8)
No	31 (75.6)	52(65.8)	17.633	0.0001	83(69.2)
How many meetings you have attended					
Not attended	10 (29.4)	31 (39.2)			41 (36.3)
Few	17 (50.0)	36 (45.6)			53 (46.9)
Many	6 (17.6)	12 (15.2)	54.613	0.0001	18 (15.9)

¹ Number of respondents; ² Percentage of respondents; 5% level of significant χ^2 = Chi-square test; p = probability value

- *Formation of water committee and cost sharing*

Community were involved in operational and maintenance of water projects through establishment of water committees and paying for water services (cost sharing) (Table 4.9).

**TABLE 4.9: FORMS OF COMMUNITY PARTICIPATION IN THE
OPERATIONAL AND MAINTENANCE STAGE: FORMATION OF WATER
COMMITTEE AND COST SHARING**

Variables	Villages names		χ^2 value	p value	Total (n = 126)
	Michese (n = 46)	Mkonze (n = 80)			
Community participate in O & M for water projects					
Water committees					
Yes	11 ¹ (28.9 ²)	34 (43.0)			45 (38.5)
No	27 (71.1)	45 (57.0)	64.205	0.0001	72 (61.6)
Cost sharing to water services					
Yes	32 (91.4)	76 (96.2)			108 (94.7)
No	3 (8.6)	3 (3.8)	193.421	0.0001	6 (5.2)
Extent of community participation					
Very low	0	2 (2.5)			2 (1.7)
Low	15 (41.7)	38 (48.1)			53 (46.1)
Moderate	13 (36.1)	18 (22.8)			31 (27.0)
Good	2 (5.6)	13 (16.5)			15 (13.0)
Very good	6 (16.7)	8 (10.1)	67.391	0.0001	14 (12.2)

¹ Number of respondents; ² Percentage of respondents; 5% level of significant χ^2 = Chi-square test; p = probability value

About 38.5% of respondents were involved in establishment of water committees. Water committees were responsible for daily activities related to water projects. From focus group discussion, initially water committee were established as temporary committee by village leaders. However, until now new committees are not established. This might be a reason for few numbers of respondents to claim not to be involved in establishment of water committees. Community participation in establishment of water committees is one of common form of community participation in Tanzania (see URT, 2002; Mandara, 2014; Masanyiwa, 2014).

In addition, significant number of respondents (94.7%) were involved through paying for water services ($\chi^2 = 193.421$; $p = 0.0001$) (Table 4.9). Qualitative data showed that people buy a basket of water (20 Litres) for 100/= TAS. This money is deposited in village water fund account which is used for the maintenance of water projects. Mandara (2014) reported that communities of Kondoa and Kongwa districts in Dodoma, Tanzania were paying 20 TAS for a basket of 20 litres of water. Rural communities were found to be involved in identification of water committee members, in decision on household contribution level to the project, about water tariffs and about levels of services to be delivered (Marks & Davis, 2012; Marks *et al.*, 2014; Ofuoku, 2011). Therefore, paying for water services is a common practice in rural water projects in Tanzania and developing countries in general. In Tanzania, villages are required to establish Village Water Committees (VWCs) and Village Water Funds (VWFs) as part of

community water project that necessitate community to participate fully in water projects for their sustainability (URT, 2002; URT, 2008; 2014).

Lastly, majority of respondents rated their participation in O & M as low (46.1%) and moderate (27.0%) and their perception differs significantly ($\chi^2 = 67.391$; $p = 0.0001$) with means score of 2.9 (cutting point is 3) (Table 4.9). Moderate participation by respondents can be a result of several factors. For example, from focus group discussion, it was learnt that with exception of TLP water project in Chisichili Mtaa, WAMMA and World Bank water projects were not yet handled over to the communities. Low level of community participation in organising fund raising (as part of O & M) was also observed in Nigeria (Ofuoku, 2011).

4.3 Challenges facing community participation in water projects

4.3.1 Breakdown of infrastructure and poor cash contribution

Table 4.10 shows challenges faces community participation in water projects. About 95.6% of respondents claimed breakdown of infrastructure was a major problems facing community participation in water projects. Qualitative data revealed that current water supply has stopped as a result of the failure (damaged) of water pump.

In order to replace that water pump requires about 20 millions TAS of which the village cannot afford. Payment of user fees (100 TAS per 20 litres) is not sufficient for O & M.

**TABLE 4.10: CHALLENGES FACING COMMUNITY PARTICIPATION IN
WATER PROJECTS**

Variables	Village names		Total (n = 126)
	Michese (n = 46)	Mkonze (n = 80)	
Breakdown of infrastructure	22 ¹ (100 ²)	43(93.5)	65 (95.6)
Poor cash contribution	18 (43.9)	43 (55.1)	61 (51.3)
Refuse to give land for projects	0	10 (21.7)	10 (16.3)
No compensation for properties	1 (5.3)	5 (10.9)	6 (9.2)
Unaccountability of leaders	4 (22.2)	3 (6.5)	7 (10.9)
Lack of commitment in participation	4 (22.2)	8 (17.4)	12 (18.8)
Environmental destruction	1 (5.6)	1 (2.2)	2 (3.1)

¹ Number of respondents; ² Percentage of respondents

Breakdown is one of the challenge faced water project in developing countries. About 58% of boreholes in Nigeria were found non function, of which 60% failed to work within five years of operational (Oloruntade *et al.*, 2014) as a result of faulty of pump and stolen parts. Mandara (2014) in her study in Dodoma,

Tanzania found that some water projects were not functioning as a result of pump faulty. In Tanzania almost 46% of water projects are non function (WaterAid Tanzania, 2009). This suggests that water system breakdown is one of the major problems facing community based water systems.

Furthermore, reluctance of cash contribution was mention as another challenge faced community participation (Table 4.10). About 61% mentioned that some people were reluctant to pay money during implementation of the water projects, while other people failed to pay as a result of poverty. Similar findings were reported by Oloruntade *et al.* (2014) who found that failure of the community to contribute money was due to poverty or as a result of belief that maintenance is a duty of the government. Chifamba (2013) reported that poverty is among factors that hinder community participation in Zimbabwe. Mwakila (2008) argued that low community participation especially in paying for user fees in water project in Tanzania, was a result of the effect of the previous free water service's policy, therefore community feel that water project's maintenance is government's work.

4.3.2 Refuse to give land for water projects and lack of compensation for properties loss

Another challenge that faced community participation was people refused to give out land for water pipes to pass through (10%); while 9.2% of respondents mentioned that people who gave up their land and/or plants were not compensated (Table 4.10). This implies that the cost foregone for compensation

is born to individual while benefit is shared among the community, consequently poor community participation in water projects. According to land policy of 1997 (URT, 1997) and Land Act of 1999 (URT, 1999) when land is taken away for development purposes, owners should be paid accordingly. However, since the local government has no money, in most cases local community are requested or persuaded to give up their land for free, and therefore termed as part of community contribution to development projects.

4.3.3 Unaccountability of leaders and lack of commitment to participation

About 10.9% mentioned unaccountability of leaders was another problem faced community participation in water projects (Table 4.10). During focus group discussion, it was learnt that water committees' leaders were not transparent, especially on financial matters. Mandara (2014) found that mismanagement of funds was one of the problems facing water projects in Dodoma, Tanzania. On the other hand, 18.8% of respondents mentioned lack of commitment to participation in water projects was another challenge faced community participation in water projects. This might be a reason of general poor community participation as perceived in this study (see Tables 4.2, 4.3, 4.4). Qualitative data revealed that some people perceived that, is the responsibility of the government to provide development including water project, and therefore did not see the reason for them to participate. Similar argument was posed by Oloruntade *et al.* (2014) and Mwakila (2008) from Tanzania. In addition, lack of transparency and flow of information was mentioned as other challenges facing community participation in Zimbabwe's water projects (Chifamba, 2013), while

lack of community commitment to participation was pointed out as a challenge in urban renewal energy in South Africa (Thwala, 2009).

Furthermore, few respondents (3.1%) mentioned environmental destruction as a challenge faced community development (Table 4.10). Destruction of environment was a result of sand mining from rivers found in the villages. When the villagers failed to contribute money, leaders decided to sell part of river as source of sand to contractors. People claim that selling sand led to environmental destruction such as river erosion and more siltation.

4.4 Factors determining community participation in water projects

Table 4.11 shows the socio-economic and governance factors influencing community participation on water projects. Multiple linear regression model was employed in the assessment of socio-economic and governance factors enabling or constraining community participation on water projects. Multiple linear regression was run to determine factors that were likely to influence community participation in water projects. The model showed that the independent variables significantly influenced dependent variable ($F = 3.608$; $p = 0.0001$) suggested that those factors are important for enhancing community participation in water projects. Coefficient of determination (R^2) was used to determine to what extent independent variables influenced dependent variables (community participation), hence goodness of fit of the model.

**TABLE 4.11: FACTORS INFLUENCING COMMUNITY PARTICIPATION IN
WATER PROJECTS**

Socio economic and governance factors (X_i)	Coefficients (a)			p
	B	SE	T	
(Constant)	0.678	0.989	0.685	0.495ns
Age of respondents	0.012	0.011	1.079	0.283ns
Sex of respondents	-0.320	0.240	-1.331	0.186ns
Level of education of the respondents	0.083	0.235	0.355	0.724ns
Household size	0.050	0.054	0.917	0.361ns
Family affordability to pay for water services	-0.258	0.252	-1.022	0.309ns
Reliability of water supply	0.141	0.119	1.181	0.240ns
Good leadership	0.220	0.104	2.109	0.037*
Ownership	0.307	0.176	1.746	0.084ns

F = 3.608 p = 0.0001 R² = 0.470

a Dependent Variable: Community participation (Y_i). SE =Standard error of the estimate; t = t-student's value; * = statistically significant at 0.05 level of significance, ns = not statistically significant at 0.05 level of significance, β = Beta weight; F = Fisher test; p = probability value; R² = Coefficient of Determination

The goodness of fit of the models was found to fit moderately well with of 0.470 implied that independent variables were able to explain almost 50% (47%) of

variation in dependent variable. Therefore, those factors were likely to influence community participation in water projects. This study came up with the following socio-economic factors: age, sex, education level and household size, and affordability of the household to pay for water services (user fee) of respondents, while governance factors were good leadership, sense of ownership and reliability of water supply.

Positive correlation was observed between community participation and age, education level and household size of respondents, good leadership, sense of ownership of the water projects and reliability of water supply implied that increase or enhancement of these variables will likely improve community participation. On the other hand, sex and affordability of the household to pay for water services (charge or use fees) were found to be negatively correlated with community participation, meaning that these factors constrains community participation on water projects.

4.4.1 Socio economic factors influencing community participation on water projects

4.4.1.1 Age of respondents

Table 4.11 shows that age of respondents has positive correlation ($\beta = 0.678$) however not statistically significant ($p = 0.283$) with community participation in water projects. Although the relationship was not significant, increase in age is likely to enhance their participation in water projects. This is because older people have experience of the water problems in the area, have bigger families

that require large amount of water, and less mobile such as migration to other places, hence their participation is likely to be higher than young ones. In addition, in some cases older people have power and ability to persuade the community to participate in community development projects including water projects. Maskey, Gebremedhin and Dalton, (2003) urged that older people tend to participate more in development activities such as meetings because of being retired hence have more time to participate. Table 4.12 shows household distribution by age. Majority of respondents (38.9%) were found to belong in the age group between 31 and 45 and between 19 and 30 were 25.4% of which are both in productive and reproductive age groups, while minority (7.9%) were found in age group of greater than 61 years.

TABLE 4.12: DISTRIBUTION OF AGE OF RESPONDENTS IN THE STUDIED VILLAGES

Variables	Villages names		Total (n = 126)
Age	Michese (n = 46)	Mkonze (n = 80)	
19 – 30	15 (11.9)	17 (13.5)	32 (25.4)
31 – 45	21 (16.7)	28 (22.2)	49 (38.9)
46 – 60	7 (5.6)	28 (22.2)	35 (27.8)
>61	3 (2.4)	7 (5.6)	10 (7.9)

¹ Number of respondents; ² Percentage of respondents

4.4.1.2 Sex of respondents

Sex of respondents was found to be negatively correlated ($\beta = -0.320$), but not statistically significant ($p = 0.186$) with community participation in water projects (Table 4.11). This implied that male is likely to participate in water projects than women. The plausible explanation could be that since male are head of household has control of over household's resources such as income, and also some activities related to water projects are masculine in nature such as digging trenches, hence male are likely to participate in both cash and labour contribution to water projects. Table 4.13 shows that male were 59.5% while female were 40.5%.

TABLE 4.13: DISTRIBUTION OF SEX OF RESPONDENTS IN THE STUDIED VILLAGES

Variables	Village names		
	Michese (n = 46)	Mkonze (n = 80)	Total (n = 126)
Male	29 (63.0)	46 (57.5)	75 (59.5)
Female	17 (37.0)	34 (42.5)	51 (40.5)

¹ Number of respondents; ² Percentage of respondents

4.4.1.3 Level of education of respondents

Level of education of respondents were found to be positively correlated ($\beta = 0.083$) but statistically insignificantly ($p = 0.724$) with community participation in water projects (Table 4.11). Although the relationship is insignificant, increase in level of education for respondents will likely motivate to participate in water projects activities. This is because education tends to increase level of understanding and daring ability to attempt new things including participation in development activities such as in water projects. Similar findings were reported by Kamuiru & Mbwisa (2014) who found that community awareness (a proxy measure of education) has positively correlated with community participation in water projects in Kenya. This study revealed that majority of respondents had attained primary education (80.2%), while 14.3% did not attend any formal education, and only 3.2% had attained higher education at college level (Table 4.14). Lower level of education is likely a reason of non significant relationship between community participation and level of education; and poor to moderate community participation as observed in this study.

4.4.1.4 Household size of respondents

The study revealed that household size has positive correlation ($\beta = 0.050$) with community participation, but not statistically significant ($p = 0.361$) (Table 4.11). This implied that, although the relationship was not significant, but increase in household size will likely increase household participation in water projects. Household size determines both labour force availability and diversification of source of income and water consumption level. Therefore, large families are

likely to participate in activities of water projects either by providing labour or cash or both. Also large families are likely to participate because they require large amount of water.

TABLE 4.14: DISTRIBUTION OF LEVEL OF EDUCATION OF RESPONDENTS IN THE STUDIED VILLAGES

Variables	Villages names		
	Michese (n = 46)	Mkonze (n = 80)	Total (n = 126)
Education			
No education	11 (23.9)	7 (8.8)	18 (14.3)
Primary	33 (71.9)	68 (85.0)	101 (80.2)
Secondary	2 (4.3)	1 (1.3)	3 (2.4)
College	0	4 (5.0)	4 (3.2)

¹ Number of respondents; ² Percentage of respondents

Mandara (2014) in her study in Dodoma, Tanzania found a significant and positive correlation between larger families and amount of water consumed on daily basis. Majority of respondents had family size ranging from 0 to 5 (51.6%), followed by 46% with family size of between 6 and 10, and few families (2.4%) had larger families ranging between 11 and 15 (Table 4.15).

TABLE 4.15: DISTRIBUTION OF HOUSEHOLD SIZE BY RESPONDENTS IN THE STUDIED VILLAGES

Variables	Villages names		
	Michese (n = 46)	Mkonze (n = 80)	Total (n = 126)
0 – 5	27 ¹ (58.7 ²)	38 (47.5)	65 (51.6)
6 – 10	17 (37.0)	41 (51.3)	58 (46.0)
11 – 15	2 (4.3)	1 (1.3)	3 (2.4)

¹ Number of respondents; ² Percentage of respondents

4.4.1.5 Family affordability to pay for water services

Family affordability is important for the community to participate in water projects especially through user fee contribution. The study shows that family affordability was negatively correlated ($\beta = -0.258$) to community participation, though not statistically significant ($p = 0.309$) (Table 4.11). Despite of the fact that the relationship was not significant, negative correlation implied that affordability will likely motivate household to participate in water projects. Qualitative data from focus group discussion revealed that community has to pay 100/= per water basket of 20Litres (1 USD = 2060 TAS). Table 4.16 shows that significant higher number of respondents (66.1%) were able to pay for water charge, while less than 40% were not able to pay for such charges ($\chi^2 = 11.571$; $p = 0.001$). Mandara (2014) and Masayanyiwa (2014) found that communities in Dodoma, Tanzania pay use fees ranging from 20 to 30 TAS per 20litre water

basket. Therefore, setting water charges that are within the ability of the user to pay is important not only for enhancing access to water to the community but also for sustainability of water projects, as the user fees (charges) are the sources of funds for maintenances of water projects, hence sustainability.

**TABLE 4.16: FAMILY AFFORDABILITY TO PAY FOR WATER SERVICES
(CHARGES)**

Variable	Villages		χ^2	p	Total (n = 126)
	Michese (n = 46)	Mkonze (n = 80)			
Family affordability					
Yes	22 ¹ (66.7 ²)	52 (65.8)			74 (66.1)
No	11 (33.3)	27 (34.2)	11.571	0.001	38 (33.9)

¹ Number of respondents; ² Percentage of respondents; 5% level of significant χ^2 = Chi-square test; p = probability value

4.4.2 Governance factors influencing community participation on water projects

4.4.2.1 Reliability of water services

Reliability of water services has influence in community participation in water projects as an indication of water project sustainability. Table 4.11 shows that though not statistically significant (p = 0.240), reliability of water has positive

correlation ($\beta = 0.141$) with community participation, implied that increase or improvement of reliability of water services will likely promote community participation in water projects. On the other hand, Table 4.17 shows that community perception on water reliability differs significantly ($\chi^2 = 231.456$; $p = 0.0001$) with mean score of 1.5. Majority of respondents (74.6%) perceived water reliability as very poor and 13.1% as poor, and about 6.6% claimed reliability of water services as very good. This might a reason of lack of significant relationship between reliability of water and community participation.

TABLE 4.17: RESPONDENT'S PERCEPTION ON RELIABILITY OF WATER SERVICES IN THE STUDY VILLAGES

Reliability of water services	Village names		χ^2	P	Total (n = 126)
	Michese (n = 46)	Mkonze (n = 80)			
Very poor	28 ¹ (66.7 ²)	63 (78.8)			91 (74.6)
Poor	11 (26.2)	5 (6.2)			16 (13.1)
Moderate	2 (4.8)	3 (3.8)			5 (4.1)
Good	1(2.4)	1 (1.2)			2 (1.6)
Very good	0	8 (10.0)	231.689	0.0001	8 (6.6)

¹ Number of respondents; ² Percentage of respondents; 5% level of significant $\chi^2 =$ Chi-square test; $p =$ probability value

From focus group discussions, it was learnt that current water project sponsored by World Bank is not working as a result of breakdown (damaged) of water pump. Also people complained that usually there were frequent breakdown which lead to poor water reliability. Marks & Davis (2012) in Kenya found a positive correlation between community participation and reliability of water services (as a proxy measure of sustainability). Break down and frequent interruption of water supply system is one of the major problems facing many water projects after completion of water projects (see Oloruntade *et al.*, 2014; WaterAid Tanzania, 2009).

4.4.2.2 Good leadership

Table 4.11 shows that good leadership has significant ($p = 0.037$) and positive correlation ($\beta = 0.220$) with community participation, implied that increase or improving good leadership in water project management will likely promote community participation in water projects. Table 4.18 shows respondent's perception on indicators of good leadership. Respondents perceived that trust, transparency, flow of information as generally poor, while accountability and fund management as poor to moderate with overall good leadership of means score of 2.5. This implied that community perceived good leadership as poor to moderate (Table 4.18).

**TABLE 4.18: RESPONDENT’S PERCEPTION ON GOOD LEADERSHIP OF
WATER COMMITTEES (N = 126)**

Variables	VP	P	M	G	VG	DN	Mean*
Trust	17 ¹ (13.5 ²)	42 (33.3)	12 (15.1)	16 (12.7)	3 (2.4)	29 (22.0)	2.4
Transparency	22 (17.5)	44 (34.9)	14 (11.1)	15 (11.9)	3 (2.4)	28 (22.2)	2.3
Accountability	10 (7.9)	36 (28.6)	22 (17.5)	24 (19.0)	6 (4.8)	28 (22.2)	3.0
Funds management	15 (11.9)	42 (33.3)	14 (11.1)	22 (17.5)	4 (3.2)	29 (23.0)	2.6
Flow of information	27 (21.4)	33 (26.2)	20 (15.1)	15 (11.9)	3 (2.4)	28 (22.2)	2.3
Overall good leadership							2.5

Note: VP = Very poor; P = Poor; M = Moderate; G = Good; VG = Very good; DN

= Don't Know ¹number of respondents ²percentage of respondents

* = mean of scores

4.4.2.3 Sense of project ownership

Sense of ownership on water project is an important factor for determining community participation in development project such as water projects. Correlation between sense of project ownership and community participation were found to be positive ($\beta = 0.307$), though not statistically significant ($p = 0.084$) (Table 4.11). This means sense of ownership of water project will likely to promote community participation on water projects. The respondents perceived that ownership at individual and family levels to be relative low, and perception

as the water project is owned by the whole community was generally high (mean score of 2.9) with overall ownership score of low to moderate implied that people perceived the water projects to be owned by the community (Table 4.19).

TABLE 4.19: RESPONDENT’S PERCEPTION ON SENSE OF OWNERSHIP OF WATER PROJECTS (N = 126)

Variables	SD	D	A	SA	Mean*
I feel I am one of the owner of the water project	23 ¹ (20.9 ²)	37 (33.6)	38 (34.5)	12 (10.9)	2.4
My family is one of the owner of the project	7 (6.4)	52 (47.7)	42 (38.5)	8 (7.3)	2.5
The water project is owned by the community	2 (1.8)	21 (19.1)	75 (68.2)	12 (10.9)	2.9
Overall ownership					2.6

Note: SD = Strongly Disagree; D = Disagree; A = Agree; SA = Strongly Agree

* = mean of scores; ¹ Number of respondents; ² Percentage of respondents

A study in Kenya found ownership with mean score 3 (Marks & Davis, 2012). Furthermore, Marks & Davis (2012) found that community participation tends to enhance community ownership of water project, while this study demonstrates that ownership can enhance community participation. This study suggests that ownership and community participation are intertwined such that while

community participation create sense of project's ownership; ownership tends to enhance community participation. Poor sustainability of rural water projects necessitated the need to incorporate community participation in the planning and construction of water system (Davis *et al.*, 2008). It is urged that community participation in planning is important for creation of community sense of ownership of water projects, which in turn ensures community's commitment to long term operation and maintenance (Whittington *et al.*, 2009).

4.5 Summary of main findings, general discussion and synthesis

4.5.1 Forms of community participation in water projects

The paradigm shift from supply to demand oriented planning of rural water projects necessitated the need to involve community in water project management. This is due to the fact that community participation has positive relationship with sustainability of water project (Ofuoku, 2011). It is clear from this study, that community were involved in several forms of participation. Indeed, different form of participation tends to differ with different stages of water project. For example, in planning stage meetings during initiation of projects was common form of participation; implementation was through community contribution through cash and labour; while in O & M, contribution through user fees was major form of contribution. These findings underscore the need to assess forms of community participation in different stages of water projects, hence useful in improvement of community participation for sustainable water projects.

Furthermore, the study registered low to moderate level of community involvement in water project; hence their sustainability in future is questionable. Several literatures have shown that community participation in water project is generally low. Akinbile *et al.* (2006) urged that low community participation sometimes might be a result of nature of the technology of water projects. With high technology of water project, community will have low participation with exception in areas where they have expertise such as contribution in labour and cash. Therefore, understanding forms of community participation is very important for consideration on investment and responsibilities, hence strengthens rural water planning, implementation, and operational and maintenance for sustainable water projects.

4.5.2 Challenges faced community participation in water projects

The study revealed that the community was faced with several challenges during their participation in water projects. These include challenges such as breakdown and poor cash contribution; people refuse to give out their land for the project; lack of commitment to participate; lack of compensation for loss of properties such land and plants and unaccountability of leaders. Indeed, these challenges in single or together (combined) might be a reason for low community participation in general in water projects as observed by this study. Therefore, removing or reducing these challenges will significantly improve community participation in water projects.

4.5.3 Socio economic factors determining community participation in water projects

Poor community participation in development projects including water projects could be attributed by a number of factors ranging from socio economic to governance (Kuta, Emigilati, Hassan & Ibrahim, 2014). The study recorded a number of factors that influence (enabling or constraining) community participating in water projects. Factors such as age, education level and household size of respondents, good leadership, and sense of ownership and reliability of water supply were found to positively correlated with community participation, hence enabling factors. Regardless of statistical insignificance, these factors, if enhanced will likely promote community participation in water project, hence sustainable water projects for livelihood improvement. Likewise, factors such as sex and affordability of the household to pay for water services (charge or use fees) were found to negatively correlated to community participation, hence constraining factors. Regardless of statistical significance, these factors if not reduced or removed will likely reduce community participation on water projects, hence unsustainability of water projects. Understanding factors determining community participation in water projects is important for redesigning, planning and implementation of water projects for their sustainability.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Chapter Overview

This chapter highlights the conclusion and recommendations of the study, suggested areas for further researches and contribution of the study to the general knowledge. It ends with summary of the chapter.

5.2 Conclusion

The study revealed that communities were involved in several forms of participation. Different forms of participation tend to vary with different stages of water project. In the planning stage, meetings related to initiation of projects was a common form of participation; in implementation stage it was community contribution through cash and labour; while in O & M, contribution through user fees was a major form of contribution. These findings underscore the need to assess forms of community participation in different stages of water projects, hence useful in improvement of community participation for sustainable water projects. Furthermore, the study recorded low to moderate level of community involvement in water project; hence their sustainability in future is questionable. Understanding forms of community participation is very important for consideration on investment and responsibilities, hence strengthens rural water planning, implementation and operational and maintenance for sustainable water projects.

The study found that communities were faced with several challenges during their participation in water projects. These include challenges such as breakdown and poor cash contribution; people refuse to give out their land for the project; lack of commitment to participate; lack of compensation for loss of properties such as land and plants and unaccountability of leaders. Therefore, removing or reducing these challenges will significantly improve community participation in water projects.

The study recorded a number of factors that determine community participation in water projects. Age, education level and household size of respondents, good leadership, and sense of ownership and reliability of water supply were found to be positively correlated with community participation, hence enabling factors. Likewise, sex and affordability of the household to pay for water services (charge or use fees) were found to be negatively correlated to community participation, hence constraining factors. Understanding factors determining community participation in water projects is important for redesigning, planning and implementation of sustainable water projects.

5.3 Recommendations

The study recommended the following:

- ❖ The community and other stakeholders (such as donors, NGOs) in provision of water services should be involved (through meetings, financial, technical expertise etc) from the very onset of the water projects and other development projects that meant to solve community problems.

This will enhance level of community participation in order to attain high level sustainability of water and other development projects.

- ❖ More and continuous training and education programmes related to water project management should be provided to the community, and in particular water committee members, by local government through training seminars, in order to sufficiently empower them to own, maintain and sustain the water projects in their community.
- ❖ Since user fees are not enough for catering maintenance costs, local government and Municipality in particular should establish a water basket funds for supporting O & M of water projects. This can be done by setting aside at least 2% of the Municipal budget for O & M. This will reduce unnecessary breakdown and long time delay in maintenance of the water project.
- ❖ Community and local government in particular should design mechanisms for compensation of property loss in cash or in kind such as land substitution or reallocation. This is because the cost for foregone compensation is born to the individual while the benefit is shared among the community, consequently reduces community participation.

5.4 Areas for Further Researches

1. Examination of socio economic, political, institution and governance conditions which communities can participate in water projects.
2. Identification of types of community participation that can lead to effective project outcome e.i. water project sustainability.

3. Assessment of sustainability of water projects, and identifying conditions which water projects can be sustainable.
4. To examine willingness of the community to participate in water project and to pay for sustainable water supply.

5.5 Contribution of the Study to the Knowledge

- Community participate in water projects in different forms in different phases of water projects, this underscore the need to assess forms of community participation in different stages of water project for their sustainability.
- The study contributes to the challenges that faced community participation. Among other challenges that faced community in participation of water projects were lack of compensation for loss of property due water projects; poor cash contribution as a result of poverty and leader's accountability. These challenges and others tend to lower community's commitment to participation.
- The study contributes to the knowledge related to factors that both enhance and hinder/constraints community participation in water projects. Enhance or reducing their hindrance, will likely promote community participation in water projects

5.6 Chapter Summary

Community were found to participate in water projects in different forms in different phases of water projects such as attending meetings, through

contribution in forms of money and manpower and paying user fees. Through participation, community were faced with several challenges such as breakdown of water pump, low level of community participation and lack of compensation for the property loss as a result of water projects. These challenges generally lower community participation in water projects. In addition, several factors such as age and household size were found to enhance community participation; while factors such as affordability to pay for the services were found to hinder community participation. In order to enhance community participation in water projects, hence their sustainability, the study recommended the following: community and stakeholders should be involved from the early stages of the project; training on water project management should be provided to the community; and there must be mechanism for the compensation for the property loss to the community as a result of water projects. More studies are needed related to: identification of types of community participation that can lead to positive outcome of the project; assessment of sustainability of water projects; and examining willingness of community participation in and to pay for sustainable water supply services. Lastly, the study contributed to the knowledge related to forms of community participation in different stages of water projects; challenges that faced community participation in water projects; and factors that both enhance and constrain community participation in water projects.

CHAPTER SIX

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CHAPTER SEVEN

APPENDICES

Appendix A: Informed Consent for Household Research Questionnaire for Mkonze ward, Dodoma Municipality

My name is Fatuma K. Daudi and I am a Masters student at St John's University of Tanzania, Dodoma, Tanzania, and pursuing Masters of Arts in Community Development. The Research title "The contribution of Community Participation in water projects in Peri-Urban areas of Tanzania: A case of Dodoma Municipality".

I am writing to invite you to participate in research in the form of a questionnaire. Questions and information obtained from this research will be used only for academic purposes.

Thanking you in advance for your cooperation.

Signed

Fatuma K. Daudi

Appendix B: Household Questionnaire for Mkonze ward

A: General information

1. Location: 2.Ward.....3.Village..... Date.....
4. Name of respondent.....5. Age of respondent (Years).....
5. Sex a) male b) female
6. Marital status a) married b) Single c) Widow d) Separated e) others (Specify).....
7. Education level a) None b) Primary c) Secondary d) College and above
8. How long you have stayed in this village (years)
- 9 . Occupation a. farmers b. pastoralists c. employed d. specify
10. Phone and/or Mobile.....
11. Household size:

B. General Questions

12. Do you know any organization that supported and/or supporting water project? Yes () No ()
13. To what extent water is the problem in this area?.....
14. Was water a first priority among other social problems? Yes () No ()
15. What do you think motivated these organizations to implement water Project in your area?.....
16. What were the sources and type of water projects (a) tapes (b) channels (c) boreholes (d) protected spring (e) Other sources (specify).

C. Form of and level of Community Participation in Implementation of Water Project

Planning stage:

17. Were you involved in identification water project as need 1 yes 2 no

18. Were you aware of the project before its construction 1 yes 2 no

19. Did you participate in the initial stages of project planning?

(a) Yes () (b) No ()

20. If yes, how were you involved in the planning stage of the project

.....

21. Did you attend any meeting before construction of the project 1 yes 2 no

22. Were you involved in selection of the technology/type of water project

1 yes 2 no

23. Were you involved in selection of the site for the project? 1 yes 2 no

24. Were you involved in decision on how the community will

participate/contribute to the project 1 yes 2 no

25. What was the source of fund for the project? 1 community 2 local govt 3 central govt 4 donor 5 combination, plse specify

26. How many meetings did you attended before construction (planning process) of the project

27. How did you rate your involvement in the planning stage meetings 1 very low

2 low 3 moderate 4 good 5 very good

28. Who participated? (a) Men (b) women (c) youth (d) both

Implementation stage

- 29. How did the community involved in implementation of the project
.....
- 30. How much money did you contribute?
- 31. How many days did you spend in the construction of the project
- 32. What other materials did you contribute for the project
- 33. What was your contribution in the project implementation?
 - (a) Manpower ()
 - (b) Financial contribution ()
 - (c) Use of local experience ()
 - (d) Participating in meeting ()
- 34. Who mostly participated? (a) Men (b) women (c) youth (d) both

Operational and maintenance stage

- 35. How did community involved in operational and maintenance stage
- 36. Were you involved in decision on rules and regulation related to operational and maintenance of the project 1 yes 2 no
- 37. Were you involved in selection of village water committee members
1 yes 2 no
- 38. Were you involved in establishing water tariff 1 yes 2 no
- 39. How many meetings did you attending in operational and maintenance of project
- 40. How do you rate your participation in operational and maintenance meetings
1 very poor 2 poor 3 moderate 4 good 5 very good

41. Who mostly participated? (a) Men (b) women (c) youth (d) both

D. Community satisfaction with the water services as a result of water project.

42. Are you satisfied with water services from water project?

(a) not satisfied (b) satisfied (c) highly satisfied

43. How far is this water project sources from your household (Kilometres)?

44. How long do you spend on one trip fetching water from this water project source (minutes/hours)?

45. Are water from water project enough for your daily need? 1 yes 2 No

46. What is the quality of water from water project 1 very poor 2 poor 3 moderate 4 good 5 very good. And Why

47. Do you use same source of water domestic throughout the year?

(a) Yes (b) No

48. If no, what is your main source of water during dry season? (a) Tradition unprotected well /spring(b) protected spring/well (c) public hand pump/tap (d) Other (specify).....

49. How far is this other sources from your household (Kilometres)?

50. How long do you spend on one trip fetching water from this other source (minutes/hours)?

51. On average, what amount of water for domestic uses does your house fetch per day?

52. Number of buckets/day (1 bucket =litres

53. Is the main source of domestic water used for other purposes too?
 (a) Yes (b) No
54. If yes, what are other uses? (a) Watering livestock (b) brick making (c) gardening (d) Other (specify).....
55. Do you experience any problem do to multiple uses of this water source?
 (a) Yes (b) No
56. If yes, what are they.....
57. Do you pay for water services from water project in your village?
 (a) Yes (b) No
58. If yes, how do you pay? (a) flat rate on monthly basis (b) Flat rate on annual basis / after harvesting season (c) Pay as you fetch. Mention amount
59. Does your family afford to pay water services? Yes (b) No
60. If no, what alternative strategy do you use to get access to domestic water supply?.....
61. Does water project reduced a distance of collecting water? 1 yes 2 no
62. If yes, rate the decrease 1 reduced a lot 2 reduced 3 the same 4 increased 5 increased a lot
63. Does water project reduced a time for fetching water? 1 yes 2 no
64. If yes, rate the decrease 1 reduced a lot 2 reduced 3 the same 4 increased 5 increased a lot

E. Factors influencing community participation water project

65. What are factors that can influence community participation in water project?
 Constraints:

Enabling:

66. Who is the owner of the water project? 1 community 2 village 3 local government 4 NGO

67. I feel that I am one of the owners of the water system

(1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree)

68. My family is one of the owners of the water system.

(1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree)

69. The water system is owned by all water project members.

(1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree)

69. To what degree are you personally concerned about the O&M of the piped water system?

(1 = not concerned at all, 2 = not very concerned, 3 = somewhat concerned, 4 = very concerned)

70. Did you receive any training related to use and management of the water project? Yes no

71. How do you rate the effectiveness of the leadership of water committee in terms of:

Trust 1 very poor 2 poor 3 moderate 4 good 5 very good

Transparency 1 very poor 2 poor 3 moderate 4 good 5 very good

Accountability 1 very poor 2 poor 3 moderate 4 good 5 very good

Flow of information related to water project 1 very poor 2 poor 3 moderate 4 good 5 very good

Level of technology of 1 very user unfriendly 2 unfriendly 3 moderate 4 user friendly 5 very water project user unfriendly

E. Challenges faced by community in the implementation and running of the water project

72. Are there any challenges/ problems encountered in participation of the community in a project?

(a) Yes () (b) No ()

73. If yes what are those challenges/ problems?

74. Is there any interruption/breakdown of the water services 1 yes 2 no

75. If yes, how long did the breakdown took (in terms of days)?

76. How many breakdown had occurred for the past six months for the last year

77. What is the condition of the water project source 1 very poor 2 poor 3 moderate 4 good 5 very good

78. Why

79. What is the reliability of the water services from the project 1 very poor 2 poor 3 moderate 4 good 5 very good

80. Why

81. When do the community collect water from the water project 1 morning 2 afternoon 3 evening 4 any time

82. Do you think community participation in planning, implementation and management of water project leads to the effective and sustainable of water?

.....

83. What should be done in order to enhance sustainability of the community participation in water project?

Appendix C: Checklist for Key Informant's Interview and Focus Group Discussion

1. Is a water a problem in your area?
2. Is there any water projects in your area? If yes, who are the donors
 3. How do the community participate in water projects? In planning, implementation and O & M stages
 4. What challenges the community faced in implementation and operational and maintenance of water projects?
 5. What are the factors influencing community participation in water projects?
 6. What should be done to enhance community participation and sustainability of water projects in your area?
 7. What are the total costs for the water projects?
 8. How much do the community contribute to the projects?
 9. When do the projects started, ended and handled over to the community

TAARIFA ZA MIRADI YA MAJI KATA YA MKONZE

Project:

Mfadhili:

Gharama za mradi (jumla):

Mchango wa Gharama za mradi kutokana na mfadhili:

Mchango wa Gharama za mradi kutokana na jamii:

Ushiriki wa jamii:

Hatua ya kutandaa mradi:

Mikutano: ndio hapana mikutano mingapi

Fedha: ndio hapana kiasi gani kwa kaya
Kijiji.....

Nguvu kazi: ndio hapana siku ngapi kwa kaya

Nyinginezo:.....

Hatua ya utekelezaji wa mradi:

Mikutano: ndio hapana mikutano mingapi

Fedha: ndio hapana kiasi gani kwa kaya
Kijiji.....

Nguvu kazi: ndio hapana siku ngapi kwa kaya

Nyinginezo:.....

Hatua ya kusimamia mradi:

Mikutano: ndio hapana mikutano mingapi

Fedha: ndio hapana kiasi gani kwa kaya
Kijiji.....

Nguvu kazi: ndio hapana siku ngapi kwa kaya

Nyinginezo:.....

Changamoto zipi jamii ilizipata katika ushirikishwaji wake katika miradi

.....

Amount of water points for each water project

Appendix D: Ethics Clearance Certificate



ST JOHN'S UNIVERSITY OF TANZANIA
DIRECTORATE OF RESEARCH AND CONSULTANCY
INTERNAL REVIEW COMMITTEE

RESEARCH CLEARANCE CERTIFICATE

FOR MASTER'S AND DOCTORAL STUDENTS

Date of Review: 03rd, January, 2015

Project title: Assessing community Participation in water project in peri-urban. A case of Dodoma Municipality

Researcher: FATUMA KITOJO DAUDI

Supervisor: Prof. P. Kopoka

Faculty / Institute / School: The Institute of Development Studies

Degree being studied for: M.A COMMUNITY DEVELOPMENT

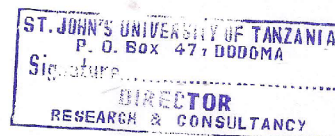
This is to certify that the research proposal herein detailed has been examined and approved by the Internal Review Committee of St John's University of Tanzania

A handwritten signature in black ink, appearing to read 'Dr. Angela Savage'.

PP. Dr. Angela Savage
Director, DRCPGS

A handwritten signature in black ink, appearing to read 'Prof. C. Rubagumya'.

Prof. C. Rubagumya
DVCA



Appendix E: Letter of Introduction to the Research Site

JAMHURI YA MUUNGANO WA TANZANIA
HALMASHAURI YA MANISPAA DODOMA
(Barua zote ziperichau kwa Mkurugenzi wa Manispaa)

MKOA WA DODOMA

Tel.: 2354817/2321550
Fax: 2321550



Ofisi ya Mkurugenzi wa Manispaa
S.L.P.1249

Dodoma

E-mail: dodomamunicipality@yahoo.co.uk

Unapojibu tafadhali tupa:

Kumb. Na.HMD/T.40/6/VOL.11/

Tarehe: 23/04/2015

Mkuu wa Chuo, JOHN'S UNIVERSITY
Chuo cha ST. JOHN'S UNIVERSITY
S.L.P. 47
DODOMA

YAH: KUFANYA MAZOEZI KWA VITENDO/UTAFITI

Tafadhali reja somo hapo juu.

Napenda kukujulisha kuwa ombi lako la mwanachuo/wanachuo wako FATUMA KITOJO DAUDI limekubalika.

Mtajwa afike Ofisi ya MIENDAJI KATA YA MKONZE kwa ajili ya kuanza mazoezi hayo/kufanya utafiti huo kwa tarehe husika. Aidha Manispaa haitakuwa na fungu lolote la kumlipa/kuwatipa mwanachuo/wanachuo huyo/hao.

Nakutakia kazi njema.

Immacent D. Kesry
Kny: MKURUGENZI WA MANISPAA
DODOMA

Nakala: Mkuu wa Idara/Kitengo MASI
Mwanachuo Ndugu: FATUMA KITOJO DAUDI
Mtendaji wa Kata/Kijiji/Mtaa ya MKONZE