IMPACTS OF WATER USERS PARTICIPATION ON THE OUTCOMES OF RURAL WATER DEVELOPMENT PROJECTS IN ELGEYO – MARAKWET COUNTY, KENYA

BY

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DECLARATION

Declaration by Candidate

This thesis is my original work and has not been presented for the award of any degree in any other University. No part of this work may be reproduced without the prior permission of the author and /or Moi University.

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DEDICATION

This thesis is dedicated to my family, my dear wife Irene for her encouragement and support throughout the study period, with constant reminders that I had an unaccomplished task and my sons Mark and Melchi for their moral support, seeing me off every morning while I went to do ‘my homework’; you inspired me!

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ABSTRACT

Concern for public participation in development projects is not new. Local institutions participation in development projects in Kenya has gained prominence lately especially with regard to project completion and sustainability. Many development projects in third world countries often fail due to exclusion of local groups participation. The purpose of this study was to assess the impact of water users participation on the outcomes of rural water development projects in Elgeyo – Marakwet county with particular reference to Keiyo North sub-county. The specific objectives of the study were: to examine the characteristics of local groups which participate in water development projects, to assess the levels and impacts of local groups' participation on water development projects and to analyze the challenges faced by local groups in the implementation of water development projects. Arnstein's 'Ladder of Citizen Participation' model and the group theory by Kurt Lewin guided the study. A survey research design was used in this study because it provided accurate analysis of the characteristics of a sample. The target population of the study comprised of 46 registered water groups in Keiyo North sub-county, from which a sample of 50% was drawn using stratified sampling technique. A total of 142 respondents and 7 key informants were selected for the study using random and purposive sampling methods, respectively. Data was obtained using questionnaires, focused group discussions, interview schedules and observation. Secondary data was sought from journals, reports, publications, development plans and Acts of Parliament. Quantitative data was analyzed using Ms Excel and presented in descriptive statistics, tables, graphs and discussions while qualitative data was analyzed thematically and presented by discussions. The study findings show that group characteristics largely influence the level of water users participation in water projects. Water users participation in water projects had positive impacts on cost, completion of projects, ownership and sustainability of water projects. Technical and socio-economic challenges affect the intensity of group participation in water development projects. The study concludes that effective coordination and consultation between water users and other stakeholders enhances faster project implementation. The study further concludes that water users participation in water projects implementation improves project sustainability especially in rural areas. The study contributes to knowledge on group dynamics and water resource development by demonstrating that organized community groups in collaboration with stakeholders are capable of developing water resources to improve their own wellbeing. The study recommends the need for improvement of technical abilities of community members to effectively undertake water projects in addition to facilitation by CDF.

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ABBREVIATIONS

ASALs	-	Arid and Semi-Arid Lands
AWRA	-	American Water Resources Association
CCF	-	Christian Child Fund
CDF	-	Constituency Development Fund
CDFC	-	Constituency Development Fund Committee
DRC	-	Democratic Republic of Congo
EC	-	European Commission
EEA	-	European Environment Agency
FDA	-	Finnish Development Agency
GDA	-	German Development Agency
GIS	-	Geographic Information Systems
GoK	-	Government of Kenya
IGAs	-	Income Generating Activities
IMF	-	International Monetary Fund
IWRM	-	Integrated Water Resource Management
IFAD	-	International Fund for Agricultural Development
JICA	-	Japanese International Cooperation Agency
KVDA	-	Kerio Valley Development Authority
KWAHO	-	Kenya Water and Health Organization
LASDAP	-	Local Authority Service Delivery Action Plan
LATF	-	Local Authority Transfer Fund
M & E	-	Monitoring and Evaluation
NADC	-	Norwegian Agency for Development Co-operation
NGO	-	Non Governmental Organization

NWP	-	National Water Policy
OKACOM	-	Okavango River Basin Water Commission
PMCs	-	Project Management Committees
RVWSB	-	Rift Valley Water Service Board
SADC	-	Southern African Development Community
SARDEP	-	Semi-Arid Rural Development Programme
SIDA	-	Swedish International Development Agency
SPSS	-	Statistical Package for Social Sciences
UN	-	United Nations
UNDP	-	United Nations Development Programme
UNEP	-	United Nations Environment Programme
UNESCO	-	United Nations Educational, Scientific and Cultural Organization
UNICEF	-	United Nations Child and Education Fund
USA	-	United States of America
USAID	-	United States Agency for International Development
WASH	-	Water Sanitation and Health
WASREB	-	Water Service Regulatory Board
WHO	-	World Health Organization
WRMA	-	Water Resources Management Authority
WRUAs	-	Water Resource Users' Associations
WUAs	-	Water Users Associations

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The concept of participation can be related to the rights of people to exercise their democratic right within the social arena and within the community in order to provide social amenities like water and sanitation facilities (Gaventa, 2004). Its importance was highlighted in the World Bank's 1975 sectoral policy paper on rural development (The World bank, 1996). Participation is argued to have given voice to ordinary citizens by including them in decisions that affect their lives, households and communities throughout the world. Community participation, like other concepts such as development, has been changing but a common thread that runs through all the definitions is that people have ideally been given their democratic right to participate and present their views as key stakeholders in matters affecting their lives and welbeing.

Local participation in development has become virtually indispensable in discussions of development globally. Failure to emphasize participation dramatically increases the chances of rejection of proposed development efforts (Cernea, 1985). Popular participation entails the active involvement of people in the making and implementation of decisions at all levels and forms of political and socio-economic activities. It relates to the involvement of the broad mass of the population in the choice, execution and evaluation of programmes and projects designed to bring about a significant upward movement in levels of living. This relates to the current study which examines the contribution of various stakeholders on water projects sustainability.

Participation remains particularly important in identifying, designing, implementing and managing projects and programmes thereby improving development planning especially in rural areas from local expertise. There is increased likelihood of new ideas and practices being taken up and added to the resources available to development programmes (Ahwoi, 2010).

True development is about removing the barriers which restrain people from achieving their full productive capacity. Participation on the other hand should be seen as a two way process with the involvement of the people in project design and execution and also the funding agency in project completion (Clark, 1991). However, bad participatory practice creates mistrust, wastes people's time and money and can seriously undermine future attempts at public engagement (Involve, 2006).

Sutton (1990) observes that a policy of participation requires concern about the people, people-centered policies and people-centered institutions. According to Sutton (1990), bureaucracies have not been very successful in reaching the poor and that in the 1950's, a Community Development programme for integrated rural development was introduced in India to enhance the economic base and improve the quality of life in rural areas, which relates to this study - water users participation. Smith (2003); Mitchell (2005) and Diduck (2009) argue that governments all over the world have realized that the involvement of local people is essential and that bureaucracies are perhaps not the most appropriate structures for exclusively implementing development projects, thus the need to involve the beneficiaries and other relevant stakeholders.

Ideally, local participation may engage agents of change, who do not act as leaders nor tell the community what to do. Their task is to foster grassroots participation and

build local institutions. In most cases, agents of change whether expatriates or nationals are expected to be experienced, well trained, energetic and knowledgeable. Agents of change are expected to facilitate relationships between the target population and external organizations (Prokopy, 2005).

However, the agents of change approach has been criticized by many scholars on grounds that the beneficiary community identifies the development projects with the change agents. This implies that the beneficiary communities do not have a sense of ownership of such projects. In such cases, projects sustainability becomes a challenge. Similarly, agents of change are individuals and in most cases may change their places of residence leaving communities with no one to turn to (Priscoli, 2004; Robinson et al, 2010). The current study focuses on group participation in water resources development.

Many scholars (Webler et al, 2001; Shantharisi and Wijesooriya, 2004 and Madrigal et al, 2011) contend that participation of local people in development projects through local institutions is more likely to be effective than individual participation. Local institutions act as a focus of mobilization among local people and as a link between local people and external organizations whether governmental or non-governmental. Institution building according to the above scholars has been defined as ‘the creation of procedures for democratic decision making at the local level and the involvement of local people in these procedures to the extent that they regard them as the normal way of conducting community affairs’ (Tripathi and Bharat, 2001). The participation of local institutions in development projects especially in rural areas serves to ensure project ownership and foster sustainability of projects. Clark (1991) highlighted that one of the main prerequisites of sustainable development as outlined in the

Brundtland Commission is “securing effective citizen’s participation in decision making”. According to the Commission, for a project to be sustainable, it must address problems and aspirations identified by the poor and must have a management and decision making structure.

Water resource development worldwide calls for the rational use of water resources which requires an integrated approach in which water quality and quantity, environment and the physical quality of life are associated. Water development programmes should therefore take into consideration environmental and ecological aspects so as to guarantee the quality and quantity of water required to satisfy human needs for present and future generations. The bulk of rural populations are usually continually dependent in the short and medium term on agriculture and allied occupations. Agriculture continues to be the mainstay of the rural economy and will have to play a major role in raising the level of productive employment in many developing countries (UNEP, 1982).

The importance of the water sector in development can never be over-emphasized especially in developing countries. According to Clarke (1993), a shortage of water can prevent almost everything from being done. Water deficits are not only restricted to developing countries nor even Arid and Semi- Arid areas but to all human beings everywhere on the planet. Water management is crucial for development and requires the participation of communities especially in rural areas. The development of water resources in rural areas has been taken for granted in the development plans of many developing countries because of the partial implementation of such projects.

Scarcity and misuse of fresh water pose a serious and growing threat to sustainable development and protection of the environment. During the International Conference

on Water and the Environment (ICWE) in Dublin on 26-31 January 1992 a call for fundamental new approach to the assessment, development and management of fresh water resources was issued. Accordingly a concerted action is needed to reverse the present trends of over consumption, pollution and rising threats from drought and floods. The Conference Report set out recommendations for action at local, national and international levels, based on four guiding principles (Hartley and Wood, 2005).

The first principle outlines the relationship between environment and development and the need to conserve water for socio-economic development. The second principle focuses on participatory management of water resources and recommends decision making to be taken at the lowest levels possible. The third principle highlights the central role played by women in water resource management, and should be included in decision making processes. The last principle recognizes that water is an economic good with competing uses and that every person has a right to access clean water. However, it remains the duty of every citizen of the world to conserve water resources. Whereas all the principles are relevant to this study, the second principle is particularly significant due to its emphasis on the need for participatory management of water resources including decision making at the lowest possible levels which is the main focus of the study as it examines the various levels of group participation (including decision making level) in water resources development.

In India, there is a multi-disciplinary approach to the management of water projects in which engineers, scientists, rural planners, economists, credit & marketing specialists, sociologists, agronomists and ecologists work as a team with communities in ensuring the continued availability of water for rural development. They all take part in proper

formulation of water projects. The people concerned are consulted at every important stage of decision making (UNEP, 1982). Tignino and Sangbana (2015) note that from the 1990s onwards, water resource management in India has taken a different route such that currently, there is a shift from supply driven water development to demand – led model where water users are called upon to actively participate. Public participation in India is implemented through the formation of water users associations (WUAs) which are seen as vehicles of democracy and decentralization in water resources management. Unlike in India where public participation though is a requirement by the constitution and the water policy, in Romania, the ministry of environment and climate change ensures that the public participates in decision making processes in water development (Tignino and Sangbana, 2013).

In Kenya, the Water Act 2002, the Constitution and the Constituencies Development Funds Act 2013 spell out that public participation is a requirement in the initiation and subsequent implementation of community projects, water projects inclusive (GoK 2002; GoK 2010 and GoK 2013). However, the extent and effect of such participation has not been assessed. The participation of local groups in development dates back to as early as the pre-colonial times in Kenya where self-help groups mobilized themselves and contributed material and non-material items towards community development.

Water is a national, cultural, social and economic good and Kenya has potential for enhancement of surface and groundwater resources and desalinated sea water. So far the developments in the sector for WRM have drawn on the UN Water Conference held in Mar del Plata, Argentina in 1977; various international meetings on water resources and environment; the Dublin Statement on water and sustainable

development of 1992; and the United Nations Conference on Environment and Development (UNCED), Rio de Janeiro (Agenda 21, Chapter 8). The NWP 1999 and the Water Act 2002 were a clear response to institutionalization of a new order in the sector through reforms based on the globally recognized IWRM approach that promotes the development and management of the resource in partnership with the people of Kenya (GoK, 2012).

Professionals and researchers on community participation within the water sector argue that it is beyond governments of developing countries to provide water through national networks to rural communities, hence the call for community participation (Page, 2003). In addition, the advantage of relying on labour, cash and local raw materials provided by community members is cheaper when one compares the limited resources at the disposal of African governments leading to the reliance on community participation.

In Kenya, the emergence of *Harambee* (pulling resources together), District Focus for Rural Development and currently the introduction of Local Authority Transfer Fund (LATF) and Constituencies Development Fund (CDF) amongst other devolved funds provides opportunities to local populations and their institutions to participate directly in development processes in their localities.

Informal types of mutual help based upon kinship and neighbourhoods have long been a feature of rural life in Kenya, as in much of Africa. Equally widespread have been the efforts of local leaders and government administration to mobilize labour through local groups. Before independence, the colonial government relied upon local groups for soil conservation work, co-operation being spiced with varying degrees of compulsion and payment. From 1948, the colonial government attempted to organize

self-help activities more systematically through the formation of the Department of Community Development (Lisk, 1988).

Upon independence, Kenya used the *Harambee* movement to spearhead development. Under the movement, communities throughout Kenya embarked on the construction of schools, roads, dams and contributed large sums of cash as well as labour for development in their regions. Various explanations have been given about the importance of *Harambee* movement. From the government point of view, the movement was a mechanism for obtaining rural development while for the local population, the Harambee movement was a way of staking a claim for government assistance and symbolized genuine participation by the public in deciding how surplus resources should be invested. In the early nineties, its popularity waned (TCARD, 1996).

According to Lisk (1988), the unpopular nature of *Harambee* movement amongst the population in Kenya paved way for the introduction of the District Focus for Rural Development in 1983. The launching of this programme was meant to reactivate the participation of citizens in development processes. This however was to be done through approval from District Development Committees which in most cases did not understand local development needs as most of the members were civil servants who in most cases were not residents of the said districts. The establishment of the Rural Development Fund in the early eighties was intended to incorporate the local people in the identification and implementation of development projects. However, due to bureaucratic constraints, participation of local people was not significantly realized at the implementation stage.

In the late nineties, the introduction of the Local Authority Transfer Fund (LATF) saw the participation of local groups in development projects from project identification up to implementation and subsequently evaluation. In 2003, the introduction of Constituencies Development Fund (CDF) and other devolved funds witnessed some level of local participation in development processes (Odhaimbo & Taifa, 2005).

In the study area, Keiyo North sub-county, an Arid and Semi-Arid region which receives an annual rainfall of between 200mm and 1500mm, several attempts have been made to develop the water sector. In the Keiyo district Poverty Reduction Strategy Paper (GoK, 2001), it was noted that lack of water remained a major challenge to the development of Agriculture and Rural Development and that the water problem would greatly affect other sectors. Many of the residents of the sub-county practice crop cultivation.

Over the years, attempts have been made both by government ministries and non-governmental organizations such as ASAL, SARDEP and JICA to implement water projects in the sub-county with minimal success. Various reasons however have been provided for minimal success in water development in the study area among them inadequate funds and low awareness levels on the importance of participation among the beneficiaries. The ministry of water and irrigation in the study area runs five gazetted water projects in the sub-county namely Iten, Kamariny, Kapkoi (all in the highland), Tambach (in the escarpment) and Chepsigot (in the Kerio valley). The five projects were financed by the ministry of water and irrigation. In addition, the ministry manages three community water projects having financed them namely; Chelingwa, Kipsoen and Kapteren; all in the highland (GoK, 2012). This indicates how the government has given preference to water users in the highland, though there

is sufficient rainfall in the zone compared to the escarpment and the valley zones with little rainfall per year.

In order to provide a better understanding of the role of local groups in the management of water projects, the study has analyzed how the local groups and ministries conform to legal provisions with regard to the management of development projects. The Constituencies Development Fund was established by an Act of Parliament in 2003 to finance development projects in the country's 210 (then) constituencies in Kenya. Under the CDF Act, the District Projects Committee oversees the procurement of equipment and materials for projects. Similarly, the Committee conducts spot checks to ascertain or assess implementation of projects (GoK, 2003).

The CDF Act, 2003 was amended in 2013. In 2015, the Act was amended and re-named the National Government Constituencies Development Fund to be in consistent with the devolved governance system. The fund is meant to fund development projects which have an element of poverty reduction and improvement of peoples' lives. The role of the community is to constitute the PMCs, give opinion regarding development projects, participate in project monitoring and evaluation and ensure project sustainability after completion. The constituencies development fund committee conducts sensitization meetings about what the nature of projects funded for the public to start writing project proposals for possible funding. This sensitization builds their capacity to undertake project proposal development. Among the projects which the CDF is supposed to fund include water projects which this study sought to assess (GoK, 2013; GoK, 2015).

The Water Act of 2002 has provisions on community water projects. Section 23 of the Water Act has provisions regarding approval of community projects. Information regarding the application of such provisions is necessary in informing the development of water projects in the study area.

The study borrows the fifth Principle of Sustainable Development which deems that decisions on development should be made at the lowest appropriate level, either by those directly affected or on their behalf by authorities closest to them. This principle is applicable to this study since local institutions (groups) in the study area undertake water projects on behalf of the larger population. This study sought to assess the role of local groups in the conception, execution and evaluation of water projects in Keiyo North sub-county.

1.2 Statement of the Problem

The water sector remains an important component of rural development in most third world countries as agriculture continues to be the predominant source of employment for the rural people. In many parts of Africa, families devote inordinate amounts of time to collecting water. Although public participation has widely been used in project planning and implementation in Kenya, not much has been documented to reveal the levels at which local groups participate in the development process. Local groups have the potential to positively contribute towards the overall success of projects in rural areas especially when they are incorporated in the various forms of participation (Thwala, 2010).

Various studies on community participation (Mwakila, 2008; Thwala, 2010; Neysmith and Dent, 2010 and Nyanchaga 2011) have only pointed out that local groups play significant roles in rural development without indicating the levels at

which such groups have been incorporated in the development process and the outcomes thereof. The study area is arid and semi-arid and the main economic activity is crop cultivation which mainly depends on rainfall which is not sufficient all year round to support plant life. Several attempts have been made both by the government and non-governmental organizations such as the World Vision, the Arid and Semi-Arid Lands (ASAL) programme, Semi-Arid Rural Development (SARDEP) Programme and Japanese International Co-operation Agency (JICA) to develop the water sector but not adequately. Although these organizations emphasized the importance of involving the beneficiaries in water development, most of the water projects started either collapsed before completion, took long to be completed or were not sustained upon completion. This study therefore sought to provide an understanding on how community groups participate in rural water development projects and the impact of the participation on project implementation and its sustainability focusing on Keiyo North sub-county.

1.3 Research Objectives

The study sought to achieve the following objectives:

i. To examine the characteristics of local groups which participate in water development projects in Keiyo North Sub-county.
ii. To assess the impacts at various levels of local groups participation on water development projects in Keiyo North Sub-county.
iii. To analyze the challenges faced by local groups and their impact on the implementation of water development projects in Keiyo North Sub-county.

This study sought to answer three research questions:

i. What are the characteristics of local groups which participate in rural water development projects?
ii. What are the impacts of local groups' participation at different levels on rural water development projects?
iii. How do challenges faced by groups impact on the implementation of water development projects in Keiyo North Sub-county?

1.4 Scope of the Study

The study was conducted in Keiyo North sub-county between 2013 and 2014 and focused on impacts of local groups' participation on the outcomes of rural water development projects. The study concentrated on twenty three groups undertaking water projects which were registered by the social services department by the time of the study in Keiyo North sub-county. A total of 142 study participants took part in the study. The unit of analysis was the water development groups. The water groups were chosen for the study because the sub-county is semi-arid and water is considered to be one of the most important natural resources especially in a sub-county where the main economic activity is agriculture (rain fed crop production). The study area is vast covering three agro-ecological zones, which is the valley, the escarpment and the highland which posed a challenge in terms of conducting the study. In addition, due to its expansive nature, it was difficult to involve more groups in the study. The study laid focus on groups dealing with water projects in the sub-county and their participation patterns, secondly, levels of group participation and their impacts on water projects and lastly challenges encountered by the groups and strategies employed to address the challenges.

1.5 Justification of the Study

Public participation is a key component in development work. While the public participate at various levels, of importance is to have an understanding of the impact of such participation on development and livelihood projects and programmes. The water sector is an important field in fostering development, especially in rural areas. However, not much has been documented in relating public participation levels to the outcome of such participation This study will therefore contribute to knowledge and information in the area of public participation in water resources development in rural areas which is key in community development, rural development and rural Sociology.

The study area is semi-arid and a lot of resources have been invested in the water sector both by the government and Non-Governmental Organizations such as ASAL, World Vision, JICA and SARDEP yet not much has been achieved. Little has been documented on the outcomes of the stakeholders participation on the projects.

This study therefore sought to provide information on the role of local groups and other stakeholders in the implementation of water projects. The information gathered would be useful to policy makers especially in the fields of community development, rural Sociology, water management, natural resources management, planners, the government, conservationists, researchers and Non-Governmental Organizations in the water sector to guide in participatory projects and programmes.

1.6 Chapterisation of the Thesis

This thesis has been organized into seven chapters. Chapter one of the thesis presented information on the background to the study, statement of the problem, objectives and research questions, and justification of the study. Chapter two of the thesis reviews literature relevant to the study and provides a theoretical framework relating study variables. It focuses on review of past studies done by other scholars in the area of study with reference to the study variables. Further, the chapter utilizes one theory namely, the group theory and the 'Ladder of Citizen participation' to relate participation to the outcomes of water development projects in the area of study and ultimately points out to the knowledge gap. Chapter three of the thesis provides information on the research methodology and data collection instruments used and the rationale for each of the instruments, pointing out the kind of data collected using the research tools. In addition, the chapter elucidates the research design, data collection procedures and ethical considerations considered during the data collection exercise.

Chapter four of the thesis presents research findings of the first objective of the study, a detailed description and characterization of groups undertaking water development projects in the study area. Chapter five of the thesis focuses on research findings of the second objective of the study. The chapter presents an assessment of the different levels of group participation in water development projects and their impact on the outcome of the projects. Chapter six of the thesis analyses the various challenges faced by groups undertaking water development projects and the impacts of such challenges on the water projects. Chapter seven, the final chapter of the thesis summarizes the findings of the study and presents conclusions and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This chapter reviews studies relevant to the topic under study focusing on the study variables with the purpose of relating them to the study objectives and identifying gaps. Theoretical and conceptual frameworks are also presented in the chapter to relate study variables and objectives.

2.2 The Concept of Public Participation: Objectives, Principles and Purpose

The Oxford English Dictionary defines participation as "to have a share in" or "to take part in," thereby emphasizing the rights of individuals and the choices that they make in order to participate. Arnstein (1969) states that the idea of citizen participation is a little like eating spinach: no one is against it in principle because it is good for you. But there has been little analysis of the content of citizen participation, its definition, and its relationship to social imperatives such as social structure, social interaction, and the social context where it takes place. Often the term participation is modified with adjectives, resulting in terms such as community participation, citizen participation, people's participation, public participation, and popular participation.

The concept of participation in development dates back to mid 19th century. The World Commission on Environment and Development for instance in 1987 drew attention to the role of community involvement in decision making. The 1990 African Charter on popular participation in development and transformation, supported participation as empowering communities and involves all stakeholders for effective delivery of project outcomes. The Dublin Statement on Water and Sustainable Development (adopted by the UN on 31 January 1992) included participation as one

of its guiding principles. In the same year, the Rio Declaration on Environment and Development and Agenda 21 were endorsed, which recognized participation as essential for environmental management. The Arhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters focused specifically on participation (Hartley and Wood, 2005).

While Westergaard (1986) opines that participation focuses more on collective efforts to increase and exercise control over resources and institutions on the part of groups and movements of those hitherto excluded from control which points towards a mechanism for ensuring community participation; Oakley and Marsden (1987) viewed participation as a process by which individuals, families, or communities assume responsibility for their own welfare and develop a capacity to contribute to their own and the community's development. Any form of participation therefore envisages to realize the objectives of participation namely; stakeholder sharing of project costs, increasing project efficiency, improving project effectiveness, building the capacity of the beneficiaries and subsequently empowering the beneficiaries.

The World Bank's Learning Group on Participatory Development (1995) looked at participation as a process through which stakeholders influence and share control over development initiatives, and the decisions and resources which affect them. Yadama (1995) asserts that participating in decision making and implementation activities, local people help project officials identify needs, strategies to meet those needs, and the necessary resources required to implement the various strategies. Jansky et al (2005) note that where the public are not included in decisions that affect their welfare

in water resources development they may resist change, protest or otherwise obstruct implementation of such decisions.

Public participation on the other hand is the process by which an organization consults with interested or affected individuals, organizations, and government entities before making a decision; a two-way communication and collaborative problem solving process with the goal of achieving better and more acceptable decisions (The World Bank, 1996). Supporting the World Bank assertion on public participation, Chitere (1994), points out that public participation is an important aspect in development as it allows for the mobilization of local resources alongside building the capacity of the beneficiaries to sustain benefits from such projects. In addition, public participation makes the community realize the importance of the project and helps them have a sense of community which enhances chances of project sustainability. Public participation is based on the belief that those who are affected by a decision have a right to be involved in the decision-making process.

Cleaver (1999) points out that public participation acts as a tool for achieving better project outcomes; enhances equity and empowerment in addition to building the capacity of individuals to improve their own lives. Participation is supposed to depend on a mobilization process, upon the realization amongst participants that high levels of involvement are for their own good. It is assumed that people will calculate that it is sensible to participate; due to the assurance of individual benefits to ensue.

In environmental sciences, Dagg et al (2003) posit that public participation is about facilitating the right of the public to engage in decision-making, achieving better decisions; a commitment to integrate the public including exercises such as environmental impact assessment. While in scientific research, Milleiv-Rushing et al

(2012), note that there are two forms of public participation in natural resources development. Firstly, contributory participation which is designed by scientists and for which members of the public primarily contribute data; also includes studies in which scientists analyze citizens' observations, such as those in journals or other records, whether or not those citizens are still alive. The second one, collaborative participation which is designed by scientists and for which members of the public contribute data but may also help to refine project design, analyze data, or disseminate findings. The second type is more participatory as citizens take part in design and dissemination.

Motives for using participation, in governance worldwide, are both democratic and practical (Dorcey, 1991; Pretty, 1995). Participation can lead to a sense of ownership of decisions and policies leading to reduced resistance and even cooperation in implementation (Chitere, 1994; Thomas, 1995). Participatory processes also provide a voice for groups marginalised by broader political and economic processes, enabling them to have a say in decisions that affect them (World Bank, 1996; Holmes and Scoones, 2000).

Decisions relating to project initiation and siting of the projects are made by various stakeholders, key among them being the beneficiary groups, government agencies and non-governmental organizations. Resources on the other hand include human labour and construction resources namely timber, sand and hardcore which are locally available. Key in the discussions of participation are the participants, the conditions, the motivation to participate and its effects (Chitere, 1994 and The World Bank, 1996). To the UNDP/World Bank Water and Sanitation Program (1996), other than

resource provision, the community previous experience in project activities is significant in the final project outcome.

The World Bank (2004) views participation as a process through which stakeholders influence and share control over development initiatives, and the decisions and resources which affect them. Southgate (2006) adds that participation legitimizes the project while utilizing community leadership, an important component to project success. Robinson et al (2010), on the other hand emphasize the presence of formal structures in any participative process where meaningful participation by every stakeholder would take place.

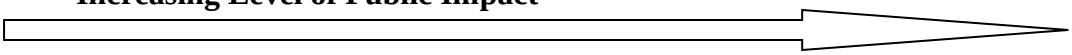
Dungumaro and Madulu (2003) stress the importance of local communities consent in taking part in public decision-making processes, especially on issues that directly affect their welfare. In the context of water resources development, local community participation could provide an important database, experience and ideas that could lead to practical, relevant, achievable and acceptable solutions to water related issues.

Priscoli (2004) notes that participation is primarily driven by values of empowerment, creativity and open access to the government by the citizens. It gives the public an opportunity to discuss issues with government and make decisions on the same, thereby removing passivity in the community. Meaningful participation allows both the community and other actors/stakeholders to jointly make decisions which are acceptable and implementable in water resources development.

The International Association of Public Participation (2004) views participation as a very practical exercise of getting people's input on something, such as a local plan or new development, and widening the sense of ownership around it. In addition, public participation involves collaboration between project beneficiaries and other

stakeholders with the purpose of ensuring the success and subsequent attainment of project goals. Further, it expands people's horizons, social contacts and sense of their own power and ability. The association designed a participation spectrum to explain the various levels of participation and corresponding impact as illustrated in Figure 2.1.

Increasing Level of Public Impact



Inform	**Consult**	**Involve**	**Collaborate(with stakeholders)**	**Empower(for ownership & sustainability)**
Participation Goal				
To provide the public with balanced and objective information to assist them in understanding the problems, alternatives, opportunities and/or solutions	To obtain public feedback on analysis, alternatives and/or decisions	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution	To place final decision making in the hands of the public
Promise to the Public				
We will keep you informed	We will keep you informed, listen to and acknowledge concerns and aspirations, provide feedback on how public input influenced the decision	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision	We will look to you for direct advice and Innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible	We will implement what you decide

Figure 2.1: Public Participation Spectrum
(International Association of Public Participation, 2004)

Figure 2.1 gives a description of the various stages and their respective impacts in the public participation exercises. In a typical public participation process, the first step would be informing the public of upcoming projects, consulting them on what they think about the project then involving them in decision making process. Thereafter, the public collaborates with agencies in designing and implementing the project which ultimately empowers them to take charge of their own development. The level of impact of the project improves with the participation stage. An effective public participation process requires the exchange of information by all the participating stakeholders as presented in the figure. It is however difficult for all stakeholders to keep their promises of frequently updating project beneficiaries owing to a range of reasons from low levels of commitment to the slow pace of project implementation.

In relation to this study, the public participation spectrum is used to demonstrate the various stages of public engagement in water development process where in the first stage, the public is informed about the existence of CDF and sectors the fund can support including water projects. Consultation stage involves dialogue between water development groups and CDF on how the groups could access funds for development of water projects. Further, in this stage, groups are expected to consult the ministry of water and irrigation and community leaders on how to develop water projects. In stage three, all group members, community leaders, key stakeholders are involved in decision making on proposal development for water project development. The fourth stage anticipates collaboration amongst all the participating stakeholders in the delivery of water project outcomes, with the groups taking a leading role in project implementation. The last stage of the public participation spectrum roots for an empowered public capable of sustaining the projects with minimal external assistance.

Mubangizi & Dascah, (2014) note that public participation requires the involvement of all parties who may potentially have an interest in a development or project, or be affected by it. It entails a wide range of activities from providing information, through consultation to direct involvement of the public in aspects of the decision-making process. However, Thwala, (2001), notes that public participation generally is more successful when the community takes over much of the responsibility than other agencies, both public and non-state actors. Participation invokes notions of inclusion, of people's abilities to make decisions and to voice their opinions and concerns which are heard (Agarwal 2001; Cooke and Kothari 2001).

The Center for Transboundary Cooperation (2005) point out that public participation involves a continuous process of interaction between the citizens and bodies (organizations) responsible for decision-making, referred to as stakeholders. In this participation, conditions are created for forming the clear and full concept among the public on the mechanisms and procedures for identification and solving environmental problems and consideration of environmental requirements by the respective bodies and organizations. To be sufficiently participatory, the public has to have access to full information about the course and current state of development and execution of the project, plan, program, about policy forming etc. In addition, all the stakeholders have a chance to declare their points of view, requirements and preferences related to use of resources, alternative solutions, or other information relevant to the decision being taken.

Participation requires consensus building, negotiation, conflict resolution, trade-offs and holistic thinking and these issues are frequently time consuming and expensive, irrespective of the scale (Giordano et al., 2007). This therefore calls for patience from

all the participating stakeholders to guarantee the attainment of set out results. Regular feedback remains of particular importance in the entire process for progress to be monitored, changes approved and plans implemented. Sya (2017), notes that for participation to take place, there must be awareness raising to elicit effective community participation where consensus building can then take place especially on water governance issues.

A number of factors affect participation. Neysmith and Dent (2010) group these factors into four categories: socio-cultural, economic, situational, and developmental. They see socio-cultural factors as being important in determining an individual's willingness to participate. Socio-cultural factors such as class, ethnicity and gender can play a role in creating the power imbalances and prevent participation by certain groups. Individual or group financial ability, educational level or literacy level, technological know-how, support infrastructure could all affect the level of public participation in water resources development (Jones, 2011; Singh, 2008 and Sultana, 2008). These relate to the first objective of this study focuses on the various characteristics of groups and their impacts on participation in water development projects

Public participation expects community members to participate in projects in order to enhance equity and efficiency, as well as to feel greater ownership towards projects, which is also expected to lead to better water resources management and greater ecological sustainability. This is particularly important given the central role played by water in the growth of rural economies. Participation invokes notions of inclusion, of people's abilities to make decisions, and to voice their concerns which are heard (Agarwal 2001; Cooke and Kothari 2001). As such, participation is linked to notions

of deliberative democracy (Hickey and Mohan 2004). Moraa and Otieno (2012) emphasize the need to raise awareness amongst community members on the importance of participation, which should then be done by institutions responsible for water management. This would enable the public understand their roles in water resource development.

Carr et al (2012) note that participation is often associated with positive outcomes in development discourse if well managed. In addition, it may direct human resources toward an issue which may distribute responsibilities and raise commitment toward resource management.

Ross et al (2008) justify public participation on a number of grounds. Firstly, it provides an opportunity to all the participants (stakeholders) to make better decisions, by opening up the decision-making process to a wide set of people contributing expertise that lies outside government. This includes local experience, traditional knowledge, and different forms of technical knowledge. Secondly, participation leads to better public acceptance of and compliance with the decisions made, because people have had the opportunity to be heard in the information gathering stages of decision making. Lastly, it brings about social justice, the idea that those who will be affected by a decision deserve to have input. All the levels of participation by water users groups have lessons learnt documented upon completion of water projects which relates to sentiments by Ross et al (2008).

Cullet (2015), notes that public participation in India emphasizes focus on local initiatives while establishing linkages with relevant stakeholders to deliver desirable project outcomes. In India for instance there has been a shift from government led water development initiatives to water user-led initiatives, the so called demand led

paradigm. The idea behind this being transferring the responsibility of decision making to the water user, coupled with capacity building was aimed at enabling water users take up management responsibilities in water resources development. The ultimate goal being to empower water users operate, maintain and sustain water projects, moving away from dependency.

Agarwal (2001) further observes that the critical assessment of how participation is conceptualized and a gender perspective on who participates, in what capacity, to what effect and with what means, is important in understanding the outcomes of participatory management institutions being set up as the solution to water resources management issues as well as ensuring that the beneficiary community is empowered. Participation demonstrates the positive recognition of a common good by the people whose achievement is found to be impossible with individual efforts but with the collective efforts of all (Mejos, 2007). Mahama and Badu-Nyarko (2014) note that public participation need to go beyond just project implementation, emphasizing that project sustainability remains paramount if projects benefits are to continuously accrue to community members. The last level of participation in this study focuses on evaluation and sustainability.

On inclusivity in participation, Smith (2003); Parkins and Mitchell (2005) contend that it is more meaningful to allow all actors have a say in decision making processes as it gives room for structured negotiations for work related activities in project work and subsequently accomplishment of such activities by all. Sinclair and Diduck (2009) concur that participation should be seen as an inclusive process in which stakeholders are involved in, with some level of control over decisions that affect them, and this must be distinguished from mere involvement.

Mansuri and Rao (2004) emphasize that local actors in participation can greatly enhance project effectiveness through contribution of ideas, materials and decision making. Ultimately, this makes development inclusive and strengthens community capacities to take charge of their own development. Prokopy (2005) adds that the demand driven approach in water resources development has transformed the water sector, re-awakening communities to take the lead in making decisions and subsequently implementing them. This relates to the third level of participation which this study focuses on.

According to Blears & Mulgan (2004) participation in the UK includes community-led initiatives in project work and encompasses the need for governance systems and organizational structures to change to allow for effective participation by those affected by development programmes. Gachenga (2015) echoes the institutionalization of local water structures and subsequent formalization of the same to better contribute to effective citizen participation in water resources development in rural areas. Carr (2015) looks at participation as a way in which governments transfer financial and administrative responsibilities to citizens, though rationalizing the same as involving citizens in development.

In the United States, public participation is perceived as a social and political process commonly applied in urban planning and design processes. The degree to which key stakeholders and communities are involved in public processes however varies, but its involvement is widely understood as critical to achieving the level of support necessary for successful implementation of new policies, plans and projects (Iacofano and Lewis 2012).

Boakye and Akpor (2012) observe that public participation relies mainly on community based organizations (CBOs), environmental groups and non-governmental organizations (NGOs) in modern democracies in expressing the views of citizens, under the assumption that those channels of communication are easily accessible to citizens. In South Africa for instance, participatory democracy which strives for the involvement of all citizens is seen as the means of giving people especially those at the grassroots level a voice in decision-making.

Rahmato (1999) notes that the user community remains an important stakeholder in sustainability of rural water projects. The involvement of the direct stakeholders in the planning, implementation, and governance and management of water resource projects is likely to enhance faster project implementation. In a study of rural water schemes in Ethiopia, the author found out that water resources development required inputs from all the stakeholders but more importantly the user community for it to actively take part in the operation and maintenance of such projects. The participation of stakeholders is however influenced by prevailing local situations (Mukui, et al 2002).

While Njoh (2002), recommends participation should be guided by principles which include; accountability, transparency, inclusiveness, legitimacy, social learning, conflict reduction, effectiveness, efficiency and equity; the International association of Public Participation (2004) on the other hand came up with a number of core values of public participation, which include; firstly, public participation is based on the belief that those who are affected by a decision have a right to be involved in the decision-making process. Secondly, public participation includes the promise that the public's contribution will influence the decision. Thirdly, public participation

promotes sustainable decisions by recognizing and communicating the needs and interests of all participants, including decision makers. Fourthly, public participation seeks out and facilitates the involvement of those potentially affected by or interested in a decision. Fifthly, public participation seeks input from participants in designing how they participate. Sixthly, public participation provides participants with the information they need to participate in a meaningful way. Lastly, public participation communicates to participants how their input affected the decision.

Smit (2003) argues that any participation process with technical information whereby participants do not understand amounts to tokenism of participation, since participants are unable to absorb the technical information and contribute. There is therefore need for the content of technical information to be presented in plain language that will ensure that participants understand what is presented. Drapa (2013) supports the use of non-technical language when addressing the public in water resources development and further notes that more active involvement of the public and stakeholders from the earliest stages of development and cooperation closely with NGOs and local authorities improves the outcome of public participation processes.

Yufei et al (2007) point out that public participation can be enhanced through raising awareness among the public on their role in water resources development. In addition, establishment of open information channels in water resources management and its decision process can help the involved interested parties conduct efficient consultation, engaged dialogue and productive decisions, which can also improve the public's enthusiasm for participation.

Nyanchaga (2011) notes that there is need for capacity building of all players in the water sector to effectively take part in water resources development and management.

User communities are particularly key to water resource development given their role in operation and maintenance of water facilities upon completion and handover by implementing agencies.

According to Carr (2015), participation is expected to enhance resource management through a number of different mechanisms, which include providing space for deliberation and consensus building for better quality decisions, mobilizing and developing human and social capital for better quality decisions and their implementation and raising the legitimacy of decisions to pave way for their implementation.

According to CTC (2005), the purposes of public participation are many and include; informing the stake-holding parties of the planned activity and ensuring possibilities for formation of the sense of involvement in the project; ensuring possibility of representing the point of view and stakes of those who would not have been represented otherwise, which should provide more accurate consideration of arrangement aimed at reduction of negative effect and looking for compromises; providing a possibility for the organizers of the planned activity to maximize the benefits from implementation of this activity and ensuring catering for serious effects during the environmental assessment. Others include; giving a possibility of physical influence on the project decisions to the public; obtaining information about local conditions and traditions (in order to incorporate amendments in the project or elaborate additional arrangements) prior to decision making; raising public credit to experts and persons responsible for the decision-making; ensuring higher transparency and responsibility of decision-making and reduction of possibility of conflicts due to early identification of burning issues.

Considerable intangible benefits from public participation are derived in those cases where the participants see that their ideas are being used for project improvement. As a result of participation, people gain confidence in it along with the sense of their own importance, while understanding of the situation is widening during meetings and opinion and information interchange between people who have different values and points of view. In the framework of public participation arrangement, a special attention should be paid to ensuring fair and balanced representation of points of view; stakes of poor groups or minorities should not be suppressed with stakes of more powerful or rich groups (Chitere, 1994; CTC, 2005).

People's participation in the management of natural resources has been shown to lead to a number of benefits, including increased effectiveness and acceptability of management actions (Esman and Uphoff, 1984), increased trust between communities and agencies (government and non-governmental) and reduced transaction costs (Uphoff and Wijayaratna, 2000).

Hering and Ingold (2012) point out that proponents for participation in water resource management argue that only by moving away from a top–down management model in which decisions are made by a small group of elite professionals who are detached from the people who live and work around water bodies, toward a participatory model that captures the diversity of understandings and interests in such bodies leading to more ethically sound and equitable management strategies which can be identified and employed.

Chitere (1994), argues that meaningful development can only be realized when beneficiaries are brought on board as active partners. Public participation is necessary in development for a number of reasons. Firstly, people tend to resist innovations that

are imposed on them, often because they do not feel they own the process and hence it is alien to them. It is therefore advisable to bring the community to realize the need for a project before initiating it. Secondly, local participation leads to mobilization of local resources and their use in development. Locally available resources such as bricks, sand, stones/ballast, oxen power, farmyard manure, local labour and skills cannot be mobilized without the participation of the local people. In particular, without community involvement, local labour cannot be used. It is acknowledged that local labour and knowledge are important in the long-run for the sustenance of development initiatives. Moreover, for successful community involvement, entry into the community and successful rapport building, first with its gatekeepers and subsequently with the rest of community members is of paramount importance.

Thirdly, local participation permits growth of local capacity, which develops out of the establishment of a partnership between development agencies and the community. This way, the community gains experience necessary for sustainability of the project. Thus, deciding and doing something for people deprives them the chance to learn and gain experience. Fourthly, participation helps in building the sense of community that is increasingly being eroded as kinship ties weaken. Thus, participation in local projects brings this sense of community feeling and rekindles the value of *harambee* spirit. Due to urbanization, industrialization, modern education and the emergence of white collar occupations, the close proximity and social interaction among kin is gradually fading away yet is necessary for communal living. Lastly, participation tends to reduce alienation, which prevents members from identifying with their community and hence resorting to counterproductive behaviour. It may also lead to societal disintegration accompanied by numerous social evils that should be averted through active participation. It is through active participation of community members

that we may for example avoid the emergence of deviant groups in society which are obviously anti-development.

In addition, the World Bank (1996) identified and summarized various reasons for community participation, which include; firstly, local people have a great amount of experience and insight into what works, what does not work and why and hence the need to involve them. In relation to this study, feasibility studies done by ministries or non-governmental organizations before initiating a proposed project would obtain this kind of information and inform the next course of action. Secondly, involving local people in planning projects can increase their commitment to the project and this enhances the likelihood of its success. Thirdly, involving local people can help them to develop technical and managerial skills and thereby increase their opportunities for employment. Fourthly, involving local people helps to increase the resources available for the programme as they can contribute in various ways according to their different capacities. Fifthly, involving local people is a way to bring about social learning for both planners and beneficiaries. Social learning means the development of partnerships between professionals and local people, in which, each group learns from the other. Sixthly, people know what works for them and professionals need to learn from people. Seventh, people make contributions of resources (money, materials, labour) for these programmes. Eigth, people become committed to activities that they have helped develop since they have developed ownership. Lastly, people can develop skills, knowledge and experience that will aid them in their future work and especially in sustaining the project.

Ballester and Lacroix (2016) support sentiments by Chitere (1994) and the World Bank (1996) by highlighting a number of benefits associated with public

participation; these being among others building social capital, trust, mutual respect, improves community capacity to implement water projects, increases the autonomy of individuals and communities alongside permitting them access project information. In addition public participation fosters social learning, allows for collective decision making and enhances project implementation.

The Center for Transboundary Cooperation (2005) listed a number of principles which guide public participation exercises. These principles aim at minimizing conflict and enhancing cooperation amongst implementing partners, they include: firstly, involving everyone who might be affected or has a stake. Secondly, informing about the aims of the planned activity and presumptive ways of their achievement. Thirdly, paying attention actively to problems of the affected parties and stakes lying behind these problems. Fourthly, treating people honestly and fairly and establishment of trust by means of consistent behavior. Fifth, being sympathetic, taking position of the other party and considering the point at issue from their point of view. Sixth, being flexible in considering alternative options and modifying the project wherever it is possible to meet the stakes of other parties better. Seventh, alleviating maximally the effects where the project cannot be adapted to the stakes of other holders and to search for ways to compensate for the losses. Eighth, establishing and maintaining an open two-way communication channel during the entire planning stage and further during implementation of the planned activity. Lastly, admitting anxiety and suggestions of other stake-holders and ensure feedback as the same are considered, assessed and catered for.

According to Blears & Mulgan (2004), public participation practice in the UK is guided by a number of principles which focus on empowering the public to take

charge of their own development. Voluntarism is the first which recognizes that people affected by an issue should choose on their own to take part in the process of bringing about desired changes. Secondly, is the principle of transparency and honesty which requires that all the participating parties in a development project or programme are accountable to the beneficiaries and honest in what they undertake. In addition, there should be regular exchange of information amongst all the participating stakeholders. This way, project beneficiaries get motivated to fully participate in the process of realizing positive change. Thirdly, the principle of power which states that participatory processes should have sufficient power to make independent decisions in order to achieve the stated project objectives. Such decisions are usually made by project management committees on behalf of the larger group implementing a development project.

The last principle according to Blears & Mulgan (2004) is that of learning and development which expects that all the stakeholders involved in a development process have the opportunity to learn from what they undertake in project work which then is instrumental in informing future processes of a similar nature. Participation also greatly improves development processes as stakeholder participation makes a positive contribution to beneficiaries' levels of development. The goal of public participation therefore is to empower project beneficiaries to understand their own situation with regard to problems, resources, opportunities and possible solutions to identified problems utilizing available resources.

Further to the principles of public participation, CTC (2005) highlighted a number of advantages associated with public participation, which include: attainment of sustainable development. Sustainable development can be achieved only by means of

involving all the stakeholders in the decision-making process. Secondly, conflict management. Though conflicts cannot be avoided, in the course of debates with public participation, issues are raised sincerely. This helps to settle such conflicts more efficiently. Thirdly, economic advantages. When the public is engaged during the entire decision-making process, their apprehensions can be catered for at an early stage of planning when amendments can be made more easily. This is more advantageous than involving the public at a later stage when even a minor alteration can result in time spending and financial expenses. Fourthly, efficient use of available data – for instance, on state of water sources, etc. public participation and public consultations are the possibility to obtain "hidden" knowledge of a wider community and get aware of their key apprehensions. Lastly, admittance of public as a valuable partner can inspire the citizens, government and enterprises for cooperation, which represents a highest-priority importance for successful implementation of a regulative system.

Prior to 1998, in South Africa, public participation was not much pronounced and citizens did not actively take part in decision making processes in water management. However, the country's National Water Act obliged the Department of Water Affairs to involve the public in deliberations on water resources management (RSA, 1998). This is similar to the Kenyan case in which public participation in water resources management is currently mandatory as enshrined in the Kenyan constitution of 2010 and the Water Act of 2002 (GoK, 2010; GoK, 2002).

In the rural areas of Mwanza Region, Tanzania, local communities usually organize themselves to construct charco-dams for their livestock. Under the Health through Sanitation and Water (HESAWA) programme, improvement, management, and

operation and maintenance (O&M) of water sources was the responsibility of the respective local communities, hence, ensuring community ownership and accountability. Further, the involvement of local communities in water projects does not only ensure democracy, but also ensures acceptability, support, and sustainability of the respective projects (Dungumaro and Madulu, 2003).

Jampel et al (2016) in study of water development in Likii, Laikipia, found out that all groups undertaking water development projects were guided by institutional structures and had both internal and external mechanisms of resolving conflicts. Further, they found out that these groups had clear boundaries on areas of operation and bound by rules and regulations. Sharon et al (2017) contend that in water resources management, institutional capacity building improves water management alongside building the capacity of participating stakeholders.

From the literature reviewed, it is evident that globally, regionally and nationally, public participation remains important and relevant in water resources development. Many authors in this section have focused more on the purpose, prerequisites and the benefits of public participation in water resources development. A demonstration of the relationship between the various levels of participation and their associated impacts on water projects outcome has not been presented and which is the focus of this study.

2.2.1 Stakeholders in Public Participation

In broad terms, stakeholders are individuals, organisations, public sector agencies and donors that are concerned with water resources and have an interest in their development (Le Moigne, 1994). They specifically include community organizations/groups, government agencies, non-governmental organizations, the

private sector and individuals. The ministry of water and irrigation in many countries worldwide is the primary government agency responsible for undertaking feasibility studies, plans and guidelines, and the formulation of policies and strategies for the allocation and utilisation of water resources.

Uphoff and Wijayaratna (2000), emphasize on analyzing the categories of stakeholders participating, the motivation to participate and how they participate including the effect of such participation. The Water Resources Group (2016) contends that stakeholders in water development should be facilitative in areas of awareness raising, enhancing communication, collaboration, outreach and governance. Fritsch (2017) notes that whereas effective participation at information and consultation stages are paramount, there is need to shift from one way communication to face-to-face discussions to enhance active involvement of all actors.

De Freitas (2010) notes that public participation being an important component in natural resource planning and management requires effective engagement amongst all the participating stakeholders. Further, its success is highly dependent on the commitment of those involved especially considering their varied interests alongside the level of participation of the resource users (International Institute for Environment and Development, 2010). Thwala (2010) echoes these sentiments adding that all stakeholders ought to participate in project planning to ensure smooth implementation.

European Environment Agency (2014) notes that public participation allows for balancing of interests of diverse stakeholders which creates a safe environment for discussion of issues and makes all stakeholders feel confident that their core values

will not be compromised in the process. In turn, balancing the interests of various groups of stakeholders generates social learning, i.e. learning by groups (authorities, stakeholders and experts) to handle issues in which all group members have a stake.

Dungumaro and Madulu, (2003) emphasize that community participation should be considered as mandatory in any development project and local communities should be viewed as equal development partners who should participate fully in the design, implementation and benefit sharing for any water related development project. Anokye (2013) adds that efforts should be made towards providing spaces for communities to take part in decision-making and not only for them to provide tangible inputs like labour. Such efforts could include capacity building of communities to enable them effectively take part both in planning and monitoring of water development projects. Sam (2016) adds that community participation in development should be characterized by voluntary participation, effective leadership and effective conflict resolution.

From case studies conducted by the American Water Resources Association (2012) in the United States of America, it was concluded that there was need for public and stakeholder involvement in water resources management. Further the case studies from Yakima and Delaware river basins identified key elements for the successful implementation of water development which include; conflict management, information management and exchange, enhancement of public participation, clear definition of institutional roles of stakeholders representing a variety of interests.

In Ethiopia, besides government, the principal external actors intervening in water development in pastoral areas are NGOs and development agencies including USAID, EC and CARE. These provide construction and rehabilitation of water points, develop

small-scale irrigation and work on capacity building and training (Nassef and Baleyhum, 2012).

A successful public participatory exercise requires the attention of all stakeholders and the process needs to be based on profound understanding, flexibility, patience and power sharing (Schneider and Libercier, 1995; Hari, 1995). Genuine participation means that people should be involved in the project throughout the program cycle, from design to evaluation. Stakeholders bring different perspectives and interests to the table, which therefore require a clear-cut definition of the mandate of each of the stakeholders to avoid misunderstandings and disagreements during the participation process (EEA, 2014). However, participatory methods are commonly used to give a local perspective as well as unique understanding of a certain community for decision-making (Becker et al., 2002).

Gleitsmann et al (2007) in their study of three rural villages in Mali found out that a platform approach in public participation which embraces social learning takes into account others' social positions, perspectives and knowledge as a key element in stakeholder deliberation is increasingly being seen as a strategic niche for development interventions in rural water development.

Nassef and Baleyhum (2012) stress the need for public participation in the assessment of local concerns and needs, which should give room for dialogue and negotiation between planners and communities on the most suitable type/placement/size of water points. The participatory approaches will also enhance commitment at the local level. In their view, planners should therefore engage with local groups representative of the different resource users in the area, including customary institutions. In Ethiopia, participation continue to evolve: from end users simply expressing demand for water

points, to assuming a role in operation and maintenance, to full involvement in all stages, including planning and construction.

According to Nassef and Baleyhum (2012) the influence pastoralists can exert on planning and siting of water points in Ethiopia differs depending on the entity constructing (and funding) the facility and the type constructed. Communities tend to lead decision-making on the traditional structures they continue to develop themselves, such as ponds, springs and customary deep wells. For structures funded and constructed by non- pastoralists, especially those that are technically more complex (like boreholes), the extent to which communities participate in decision-making varies. Many donor agencies that fund long-term development place participation in planning, management and maintenance high on their agenda.

Stakeholder participation in water resources management in developing countries is being promoted in efforts to decentralize decision-making and improve the planning, development, and sustainable use of water and environmental resources (UNWWAP 2003). Successful models of stakeholder watershed action planning in Africa have yet to emerge from new experimentation underway in several countries. Early evidence from Zimbabwe suggests many risks and challenges (Kujinga 2002). A bottom-up approach that engages local populations in the planning process can be particularly important in developing countries where reducing poverty and enhancing livelihoods are important goals for water and environmental resources management. The welfare of poorer segments of the population, often marginalized from formal planning processes, tends to be directly tied to the condition of and access to water and other common pool resources in localized areas of watersheds.

Public participation can only become a reality when central governments and development agencies alike are willing to relinquish or share control with a local community. Conditions under which this can take place, as Blair (2000), notes are extensive participation of all stakeholders and mechanisms to ensure that those in authority at the local level are held accountable for their actions. Phunthavongsa, et al (2014) emphasize the need for voluntary participation of all the relevant stakeholders in water resources development for enhanced success. Further, clear provision of information to beneficiaries on their role in water sector development triggers their active participation.

The need for stakeholder participation is further emphasized by Boateng and Kendie (2015), who point out that all community members should take part especially in decision making processes. Although socio-cultural norms may inhibit women from active participation in decision making processes, this should be addressed to bring out meaningful water resource development especially in rural water projects.

Lock (2013), points out that stakeholders are important partners in project work and greatly determine the success of a project. The range of stakeholders vary with the nature of the project and the kind of contributions they usually make to enable the project achieve its goal(s). Stakeholders include the beneficiary community, project sponsor, statutory bodies, regulatory authorities, contractors/subcontractors, suppliers, staff, artisans, labourers, lending institutions, environmental groups, project manager and local residents. Eskerod and Jepsen (2012) observe that of essence in project management is the ability of the project management team to identify and manage stakeholder roles and their contributions to overall project implementation and attainment of the intended benefits. Stakeholders contributions in their view are varied

and include finances, provision of materials and equipment, technical expertise, monitoring and evaluation, supervision, conflict resolution and capacity building. Romano (2017) supports their assertions adding that capacity building water committees is central to successful water development. This is similar to the Kenyan case where CDF committees capacity build water project management committees (PMCs) to effectively undertake water project implementation.

Rutto, et al (2011) point out that stakeholders contribution to successful project completion remain the desire of every project management committee. In a study of the contribution of integration services to the success of CDF projects in Eldoret North constituency, a number of stakeholders were identified to include the community, the government, contractors, beneficiaries and suppliers. According to the study, the identified stakeholders played different roles to ensure project success. The stakeholders took part in joint project appraisals, risk analysis, provision of environmental services and provision of technical specification services, all of which were listed as project integration services which enhanced project success.

2.2.2 Levels of Public Empowerment and Participation

Each development project, organization and authority has its own way to conduct participatory approaches. The level of participation often depends on the type, duration, aim, size, and influence of the proposed project. Becker, et al (2002) identified five levels for empowering people to become involved in the development project: first, information sharing, second, information gathering, third, work responsibility, fourth, interacting and fifth, self-developing. This study focuses on the five levels of participation in development.

Information sharing, which is the lowest level of empowerment is relevant to projects which are best conducted by using expert knowledge. In this case the target group serves only as a receiver of information. The information can reach the target group in written or verbal form. One example of this kind of participation could, for instance, be a quick evacuation project in the case of a dam collapse. Information gathering, which is the second level of empowerment involving information gathering by interviews and questionnaires and is equitable at some stages of participatory projects. This kind of participation can be organized before or after project implementation. During the process the local people are restricted to the role of information sources, whereas planners and experts are making the final decisions (Becker, et al, 2002). The current study looked at the various roles of stakeholders in decision making processes.

Work responsibility, being the third level of participation is more powerful. At this level the local people can participate in the work in reality, although participation remains at a very basic level (for example construction work). Interacting is the fourth participation level in which the local people are able to participate in some part of the project together with experts. An example of such a project type could be including both fishermen and experts from the Ministry of Fisheries in the discussion and decision-making on what should be done to increase the fish catch. Self-developing is the fifth level of participation and is achieved when local people themselves evaluate their own situation and decide what to do to improve it. Sometimes local people search neighbouring organizations to support them in implementation and financing. This implies the active involvement of the local people (Becker, et al, 2002). In the current study, the role of the ministry of water and irrigation and local groups implementing water projects was examined.

Under proper conditions the local people are capable of helping themselves. They can often successfully take proactive roles in development if they are given the right space and responsibility to act and take part in decision-making. Genuine participation supports the activity of the local groups. It aims to enhance self-development by giving poor people responsibilities (Baharoglu and Kessides, 2004).

Self-development is the strongest form of participation indicating that the communities or the actors take full responsibility for the development process, from the beginning to the end. However, in reality this is seldom the case. There are several conditions that need to be met before self-development can succeed. There are obstacles that hamper the process from both the inside and outside. Achieving self-development depends greatly on the communities, their operations as well as individuals. Communities are not homogenous entities, which can easily facilitate self-development. They differ in terms of culture, religion, gender, income levels and economic interests. The varying needs, priorities and interests within the community hamper the efforts to achieve successful development actions. Hence, the communities need assistance in building togetherness and communication.

While acknowledging the contribution of stakeholders to project success, the foregoing contributions from various authors, however have not related the various levels of participation to specific water project outcomes, which is the focus of this study.

2.3 History and growth of the Water Sector in Kenya

The history of the water and sanitation sector in Kenya according to the Ministry of Water and Irrigation (2005) dates back to the pre-colonial period, the East African Protectorate era where water affairs were managed by the public works department.

In 1952 the Water Act Cap 372 was enacted, which remained the legal basis for the water sector development in Kenya until 2002 when the Water Act 2002 was enacted. Earlier, in the 1950s and early 60s, responsibility for the administration of water supply was split between three institutions namely: the ministry of works operating in urban centres with centralised water service provision; local authorities that were deemed capable of managing water supply and lastly, the water development department, which was responsible for developing new water supplies for urban and rural centres (GoK, 2002).

As Kenya gained independence in 1963, attempts at simplifying the administration of water supply resulted in the transferral of all organizations responsible for water to the Ministry of Agriculture in 1964. The distribution of responsibilities and authority was however unclear and led to bottlenecks and inefficiencies which led to the creation of a fully-fledged Ministry of Water Resources Management and Development in 1974. However, the newly established ministry was not allocated adequate resources thus experienced a lot of challenges implementing water projects aimed at providing water for all (GoK, 1999). The place of community participation was however not spelt out.

Kenya's Water Act 2002, introduced water reforms which incorporated other players including communities in water resources development. According to Hayanga (2007), the enactment of the Water Act in 2002 was the genesis of decentralization of water development in Kenya as it established institutions and enabled beneficiaries to actively engage in water development projects, a shift from the traditional top-down approach to water management. The culmination of this being the involvement of NGOs such as CARE-Kenya in water and sanitation projects in partnership with the government and communities. In 2016, there was yet another Act, Kenya Water Act

2016 which gives priority to use of abstracted water for domestic purposes over irrigation and other uses. The Act re-aligns water resources management with the Kenyan constitution 2010 which recognizes public participation as a requirement in the management of environmental resources, water inclusive. Water management is accordingly devolved to the county governments (GoK, 2016). The development of the water sector in Kenya has undergone a number of phases, all aimed at improving local peoples' access to safe drinking water. In the earlier phases however, community participation was lacking though later embraced but without specific forms of engagement. Table 2.1 provides a summary of key events in the development of the water sector in Kenya from pre-independence period to post-independent Kenya.

Table 2.1: Key dates in the reform of the sector in Kenya

Year	Event
1952	Water Act Cap 372
1957	Establishment of Mombasa Pipeline Board, first 'commercial' supplier
1988	Establishment of NWCPC
1990s	Corporatization and commercialization of municipal providers (Nyeri, Eldoret, and Kericho)
1995	First management contract, Malindi
1999	Water Policy
2002	Water Act 2002
2003/04	Establishment of WSIs
2005	Transfer plan published
2006	Launch of SWA and first Annual Sector Conference
2009	Sector Investment Plan
2010	The Constitution of Kenya 2010
2012	National Water Policy
2014	National Water Master Plan, 2030
2016	Water Act 2016

Source: Ministry of Water and Irrigation, 2005; GoK, 2012; GoK, 2014 and GoK, 2016.

A major step in water reforms in Kenya was the integrated water resources management and water efficiency plan (GoK, 2009) which takes into account and

places emphasis on stakeholders' participation in water planning and management, paying particular attention to securing the participation of women and the poor. It recognizes water decision making at the lowest levels, emphasizing that such decisions should reflect national objectives given the central role played by the water sector in the economic development of the nation. The place of communities in the entire planning and execution is however not stipulated.

National Water Policy of 2012 (NWP 2012) was developed in response to the mandate, vision and mission of the ministry responsible for water affairs in Kenya (GoK, 2012). This policy takes into account requirements of the new Constitution of Kenya 2010 (GoK, 2010); with regard to consideration of water as a public good, and the right to water by all; the Kenya Vision 2030; the Millennium Development Goals (MDGs) equally recognize the importance of water for all in socio-economic development of any society. This policy has paved the way for stakeholder participation in water resources development and has seen the entry and participation of several NGOs in water development, key among these being JICA, SIDA, FDA, GDA and NADC.

The most recent government document on water development, the National Water Master Plan, 2030, prepared by the ministry of Water and Irrigation envisages that by the year 2030, Kenya's population would be 68 million and therefore the need for more water both for consumption and production. The master plan aims at ensuring the population has access to water, improve agricultural production through irrigation, improve sanitation and generate more energy to meet the country's demand. Water resources development according to the master plan is informed by the current water demand of over 3 billion cubic metres which is projected to rise to 12.5 billion cubic

metres by the year 2030 to meet the water requirements of the population then (GoK, 2014). The master plan however, does not expressly provide for ways of public participation in the implementation of the plan.

From the above water sector developments, it is evident that the journey to realizing a society which manages her own water resources is long, tedious and therefore requires a population which perseveres and collaborates with all stakeholders to achieve its goal. The operationalization of the various legal provisions in the water Act of 2002, National Water Policy of 2012 and Water Act, 2016 remain key to empowering communities own and operate their water systems with minimal problems and enhance their economic wellbeing. Various institutions established under the Water Act of 2002 and 2016 are meant to facilitate the development of water resources both in urban and rural areas and enable citizens have access to wholesome water for domestic, agricultural and industrial purposes. These developments however, do not show the various levels in water development projects at which communities are expected to participate and their anticipated impacts.

2.3.1 Models of Community Participation in Water Management

Three points of view generally emerge in determining the best practice models for community participation in water projects which could be put in context for community driven development. One model links community participation with political emancipation of the poor, where participation means giving priority to education and skills to use personal and community resources to identify their needs and to seek solutions together. This view recognizes the fact that poor communities have the economic resources to improve their living conditions but lack the organizational and institutional frameworks to exploit these opportunities.

Subsequently, community components should stress the development of community problem-solving skills through a range of participatory techniques for inclusive planning and implementation (Mukui et al, 2002). Critics of this approach point out potential short-term losses in economic efficiency and program performance as a lot of time and resources get tied in learning processes. Kenya's Water Act, 2002 and the formation of water groups would address the institutional issues raised by this model. Levels of public participation in water resources development is not however addressed by this model.

A second view of participation stresses the role of external experts in defining relationships, using local information to make appropriate designs and making correct assumptions about what people want, and how they can work together as families and communities to meet their wants (Mukui et al, 2002). An important consideration is how their traditions, customs and beliefs affect their efforts to transform resources into goods and services. Here participation occurs principally in the implementation and operation of schemes/projects rather than in their identification and preparation. Experience has shown that this approach tends to postpone the responsibility for operation, management and maintenance by the communities till handing over. This model of participation may lead to lack of community ownership, and thus create dependency on external development agents.

A third approach to participation has been associated with the requirement that local people should contribute towards the resources necessary to implement the project or desired service and participate in implementation activities (Mukui et al, 2002). The philosophy behind this model is based on the assumption that people tend to attach higher value to things that they have paid for and are more inclined to care for them.

Community contributions to the cost of a project or service also reduce the cost to the partners addressing the community need. This approach has been popular among donors including NGOs. The concept of matching grants in projects finds an explanation in this model. A potential downside of this model is that people may value but not take an active role in implementation (Mukui et al, 2002).

Mukui et al (2002) note that in practice, community projects in the water sector may combine elements of the three models, namely, use of community participation as a tool of empowerment and emancipation, use of external experts, and require community contributions. For example, a water project as an entry point to an integrated project could provide for learning, improvement of social capital and general improvement of livelihoods. At the same time, the design and choice of technologies could have inputs from the communities based on traditional knowledge and community ability to manage and sustain the technologies. Finally, the community could have financial and in-kind inputs to the project, and design equitable and enforceable levies on beneficiaries. The three models apply to this study given that public participation by the local community occurs at different levels.

2.4 Emergence of public participation in development

Concern for public participation in development projects was highlighted in the World Bank's sectoral policy paper on rural development (The World Bank, 1996). The paper pointed out the importance of empowering local people to understand the entire process of development projects to enable them contribute positively towards their implementation and subsequently sustain such projects. In addition, failure of centralized development in many countries pointed to the fact that there was need to shift from this approach to development to a more people-based approach which took

into account the needs and aspirations of the local people. This resulted in the emergence of bottom-up approach to development in which the local people through their representatives or groups would take part in project initiation, implementation and subsequent evaluation (Cernea, 1985). This study, by focusing on water users' participation in water projects development, examines the application of the bottom-up approach to water resources development with the contribution of stakeholders.

In 1992 during the World Summit held in Rio De Janeiro, Brazil, delegates gathered discussed the concept of sustainable development in which communities were identified as the primary drivers in any development process because they benefit from the outcomes of development. The conference recognized the important roles played by community groups in the management of natural resources, water inclusive and recommended the need for inclusion of such groups in management processes (Keating, 1993). The second objective of this study looks at the roles of groups at different levels in water projects development.

Since the mid 1970's, a wide range of organizations started involving local people in their own development. According to the strongest advocates of participatory development, 'normal development' is characterized by biases – eurocentricism, positivism and top-downism – which are disempowering (Chambers, 1997). The third objective of this study analyzes the various challenges faced by groups in the implementation of water projects.

In socially sound development of water resources management, participation of people is the key element. In such an approach, the importance of individual, household and community participation is highlighted and places people at the centre of the development processes (ODA, 1999). The capacities, values and needs of

people are widely taken into account. With proper participation, the wide field of water resources can be understood and the possible management issues addressed (Singh, 2002). Water resources are bound with societies, economies and environment. Because of the multidimensional character of water, the resources and their management cannot be separated from the overall development of a region (Heinonen, 2009). This study explores the contribution of the water sector to other sectors of the economy in the study area, particularly the agriculture sector which is the main stay of the sub-county.

Communities are not alone with the development work. They have multiple partners such as NGOs, donors, agencies and government offices to which they need to clarify their needs, plans and cost estimations. The communities thus need assistance and information about communicating with different types of partners and dimensions of the project as well as technical and managerial support. There is also an increasing demand for space for poor people to be heard by the upper levels of decision-making and a need for education and information about the participation process itself (Cornwall, 2002). This study elaborates the roles played by various stakeholders in water resources development.

Emphasis from supply-driven water supply interventions to Demand Responsive Approach (DRA) is due to the fact that the preceding interventions failed to provide poor communities with sustainable water supplies. In addition, such approaches left out the beneficiary community from making important decisions about the water projects thereby leading to a lack of project ownership (Breslin, 2003). The inclusion of the local people in development projects arose when it became apparent that programmes which had excluded the local people yielded limited benefits. From the

1970's onwards, the need to empower project beneficiaries to express their needs gained momentum and had the support of mainstream organizations such as the World Bank (Hickey & Mohan, 2005). This has been the case in Kenya through the introduction of constituencies development funds, with an education component, the current study examines the contribution of CDF and other stakeholders in empowering local groups participating in water resources development in the study area.

Currently, many development organizations partner with local groups in implementing development projects as a way of empowering such groups to own their development processes for sustainability to be assured. Governments too channel development support to the public through organized groups as they are seen as acting as a link between the community and the government (Kane & Salmen, 2006). Further, Tadesse et al (2013) add that full community participation promotes a proactive process in which the beneficiaries influence the development and management of development projects rather than merely receiving a share of project benefits.

In Kenya, right from pre-colonial times, public participation in development projects was seen in communities as they participated in the provision of labour for joint community projects such as construction of houses, land preparation, crop harvesting amongst other community tasks. In independent Kenya, the adoption of Harambee philosophy was emphasized to promote popular participation. The idea was to have government support community initiated development projects to enhance ownership and sustainability (Government of Kenya, 1965). The spirit of self-help, popularly referred to as Harambee was commonly used to initiate community projects, with

external actors mainly government and non-governmental organizations making substantial financial and technical contributions. Mumma (2005), points out that many water projects were successfully implemented through the self-help model, with beneficiaries contributing upto 15% of the total project cost in terms of labour and cash while other stakeholders provided the balance.

In Kenya, just like in other developing countries including Cameroon, Ghana, Nigeria and Tanzania, before community management of water resources was applied as a major development strategy in the 1980s, water supply facilities were planned and operated by the central government or its agencies on behalf of the people (Page, 2003). However, budget constraints, low revenues, and weak operation and maintenance led to the degradation of facilities whilst demand for water has increased (Engel et al., 2005; Karikari, 1996). Non-governmental organizations advocated for community management of water facilities especially in the rural areas due to the withdrawal of government from providing and managing these facilities (WaterAid, 2008).

In Eastern Kenya for example, many soil and water conservation activities were undertaken by communities through their organized groups. In the former Kitui district, a water and agriculture project was implemented by the local people, the government of Kenya and the Danish government in 1982 to improve the living standards of the people of Kitui. The programme relied on the local people for the provision of labour and trained them on project implementation (Shanyisa, 1992).

In construction type of community projects in Kenya, mutual self-help plays a big role. It reduces building costs for individual households, as construction material can be bought in bulk and skills can be pooled (Rakodi 1983: UNCHS 1986:47-53). An

outstanding example of community participation in Kenya is the Dandora housing project in Nairobi which the Nairobi City Council supported by encouraging people to form building groups. The process of group formation began in December 1975 when the first 1000 plots were handed over. In this project, plot charges ended up being higher than originally estimated at the design stage and, in addition, people had to pay for water and temporary shelter or rent elsewhere. The minimum housing expenditures were therefore well over half the minimum wage, without including construction costs and living expenses.

In spite of this, a study of investment in building in Phase I (up to 1983) showed that, on average, residents had mobilized six times more construction finance than the official loan provided, 48 per cent coming from loans (mostly from relatives) and 7 per cent from gifts. Most people supervised the construction on their own sites on an individual basis, using some hired and some self-help labour (62 per cent) or hired a skilled craftsman to supervise the construction for them (21 per cent). The remaining 17 per cent worked in the building groups, which used more self-help labour, especially for the unskilled tasks. These were people with no additional source of finance. The fact that they were able to build may be attributed to the building group support services provided by housing development department's Community Development Division (UNCHS 1985). This study examines the contributions of various players at different levels and their impacts on the implementation of water projects.

Kenya has tried several efforts to include development groups in development processes. The District Focus for Rural development Strategy introduced in 1983 is one such effort in which the development needs of the communities were to be

identified by the people themselves and development projects initiated. The role of the government would be to provide some financial and technical support (Government of Kenya, 1983). The current study explores the nature of financial and technical services provided by the government and their impact on water projects development in the study area.

In promoting public participation in development, the Kenya government in 1998 introduced the Local Authority Transfer Fund. The fund was aimed at mobilizing communities at ward level to participate in development activities. To participate in development work, communities were expected to identify projects at the ward level through the Local Authority Service Delivery Action Plan (LASDAP) process. Communities participated through provision of information on the kind of projects they wished to undertake and also took part in the prioritization of such projects. Once projects were funded, project management committees were constituted to manage the project. These committees had community representation. The Local Authority Transfer Fund strategy of development had varying success stories in various wards in Kenya (Republic of Kenya, 1998). The current study analyzes the roles of the various committees (both in CDF and groups) in enhancing water project implementation.

In the year 2003, the Kenya government introduced the Constituencies Development Fund to finance her development projects across sectors. The objective of the fund is to provide development funds to projects implemented at the local levels to improve the living standards of the people. The CDF Act stipulates that the fund shall be used to finance community-based projects which include water projects. Projects funded using CDF are initiated, implemented and managed by the local people through organized groups registered by relevant government ministries (Republic of Kenya,

2013). Many community development projects have been successfully implemented using CDF monies in many constituencies in Kenya. The Kenya government is still financing community projects using the CDF money.

The introduction of CDF in Kenya positively affected the water sector particularly in the study area, eliciting demand driven initiatives from the public. There emerged several community groups which applied for the CDF funds to start off water projects. As observed by Breslin (2003), demand responsive approach (DRA) to development has turned out to be the basis of governmental and NGOs water supply guiding principles all over the world. The shift of emphasis from supply-driven water supply interventions to Demand Responsive Approach (DRA) is due to the fact that the preceding interventions failed to provide communities with sustainable water supplies. In the case of supply-driven interventions, it was found out that beneficiary communities merely take water supply service delivery but failed to play an active role during project implementation and lack a sense of project ownership. Figure 2.2 illustrates a demand responsive approach.

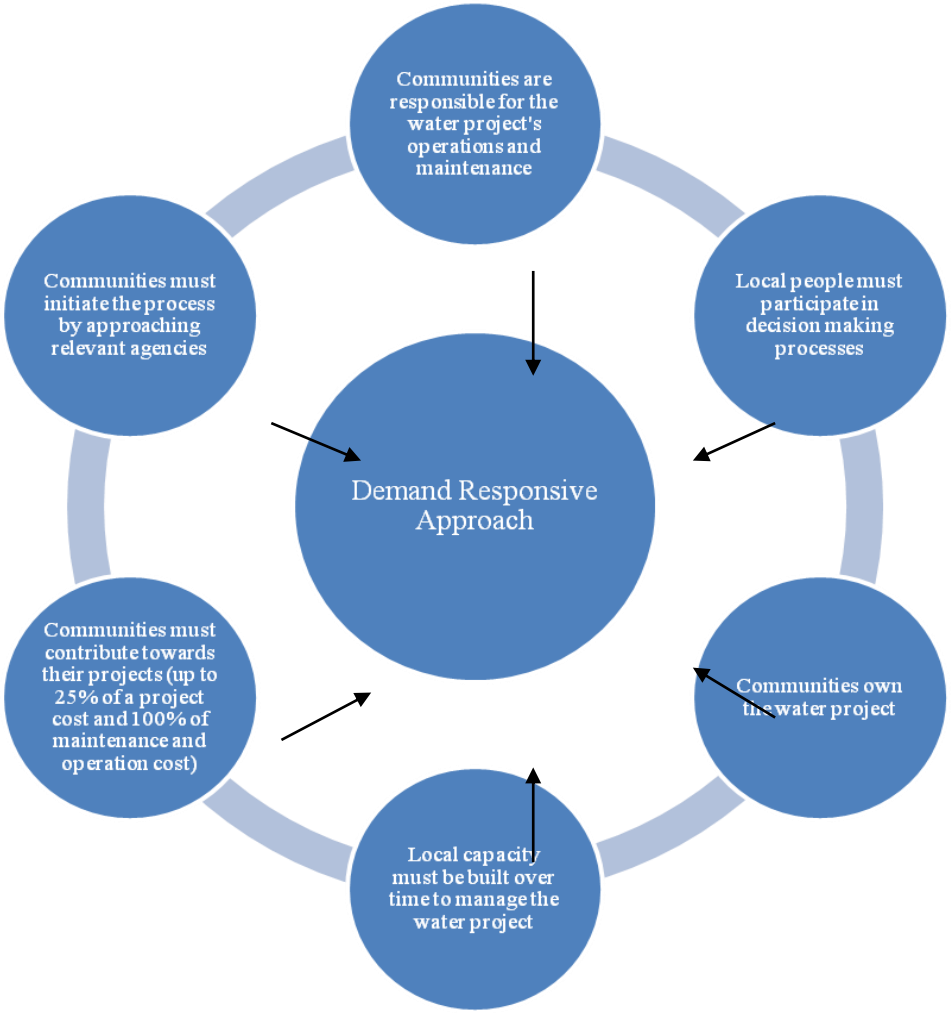


Figure 2.2: Demand Responsive Approach
Source: Breslin, (2003)

In the Kenyan setting, Figure 2.2. demonstrates a shift from the top-down approach to water development to the bottom up approach in which communities through organized groups identify their own water needs and take steps to engage relevant government agencies such as CDF and the ministry of water and irrigation to initiate water projects. In the process, other stakeholders join in contributing in various ways among them capacity building to enhance project success. On the other hand, communities make contributions in cash, materials and labour as an indicator of commitment, project ownership and for sustainability reasons.

2.5 Forms and Levels of Public Participation in Development Projects

Participation of communities in project implementation is not new. Kane & Salmen (2006) point out that beneficiaries and affected populations can participate in development in many ways for example by providing information through needs assessment, identification of options, collaboration in design, mobilization and implementation of activities, monitoring and evaluation of projects and general enhancement of their own power to direct their futures.

The concept of participation in rural development has been evolutionary for the past two decades. The contribution of the community to development projects, in the form of unpaid labour was then widely accepted as an important constituent and in most cases the only form of community participation. This widespread acceptance meant that as long as developers could convince a local community to volunteer labour, full participation as well as 'acceptance' of the project was guaranteed. Supporting evidence, documented by Kleeimer (2002), notes one donor in Tanzania even paying villagers to provide unskilled labour. Development agencies and governments alike, involved, particularly in rural water supply, have had to re-evaluate their active role. From this, emerged a new perspective that allowed the shifting of responsibility of financing and constructing water projects from governments and development agencies to the local level, i.e. the local community (Garande and Dagg, 2005).

In many development projects, local communities are incorporated at different stages of the project. Most often the local communities are incorporated at the information-gathering, consultation, decision-making, initiation of action or evaluation stages. In information gathering, project designers or managers both collect information from and share information with intended beneficiaries on the overall project concept and

goals. At the consultation stage, intended beneficiaries are consulted on key issues during the project. Beneficiaries have an opportunity to interact and provide feedback during project design, implementation or both (Cernea, 1985).

Lane (2005), asserts that public participation should be incorporated into planning processes for it to be a central feature of decision making and implementation which then gives a voice to the public. This would subsequently increase their control over the project's outcome. Decision making remains an important stage in project implementation. Beneficiaries participate in decision making for project design or implementation, implying a greater degree of control and responsibility than the passive acceptance of possibly unwanted benefits. The next level of public participation in development is the stage of initiation of action. When beneficiary groups identify a new need in a project and decide to respond to it, they are taking the initiative for their own development.

The last stage of public participation in development projects is evaluation. In this stage, participatory evaluation by beneficiaries can provide valuable insights and lessons for project design and implementation- information that otherwise is likely to remain unknown. Equally important as pointed out by Rahmi et al (2017) is capacity building of communities to facilitate water project sustainability after such projects are completed.

In Kenya, public participation in development projects was very pronounced under the district focus for rural development strategy in 1983. The strategy required that the local people who were the intended project beneficiaries should participate in project identification. Examples of projects implemented under this strategy included village water systems, rural access roads, rural health projects, cattle dips amongst others.

Community members were expected to contribute in the initial conceptualization of the project idea at the village, sub-location or location levels. After a project was identified at those levels, it would be forwarded to the divisional development committee. The project idea at this stage would then be written down into a project proposal and forwarded to the district development committee for consideration for funding (GoK, 1983).

The screening, prioritization and preliminary costing of the proposals were however done by the Executive Committee of the District Development Committee, particularly the District Planning Unit. The planning and co-ordination of projects was the responsibility of government ministries, however, they encouraged the participation of the public through self-help groups and provided them with technical and moral support where necessary (GoK, 1983).

2.6 Public Participation and Development Projects

The involvement of the public in development projects has in most cases been vital in ensuring project completion. The local people through their institutions are able to identify their unique problems. Lisk (1988) points out that successful water projects have in most cases incorporated local groups from the initial stages of the projects e.g. idea generation, but where the government played a leading role in the provision of finances and technical input which are lacking at the lower levels.

Bendavid-Val (1990) argues that worldwide, efficient economic development involves recognizing the appropriate roles played by the private and public sectors. The involvement of the public through local groups in most cases has been recognized to impact positively on project success especially where such groups identified the projects.

The incorporation of the public in the implementation of development projects has in some cases led to project sustainability while in some other cases resulted in conflicts amongst participating institutions (UNCHS, 1994). Overall, the most important aspect of involving the beneficiaries through organized groups in development processes is solving a community problem.

The way local groups participate in development projects has an effect on the success or failure of such projects. According to IFAD (2002), the participation of local groups in learning how to improve a project throughout its existence is fundamental in ensuring successful project implementation. In many development interventions, people lose motivation if they are either not invited to participate or the conditions are not created for their meaningful participation.

In India, the top – down approach in water sector development initially adopted had significant limitations often leading to project failures. The realization by the Indian government that exclusion of the water users in project activities largely contributed to such failures led to reforms in the water sector which placed the users at the center of the projects. The aim being to move away from the so called ‘dependency culture’ and ‘engineering based solutions’ and enable communities own and sustain the projects with minimal external reliance (Tripathi and Bharat, 2001).

Later after the reforms in India, community-based water schemes are implemented by the user community with assistance from external funding agencies and the central government. The community is required to contribute ten per cent of the project’s capital cost, which may take the form of cash or labour. However, operation and maintenance costs are entirely met by the water user group through collection of water tariffs from consumers (Nisha, 2006).

In Sri Lanka, water resources management encompasses the careful monitoring of water uses and largely includes the education and participation of farmers in water management. Community facilities e.g. schools, hospitals, co-operatives, market places are provided with water to match their needs. It is recognized that for effective water management, a suitable institutional framework must be established with a strong community representation (UNEP, 1982).

In Malawi, community participation in water development led to the successful implementation of Malawi Rural Piped Water program in 1968 which had strong community involvement at all levels of the project. The responsibilities of the community and the government were well defined. Communities elected water committee members and came up with water use rules while the government committed initial funding and also provided technical expertise (The World Bank, 1989).

Community participation in decision making and implementation brings a number of rewards. It is a more democratic approach than imposition of projects from outside and also provides good opportunities for the growth of skills and competence at the grassroots level – increasingly recognized as the most central goal of development. It has been noted that a community is more likely to co-operate in the implementation, operation and maintenance of new systems if it has had a say in the preparation of plans. In many countries such as Sudan, South Africa and Sri Lanka, government agencies offer assistance to communities by helping them form committees to address water issues (World Bank, 2006).

In Afar, Ethiopia customary institutions are partly responsible for natural resource management. Indigenous pastoral law determines access to and control of natural

resources where decisions on access to and control of natural resources are made by the village council, which consists of the clan leader, clan elders, local wise men and a traditional rule-enforcing unit (Hundie, 2006).

In developing countries, the inclusion of water user groups such as farmers, village officials has to be factored in to ensure proper use of water resources. This is usually effected through village committees, farmers' organizations and other organized groups in communities. The groups are usually built around traditional groupings in order to avoid social and political conflicts (UNEP, 1982).

Marijani (2017), in a study of community participation in water development in Kinondoni and Ulanga in Tanzania found out that groups participated at different levels with varying results. Low levels of awareness of water policy was found to negatively affect community participation in cost-sharing on water development projects in Ulanga. Romano (2017) adds that from experiences in Nicaragua, democratic participation and inclusivity of all should be embraced for positive outcomes to be realized in the water sector. In addition, capacity building of water committees improves their abilities to make informed decisions in water development.

From the foregoing discussions, it is evident that there are several impacts of public participation on the outcome of water development projects. The impacts range from project initiation, decision making, implementation, success, maintenance, sustainability and even failure. However, the studies did not relate public participation at different levels to the outcome of the projects. The present study therefore sought to relate public participation levels and their impacts on the outcome of water development projects in Keiyo North sub-county.

2.7 Challenges of Public Participation in Development Projects

Successful project implementation calls for the meaningful participation of citizens and their representative organizations. However, this is not always realized since such participation is often piecemeal and come late in the policy process (Hickey & Mohan, 2005).

In most countries of the Asia and Pacific region, state or state sponsored institutions are responsible for harnessing of water resources. The beneficiaries are not usually alive to their responsibilities as water users and as a result, expensive water resource development projects have failed to achieve their objects. This is a major challenge in water resource development projects, given that legislation alone is not sufficient to ensure effective and optimum utilization of water resources; public enlightenment and active joint participation have been found to be essential to the success of such water development projects (UNEP, 1982).

Studies done by UNCHS (1994) in Bolivia indicated that the major challenge facing any agency in rural development processes was on how to deal with the wide variety of community groups and their needs from the onset. The actual challenges were the enormous distances and poor communication especially during the rainy season which made it difficult for the team to make continuous presence in the community. The second challenge was on how to meet the communities varied demands and training needs.

In many developing countries, it is recognized that most of the water resources challenges can be traced to organizational, administrative, political, managerial or financial rather than technical factors. Effective co-ordination however has to be established for the proper management of water resources (UNEP, 1982). In a study

of Odzi catchment area of Zimbabwe, Kujinga (2002) observed that decentralized water management had its own challenges ranging from stakeholder varied interests to inadequate financial resources alongside political interference.

Further, in Zimbabwe, Tambudzai et al (2013) in a study on decentralization of water management pointed out that water user participation in water resources development would be hampered by a wide range of reasons. They identified inadequacy of technical personnel, poor infrastructure, compromised user participation and unclear communication lines between institutions.

In many African countries, a number of challenges stand in the way for effective stakeholders' participation in water development projects. Common among these being; inadequate and untimely financing, poor infrastructure, poor governance, low education level and low capacity amongst the participating stakeholders (UNESCO, 2015).

According to Hickey & Mohan (2005) some development agencies use the rhetoric of participation with limited empowerment yet they do not actually involve the beneficiaries or their groups to ensure meaningful participation in project implementation. In certain circumstances, they hand-pick community representatives or bring them when it is too late to change anything.

The economic and cultural conditions of the beneficiaries may also become a challenge to participation. Brett (2003), warns that simply participating is meaningless unless there is an institutionalized accountability. He argues that we should focus on the nature of the institutional constraints that determine how much leverage users can exercise over agencies, whether these operate in the state, market or voluntary sector.

The Technical Center for Agricultural & Rural Co-operation (TCARD) (1996), indicated that a major challenge in rural development is lack of transparency and other vested self-interests on the part of government officials which hinders full-scale people's participation. The beneficiaries of projects and programmes should be involved in the decision making process in the project process.

Jan, et al (2017), point out that collaborative decision making requires elaborate education of water beneficiaries to enable them effectively participate in decision making process. In a study of water users participation in water development in South Africa, they found out that failure by agencies such as government ministries to sensitize the public about their roles as outlined in relevant laws led to their low participation in decision making processes.

Constraints in policy setting and policy implementation have always been common in rural development programmes i.e. the acceptance of rural development as a valid concept for the economic and social development of rural communities. Policy makers, who happen to be also politicians, tend to readily forsake long-term objectives to short-term benefits (TCARD, 1996).

According to Bendavid-Val (1990), the insufficient practice of the so-called demand-driven approach deprives policy makers of vital information required from rural development programme beneficiaries to ensure that the set of policy measures decided upon are consistent with the rural communities developmental goals. Existing authority structures in many societies inhibit widespread participation in decision making. National governments in some cases may limit the extent of local empowerment, particularly where they perceive a threat to their own authority (Benavid-Val, 1990).

Whereas the objective of development projects at the local levels are designed to uplift the standards of living of local populations, many development projects are faced with the challenge of bureaucratic state institutions which are notoriously ineffective in delivering public services to facilitate faster project completion. Similarly, many so-called development failures are not failures at all because they were never intended to succeed in the first place. In many developing countries, governments enact legislation with fine sounding goals, such as encouraging sustainable resource management. However, these legislations are rarely put into practice (Lisk, 1988).

Tripathi and Bharat (2001), point out that many challenges stand in the way of effective community participation in water sector development, among them being financial difficulties, institutional problems, inadequate human resources, lack of sector coordination, insufficient community involvement and insufficient information and communication. These could however be addressed through capacity development of the user community.

In the Democratic Republic of Congo (DRC) and Djibouti, the IMF (2015) found out that institutional weaknesses, poor regulatory environment coupled with high infrastructural costs hampered water sector development thereby not attracting stakeholders to actively engage in water resources development.

Like in many developing countries, effective participation in water resources development in Kenya is hampered by challenges ranging from internal conflicts, management, and accountability to stakeholder engagement. Many of these challenges though mainly internal, negatively impact on participation leading to undesirable outcomes (Lucie et al, 2016).

2.8 Theoretical Framework

The study employed the Group theory developed by Kurt Lewin (1961) to explain the different circumstances which work for and against the implementation of water development projects in the study area. In this theory, a developer works directly with groups in the community or with the entire community; such a developer does not work with individuals. This group theory is also known as the Quasi-Stationary Equilibrium theory. Kurt Lewin (1961) argues that in any situation, there are forces working for and against a certain action. Further, Lewin (1961), points out that such forces in a community influence peoples' behaviour and that when the positive and negative forces balance, a state of equilibrium is attained. In this state of equilibrium, a developer strengthens the positive forces and weakens the negative forces for development to be realized. For Lewin, the most important aspect in development processes is for the developer to realize the positive and the negative forces and being able to handle such forces for meaningful development to be attained.

In community development, negative forces may include; resistance to change, local leaders who may be anti-development and unwillingness by the people to contribute resources for water development projects. On the other hand, positive forces may include widespread education amongst the local groups on the importance of water for development, availability of competent change agents and good communication between the groups and the Ministry of Water and Irrigation.

Lewin (1961), continued to argue that change takes place in three steps, firstly, Unfreezing – which entails an exposure of community members to a situation and making efforts to identify and understand the various positive and negative forces therein. Secondly, Moving – This refers to altering the forces that have been identified

in a given situation to a desired direction. After studying the community, the change agent tries to change the direction of the people. This involves either adding or strengthening positive forces or weakening or eliminating negative forces or doing both. It entails creating a new disequilibrium. Thirdly, Freezing – this has to do with stabilizing the situation at the new level of equilibrium. In using this theory to explain the participation of groups in water development in the study area, both the positive and negative forces were identified, documented and analyzed in terms of their contribution to the levels of development of water projects by different groups. The theory was also used in assessing the role of change agents in facilitating water development in the study area.

2.9 Conceptual Framework

The study utilized the 'Ladder of Citizen Participation Model' developed by Arnstein (1969) to illustrate citizens' participation in development projects. The Model provides an analysis of the different levels of participation, some of which are considered better than others in terms of impact on project success. The steps are presented in an ascending order where participation at the lower levels/steps is considered less participatory and participation at the higher levels/steps is considered more participatory. The impact of participation differs with the level/step of participation. The model holds that, when beneficiaries participate at higher levels, project success is deemed to be high whereas when beneficiaries participate at lower levels, project success is low. Figure 2.3 illustrates this information.

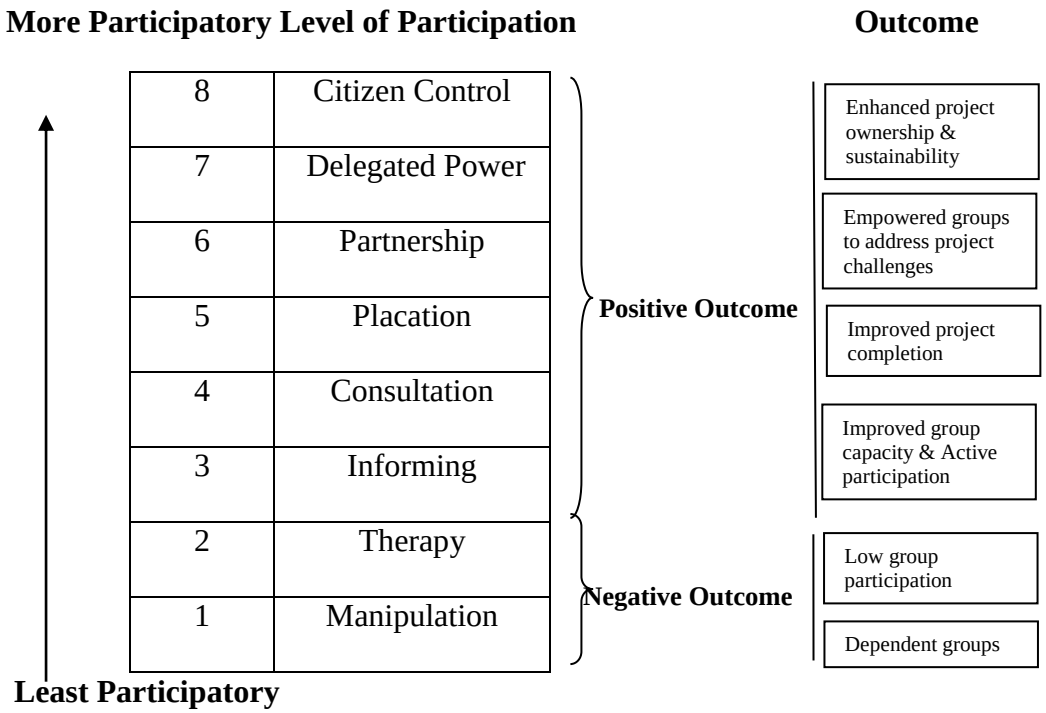


Figure 2.3: The 'Ladder of Citizen Participation Model'
Source: Modified from Arnstein (1969)

From Figure 2.3, the first and second steps (Manipulation and Therapy) are non-participative. The two steps have the aim of curing or educating the participants. An assumption is made that the proposed project is best and the objective of participation is to achieve community support through public relations.

The third step (Informing) is an important step to legitimate participation. Quite frequently, the emphasis is on a one way flow of information. There are no channels for feedback. The fourth step (Consultation) is another legitimate step of participation involving attitude surveys, neighbourhood meetings and public enquiries. The fifth step (Placation) involves co-option of individuals into committees. It allows citizens to advice or plan with no limit on the amount of money and time to contribute but retains for power holders the right to judge the legitimacy or feasibility of the advice. Arnstein (1969) refers to the three steps above (informing, consultation & placation) as 'degrees of tokenism'.

The sixth step (Partnership), involves redistribution of power through negotiation between citizens and power holders. Planning and decision making responsibilities are shared e.g. through joint committees. Step seven entails delegated power. Citizens in this step hold a clear majority of seats on committees with delegated powers to make decisions. The public has the power to assure accountability of the project to them. Step eight relates to citizen control. The have-nots handle the entire job of planning, policy making and managing a project e.g. a neighbourhood project with no intermediaries between it and the source of funds. The last three steps i.e. partnership, delegated power and citizen control are referred to as 'degrees of citizen power'.

From the above model, it is argued that progression from step one to step eight by citizens in development projects signifies increased levels of citizens' participation in development. The first two steps of participation have been referred to as non-participation since communication flow is one-way i.e. from an agency to citizens. Steps three, four and five mean an improved form of citizen participation since some form of consultation takes place. The last three steps i.e. steps six, seven and eight mean better involvement of citizens through partnership and citizen power to control and manage development projects with little external control and this is considered the most desirable form of participation.

The study utilized this model to provide an understanding of how groups undertaking water development projects in Keiyo North sub-county participate in water development projects. In carrying out the assessment of citizens' participation, information was sought from key institutions in the water sector namely; Ministry of Water and Irrigation, Ministry of Agriculture, Ministry of Environment and Natural resources and the Water Resources Management Authority.

From the various aspects of the model, ranging from information sharing to empowerment, it was useful to the study in analyzing how the various levels of public participation as presented by the model impacted on the outcome of the water development projects.

2.10 Chapter Summary

The second chapter of the study has reviewed literature related to the study. Past studies relevant to the topic of study have been reviewed with a view to relating the study to what other researchers have done to highlight knowledge gaps in characterisation of groups, impacts of their participation on the outcomes of rural water development projects and impact of challenges encountered by groups on water development projects. Literature reviewed started from the concept of participation and public participation from a global to local perspectives from different studies and authors. The process of participation including its core values and purpose were reviewed. In addition, literature reviewed included developments in the water sector in Kenya from pre-independence to date and a demonstration of the various milestones made including highlighting the role of participation in water resource development. Arnstein's (1969) ladder of participation and Kurt Lewin group theory were used to guide the study. From literature reviewed, many of the studies for example, (Mwakila, 2008; Thwala, 2010; Kane & Salmen, 2006 and TCARD, 1996) did not relate public participation levels to the outcome of water resource development projects and this then became the knowledge gap which the study intended to fill.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides information on the study area, research design, sampling procedures, research instruments, data collection methods, data analysis and presentation.

3.2 The Study Area

The research was conducted in Keiyo North sub-county in Elgeyo Marakwet County. The sub-county borders Baringo West sub-county to the East, Eldoret East sub-county to the West, Marakwet East sub-county to the North and Keiyo South sub-county to the South. The sub-county has a total area of 641.3 Km^2. Administratively; the sub-county has two divisions namely; Kamariny and Tambach. There are nine locations and 34 sub locations in the sub-county (GoK, 2009). Table 3.1 provides information on administrative units of Keiyo North sub-county; while Figure 3.1 shows the map of the study area.

Table 3.1: Administrative Information of Keiyo North sub-county

Division	No. of Locations	No. of Sub-Locations	Area (Km^2)
Kamariny	5	19	210.5
Tambach	4	15	330.8

Source: Keiyo North sub-county Statistics Office, Iten, 2013

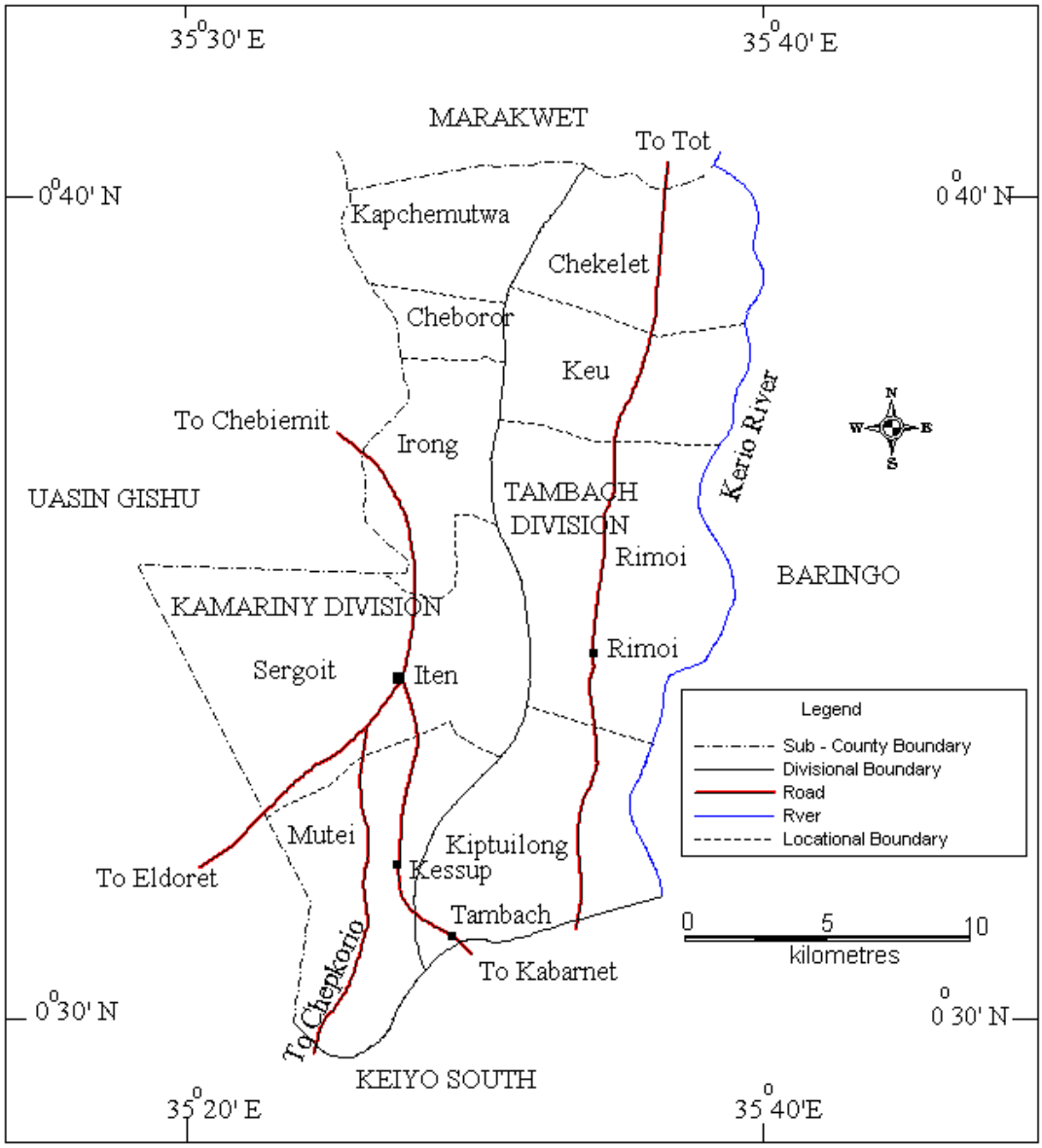


Figure 3.1: Map of Keiyo North Sub – County

Source: Geography Department GIS Lab Moi University

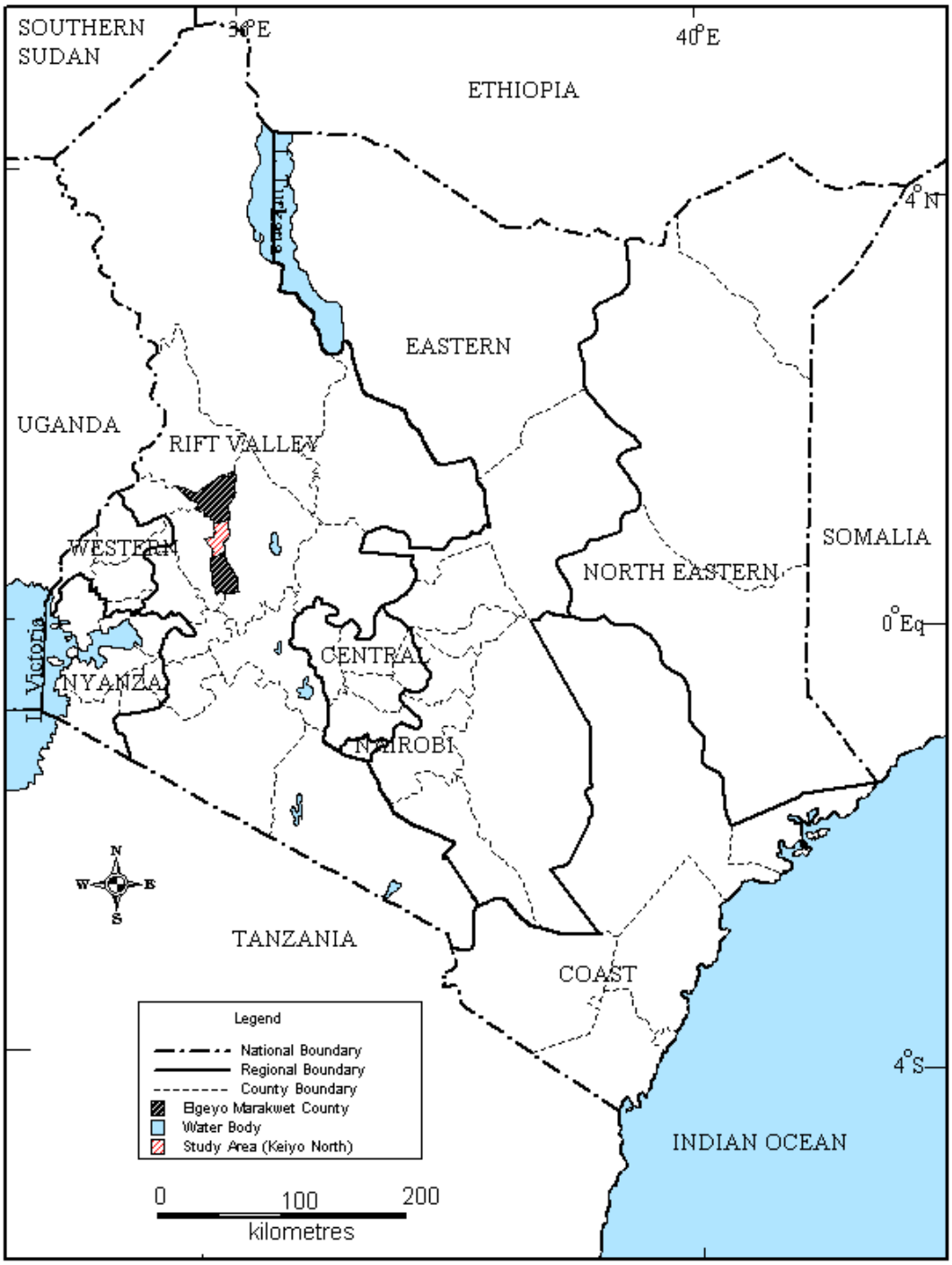


Figure 3.2: Map of Kenya showing the location of study area.

Source: Geography Department GIS Lab Moi University

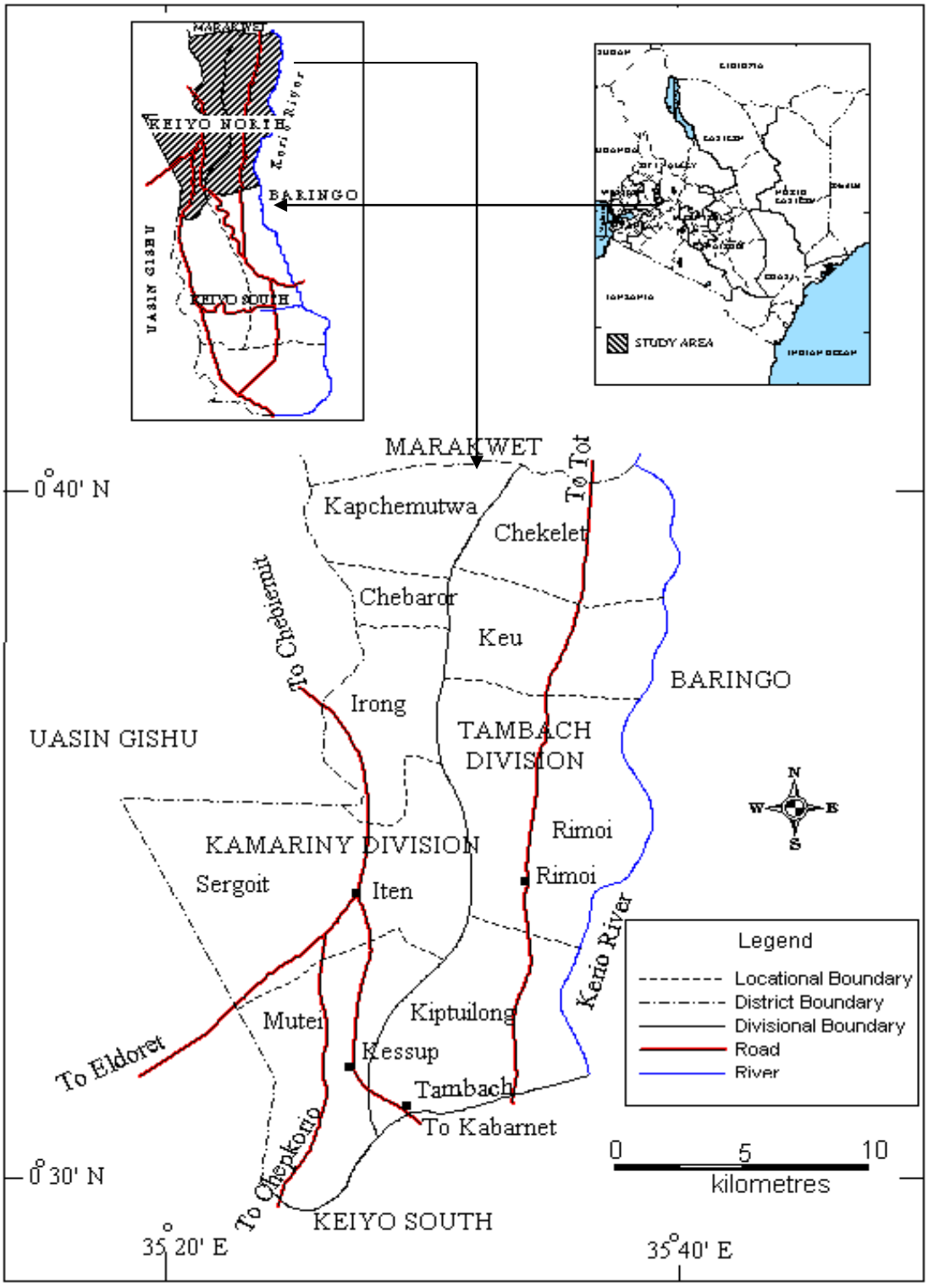


Figure 3.3: Map of Keiyo North sub-county and the location of the study area in Kenya.

Source: Sub-county development office, Keiyo North Sub-county, 2014

3.2.1 Physiographic and Natural Conditions

Keiyo North sub-county is divided into three main topographical zones which run parallel to each other in a North- South direction. These are the highland plateau, the Elgeyo escarpment and the Kerio Valley. The sub-county lies between the large farms of Eldoret East sub-county to the West and the Kerio Valley to the East. Kerio valley is situated 1000m above sea level while the escarpment rises from 1000m to 2200m above sea level. The highland plateau has an average altitude of 2400m above sea level. Temperatures range between 30^{o} in the Kerio Valley and 15.1^{o} in the highlands.

Areas of higher altitude are characterized by higher rainfall and have a great potential for agricultural and livestock production. In the Kerio valley, low rainfall and high temperatures prevail while the highlands have high rainfall which ranges between 1200mm to 1700mm per year and moderate temperatures. Rainfall in the escarpment ranges between 1000mm to 1400mm per year while the Kerio Valley receives between 700mm to 1000mm of rainfall per year. Rainfall pattern in the Kerio Valley is however so erratic and figures as low as 220mm per year have been recorded, reminiscent of semi-arid climate (GoK, 2009).

Given the erratic rainfall especially in the escarpment and the valley, the government, non-governmental organizations and faith-based organizations over the years initiated water projects to address the water problem. According to the Keiyo North sub-county water officer, the government through the ministry of water and irrigation finances two types of water projects, viz; government and community. In the study area, the national government funded only one project project in the valley, which is Chepsigot water project and one water project in the escarpment which is Tambach water project. A majority of government funded projects are found in the highland

and include Kapkoi, Iten, Kamariny, Chelingwa, Kipsoen and Kapteren; yet water is required most in the Kerio Valley and the escarpment. According to the Keiyo North sub-county water officer, the Rift Valley Water Service Board constructed three water pans in the valley, namely, Kapkoros, Tulwobkel and Chesiron in Keu location. On the other hand, Kerio Valley Development Authority constructed four dams in the highland namely Singore, Kamogio, Kapkessum and Etio in Kamoi location. In addition, KVDA desilted three dams namely Koisot and Chelilei in Irong location and Mokoino in Mutei location. These projects were implemented over a period of ten years between 2005 and 2014.

On-governmental organizations such as JICA, SARDEP, ASAL, SIDA over the years initiated water projects such as water tanks, spring protection, construction of communal water points and water distribution in the valley and the escarpment where there was need. Public participation in these projects was however induced and any form of contribution by the beneficiaries towards implementation was minimal. Many of these projects took long to be completed while others were never maintained upon completion and therefore did not continuously yield the desired benefits to the consumers.

The two scenarios presented by the government and non-governmental organizations was not satisfactory to bring about any meaningful developments in the water sector as the public was not fully involved in the process of project implementation. The introduction of CDF and the requirement that the public participates in the entire process of the project therefore necessitated this study to establish the various levels of public participation and their effect on the outcome of rural water projects.

3.2.2 Population Profile

The sub-county has a total population of 76,810 persons. Kamariny division has a population of 51,398 persons while Tambach division has a population of 25,412 persons. The annual population growth rate stands at 2.8% per annum. However, population within the sub-county is unevenly distributed; the highest population concentration being in Kamariny division which has a density of 244 persons per square kilometer whereas Tambach division has a density of 77 persons per square kilometer. The high population concentration in Kamariny division can be explained by the high agricultural and commercial potential of the division given its location i.e the highlands and also being host to the Elgeyo Marakwet county headquarters, Iten (GoK,2009).

3.2.3 Socio-Economic Activities

The major socio-economic activities in the sub-county pursued by the population are in the agricultural and livestock sub-sectors. There are no large farms in the sub-county which limits farmers to small-scale production. Crop farming is practiced mainly by farmers in the highlands where crops grown include; maize, wheat, beans and vegetables. In the escarpment and the Kerio Valley, vegetables and drought resistant crops are grown due to low rainfall. Dairy farming is practiced by farmers in the highlands while those in the escarpment and the Kerio Valley rear animals for meat. Other economic activities in the sub-county include bee keeping, tourism and business (GoK, 2009).

3.3 Research Design

This study used a survey research design as it allowed for the collection of adequate data on the impact of water users participation on the outcomes of rural water development projects in the study area using a variety of methods. Firstly, the study

used a questionnaire to capture information on general group characteristics and their participation in water development projects in the sub-county. Secondly, key informants from relevant institutions who were deemed knowledgeable in the topic under study were identified and interviewed to provide information on the performance of water development groups. Thirdly, one focused group discussion was held in each of the three agro-ecological zones where participants were invited to engage in-depth discussions on the impact of water users participation on rural water development projects in the study area. Fourthly, observation of the various types and stages of implementation of water projects in the study area was done for comparison with information from other sources, thereafter, photographs of the same was taken. Lastly, secondary data was obtained from published and unpublished work done by other researchers to build on the literature review. The survey method is cost effective, qualitative and matched with the data collection instruments namely interview schedules and Focused Group Discussion guide. This research design enabled the researcher to undertake an in-depth analysis of phenomenon under study. It provides for accurate descriptive analysis of characteristics of a sample which can then be used to make inferences about populations (Kerlinger, 1973). The disadvantage of this design is that information not known to respondents may be difficult to obtain. To address this problem, a number of data collection methods were employed which included questionnaires and observation.

3.4 Target Population

The population of the study comprised of all registered water groups in Kamariny and Tambach divisions of Keiyo North sub-county which undertook water projects and had benefited from funding from the Keiyo North Constituency development fund from 2004. A total of fourty six registered water development groups were targeted.

The groups were drawn from the three agro-ecological zones of the sub-county, namely the highland, the escarpment and the valley each with varying number of members. It was from this population that the sample for the study was drawn. The group constitutes the unit of analysis of the study.

3.5 Sampling Procedures

3.5.1 Sampling Frame

The sampling frame for this study was all the registered water development groups in Keiyo North sub-county. In order to determine the sample size, the researcher used the most recent list of all the registered groups in the sub-county which undertook water projects. The list was obtained from the Keiyo North Constituency Development Fund office in Iten town. The total number of all registered groups which undertook water projects from 2004 were fourty six. This is illustrated in Table 3.2.

Table 3.2: Number of groups in Keiyo North Sub-county per agro-ecological zone

Zone	Number of groups
Highland	12
Escarpment	20
Valley	14
Total	**46**

Source: Constituencies Development Fund Office, Keiyo North Constituency, (2009)

3.6 Sample Selection and Sample Size

Out of all the groups that undertook water projects in the sub-county, half of all registered groups from each location were selected using stratified sampling. From each of the selected groups in each location, three officials that is the chairman, secretary and treasurer were purposively selected for interview since they are familiar

with group activities and are custodians of all information regarding group functioning. Other than the group officials, ordinary members were also selected to give their views regarding implementation of the water projects. From each of the twenty three groups, an average of 11.75 per cent of the members were randomly selected to participate in the study, totaling up to seventy three members. In total, one hundred and fourty two respondents were selected. Table 3.3 provides more information on the number of groups selected while Table 3.4 gives information on the sample size selected for the study.

Table 3.3: Number of Water Groups per location in Tambach & Kamariny divisions

Tambach Division	**No. of Water Groups**	**No. of Groups selected**
Kamogich	8	4
Keu	6	3
Kokwao	10	5
Kiptuilong	10	5
Total	**34**	**17**
Kamariny Division		
Mutei	4	2
Irong	4	2
Kamoi	2	1
Chebaror	2	1
Total	**12**	**6**

Table 3.4: Sample size

Group Size	***No of groups***	***Total No of Members***	***No of members selected per group***	***Total members selected***	***Percent selected***
11-20	5	96	2	10	13
21-30	10	247	3	30	12
31-40	7	243	4	28	11
41-50	1	45	5	5	11
Total	**23**	**631**		**73**	
Group officials	**23**		**3**	**69**	
Grand total				**142**	

Key informants drawn from different sectors/ departments were purposively selected. Those selected to provide key information from their sectors included; the Keiyo North Sub-county Water officer, Keiyo North Sub-county Development officer, Keiyo North Sub-county Community Development Officer, Keiyo North Sub-county Crops Officer, Keiyo North Sub-county Livestock Production Officer, Keiyo North Constituency Development Fund Committee Member in charge of projects and World Vision's Project Officer in charge of water development (Soin Integrated Programme Area), totaling up to seven key informants. The key informants were interviewed on their role in water development projects in the sub-county. An interview schedule was used to guide the interview process in obtaining information from the key informants. Key informants information was necessary to verify or validate information gathered using other sources especially the questionnaires.

3.7 Data Collection Instruments

The process of data collection entails the act of obtaining information from various sources necessary to answer the research objectives. In selecting an appropriate method for data collection, a researcher is often guided by a number of factors which may include; the nature and scope of the research, availability of funds, time factor and the level of precision required (Kumssa & Ngau, 2004).

In this study, both primary and secondary methods of data collection were employed. Primary methods of data collection included the use of questionnaires, interview schedules, observation and focused group discussions. Secondary methods of data collection involved review of works related to public participation in water development projects from reports which included the Kenya Demographic and Health Survey, records at the Keiyo North CDF office, annual reports from the Ministry of Water and Irrigation, reports from World Vision and the defunct County Council of Keiyo.

3.7.1 Questionnaires

In this study, a questionnaire was used to collect primary data. The questionnaire was developed to obtain information from members (officials and ordinary members) of water development groups in the sub-county. The questionnaire was divided into six sections with section A sought general information about respondents, section B sought information on group characteristics, section C sought information on group participation levels, section D sought information on the impacts of group participation on water projects, section E sought information on challenges affecting groups' participation in water projects implementation while section F sought information group strategies to address identified challenges and strategies for project

sustainability. The questionnaire had both open and closed-ended questions. A total of 142 questionnaires were administered (physically) by the researcher to 69 group officials and 73 ordinary members, which totaled to 142 members.

3.7.2 Observation

This method was used to capture visual evidence of the projects under implementation through photographs. Photographs of the various water development projects in the study area were taken and are presented in the appendices. This method was useful in cross-checking information and validating what had been recorded using other data collection methods.

3.7.3 Focus Group Discussions

A focused group is a planned, facilitated discussion among a small group of stakeholders designed to obtain perceptions in a defined area of interest in a permissive, non-threatening environment. Focus groups are used as a method of obtaining information from people who represent a target group and seeks peoples' opinions about particular issues of concern to a researcher (Krueger, 1988).

Somekh and Lewin (2005) point out that in organizing for focus group discussions a number of issues should be taken into account which include the logistics of accessing the participants and convening groups, the influence of gatekeepers and group dynamics. Of importance in convening focused group discussions, there is need for a guiding research agenda to be followed and confidentiality of the results of the discussions ensured.

Focused group discussions were held to obtain information in this study. A total of three focused group discussions were held, one in each of the agro-ecological areas. In the highlands, it was held in Sergoit; in the escarpment one was held in Anin while

in the Kerio Valley, one was organized in Rimoi. Each of the focused group discussion comprised of between 8 and 10 members. Participants invited to the FGDs were drawn from the water groups (between 3-4 members, this also represented the public), locational development committees (1 member), government ministries implementing water related activities (between 2-3 members), Non-governmental organizations operating in the agro-ecological area (1 member) and one member from the Constituencies Development Fund Committee. The invitation of the participants took into account gender considerations so that during discussions, the views of either gender would be captured. In Sergoit, 10 members (5 male and 5 female) participated in the FGD discussions, in Anin, 8 members (4 male and 4 female) participated while in Rimoi 8 members (6 male and 2 female) participated. Gender representation in the FGDs in Sergoit and Anin was good while in Rimoi, there was an imbalance in representation in favour of men. The explanation provided for the under-representation of women being the enormous domestic assignments, which consumes much of their time denying them the opportunity to participate in community work.

The aim of the focused group discussions was to obtain information on group performance, collaboration and general challenges that face groups in performing their tasks. Such discussions were designed to gather information on the perceptions of the groups on their involvement in water projects in their specific locations. The group leadership was used to convene meetings to facilitate focused group discussions.

Focus group discussion as a strategy often brings out participants' spontaneous reactions and ideas and enables the researcher observe some group dynamics and organizational issues. The primary purpose is to understand how people feel or think

about an issue or an idea. Focus group discussions foreground the importance not only of a context but also of expression because they capitalise on the richness and complexity of group dynamics, allowing for in-depth discussions on the subject matter.

3.7.4 Interview Schedules

A schedule is a detailed, classified, planned and seriated list of items on which information is required. Its main use is to obtain concrete, quantitative/qualitative and objective data from the sources directly. The items in a schedule must be clearly and precisely worded so that both the researcher and the respondent easily understand what is required (Kothari, 2007).

This method was used to gather information from key informants. Seven key informants were interviewed who included: the Keiyo North Sub-county water officer, sub-county crops officer, sub-county livestock officer, community development officer, Keiyo North constituencies development fund committee member in charge of monitoring and evaluation, sub-county development officer and Water engineer – World Vision, Soin ADP. A set of questions was designed to elicit information on the roles of key informants (or their institutions), performance of water development groups, challenges and success of water development groups in the implementation of water development projects in Keiyo North sub-county.

3.7.5 Secondary Data

This was obtained mainly from libraries both public and private. Information was gathered from published and unpublished work. Information related to the topic of study was sought from Government of Kenya Development Plans, Sessional Papers, Publications, Reports and Journals. Public libraries were visited for information on background to the study, literature review and characteristics of the study area; these

included those of Moi University, University of Nairobi and Kenyatta University. Private libraries included those of Daystar University and United Nations Development Programme (UNDP) both in Nairobi.

3.8. Validity and Reliability of research instruments

3.8.1 Validity of the instruments

Kerlinger (1973) defines validity as the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration. Validity focuses on whether a research instrument measures what it is supposed to measure by providing answers to the research questions for which it was undertaken(Mugenda, 2008).

To ensure instrument validity, a pilot study was conducted in the study area in the month of February 2013 to pretest the questionnaire. The pretest was carried out on three groups namely, Chebagon in the Valley, Sorbich in the escarpment and Kapkessum West in the highland. After the pretest, a few changes were done on the questionnaire after discussions between the researcher and supervisors. The purpose of the pre-test was to ensure validity and reliability of the research instrument. The three groups were excluded in the main research study.

3.8.2 Reliability of the instruments

The concept of reliability relates to consistency of a research instrument to yield similar results under constant conditions (Schindler & Cooper, 2007). It basically refers to consistency over time under the same circumstances. In this study, reliability of the research instruments was ensured through the test-retest method during the pretest.

3.9 Data collection procedures

Prior to data collection, a research permit was obtained from the national council for science and technology. Letters of introduction were also obtained from the Keiyo North County Commissioner and the Keiyo North Education office to introduce the researcher to the research participants. Thereafter, the data collection exercise commenced.

3.10 Data Processing, Analysis and Presentation

Once all the completed questionnaires were returned from the field, they were inspected, edited and coded. The purpose of this was to detect any errors, omissions and ascertain completeness and accuracy. In cases where such omissions were noticed, revisits were done to find out reasons for omissions. Qualitative data was analyzed by grouping themes and providing discussions thereafter while quantitative data analysis was done using computer statistical package -Ms excel, which involved calculation of frequencies, percentages and averages. The findings of the study have been presented using a number of forms. These include discussions, descriptive statistics, tables and graphs.

3.11 Ethical Considerations

First and foremost, clearance to conduct the study was sought from the National Council for Science and Technology, which issued a research permit to the researcher to undertake the study (see Appendix V). The permit was presented to the Keiyo North sub-county commissioner and the education ministry in the same sub-county for further authorization to conduct the study. Informed consent was sought from the research participants, namely key informants, members of groups and those invited to participate in focused group discussions. Study participants were assured that their

responses were purely for academic purposes and for that matter confidentiality was assured. Research participants were requested to sign a consent form before participating in the research. Participation in the study by respondents, key informants and FGD members was voluntary.

3.12 Chapter Summary

This chapter has presented information about the study area in detail, elaborating its population, socio-economic and natural resource status. The research design (descriptive), study population, sampling procedures and sample size of 142 respondents have been explained sufficiently. Further, the chapter has highlighted primary data collection tools which were; questionnaires, observation, interview schedules and FGDs as well as secondary data collection tools, notably review of reports, journals, publications and legislations. Finally, the chapter presented information on data processing, presentation methods and ethical considerations.

CHAPTER FOUR

GROUP DYNAMICS

4.1 Introduction

The first objective of this research was to profile groups undertaking water projects in the study area. The purpose of this chapter therefore is to present information on the various characteristics of the groups and show how they undertook their tasks with a view to achieving group objectives. A number of issues are presented in this chapter ranging from physical location, group size and composition, areas of operation and group communication methods.

4.1.1 Group Formation

Water development groups in the study area were formed by a few members after identifying the need for developing water resources to meet their development requirements. This was informed by among other reasons awareness exercises carried out by the Keiyo North constituency development fund committee and the ministry of water and irrigation. Upon registration of the groups, members would embark on a sensitization campaign within the community to impress upon others to join their groups through payment of registration fees ranging from Kenya shillings 300 to 1,000 to undertake basic group functions such as proposal development, travelling and communication costs in the formative stages of the groups. The recruitment of members was guided by place of residence, ability to pay the registration fee, commitment to the group goals and willingness to meet other group costs for water development.

4.1.2 Location of groups and area of operation

A total of twenty three water resource development groups were included in this study, this represented fifty per cent of the target groups. The groups are spread across the three agro-ecological zones of the sub-county, that is, the highland, the escarpment and the Kerio valley. In the Kerio Valley zone, seven groups were included in the study, namely; Arrar Kamoingon, Chebinyiny, Enou, Kibomoo, Kipchukuku, Kipleketetwo and Kipsabu Lower. In the escarpment, a total of ten groups were included in the study; these were: Chebagon, Chepkeikei, Ematu/Emkong, Emket Kapkobal, Emkogo, Enego, Kapchepkoima, Kapkerembe, Kibusien and Kombatich. In the highland zone, the number of groups included in the study were six, namely; Kamogio, Kipsoen, Kiptorgotik, Logogo, Simotwo and Singore. The distribution of the location of these groups according to the three agro-ecological zones is presented in Tables 4.1, 4.2 and 4.3.

In the escarpment, it can be noted that Enego water project is the oldest having been started in 1996 with 37 members, but taken long to be completed occasioned by the high cost of water distribution and the rocky and hilly terrain. On average, groups in this zone have operated for 7 years while a significant number of groups have a large membership of over twenty members. The large membership in the groups is a factor of the importance of the water resource to the socio-economic development of the escarpment as rain water is insufficient to support agricultural activities. Table 4.1 provides more information about groups in the escarpment.

Table 4.1: Groups in the Escarpment Zone

Name of Group	Year of formation	No. of years in operation	No. of Members	Composition of members		Type of water project
				Male	Female	
Chebagon Water Project	2006	7	27	22	5	Water distribution
Chepkeikei Water Project	2010	3	21	12	9	Spring protection and water distribution
Ematu/Emkong Water Project	2005	8	17	9	8	Spring protection and water distribution
Emket Kapkobal Water Project	2004	9	23	17	16	Spring protection and water distribution
Emkogo Water Project	2008	5	20	10	10	Water distribution
Enego Water Project	1996	17	37	26	11	Water distribution
Kapchepkoima Community Water Project	2005	8	35	20	15	Water distribution
Kapkerembe Water Project	2007	6	31	20	11	Spring protection and water distribution
Kibusien Water Project	2009	4	31	22	9	Spring protection and water distribution
Kongotich Water Project	2008	5	23	13	10	Water tank constructio n and water distribution

In the highland, most of the groups undertake water dam construction and spring protection. This is explained by the high rainfall received in this zone and the many agricultural practices farmers engage in. Except for Logogo water project which has operated for over thirty years, a significant number of groups in this zone have been in operation for less than ten years. All the groups in the zone have a large membership explained by the importance attached to water resource development for socio-economic development. Gender parity is almost attained in many groups in this zone

due to high levels of awareness on the importance of inclusion of both male and female in development activities. Table 4.2 provides more information on groups in the highland zone.

Table 4.2: Groups in the Highland Zone

Name of Group	Year of formation	No. of years in operation	No. of Members	Composition of members		Type of water project
				Male	Female	
Kamokio Water Project	2003	10	23	15	8	Dam construction and water distribution
Kipsoen Community Water Project	2005	8	33	18	15	Dam construction and water distribution
Kiptorgotich Youth Water Project	2009	4	27	15	12	Spring protection and water distribution
Logogo Water Project	1980	33	38	20	18	Dam construction and water distribution
Simotwo Water Project	2006	7	29	15	14	Water tank construction and water distribution
Singore Water Project	2006	7	19	12	7	Dam, tank construction and water distribution

A total of seven groups from the valley were included in the study. Many of the groups implement water distribution projects while only two implement water tank construction and distribution type of projects. Water distribution is done to homesteads of the group members who have either constructed their own water storage facilities or to common storage facilities. In instances where members do not have storage facilities, stand pipes are erected at their homesteads. Other than Chebinyiny and Enou water development groups which have operated for 20 and 13

years respectively, the remaining groups have been in existence for less than 10 years. The recent formation of many groups in this zone is explained by the low income levels of many of the residents due to limited socio-economic activities, a majority of them being unable to raise the requisite amount of money to start up groups and the mandatory contribution of cash and or materials required by development agencies for community project implementation. Membership in many groups is large, attributed to the importance of water for development while gender parity is low due to low levels of awareness and the many domestic chores undertaken by the female gender denying them the opportunity to enlist and participate actively in group activities. Table 4.3 provides more information about groups in the valley zone.

Table 4.3: Groups in the Valley Zone

Name of Group	Year of formation	No. of years in operation	No. of Members	Composition of members		Type of water project
				Male	Female	
Arar Kamoingoin Water Project	2008	5	20	14	6	Water distribution
Chebinyiny Water Project	1993	20	45	28	17	Water tank construction and water distribution
Enou Water Project	2000	13	24	12	12	Water distribution
Kibomoo Water Project	2010	3	27	20	7	Water distribution
Kipchukuku Water Project	2006	7	38	28	10	Water tank construction and water distribution
Kipleketetwo Water Project	2007	8	23	13	10	Water distribution
Kipsabu Lower Community Water Project Group	2011	2	20	10	10	Water distribution

The study sought to find out the areas of operation of the twenty three water development groups spread across the three agro-ecological zones. Study findings

indicate that Kamogich location has four groups (three in the escarpment and one in the valley), Kokwao has five (three in the escarpment and two in the valley) whereas Kiptuilong location has five groups (four in the escarpment and one in the valley). The three locations have more water resource development groups, because of their expansive area of coverage and given the fact that they transcend two agro-ecological zones of the escarpment and the valley. The remaining locations of Keu, Kamoi, Mutei, Chebaror and Irong, all have water groups operating within one agro-ecological zone. In summary, the escarpment has the highest number of water resource development groups at ten, followed by the Kerio Valley at seven and lastly by the highland at six. This situation is explained by lack of permanent water sources and inadequate water storage facilities in the escarpment and the low rainfall levels in the Kerio Valley. The highland has adequate rainfall and some permanent water sources in addition to diverse income sources such as dairy farming to afford water storage facilities including plastic tanks and water dams. Table 4.4 provides a summary of the areas of operation of the water development groups.

Table 4.4: Group location and operation areas

Agro-ecological location of the group	Name of group	Area of operation
Escarpment	Chebagon Water Project Kibusien Water Project Kombatich Water Project	Kokwao
	Chepkeikei Water Project Ematu/Emkong Water Project Emket Kapkobal Water Project Kapkerembe Water Project	Kiptuilong
	Emkogo Water Project Enego Water Project Kapchepkoima Community Water Project	Kamogich
Highland	Kamogio Water Project	Chebaror
	Kipsoen Community Water Project Simotwo Water Project	Mutei
	Kiptorgotich Youth Water Project Logogo Water Project	Irong
	Singore Water Project	Kamoi
Valley	Arar Kamoingon Water Project Enou Water Project Kibomoo Water Project	Keu
	Chebinyiny Water Project	Kiptuilong
	Kipchukuku Water Project Kipleketetwo Water Project	Kokwao
	Kipsabu Lower Community Water Project Group	Kamogich

4.1.2 Year of group formation

The study sought to find out the years of formation of different groups in the study area as well as the motivation for formation. From the study findings, it was revealed that a large percentage (56.52%) of groups were formed between 2006 and 2010, followed by the duration between 2001 and 2005 at 21.73%, whereas groups formed between 1980 and 2000 were only four (4) representing 17.4%. This is quite a small

number of groups formed within a timeframe of 20 years compared to eighteen (18) groups formed between the year 2001 and 2010, a timeframe of 10 years representing 78.25%. The main reason advanced for the high number of groups formed between 2006 and 2010 was that a lot of sensitization had been done by the Constituencies Development Fund Committee on the kind of projects funded by the Constituencies Development Fund and therefore community members formed groups to benefit from financing from CDF.

The explanation for the small number of groups formed before the year 2000 was the requirement of huge capital outlays for implementation of water projects and therefore without support from external sources, communities were unable to finance many water development projects on their own. There was only one water group formed after the year 2011 in the study area, representing 4.3% of the total number of groups. The justification given to this being that water resource development projects are long term and consideration to finance on-going projects is given preference over new projects. This being the case, community members therefore chose not to form new groups to allow the on-going projects be completed. The year of group formation is significant in this study to understand the number of projects formed after the introduction of constituencies development fund and further show the effect of the fund on the establishment of new water projects in the study area. Table 4.5 provides information on the years of formation of water projects in the study area.

Table 4.5: Year of group formation

Year of formation	No. of groups across agro-ecological areas			Total number of groups	Percentage
	Valley	**Escarpment**	**Highland**		
Before 1990	0	0	1	1	4.35
1990-1995	1	0	0	1	4.35
1996-2000	1	1	0	2	8.70
2001-2005	0	3	2	5	21.73
2006-2010	4	6	3	13	56.52
2011 onwards	1	0	0	1	4.35
Grand Total	**7**	**10**	**6**	**23**	**100**

4.1.3 Group size, structure and Gender composition

The study sought to find out group size and gender composition with a view of relating the same to completion of tasks. Study findings reveal that a majority of the groups (8) had more than 30 members, those with members between 21-25 were six groups, those with membership of 20 and below were 5 while groups whose members were between 26-30 were only four. A further analysis indicated that of the eight groups with a membership of more than 30, the escarpment had the highest number of 4 while the valley and the highland had two each. Membership in all the groups was on individual basis. This was explained from the point of view of the difficulty of obtaining water in the escarpment and how committed community members were to pooling resources together for common goals.

Regarding group structure, all the groups had a functional organization structure, with the chairperson at the top, the treasurer and secretary next in rank, below being the Project Management Committee (PMC) followed by the sub-committees and lastly the members. The membership of the PMCs varied with groups, some with seven members while others with nine members. The odd number of PMCs was for the

purpose of easing stalemates during elections and therefore allowing for faster decision making. In 15 of the 23 groups, their PMC membership was nine while the remaining 8 groups had seven members in the PMCs. The major determinant of the number of PMC was the size of the group, the larger it was the higher the number of PMC members and vice versa. Sub-committees constituted by the groups included; resource mobilization, conflict resolution, project implementation and monitoring and stakeholder management.

The number of the sub-committees was not uniform across the 23 groups. Resource mobilization and project implementation and monitoring were constituted by all the groups. Seven groups had all the four sub-committees, three among them were groups which completed their projects on time; namely Simotwo, Emkogo and Arrar Kamoingon groups. Other groups in this category were; Kipsoen, Kapchepkoima, Logogo and Kipchukuku. The other 16 groups had three sub-committees each; some had the conflict resolution sub-committee while others had the stakeholder management sub-committee. The main mandate of the sub-committees was to assist the PMC in their respective areas of specialization thereby contributing to aster implementation of the projects. In a study of project success factors by Church and Prokopy (2017), they found out that effective community leadership and appropriate structures in addition to availability of funds contributed positively to timely completion of water development projects in the United States. Figure 4.1 gives an illustration of the groups' functional organization structure.

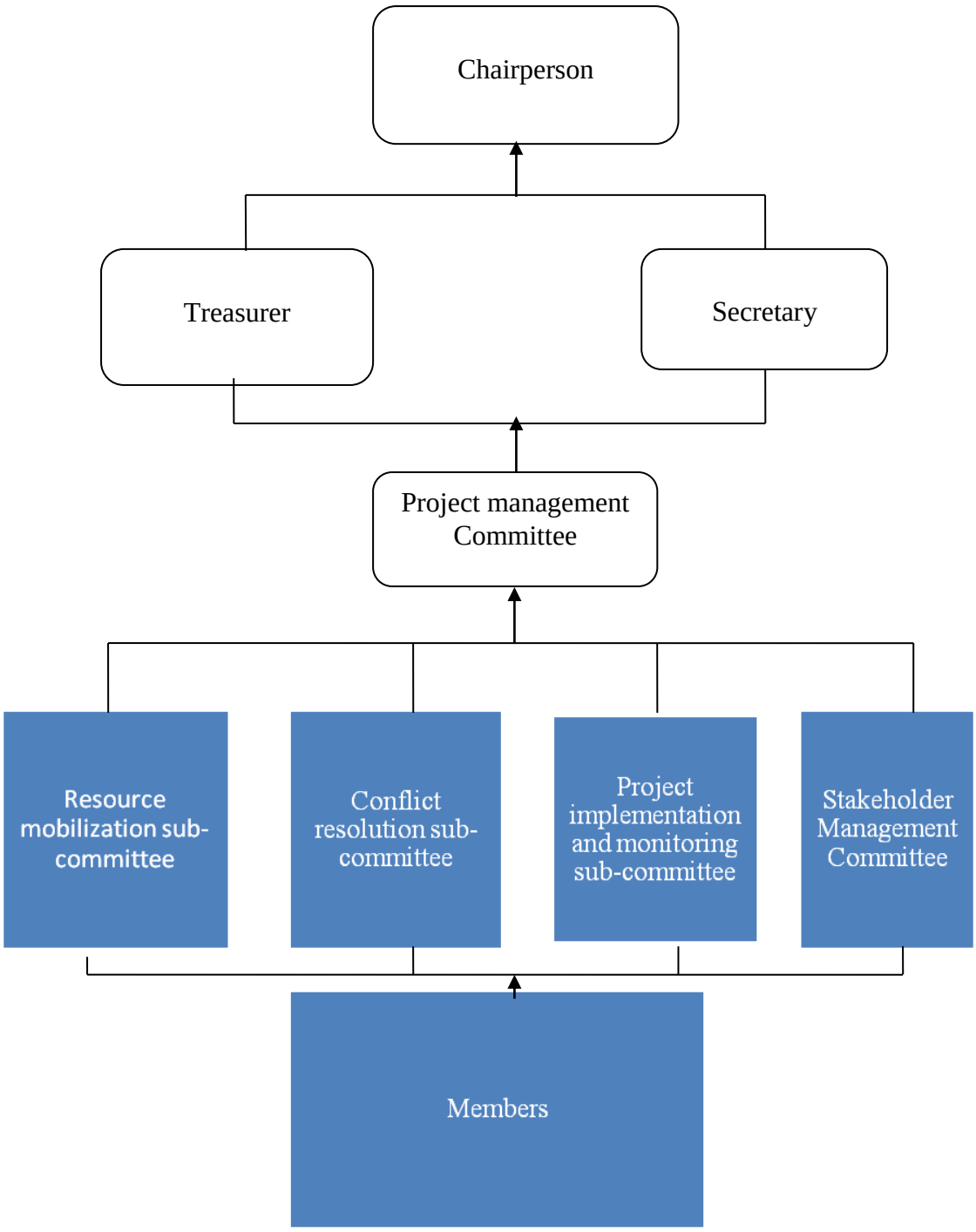


Figure 4.1: Group functional organization structure

It was further found out that the number of males was higher in 20 groups compared to the females in general membership as illustrated in Table 4.4. Only three groups had attained gender parity in terms of representation, these were Emkogo in the escarpment, Enou and Kipsabu lower both in the Kerio valley. Members played

various roles in the groups assigned by the leaders. According to FGD participants from the three FGDs conducted, the non attainment of gender parity by most groups was explained from a work perspective where the amount of household chores women have is more compared to men and therefore could not enlist as members in most of the groups. However, in the three groups where gender parity had been attained, it was attributed to widespread awareness campaigns on the benefits of inclusion of both genders in all development projects in their localities. Table 4.6 provides this information.

Table 4.6: Group size and sex composition

Name of group	No. of Members	Composition of members	
		Male	Female
Chebagon Water Project	27	22	5
Chepkeikei Water Project	21	12	9
Ematu/Emkong Water Project	17	9	8
Emket Kapkobal Water Project	23	17	16
Emkogo Water Project	20	10	10
Enego Water Project	37	26	11
Kapchepkoima Community Water Project	35	20	15
Kapkerembe Water Project	31	20	11
Kibusien Water Project	31	22	9
Kongotich Water Project	23	13	10
Kamokio Water Project	23	15	8
Kipsoen Community Water Project	33	18	15
Kiptorgotich Youth Water Project	27	15	12
Logogo Water Project	38	20	18
Simotwo Water Project	29	15	14
Singore Water Project	19	12	7
Arar Kamoingoin Water Project	20	14	6
Chebinyiny Water Project	45	28	17
Enou Water Project	24	12	12
Kibomoo Water Project	27	20	7
Kipchukuku Water Project	38	28	10
Kipleketetwo Water Project	23	13	10
Kipsabu Lower Community Water Project Group	20	10	10

4.2 Types of Water Projects

The types of water development projects implemented by groups in the study area were categorized into four, namely; water tank construction, water distribution, dam construction and spring protection. These projects were undertaken in all the agro-ecological zones of the study area. Table 4.7 provides information on the different water resource development projects implemented in the study area.

Table 4.7: Types of Water development projects

Type of Water project	No. of groups across agro-ecological areas			Total number of groups	Percentage
	Valley	**Escarpment**	**Highland**		
Water tank construction	2	1	1	4	17.4
Water distribution	5	4	1	10	43.5
Dam construction	0	0	3	3	13
Spring protection	0	5	1	6	26.1
Grand Total	**7**	**10**	**6**	**23**	**100**

The study findings indicate that, a majority of the projects were water distribution to households of members, this stood at 43.5%. This was evident mainly in the Kerio valley and the escarpment compared to the highland. This was explained from the perspectives of water needs across the three ecological zones and different water sources available to residents. In the highland, rain water is adequate to meet domestic and agricultural requirements especially for subsistence purposes for at least six months; during the long rains season of April- July and the short rains season of August – October, unlike in the Kerio Valley where annual rainfall is inadequate for domestic and livestock uses. Residents in the escarpment part of the sub-county have difficulties accessing wholesome water as they rely on inadequate rainwater, seasonal rivers and springs.

Spring protection types of water projects were common especially in the escarpment at 26.1%. These type of projects involve securing a spring by fencing off the water source to reduce degradation and or pollution of the source from human activities and animal grazing. In addition, such preventive measures would ensure the flow of clean water to the users. Spring protection would equally involve the construction of a water collection point and a watering point for livestock away from the source guaranteeing non point pollution of water. Due to the slope gradient, it is difficult to construct water dams and therefore spring protection becomes the most preferred type of project in the escarpment. Water tank construction and dam construction type of projects ranked third and fourth at 17.4% and 13% respectively. Water tank construction involves the erection of a tank for water storage, either from roof catchment or from other sources such as rivers, streams which has to be pumped to the tank. The sizes of the tanks were between 100 and 150 cubic metres.

Dam construction on the other hand involves the construction of a water reservoir to store water especially for use during the dry spell. This may take the form of diversion of river or stream water or harvesting of runoff. It was noted that dam construction was common in the highland largely due to the nature of economic activities. In the highland, group/community members practice dairy and irrigation farming as well as fish farming as is the case in Logogo water project which require a lot of water. These last two types of projects are implemented with close supervision by the ministry of water and irrigation as reported by the sub-county water officer. The reason for this being the intensity of work involved and quality standards expected to be adhered to in these projects.

Other than group members benefitting from the water projects, the immediate community also benefit from the water projects. After serving her members, groups consider requests from community members who are desirous of using water from their projects. Non members are required to pay a prescribed fee to the group to have access to the water, usually between Kenya Shillings 1,000-5,000 and cater for connection expenses alongside paying for monthly maintenance fee, which varies from one group to another. The procedure of getting connected to tap water and or accessing water from dams/springs varies with the type of water project and group rules. Application to access and use water also varies with the type of user, for instance public institutions such as schools, dispensaries, chief's offices and public facilities like cattle dips are given first priority. Upon approval by members granting such institutions to access and use water are required to make arrangements to purchase water connection materials and organize to pay maintenance fee.

It can be noted that different types of water projects are implemented in the three agro-ecological zones. The type of terrain, nature of economic activities and amount of rainfall influence the project types. Varitwuttikul et al (2017) in a study of water resource development in Thailand found that the history of a people, type of settlement and their lifestyles influence the types of water projects. Appendices VIII-XIV further illustrate the four types of water projects in the study area.

Appendix VII is a distribution water project of Enou water development group in the Kerio Valley zone constructed through support joint collaboration between the group, CDF and KWS in an effort to avert human-wildlife conflict around Rimoi National Reserve especially during the dry months of October-March. The project also serves nearby households for domestic water. Appendix VIII illustrates a water project

located in the escarpment, during the dry season, spring water levels diminish denying downstream users water for domestic and livestock use. Note a zebu bull inside the dry water trough in search of water.

Appendix IX displays Chepkeikei water distribution project located in the escarpment. Note the water pipe being supported on a stone due to the difficult terrain which does not allow for digging of trenches for laying of water pipes. Appendix X indicates a spring protection and water distribution water project located in the escarpment and serves as a water intake, note the water overflow and the water distribution pipe. The vegetation growth around the spring and intake is water conservation effort by the group members.

Appendix XI shows Simotwo water tank project located in the highland and is one of the projects completed with support from the ministry of water and irrigation, CDF and other stakeholders. Appendix XII illustrates Logogo water dam located in the highland, its water is used for animal and crop production as well as fish farming by the group members and the larger community around the water project. The dam has been fenced off to reduce incidences of human and animal drowning.

Appendix XIII illustrates soil and water conservation structures put in place by crop farmers in the area to guard against soil erosion to reduce siltation of rivers which are a major water source in the escarpment and the valley. Ministries of agriculture and water and irrigation play important roles in education of the public on the importance of soil and water conservation in the two zones.

4.3 Level of Education

The study sought to find out the educational and professional levels of group members with a view to relating the two to effective participation in water project development. In addition, this information was necessary to aid in showing how groups utilize professional qualifications of members in project activities. Table 4.8 provides a summary of education qualifications of the respondents.

Table 4.8: Education qualifications of the respondents

Education level	Number of respondents	Percentage
Primary	25	17.61
Secondary	81	57.04
Post Secondary	21	14.79
University	15	10.56
Total	**142**	**100**

The study found out that a majority of the respondents (81) in the 23 groups had completed secondary level of education, representing 57.04 %; this was followed by those who had completed primary level, which was 25, those with post secondary education were 21, while university graduates were only 15. These figures on educational levels indicate that a majority of the group members were literate and therefore could transact group activities.

On professional qualifications, a large number of group members (107), representing 75.35% did not possess any professional qualifications, while a small number (35), representing 24.65% had professional qualifications. The professional qualifications were in the fields of teaching (12.05%), accounting (6%), health (4%) and security (4.6%). The professional training the few members had was used in a number of ways to ensure project success. These ways include; mobilization of members to attend

group activities, sensitization of members on the importance of water for development, training members on project management, hygiene and sanitation. Very few members of groups had previously managed development projects. Study findings indicate that only 38 members out of the 142 interviewed had managed projects in the past. These projects included water conservation and management, road construction and horticulture. The study found out that Simotwo water project in the escarpment had members whose educational levels were higher compared to all the other groups. Out of the 29 members in the group, 4 had completed primary level, 19 had completed secondary level, 3 were diploma holders, 2 were degree holders while one had a masters degree. In my opinion, this could explain the timely completion of the water project by the group.

Information on the educational qualifications of the members was important as this provided an insight into how the various skills possessed by such members were utilized in the implementation and management of the water projects. Further, this was important to establish the availability of members who had professional training in water resource management and would therefore be instrumental in translating technical information from the water ministry to members of the groups. Similarly, education is crucial in creating positive attitudes, inculcating social values alongside stimulating self-reliance. However, none of the group leaders had qualifications in water resources management.

Ananga (2015), in a study of community participation in the management of water resources in Kisumu town found that the research respondents had average education level, at form four and which had a significant effect on their participation. In a study of peoples' awareness and participation in planning and leadership in three counties of

Kakamega, Kisumu and Kajiado, Chitere and Veronica (2017), found out that peoples' level of education affects their levels of awareness, involvement in planning and participation. Low participation in development planning was found to have a strong relationship with the level of education.

Prokopy (2005), Madrigal et al (2011) and Crow et al (2012) re-affirm the importance of educational skills in water development. They are in agreement that the success of community water projects depends on the levels of education, nature of skills, knowledge and experiences of the members and the management committees such as the PMCs. In essence, the more knowledgeable and skilled the membership, the higher the chances of project success as illustrated by Simotwo water development group.

4.4 Methods of choosing group leaders

Group leadership remains an important aspect in the management of the affairs of groups. This study sought to find out the methods used by groups to choose their leaders and how this affects members' participation in group activities as well as its contribution to overall group performance. From the study, two methods of choosing leaders were identified, these being; firstly election and secondly nomination. The election method was found to be the most common, being practiced by 20 out of the 23 groups while only three groups practiced nomination in choosing their leaders.

According to FGD discussants, in group elections, leaders were elected to office based on their previous experiences in managing community projects and in other organizations. Election exercises were conducted with the department of social services overseeing the process to ensure there were no malpractices. Most groups reported that they did not experience any disputes from the outcome of the elections.

With support from the members in form of ideas and suggestions, water resource development groups implemented their activities without major challenges.

According to FGD members and 69 group officials interviewed, the methods of choosing leaders is critical as it explains how the water development groups provide space for members to actively participate in deciding on who would spearhead their water development activities. In addition, this further explains that members are involved in making their own decisions on the management of their water development affairs, signifying they are informed and empowered.

4.5 Communication Methods

Dagg and Garande (2005) point out that communication and information sharing not only impacts a project, but also determines the understanding that a community has of specific issues and the general status of the project. Holding consultations with the community as a whole, rather than engaging in selective consultation, provides clear communication channels and disseminates information so that everyone has a similar understanding of the key issues. At the implementation/construction phase, clear communication channels need to be put in place so as to keep stakeholders informed of any modification to the project design and implementation strategies. The study sought to find out the methods used by groups to communicate to members about planned meetings. Three methods were identified, namely; announcements during meetings, sending letters to members and use of telephone calls. Table 4.9 provides information on the communication methods used by groups.

Table 4.9: Communication methods employed by groups

Communication Method	No of groups using method	Comments
Announcements	18	Used to invite members to upcoming meetings, found to be very effective
Letters	3	Used to send invitations to members to attend proposed meetings, quite detailed as they outline the agenda of meetings allowing members to adequately plan for such meetings
Telephone calls	2	Used as a follow-up method to remind members of planned activities

Of the three methods, announcements during meetings was found to be the most popular with 18 groups confirming its use, three groups used letters while only two groups used telephone calls/short text messages to invite members to proposed meetings.

Respondents were required to rate the effectiveness of the three methods in relaying information to members about planned meetings. The study found out that the use of announcement during meetings was the most effective (90 respondents – 63.38%) while the other two were found to be moderately effective (52 respondents – 36.62%). Those who preferred the use of letters however noted that the method provided a record for reference purposes especially about the agenda unlike use of telephone calls/text messages and announcements.

Garande and Dagg (2005) in their study of the Molinos water project in Chile, concluded that communication plays a central role in updating project stakeholders on the level of progress and enabling them make timely inputs for delivery of planned

results. Various communication channels were available and their level of use varied depending on the purpose. Rogers and Hall (2002) support these sentiments pointing out that a project is required to be inclusive and communicative, with communication channels free flowing so as to enhance transparency. Thus, at the implementation/construction phase, in particular, clear communication channels need to be highly functional so as to keep the community informed of any modification to the project and implementation strategies at whatever the cost.

A study by Boakye and Akpor (2012) in Msunduzi Catchment River in Kwa-Zulu Natal province, South Africa found out that information dissemination to CBO members was critical to proper implementation of water project issues. During group meetings for instance, there was interactive discussion of issues amongst the members facilitating collective decision making processes.

Smit (2003) and Solitare (2005) argue that any participation process with a technical information whereby participants do not understand amounts to tokenism of participation, since participants are unable to absorb the technical information and contribute. There is therefore a need for the content of technical information to be presented in plain language that will ensure that participants understand what is presented at the forum. The mode of presentation of information in participation process also affects the information comprehension by participants. This is because individuals learn differently, which requires a variation in the manner in which information is presented to them. The presentation of information in a participation process should therefore be in a form that will be relevant to everyone in a participation process. In this study, the applicability of the statement was relevant

especially with regard to the ministry of water and irrigation while presenting bills of quantities and technical design information to various groups.

4.6 Agenda Development and Frequency of Group Meetings

In 16 groups, agenda development was done by the executive committee, composed of the chairperson, treasurer and secretary. The justification given for this being the confidence members had in the executive committee that they had the experience to guide the group on project implementation. However, in 7 groups, the executive committee jointly with the project management committee (PMC) and various committees constituted by the groups developed the group agenda items for meetings. The seven groups in their view felt that the PMC had up to date information regarding the project and therefore was the right organ to inform the group leadership on agenda items. Similarly, the various committees constituted by the groups, notably resource mobilization, conflict resolution, project implementation and monitoring informed the group leadership of items to be shared during group meetings which required deliberations by the entire group members before decisions were made. Such issues included budget approvals, selection of contractors and payment of service/materials delivered.

The frequency of holding group meetings varied from one group to another. Most groups (8) held meetings once a month. Seven groups held meetings once in every three months; five groups held meetings twice a month while only three groups held weekly meetings. Various explanations were given for this, which included the cost of organizing frequent meetings by those which held meetings once in three months. Groups which organized regular meetings justified this by noting that such allowed for sharing of information and faster decision making. It was further noted that

meetings provided members with an opportunity to exchange views on project progress, make proposals for changes to the project in areas they felt change was necessary, enabled group leadership obtain approval from members to undertake certain activities like incurring expenditure on unplanned tasks such as trainings.

4.7 Group Conflicts and Resolution Methods

This study sought to find out the types of conflicts groups encounter during their lifespan. Four types of conflict were identified, these were; financial, non-implementation of projects, delayed dissemination of information and change of decisions by the group leadership. In 11 groups, conflicts related to financial mismanagement were the most common, followed by conflicts related to non-implementation of project work reported in 10, while the third type of conflict resulted from delayed dissemination of information from the leaders to the members, reported in 8 and the last cause of conflict was cited as change of decisions by the group leadership without informing the group members for approval, reported in 3 groups. All the groups included in the study had encountered different types of conflicts.

Financial mismanagement being reported as the most common in many groups entailed channeling money meant for certain tasks to other activities not sanctioned by the members. In other instances, the cost of materials was exaggerated beyond the market price leading to financial losses by the groups affected. Kipchukuku water project in the Kerio valley for instance lost Kenya shillings 21,000 in 2009 due to procurement of low quality water pipes by a contractor.

Non-implementation of project work was mentioned as the second most common source of conflict. From key informant interviews, FGDs and the group officials,

several reasons explain this situation. Firstly, delayed disbursement of finances by CDF, secondly, slow dissemination of information from stakeholders and low capacity level of group members on what they are expected to do in project implementation work. Another reason cited for non-implementation of project work being delayed decision making by relevant authorities including group PMCs. All these negatively impacted on project outcome.

Conflict resolution is paramount for group existence and attainment of its goal. From key informant interviews, a number of conflict resolution methods are used to address the conflicts which include consensus, voting, sole decision making and leadership intervention. The groups established structures including the executive and the PMCs were found to be instrumental in conflict resolution. Financial and non-implementation of project work type of conflicts were given a lot of weight by groups. In instances of loss of funds for instance, affected members were required to pay back the lost funds while in cases where contractors were involved, the ministry of water and irrigation and CDF were invited to arbitrate as was the case in Kipchukuku water project.

The study found out that the most commonly used method of conflict resolution was consensus through the established structures; this was common among 15 groups followed by voting on decisions, used by 5 groups. Sole decision making by the chairperson as a method of conflict resolution was only used by one group while two groups resolved conflicts through intervention by the group executive committee – composed of the chairperson, treasurer and secretary. It is therefore clear that conflicts in groups in the study area are internally addressed through consensus. This is key to

group stability and implies that groups have internal mechanisms of resolving conflicts. Table 4.10 provides a summary of group dynamics.

Table 4.10: Summary of group dynamics in water development

Group Activity/Issue	Methods/type of responses	No of groups	Effectiveness/popularity
Choice of group leaders	1. Election	20	Very effective
	2. Nomination	3	Moderately effective
Information relay	1. Announcements	18	Very effective
	2. Use of letters	3	Moderately effective
	3. Telephone calls	2	Moderately effective
Group agenda development	1. Executive committee	16	Very popular
	2. Executive committee and PMC	7	Popular
Frequency of group meetings	1. Weekly	3	Low popularity
	2. Twice a month	5	Moderate popularity
	3. Once a month	8	Popular
	4. Once in 3 months	7	Popular
Types of conflicts	1. Financial mismanagement	11	Not applicable
	2. Non-implementation of project work	10	
	3. Delayed information dissemination	8	
	4. Change of decisions	3	
Conflict resolution methods	1. Consensus	15	Very popular
	2. Voting	5	Very popular
	3. Sole decision making	1	Not popular
	4. Group officials decision making	2	Not popular

The findings of this study are in agreement with those of Khasankhanova (2003) in a study of water users associations in Uzbekistan who found that reduction of water related conflicts could be addressed by taking collective decisions at the level of ordinary users which calls for balancing of stakeholder interests. Their participation greatly improved their contributions to decision making as well as funding, adding

that water resources development equally requires comprehensive stakeholder participation.

The results of this study also agree with research findings by Armah (2008), who conducted a study on local participation in water resource management in the Fahama community in Ghana and found that certain key effective arrangements for settling disputes existed. These arrangements included extensive communication networks among the civil society groups, and effective communication between the civil society groups and the Old Fadama community. Such arrangements minimized the negative effects of conflicts on the functioning of groups.

Similar results were found by Robinson et al (2010) in their study of pastoralist decision making processes in Kenya among the Maasai, Gabra and Pokot where conflicts over water and pasture were resolved through consensus. The elders in the society, however, play important roles in guiding decisions made over such conflicts.

4.8 Chapter Summary

Chapter four presented information on the various dynamics of groups ranging from group size and composition, location, types of water projects, decision making to conflict resolution. Group size does not vary significantly across the three agro-ecological areas with the smallest having 17 members while the largest has 45 members. Many group members are form four leavers and therefore literate to effectively participate in group activities. Four types of water projects were found to be implemented in the study area, the most common being distribution of water. The chapter concludes by highlighting the methods of conflict resolution, the most notable being consensus, however, many conflicts are internally addressed. The group

dynamics discussed in this chapter influence group participation in water projects development at various levels such as assignment of tasks, interpretation of water designs, feedback processes with stakeholders and resources management.

CHAPTER FIVE

IMPACTS OF LOCAL GROUPS' PARTICIPATION ON WATER DEVELOPMENT IN KEIYO-NORTH SUB-COUNTY

5.1 Introduction

The second objective of this study was to assess the levels and impacts of local groups participation on water development projects. The purpose of this chapter therefore is to present information regarding the different levels at which groups participated in water resource development and their impacts on the outcome of water resource development.

5.2 Levels of Participation of Groups in Water Resource Development

The study sought to find out the different levels at which groups participated in water resource development. Using the ladder of citizen participation in development, a summary of five levels was arrived at, these being; idea generation, consultation, decision making, implementation and evaluation.

Study findings indicate that all the 23 groups participated at the first level of participation by contributing ideas for initiation of the water projects. The push for initiation of water projects was informed by several reasons key among them, the long distances travelled in search of water (in some instances as long as 10 kilometres in the Kerio Valley), secondly the need to start up small scale agricultural production projects for income generation and thirdly to improve hygiene and sanitation at household level. The county development officer explained that the active participation of groups at this level was a result of the widespread awareness campaigns by government agencies on the need for public participation in

development projects. Participation of groups at this level confirms the fact that after sensitization of groups by development agencies, demand for water is created. This therefore supports the demand responsive approach in water development which stipulates that after intensive education among the public on the need to start up and operate water projects, communities take up the task of identifying and establishing water projects with support from stakeholders.

According to key informants interviewed, many community groups intended to start up water projects for domestic and agricultural purposes but could not engage in the same due to limited knowledge on how to start. The introduction of CDF coupled with widespread awareness creation on its existence and how to write proposals to access funds from CDF marked the beginning of serious community involvement in water projects development in the sub-county. The coming in of other development stakeholders to complement government efforts in the development of the water sector further contributed to improved community awareness on water development. A combination of all these led to community organization in form of groups and idea generation on water projects initiation. Members at this level would conceptualize the idea of the need for a water project, the source of water, uses/users and funding.

In Tanzania, a study of two water projects by Mwakila (2008), found that a significant number of community members (45/52) participated in the initial stage of the projects (planning). This was explained from the point of view of enhanced awareness creation by the state on the role of the public in water resources development.

At the second level of participation – consultation, all the 23 groups indicated there was sufficient participation by their members. At this stage, different participation patterns were adopted, firstly, one way participation pattern in which group leaders

would present information regarding the type of water project, water source, possible funding and capacity building agencies and expected participation standards of the group members. The second participation pattern adopted was two way in which there was dialogue between members and group leaders about issues presented by the leaders. This pattern involved members seeking clarification, further information and making suggestions while leaders provided guidance, clarified issues raised and encouragement members to actively participate in the discussions on the proposed water projects.

The third participation pattern used in consultation was multi-dimensional, involving group leaders, group members and different stakeholders, notably the ministry of water and irrigation, Keiyo North constituency development fund officials, government agencies and NGOs. Consultation centered on the nature of water projects, their projected costs, roles of different stakeholders among other issues regarding the projects. However, participation of group members at this level was average due to limited experience of a majority of members in project management issues. In addition, the technical language used by ministry of water and irrigation personnel limited the participation of group members. The secretary of Chebagon water project made the following comment regarding consultation between group members and the ministry of water and irrigation personnel,

> "*When these people (referring to ministry of water and irrigation personnel) came to our group, they talked about water issues using terms which could not be understood by many members forcing us to ask for translation. In fact this made the whole exercise not as participatory as we thought".*

At the second level of consultation, group members after consulting with the relevant stakeholders, developed project proposals given that this guides any development project. The development of such proposals, which later translates into an

implementation plan may be done internally or involve the engagement of experts. This study sought to find out who or which organization was responsible for the development of proposals for the various groups. All the 23 groups indicated that they developed their project proposals although with inputs from the ministry of Water and Irrigation and World Vision – Soin Integrated Programme Area (for groups in the escarpment and the Kerio Valley, where World Vision operates). This implies that awareness creation exercises conducted by CDF and other stakeholders in the community enabled the groups write fundable project proposals.

At the third level of participation, decision making, 18 groups participated representing 72.26%. Decision making is key in project management as it paves the way for project implementation. Decisions made related to project siting, project planning, resource allocation, assignment of roles, preparation of work plans, stakeholder identification and engagement. Participation in decision making by groups was influenced by the level of education of group members, in groups which had a majority of their members being literate, their level of participation was higher, one such group was Simotwo water development group.

From the study, group members were involved in major decisions regarding water projects as indicated by their high levels of participation in siting the location of water projects. The ministry of water and irrigation also took part in guiding the groups come up with decisions on siting of water projects given that it undertakes a feasibility study on the viability of the projects based on the amount of water available in every source identified to meet the needs of the users. Key informants acknowledged the rising levels of group participation in decision making, attributing this to widespread awareness campaigns undertaken by various stakeholders in the

study area. Participants in the three FGDs held added that the awareness campaigns had positively influenced many groups to actively participate in decision making. The involvement of the users is paramount in siting of water projects. Mclvor (2000), in a study of Rural Water Schemes in Zimbabwe explains that participation of the water users in the planning and design phase is important as it unearths any problems associated with the siting of the project which can be addressed before actual implementation is undertaken. In the study of the schemes in Zimbabwe, the actual users of the water pumps (women and children) were not identified and sites were ineffectively located near beer halls rather than near residential areas.

Jonsson (2005) supports group participation in decision making arguing that effective participation of beneficiaries at the decision making level in natural resource management leads to increased public awareness and acceptance of project outcome. The consequence of this being transparent decision making and faster implementation of activities.

The fourth level of participation, implementation phase remains one of the most important phases in project work. All the 23 groups participated at this level. However, in three water development groups namely; Kapchepkoima, Kongotich and Kiptorgotich, their water projects were not implemented according to the original plan. A number of reasons were given for non-implementation according to plan. One of the reasons was that there were changes in the water distribution lines to accommodate new members who joined the group after the plan had been drawn and this contributed to delays in implementation. The second reason advanced was that procurement procedures were cumbersome, took a lot of time and therefore delayed project implementation. Thirdly, there were constant delays in the disbursement of

funds by the Keiyo North Constituency Development Fund office which led to delayed implementation of work.

Project implementation took different forms with members participating at different levels. The group leadership played the role of co-ordination and followed up disbursement of money from the Constituencies development office. In addition, the leadership supervised work done on site together with the project management committees. Group members on the other hand contributed money and labour as outlined in the project proposals while in other instances, they helped contractors in delivery of materials to the project site. Similarly they ensured the materials were in safe custody. The PMCs and the four sub-committees played important roles of co-ordination and monitoring of work and reporting progress made to the entire group. Keiyo North constituency development fund project implementation committee monitored work done by the groups to ensure they adhered to their work plans.

Other than group contribution to project implementation, the community neighbouring the water projects made some contributions. This contribution was made in five categories namely; contribution of land for construction of water tanks, free labour, free materials, paid labour and paid materials. Community free labour contribution was in the areas of digging trench lines, backfilling of the trenches, carrying pipes to designated areas, loading and offloading of construction materials and equipment and carrying bricks/stones to project areas in the case of dam construction. According to key informant interviews and focused group discussions, this is the stage where communities were very active in project development.

With regard to community contribution of free materials, a number of construction materials were identified. These ranged from sand, timber, ballast, stones and bricks.

The type of construction materials to be used varied from one project to another. Sand, ballast and stones/bricks were the most commonly found materials in the Kerio valley agro-ecological zone, while timber and bricks were common in the highland. Timber, stones/bricks and ballast were common in the escarpment. The secretary of Simotwo water project made the following comments on this level of participation.

> *"This is the level where most of our members have been waiting for so as to make their material and labour contributions and see the project rise from the ground hoping that over time they will see the fruits of the projects. Many are eagerly anticipating for its completion to start both dairy farming and small-scale irrigation projects to boost household income and improve their quality of life".*

The ministry of water points out that community participation in project implementation should be in the form of funds, labour or material contribution, all of which should be in the range of 10-25% of the total project cost so that they can own the project. However, it observes that in the study area, community participation in implementation phase tends to be low especially in the Kerio Valley due to the low levels of awareness on the importance of public participation in water projects and given their low socio-economic standards. In the Kerio valley as well, inter-clan conflicts over water use further exacerbates the problem of community participation in project implementation (GoK, 2009).

In a study on the role of the community work ethic and participation on rural development performance in Kilibwoni and Kapsabet divisions of Nandi District, by Rono and Abdillahi (2003), slightly above 50% of those interviewed participated in the project conception and implementation phases while a small percentage (19.4%) took part in project evaluation/appraisal. These results compare favourably with the findings of this study since all the respondents (142) interviewed indicated that they took part in project implementation.

Contrasting results were found by Jingling et al (2010) in a study on public participation in Haihe river basin in China in which there was low public participation occasioned by low provision of information by the water ministry on the role of the public in water resources management. This scenario denied the public the opportunity to actively take part in decision making processes on water management issues.

These findings are in concurrence with those of Mahama and Badu-Nyarko (2014) in their study of community participation in water development in Ghana who found that a majority of community members participated in project implementation, while a few participated in searching for sites for the projects.

Chitere and Mutiso (2015) emphasize the importance of project implementation management and provision of timely extension services in any project. In addition, they observed that the group approach in participatory development yields positive development outcomes in any sector as this motivates group members participation.

The last level of public participation, evaluation had seven groups participating, representing 30.43%. The public participated through provision of information on various aspects of the projects, these included delivery of the project on time, resources utilized in project implementation, quality of the water projects and lessons learnt during project implementation. Groups which participated in project evaluation included; Emkogo, Simotwo, Chebagon, Kibusien, Kiptorgotich, Singore and Arrar Kamoingon. Project evaluation was done by the projects monitoring and evaluation sub-committee of the Keiyo North constituencies development fund.

Table 5.1: Levels of participation by groups

Level of participation	Number of groups	Percentage
Idea generation	23	100
Consultation	23	100
Decision making	18	72.26
Implementation	23	100
Evaluation	7	30.43

Participation of group members in the five levels of water resource development was voluntary. A majority of the respondents (123), representing 86.62% were of the opinion that if they had adequate training on water management issues they would have effectively participated in decision making and evaluation levels in water development. Participation at the various levels was justified on a number of grounds, notable among them being, ownership of the project, reduction of conflicts during implementation and learning from implementation to manage the projects.

Community contribution of capital for project implementation is also evident from Bangladesh in which the community is required to invest in cost and construction costs of between 5-15% of capital costs. This compares favourably with the Kenyan scenario in which the community is expected to contribute between 10-25% of the project cost. In this study, groups met their 20% contribution of total project cost, for instance Enou water project (Appendix VII), whose total cost was Kenya shillings one million six hundred and fifty thousand saw the group contribute Kenya shillings three hundred and thirty thousand. Another project, Logogo water project (Appendix XII) whose cost was Kenya shillings seven hundred and fifty thousand saw the group contribute Kenya shillings one hundred and fifty thousand shillings. In addition, the community is expected to meet 100% of project maintenance costs as this will have been handed over by the implementing agency. The water user committee, in the

Kenyan case referred to as the project management committee is then left with the responsibility of regulating user access and control of the water project. Little follow up on the performance of the water project is done by implementing stakeholders (Sultana, 2008).

On community participation in development, Agarwal (2001) notes that at the lower level of participation, there is often passive participation while at the higher levels of participation from decision making, implementation, there is definitely active members participation. This statement agrees with the findings of this study.

5.3 Stakeholder Participation in Water Development

Stakeholders are important players in development in any sector of the economy. As emphasized in The 2000 Hague Ministerial Declaration which called for 'governing water wisely to ensure good governance, so that the involvement of the public and the

interests of all stakeholders are included in the management of water resources' (Rogers and Hall, 2002).

This study sought to identify various stakeholders in the study area which played a role in water resource development. Eleven stakeholders were identified, both government and non-government, participating in a variety of ways as presented in Table 5.2.

Table 5.2 Stakeholders participation in water development

Stakeholder	Category	Form of participation
Keiyo North Constituencies Development Fund	Government	Provision of financial resources, training on use of finances in project implementation, monitoring and evaluation.
Ministry of Water and Irrigation	Government	Training on operation and maintenance, Technical support e.g survey on water potential, financial assistance.
Ministry of Agriculture	Government	Training on soil and water conservation, irrigated crops, livestock production methods.
World Vision	NGO	Capacity building on water management, provision of materials, paid labour
Kerio Valley Development Authority, WASREB, RVWSB	Government Agencies	Financing, training on water uses e.g. on tree nursery establishment and beekeeping.
Catholic Diocese of Eldoret	Faith based	Provision of water tank construction materials, training on water management
Christian Child Fund (CCF)	Faith based	Financial support, training on group dynamics including problem solving methods.
Japanese International Cooperation Agency (JICA)	Bilateral Aid Agency	Training on water management, provision of construction materials and dairy goats to groups.
Semi Arid Rural Development Programme	NGO	Capacity building on water development, provision of financial resources, provision of dairy cows and goats, taking groups for exposure tours on crop production, training groups on environmental conservation.
Nature Kenya	NGO	Conservation of water catchment areas e.g. Kessup, Singore and Kapchemutwa forests in the highland (these serve as water catchment areas).
Kenya Water and Health Organization	NGO	Capacity building groups on water development and sanitation.
County Council of Keiyo (defaunct, currently Elgeyo-Marakwet county)	Government	Financial support, monitoring and evaluation of funded projects.
Water groups	Non-government	Ideas, decision making, implementation, financial, material contribution
Community	Non-government	Ideas, financial, labour and material contribution

From Table 5.2, it can be observed that nearly all the stakeholders provide various types of trainings to community groups undertaking water development projects in the study area. The focus of the trainings lies in the management of water resources and their uses. The chairman of Simotwo water project made this comment regarding stakeholder participation,

> *"As groups, we have benefitted so much from trainings offered by stakeholders in the areas of leadership, time management, record keeping, resources management, conflict management and monitoring and evaluation. The skills gained have improved the way we implement our projects in addition to tracking progress at all stages of the projects".*

A few stakeholders however provide financial resources to the groups, notably the CDF, ministry of water and irrigation, KVDA, WASREB, RVWSB, SARDEP and CCF. Other stakeholders such as the Catholic Diocese of Eldoret, World Vision and JICA provided materials such as water pipes for water distribution. Text box 5.1 illustrates examples of collaborative water projects financed by different stakeholders across the three ecological zones.

The collaboration of different stakeholders saw the construction of several water pans, construction of dams and desilting of dams in the Kerio valley and the highland zones between 2009 and 2014. These water pans include Kapkoros, Tulwobkel and Chesiron, all in the Kerio Valley, financed by RVWSB and WASREB. Three water dams were constructed in the highland, namely; Singore, Kamogio and Kapkessum, financed by KVDA. Still in the highland, KVDA financed the desilting of Etio, Koisot, Chelilei and Mokoiywo dams. The community provided the required labour and helped in supervision of work throughout the projects implementation process. The local administration led by respective area chiefs, their assistants and administration police provided security and ironed out any differences which emerged between groups and communities. All these efforts resulted in the successful completion of the water projects, which have made immense positive impacts on three main sectors of the community; notably agriculture, health and education.

(Fieldwork notes, 2014)

Box 5.1: Collaborative water projects

From Table 5.2 and box 5.1 it can be observed that different stakeholders participate in water resource development projects in the study, pointing out their importance in the development of the water sector. It is evident that government agencies majorly provide technical advice and financial resources while NGOs capacity build communities to actively participate in water development projects. Collaboration between the public and stakeholders in water development in the study area improves public participation across the five levels of participation, contributing to better project outcomes as evidenced in box 5.1.

In a study on public participation in sustainable rural development in Hungary, Bodorkos (2010) found out that capacity building trainings for participation by the Hungarian community development had an integral role in providing a supporting environment for participatory action research. Community planning processes provide

a space for this change, as practical experience shows that participants usually go beyond their individual interests and are more open to include environmental aspects when taking common decisions. In addition, the value of local knowledge was found to be instrumental in the study. Such knowledge would be more useful especially at the project inception and implementation stages. This is because local people have adequate knowledge on what works and what does not in their own environments. In addition, local knowledge becomes useful in areas such as siting the location of projects and conflict management. The importance of local knowledge in project implementation is supported by authors such as Chitere (2004) and The World Bank (1996) that such knowledge enhances the chances of successful implementation of projects due to the diverse ideas local people contribute.

In Mongolia and Bangladesh, studies done by Water Resources Group (2016) found out that stakeholder participation in water management impacted positively on water development projects. Areas of impact included increased awareness among the users on their roles, better co-ordination and collaboration with stakeholders and quicker resolution of water related disputes.

Anokye (2013) in a study of Densu water project in Ghana found out that the rural water delivery project had contributed to the realisation of social and economic welfare of the people. Those who received training had developed their skills in accounting, book keeping, minutes taking, records taking, leadership skills, and, among others while their self-esteem and efficacy increased. Capacity building in the water delivery scheme, besides contributing to the sustainability of the water delivery scheme had improved the social and economic life of the people.

Results from a study done in Okavango River Basin, a water resource shared by three countries, namely: Namibia, Botswana and Angola indicate that public participation in local and national decision-making processes related to natural resource management is promoted through specific provisions in the national constitution of each country (Republic of Namibia, 1989; Republic of Botswana, 1990; Republic of Angola, 1992). Typically, responsibility for management and decision-making are devolved to the lowest appropriate level (usually a local authority) (Turton *et al.*, 2003). The role of communities, traditional leaders, local, regional and national government officials, and NGOs in water resource development revolve around effective management of water resources. In Botswana and Namibia for instance, several active NGOs and community associations are involved in activities to promote public awareness, as well as in the development and expansion of projects and actions designed to enhance the socio-economic status of rural communities (Ashton & Nael, 2005). These findings compare favourably with the research findings of this current study on stakeholder management of rural water development projects.

In Portugal, Gamboa (2014) in a study of river basin management found out that stakeholders interests are varied in river basin management though the user group's or community's level of awareness of the project, especially the benefits, greatly influences their level of participation. This implies that genuine stakeholders such as the government and NGOs partnering with communities in water projects implementation need to firstly educate the user groups on their role and expected gains in the projects. Chitere and Mutiso (2015) support the idea of developing the capacity of the local people by stakeholders to equip them with skills necessary for project implementation and subsequent management.

The World Bank Group (2016) notes that water development in many countries worldwide require stakeholder participation in several areas to facilitate faster completion. The huge capital outlay in addition to technical expertise requirement call for stakeholder involvement in the areas of infrastructure development and institutional capacity strengthening especially in rural water projects as demonstrated in many World Bank group supported water projects in Malawi – the Shine Valley transformation Program; Morocco, Myanmar and Egypt.

Githua and Wanyoike (2015) in their study of the factors which influence the performance of community water projects in Njoro sub-county Kenya, a majority of those interviewed felt that stakeholder participation was important at all stages of the project and would increase the chances of project success. Stakeholders participated at the stages of identification, initiation and implementation of the community water projects.

In Laikipia county, a study by Speranza et al (2016) on the effectiveness of community based water projects revealed that active community involvement right from the initiation stage through implementation and monitoring, good leadership, adequate provision of funds and community education and training contribute to project success.

5.4 Participation of the Ministry of Water and Irrigation in Project Activities

The ministry of water and irrigation has the mandate of overseeing implementation of water projects across the country. It is the responsibility of this ministry to educate members of the public to understand how water issues affect their own lives and their roles in undertaking water development projects. The European Environment Agency (2014), points out that increasing the involvement of the beneficiaries in water

development requires agencies responsible to use simple language that is easily understood and motivate the beneficiaries to see the need for participation.

The study sought to find out the specific contributions of this ministry in water resource development in Keiyo North sub-county and specifically with regard to the 23 groups chosen for this study. A number of contributions made by the ministry were pointed out by the respondents. These contributions included; firstly training the group members on water site protection measures to avoid water pollution and diminishing water volumes. Secondly, the ministry surveyed the adequacy of water from various sources to meet the needs of the consumers. Thirdly, assisting groups to draw plans (intake and distribution), design maps (tank, dam), bills of quantities and work plans. Fourthly, assisted groups in the identification and subsequently interviewed resource persons for construction work, which included masons and plumbers. Lastly, the ministry provided technical services for ascertaining the proper fitting of water pipes to avoid water leakages thereby reducing water wastage. This was done through testing and re-testing.

Respondents were asked to rate the provision of technical services by the ministry of water and irrigation. Five options were provided, the first option excellent meant that services were timely and addressed the identified project need or problem, the second option good meant that services sought were provided though not timely, but addressed the problem/need. The third option, fair meant that the services sought were delayed necessitating a reminder and could not satisfactorily address the problem or need. The fourth option, poor meant that the services sought delayed, and at least two reminders would be made to the ministry before provision of such services while the services hardly solved the problem or need. The last option, do not know meant that

respondents who chose this option had no idea of the type of services sought from the ministry of water and irrigation as well as the quality of such services. From the findings, a majority of the respondents (86) rated the services as being good. This category represented 60.56% of the respondents. This was followed by those who rated the services as being excellent and were 25 respondents representing 17.61%. Twenty six respondents representing 18.31% rated the services as fair while 5 respondents (3.52%) could not rate the services using the options provided. From this rating, it can be concluded that services from the ministry of water and irrigation were rated above average because 78.17% of the respondents rated the services as good and excellent.

5.5 Rating of Group Participation and Project Completion

Group participation rating in water development gives an indication of the perception of the community on what they do. Respondents were asked to rate their participation in project implementation. Four options were provided, that is excellent implying participation from level 7-8 in the ladder of citizen participation, good implying participation in step 5 and 6, fair implying participation in step 3 and 4 and poor implying participation in step 1 and 2. Over half of the respondents (73), representing 51.41% rated their participation as being good, 21 respondents (14.79%) rated their participation as excellent, 42 respondents (29.58%) felt they fairly participated, 4 respondents (2.81%) indicated their participation was poor while only two respondents (1.41) could not rate their participation. From these results, it can be observed that most groups feel that their participation is above average as pointed out by 94 respondents within the category of ‘good’ and ‘excellent’. Further, this means that there was consultation between the groups and other agencies such as the ministry of water and irrigation on project implementation. The two levels of rating of

participation that is good and excellent point out to the possibility of project ownership by the groups which is a good indicator for project sustainability.

In addition to rating the level of group participation, respondents were asked to rate the level of completion of their water projects. The aim of rating was to find out whether groups completed their projects on time or not and explanations for the same. Study findings indicate that only five groups completed their water projects on time and were operational serving the members, the rest of the water projects had not been completed as planned and completion delayed between three months to one year. Table 5.3 provides more information on the level of completion of water projects in the study area.

Table 5.3 Level of completion of water projects

Level of Completion	Number of groups	Percentage
Completed on time	5	21.7
Completion delayed by 3 months	3	13.0
Completion delayed by 6 months	8	34.9
Completion delayed by 1 year	7	30.4
Total	**23**	**100**

It is worth noting that 18 out of the 23 water implementing groups had not completed their projects according to plan. This represents 78% of the water projects under study. A number of explanations were given by the respondents for this trend of non-completion of projects on time. A major reason advanced by key informants and FGD discussants to explain the slow pace of project completion was delay in disbursement of funds by the Constituencies development fund office of Keiyo North constituency. This was cited as the main reason because annual disbursement of installments to projects does not complete project activities therefore causing delays. The second

justification for delays in project completion was cited as internal disagreements between members with regard to allocation of tasks and subsequent fulfillment of the same. This was found in the areas of delivery of construction materials such as sand, stones/bricks and timber. The last reason for the non-completion of projects on time was inadequate cooperation between the group and other stakeholders on timelines for delivery and or completion of certain activities. Project contractors in some cases failed to deliver certain project deliverables due to delays by group members to deliver construction materials such as sand and timber or equipment such as water pipes. In some instances, inspection work by the ministry of water and irrigation delayed because group members delayed digging water pipelines which did not foster good work relations with the ministry. It can be concluded from the reasons for project delays that there has not been adequate and timely participation at the consultation and implementation stages by some stakeholders with the aim of completing water projects as planned.

Owing to the delays occasioned by the three justifications provided, many groups had incurred extra costs in project implementation. Such cost overruns meant that group contribution to project implementation increased and therefore members were required to make additional contributions to make the projects successful. The 18 groups which had not completed their projects on time incurred cost overruns. This is clear indication of how project delays can negatively affect project implementation and push the cost of implementation to project beneficiaries. Project delays also lead to delays in delivering project benefits to end users. The treasurer of Kipchukuku water project in the Valley had this to say about the delays,

> *"Our projects have delayed not because our members do not co-operate during implementation. The delays are a result of a mix of factors largely from other players such as CDF not disbursing money on time and the ministry of*

water and irrigation not offering technical advice according to the work schedules of many water groups. The delays are expensive to the groups since cost of materials keep rising yet CDF does not consider that compelling group members to fundraise to bridge the deficit. This is not good at all; every player in project implementation should fulfill their commitment to address such issues".

5.6 Impacts of Water Users Participation on the Outcome of Water Projects

The impacts of water users' participation have been categorized into five, namely; cost, completion, project ownership, motivation of stakeholders and project sustainability.

5.6.1 Reduction of project cost burden

One of the key project elements is project cost. A project budget outlines the cost of each of the project items at a particular time and any variation to it pushes up the cost of implementation. The study findings reveal that a significant percentage of respondents (46.48%), (66) acknowledged that participation of groups in water resource development had led to reduced cost of project implementation. Various justifications were provided by these respondents. Firstly, they indicated that the provision of locally available materials such as sand, timber and stones/bricks sold at affordable rates. Secondly, the cheap labour available from the community reduced the cost of hiring labour from outside the community and therefore lowered the cost of project implementation. Thirdly, transport costs were low due to the proximity of construction materials to water project sites, this enabled groups to make significant savings.

However, 53.52% of the respondents (76) felt that group participation in water development projects had contributed to a rise in the cost of projects. This category of respondents cited a number of reasons including, delays in disbursement of funds by

CDF, delays in decision making by groups, conflicts as well as delays in purchase of materials due to procurement procedures. Despite all these, it can be concluded that participation of groups in the implementation of water projects had positive changes on project costs given that the many challenges experienced by groups were largely outside their control, especially delayed disbursement of funds by CDF.

5.6.2 Project completion rates

One of the indicators of project success is project completion time. Every project has a timeframe for delivery of key milestones and ultimately completion and handover of the project to either the customer or the beneficiary/end user. In this study, respondents were asked to indicate the rate of completion of their water projects. The findings reveal that only five projects were completed within their stipulated time while the remaining 18 projects had delayed. The completed projects were: Arrar Kamoingon and Kipleketetwo in the Kerio valley; Ematu/Emkong and Emkogo in the escarpment and Simotwo in the highland. Some key characteristics of these groups include their averagely small sizes with membership of between 17 and 29, balanced gender composition except for Arrar Kamoingon with a huge disparity (male numbers more than double that of female) and the years of formation are in the same range – between 2005 and 2008. Members of these groups interviewed indicated that their participation in project activities had improved project completion rates. In this study, it was observed that despite active participation of groups in water projects only 5 groups completed their projects on time representing 21.7% while the remaining 18 groups, (78.3%) did not complete their projects on time as stipulated in their workplans. It should be noted however, that the reasons advanced for the delays in project completion were beyond the control of the groups given that delays in disbursement of finances by the Keiyo North constituencies fund was not a function

of the groups. Contribution of groups in all the five levels of participation especially on the implementation level where members made cash, material and labour contributions enhanced project completion. However, in some instances where project cost was high, contribution of cash by group members was slow, negatively impacting on project completion. An example in this case was Enou water project in the valley whose total cost was Kenya shillings one million, six hundred and fifty thousand whose completion delayed by one year. In addition, effective communication amongst members and quick internal conflict resolution, at the second and third levels of participation ensured there were minimal delays in project implementation.

Further, on project completion, the study found out that effective group participation was partly influenced by the cost and type of project. For instance, spring protection type of projects delayed by only three months while many of the tank, dam and water distribution type of projects delayed by between six months and one year. The cost of spring protection projects was found to be low compared to dam construction projects, for example the cost of Kiptorgotik spring protection project was Kenya shillings one hundred thousand only compared to the cost of Singore dam construction project whose cost was Kenya shillings one million and four hundred thousand shillings.

Many water distribution type of projects mainly in the escarpment and the valley delayed by between six months and one year largely due to delays in funds disbursement by CDF, impacting negatively on group participation in terms of contributing materials and implementing work. Project completion in the valley and the escarpment can also be explained from the point of view of the difficult terrain and sparse location of households which increases project cost as more money is

required to purchase galvanized iron water pipes compared to plastic pipes commonly used in the highland. Due to the nature of socio-economic activities undertaken by residents of the valley and escarpment, mainly pastoralism and small scale farming, their timely contribution of cash is slow, contributing to project delays. In the escarpment, delays are explained from the point of view of high cost of projects whose funding depends on CDF allocations which quite often delay thereby delaying project implementation. From these findings, it is clear that group participation at project implementation stage negatively affected by external funding and to some extent the cost of projects. Overall, the highland has the largest percentage of project delay at 83% followed by the escarpment at 80% and the valley at 71%. Table 5.4 provides a summary of project delay duration across the three agro-ecological zones.

Table 5.4: Project delay duration

Project name	Project type	Duration of delay	Zone
Chepkeikei	Spring protection	3 months	Escarpment
Kibusien	Spring protection	3 months	Escarpment
Kiptorgotik	Spring protection	3 months	Highland
Kamogio	Dam and water distribution	6 months	Highland
Kipsoen	Dam and water distribution	6 months	Highland
Kibomoo	Water distribution	6 months	Valley
Kipsabu	Water distribution	6 months	Valley
Kapchepkoima	Water distribution	6 months	Escarpment
Kipkerembe	Spring protection and water distribution	6 months	Escarpment
Kongotich	Tank construction and water distribution	6 months	Escarpment
Chebagon	Water distribution	6 months	Escarpment
Emket	Spring protection and water	1 year	Escarpment
Kapkobal	ddistribution		
Enego	Water distribution	1 year	Escarpment
Logogo	Dam construction and water distribution	1 year	Highland
Singore	Dam, tank construction and water distribution	1 year	Highland
Chebinyiny	Water tank construction and water distribution	1 year	Valley
Enou	Water distribution	1 year	Valley
Kipchukuku	Water tank construction and water distribution	1 year	Valley

The study identified a number of project drivers which worked for the completion of water projects in the study area. Key among the factors identified was active group participation, capacity building of groups, timely disbursement of funds by some financing agencies alongside delivery of materials and equipment necessary to facilitate water development. From the three focused group discussions conducted and key informant interviews, projects funded by stakeholders such as World Vision were completed within the stipulated time compared to those funded by CDF because they do not take long to disburse money for prioritized water projects. Figure 5.1 provides a summary of drivers of project success.

Driver	Prerequisite	Outcome
Timely disbursement of funds	Presentation of budget and work plans to funding agencies (CDF, government ministries, agencies or NGOs)	
Active group members participation	Group members education on their roles in the project implementation and management process	
Quick conflict resolution	Identification of conflict sources, types and assignment of roles to stakeholders to resolve the conflicts. There must be willingness of stakeholders to resolve conflicts identified.	
Regular stakeholder feedback meetings	Proper planning and information dissemination to stakeholders on proposed meetings including the agenda	Successful water projects
Stakeholder collaboration	Identification of stakeholder roles and seeking the support of each for project success	
Reliable and affordable labour	Provision of artisan based trainings to community members and the willingness of the trained members to provide labour at budgeted rates	
Capacity building of groups	Training institutions to provide training to group members on areas of interest to the members relevant to water projects	
Information sharing	Exchange of information between various stakeholders on project status, financial progress, human resource, procurement issues. This was done through sharing of reports, seminars, workshops, community meetings.	

Figure 5.1: Drivers of project success

A key driver associated with project success in the study was group members active participation in project identification and implementation. The study found out that there was group members participation in the siting of water projects across all groups. Where proper sensitization was done, group members contributed materials such as sand, ballast and timber on a timely basis which aided in fast tracking project implementation. Other forms of participation of members during implementation included attending project meetings to deliberate on project activities. In such forums, decisions made were owned and implemented by all the group members with the aim of attaining project goals.

Quick conflict resolution was identified as a driver of success in water projects development. A number of conflicts ranging from leadership wrangles to delays in delivery of materials and completion of projects by contractors were identified as contributing to low levels of cohesion in groups. However, through internal mechanism like having committees in charge of dispute resolution and inviting external stakeholders to train groups on conflict resolution mechanisms, many groups were able to resolve their differences and implement projects as planned. Organizations such as World Vision, Mercy Corps, KWS, department of social services and CDF were instrumental in providing the necessary trainings on conflict resolution.

Another success factor was the frequent meetings organized by the project leadership to update members on progress made in project implementation. This platform provided PMC members an opportunity to share with group members information on all issues related to the project. Such issues included major results achieved so far, funds utilized to date, major milestones made, project challenges, expected

contributions from members and other stakeholders and planned activities. Such a forum gave members a chance to ask PMC members pertinent questions about the project and give suggestions on how the project could be improved to attain the set out results. In addition, the meetings acted as sessions to review work done so far against the set targets. In summary, they were forums for reporting monitoring and evaluation information to the members.

Collaboration between groups implementing water projects and other stakeholders was another success factor. This collaboration was seen right from proposal development through drawing of designs, plans and bills of quantities to actual disbursement of money, delivery of materials, provision of technical expertise and constant monitoring and evaluation. Stakeholders who participated in project work were many and drawn from government ministries such as water and irrigation, agriculture, CDF, department of social services, KWS, KVDA as well as non-governmental organizations such World Vision, Mercy Corps, SARDEP and a bilateral aid agency - JICA. Each of these stakeholders played a role in ensuring that projects were implemented as planned. The nature of collaboration varied from one stakeholder to another, though overall, collaboration centered around resource provision and utilization with the aim of attaining set out project results.

Availability of affordable and reliable labour from the community was identified as a success factor. The unskilled and semi-skilled labour from the community was utilized for such works as digging trenches for pipe laying, removing debris from dam sites, clearing bushes to pave way for pipe laying and carrying construction materials. This labour was readily available from the community, the rates for such labour were

affordable and therefore did not delay work within the study area. The youthful population (mainly men) of the community provided this labour.

Information sharing was identified as one of the factors which contribute to project success. Information remains an important component in project work for many reasons. Firstly, it updates stakeholders on the level of project implementation which can then be compared to the planned activities and depending on the stage of implementation, changes may be proposed and implemented to keep the project on track. Secondly, project information is important as it facilitates decision making by project management teams as well as stakeholders on important issues related to the project. Thirdly, information aids in assessing the levels of stakeholder contributions and their effects on project implementation, for instance disbursement of funds, delivery of materials and technical expertise to groups by stakeholders.

A variety of methods for information sharing were used by groups. These methods included; community meetings (*barazas*), also referred to as community learning forums (CLFs), group meetings, seminars and community workshops and reports. Community meetings and workshops were organized by groups with the purpose of updating members of the community of whom were members of groups on levels of project implementation, challenges encountered and soliciting their views on how best the project could be implemented successfully.

Group meetings were the second method of information sharing used by groups to share information. This method is more specific to groups and involves presentation of project implementation information to members by either the PMC or the top leadership of the group, which is the three group officials. In such meetings, members are updated on all issues of the project ranging from financial, physical progress,

quality standards, specific milestones, performance of stakeholders, challenges encountered, membership issues and attainment of project results. Such meetings are very consultative and require members to actively participate by providing ideas on how to improve project implementation.

Seminars as an avenue for information sharing were mainly organized by other stakeholders, not the community groups. These seminars were convened with the purpose of enabling groups undertaking water development projects and stakeholders share information on pertinent issues related to the project. Issues for discussion included financial accounting, contractor/supplier responsibilities, group roles, projects changes and approval procedures and tracking results delivery. They also provided an opportunity to the community groups to share their challenges with stakeholders and how to handle them.

The last form of sharing information was reports. Groups prepared different types of reports containing varied information to be shared with specific stakeholders. The reports found to be commonly used by groups included; general progress reports, financial reports, quarterly reports and problem specific reports. Whereas general progress reports contained all areas of a project and informed both the members and stakeholders of the general progress made so far in project implementation, financial reports were used to share income and expenditure information with the funding agencies. Quarterly reports were prepared to share information with members and obtain their inputs on how to improve results delivery. Problem specific reports were prepared by committees constituted by the group on specific problems identified as threats to the project. Such problems included theft of project materials, poor quality materials, delays in project implementation by the contractors, delays in disbursement

of funds by project financiers and delays in delivery of materials by members. These reports contained proposed solutions to the identified problems. Information in the reports was presented to members and their contributions informed the way forward as far as finding workable solution to the problems is concerned.

The last driver of success identified was capacity building of group members on their roles in water resource development and the importance of the resource in economic development. Many stakeholders participated in sensitizing groups on what they ought to do to develop their water resources. These included the ministry of water and irrigation and that of agriculture, CDF, county council of Keiyo, KVDA, World Vision, JICA and SARDEP. Locational development committees in collaboration with CDF particularly played key roles in education of community members on how to write proposals on water development and submit them to CDF for possible funding. The ministry of water provided technical expertise in areas of conducting feasibility studies and advising groups on project viability, drawing plans and designs for groups. Text box 5.2 illustrates a successful water project implemented by World Vision, CDF, ministry of water and irrigation and the community. This demonstrates the effectiveness of teamwork in project implementation which relates to the second objective of this study on the levels and impacts of water users participation on the outcome of water projects.

Kabeei water project was started in 2008 in Kiptuilong location, Kipka sub-location in Tambach division by a small group of residents due to water shortages arising from the seasonality of streams in the sub-location. Kipka self help group comprising 25 members started the group in 2005 and embarked on income generating activities, mainly irrigation of crops and dairy farming. Due to water shortages, the performance of their projects was not appealing. This culminated in the group focusing on water development in 2008 to provide adequate water for their activities. The group applied for funds from World Vision and some from Keiyo North CDF and supplemented with community contributions of labour, supervision and materials. The ministry of water and irrigation provided technical expertise. The combination of effort from the four stakeholders saw the completion of the project in a record one year. The project serves 71 households and has reduced the walking distance to the nearest water point from 1kilometre to less than 300 metres. The role of change agents within the community and the active participation of the community members at each project stage were particularly instrumental in the faster completion of the project. Project maintenance is done by the community through monthly subscriptions of fifty shillings for routine patrols, repairs and maintenance.
(Fieldwork notes, 2014)

Box 5.2 Successful water project

Collaborative projects as illustrated in text box 5.2 are implemented within stipulated timeframes due to commitment by all stakeholders to fulfill their roles. The water development groups (beneficiaries) in such projects are motivated by other stakeholders thereby positively contributing to project implementation.

5.6.3 Project ownership

Any form of participation in development is meant to empower those participating and contribute to ownership of the project by the intended beneficiaries. This study sought to find out the effect of participation on project ownership. From the findings, 20.42% of the respondents (29) indicated that participating in project activities had led to ownership of the project by the members. Indicators of this included; unconditional provision of their labour when required for any manual assignments such as carrying water pipes, assisting artisans and contributing construction

materials. Others included, concern by the members about delays in implementation occasioned by external factors such as delayed inspection of works by the ministry of water, an almost full member attendance of group meetings, concerns raised by members on the expansion of the project and how to derive continued benefits from the project. In addition, the study found out that group structures such as PMCs were actively engaged in educating members on the need to make monthly contributions for purposes of meeting the costs of operations and maintenance. Already, completed projects such as Simotwo and Kamoingon had embarked on monthly collection of such fees with each member contributing Kenya shillings one hundred and fifty. All these issues presented by respondents clearly showed that they have owned the water projects. In conclusion, public participation positively contributes to project ownership as demonstrated by the results of this study.

The results of this study agree with those found by Speranza et al (2016) in Laikipia, Kenya in which different levels of ownership were achieved through communities initiating projects, electing PMCs, contributing in cash and kind to project infrastructure, and participating in project meetings, thereby having some control over project activities.

Contrasting results were however found by Gbedemah (2010), in a study of water projects in Akatsi in Ghana where a majority of the respondents indicated that the projects were owned by NGOs (54.8%) and District Assemblies (35.6%), with only 2.7% of them indicating that the community owned the water projects. The explanation given being the low community contribution to project implementation at only 5% of the project cost. Further, the district assemblies hold the project in trust for

the communities, therefore community members think the water projects belong to the district assemblies.

Other contrasting results were found by Phunthavongsa et al (2014) in a study of water resources development in Lao People's Democratic Republic in which water resource management project users or beneficiaries did not appreciate the projects since the projects were provided by the government for free of charge that related to lack of sense of ownership.

5.6.4 Stakeholder motivation

Stakeholder participation in project implementation enhances project success in a variety of ways as they bring in the much needed support financially, capacity built groups, contribute ideas as well as help in monitoring and evaluating what groups implement. Respondents were asked about the impact of their participation on project stakeholders. A majority of the respondents (105) representing 73.94% indicated that stakeholders had been motivated by the work groups did in water development. Many stakeholders including government ministries of water and irrigation and agriculture committed much of their time to train the groups on water management and agricultural production. In addition, a number of NGOs such as World Vision and Nature Kenya as well as faith based organizations also made considerable contributions to the implementation of water project undertaken by groups. Forms of support from NGOs and faith based organizations ranged from capacity building on water development, agricultural production, water development materials and financial assistance in the form of grants. All these forms of support to groups indicated that stakeholders had confidence in what the groups were implementing.

World Vision's water engineer made these remarks in reference to public participation in water resource development in the study area,

> *"The community here is so co-operative that as an NGO, we feel motivated to do our best in ensuring that the get connected to tap water for their socio-economic development. Group members keep time when invited for meetings, actively engage us on water issues, they are very curious during our capacity development trainings and appreciate the support we give them."*

Due to cooperation from the community in the escarpment and the valley zones, World Vision through its integrated development approach (IDA) in collaboration with the community, especially community change agents started a number of projects which included integrated water sanitation and hygiene, health education and food security. Kabeei and Kabei water projects were initiated in the escarpment in 2008 and completed in one year. According to World Vision's water engineer (Soin ADP), the two water projects supply water to 71 households both in the escarpment and the valley zones to actualize the three projects. The completion of the projects is associated with active community participation; including the participation of community own resource persons in addressing any emerging conflicts among community members and or with stakeholders. The completion of the projects has since reduced distance travelled by community members to fetch water from one kilometer to just 300 meters. All these projects were funded by World Vision while the community provided labour and materials amounting to fifteen per cent of the projects' costs. World Vision indicated that they jointly initiated these projects with the communities having been motivated by the levels of commitment demonstrated by community groups.

A small number of respondents (37) representing 26.06% however, felt that participation of group members in water development activities had not done much to

motivate stakeholders to support the groups. This category of respondents indicated that lack of cooperation in some groups, among them Enego in the escarpment and Enou in the valley and delays in delivery of some construction materials by group members had negatively affected relations between the groups and stakeholders. In conclusion, the study found out that there was active participation of group members in water development projects which had positively contributed to stakeholder participation in project activities.

5.6.5 Project sustainability

An important aspect of any project is its sustainability. For a project to be sustainable, the beneficiaries need a lot of education and training on how to sustain the benefits which accrue from the project and equitably share amongst the members. In this study, respondents were asked to indicate the effect of their participation on project sustainability. Out of the 142 respondents, 76 pointed out that their participation had contributed to project sustainability, representing 53.52% of the respondents. A number of indicators were identified by the respondents as proof of sustainability which included; contribution of unpaid labour, contribution of unpaid materials, commitment of time to project activities by the members, start up of small enterprises such as tree nurseries, fish farming and irrigation projects started by groups to earn income for meeting group obligations such as fees for renewal of group registration certificates, purchase of stationery and other costs incurred by the group during project implementation. This was evidenced in groups such as Simotwo and Emkogo where members had already started paying water user charges and had established tree nurseries for income generation to sustain group activities and ensure that their groups could meet their operation costs.

These results are concomitant with those of Ahmad et al (2014) in Pakistan which found out that individuals in groups participated in the execution stage of project implementation in the form of manual labour and giving land for main pipeline, which further concurs with findings by Davis and Liyer (2002) who illustrated that contribution of the community in the form of money, labor and material are the general ways of community participation, which leads to the sustainability of rural water supply programs. In a study by Ofuoku (2011) in Delta state, Nigeria, study findings revealed that projects with high levels of community participation were more sustainable compared to those funded by the state, local governments and oil companies.

Lockwood (2004) points out that the full participation of the community in operation and maintenance (O&M) of any water scheme, technical and financial management, cost sharing for execution and O&M, strategic decision making and ownership by the community are essential segments for sustainability of water supply schemes. Further, in rural water supply projects, a key issue of sustainability is community ownership and management. Meaning that, the communities take the final decision on important aspects of the planning and implementation of water supply schemes in sustainable rural water supply systems. Currently, involvement of the community in different phases of the project is widely accepted by NGOs, governments and other stakeholders. Communities' participation in which the community takes the responsibility of managing the water supply systems by themselves is one of the indicators for sustainable community management in rural water supply schemes.

In Nigeria, Ofuoku (2011), in a study of the effect of public participation on sustainability of rural water projects in Delta state, Nigeria, found out that communities unions in different names like community development committee, community progressive union, etc have the executives who represent the interest of

the communities. This is contrary to the approach used by ACTIONAID (2006) in Kenya where they involved the community right from the beginning. By so doing, they feel the project belongs to them and they strive towards sustaining it.

While in Ethiopia, a study by Lencha (2012) of rural water supply management and sustainability in Ethiopia in Adama area found out that a majority of the community members participated in project implementation through provision of materials, labour and cash, with a few participating in consultative forums. In the same study however, the water committees, the beneficiary community and government agencies were responsible for making project decisions. This compares well with the findings of this study as major decisions were found to be made by the groups through their respective leadership.

Further, these findings are in agreement with those found out by Beyene (2012) in a study in Amhara region in Ethiopia on the factors affecting the sustainability of rural water supply systems in which it was found out that in almost all water points the communities mentioned that they contributed money for operation and maintenance before the installation of the project and the contributed money was kept by the water committee treasurer together with WC accountant or a person selected by the community members. For example, the strategy used by Organization for Rehabilitation and Development in Amhara (ORDA) is that before constructing the water point, staff members of the implementers first made discussion with the community, whether communities contribute cash, labor and kind during construction and money for operation and maintenance after construction or not. Further, similar findings were found by Mwakila (2008) in a study of two water projects in Tanzania where community contribution of cash, labour and their commitment to meet

operation and maintenance were mentioned as major components of project sustainability.

In a study of Densu basin in Ghana, Anokye (2013) found out that the rural water delivery sub-sector had made a number of achievements, which included incorporation of participatory planning and community participation in water resources development which contributed to high levels of public accountability and empowerment thereby raising community commitment at the local level and enhancing project sustainability. In addition, community members had been empowered to levels where they would elect members of water committees to represent them while there was also improved community participation, contributing to better ownership and maintenance of water projects. This was made possible through capacity building of community members by the various stakeholders enabling them to actively take part in decision-making at appropriate levels in the project cycle.

According to the findings of this study, many trainings on project sustainability were offered by stakeholders working with groups. These stakeholders were ministries of water and irrigation, agriculture, KVDA, World Vision, Catholic Diocese of Eldoret, CDF- Keiyo North constituency office and JICA. Areas of sustainability emphasized in the trainings included initiation of income generating activities (IGAs) to support operations and maintenance costs of the water projects, training of members on modern agricultural production methods for improved yields and increasing members monthly/annual subscriptions to the group so as to move away from dependence on external sources of support. In conclusion, the participation of groups in water resource development has positively contributed to project sustainability owing to the

numerous trainings offered by government and non-government organizations and as a result, many groups have initiated income generating activities which if well managed will contribute to their sustainability. Figure 5.2 provides information on the water project development process in the study area while Figure 5.3 provides a summary of the project implementation phases and respective actors in each phase.

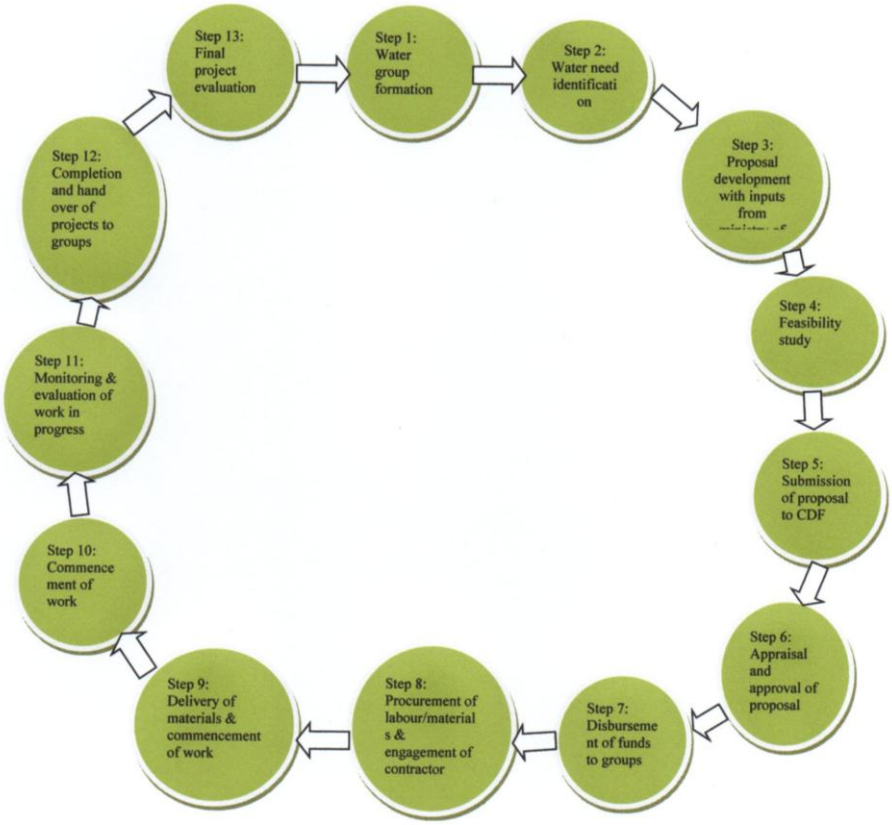


Figure 5.2: Water project development process

Figure 5.2 illustrates a 13 step typical water development project process in the study area. The process of water development starts from the first step of group formation where community members mobilize themselves and formally register a group to pursue water development project. Steps 3 and 4 of proposal development and undertaking of feasibility studies, the ministry of water and irrigation is involved to ascertain water quantities and help groups draw water designs and plans. Groups

thereafter submit their proposals to CDF for appraisal and subsequent approval for funding. Once funding has been approved, groups then wait for funds disbursement before proceeding to recruit contractors and purchase the necessary project materials such as water pipes and cement. This is done in collaboration with CDF and ministry of water to check on quality standards of procured labour and materials. In instances where partial financing has been sourced from NGOs, such an organization also actively takes part in the procurement process.

Once procured and materials delivered, work commenced with close supervision by the ministry of water and irrigation, CDF and PMCs. Again if a NGO financed a project, then it took part in supervision of work being done. Monitoring and evaluation of work done remained the duty of all the stakeholders involved, notably the ministry of water and irrigation for professional guidance, CDF and PMCs. The purpose of such monitoring activities is to ensure that planned activities are being implemented and if there are reasons for variation of the project, then necessary approval is sought from relevant authorities. Upon successful completion of the project, the contractor hands over the project to the group with full project operation information. The groups with assistance from the ministry of water undertake important tests to ascertain the levels of working of various project components including water taps. In step 12, proposals on how to sustain the water projects are documented for the purpose of operation and maintenance. The final step of the process is project evaluation usually done by CDF, ministry of water and irrigation and community groups or NGOs which financed the projects to assess the value of such projects and document best practices as well as lessons learnt for future project implementation.

Project Phase	Stakeholders	Stakeholder category
Idea generation	1. Groups	1. Primary
	2. Ministry of water and irrigation	2. Secondary (government)
Consultation	1. Groups	1. Primary
	2. Ministry of water and irrigation	2. Secondary (government)
Decision Making	1. Groups	1. Primary
	2. Ministry of Water and irrigation	2. Secondary (government)
	3. CDF	3. Secondary (government)
Implementation	1. Groups	1. Primary
	2. Ministry of water and irrigation	2. Secondary
	3. CDF	3. Secondary
	4. NGOs	4. Secondary
	5. Contractors/suppliers	5. Secondary
Termination and evaluation	1. Groups	1. Primary
	2. CDF	2. Secondary
	3. Ministry of water and irrigation	3. Secondary
	4. NGOs	4. Secondary

Figure 5.3: Water project implementation phases.

Figure 5.3 provides information on the five project phases in water development in the study area indicating participation of various stakeholders in the projects. In addition the figure categorizes the stakeholders into two; that is primary and secondary. Water development groups are the primary stakeholders while government ministries/agencies, contractors, suppliers and NGOs fall under the category of secondary stakeholders. It is worth noting that groups and the ministry of water and irrigation participate at all the five levels of the project cycle because group input is necessary given the fact that they will own and operate the water projects; on the other hand the ministry of water has the mandate and expertise to supervise all water projects in the country.

5.7 Chapter Summary

This chapter has presented information on the impacts of group participation on water development projects. It has clearly indicated that participation has the impacts of reducing project costs, contributing to project ownership by the beneficiaries, improving chances for project completion, motivating stakeholders to positively participate in project implementation activities and improving project sustainability.

CHAPTER SIX

CHALLENGES ARISING FROM GROUP PARTICIPATION IN WATER PROJECTS

6.1 Introduction

The third objective of this study was to analyze the challenges which local water resource development groups face and their impacts on water development projects. This chapter analyzes the various challenges faced by water development groups, their impacts and proposed solutions to the same.

6.2 Challenges Faced By Groups in Water Resource Development

Projects across sectors are faced with a wide range of challenges, some internal while others external. The extent to which such challenges affect project activities depends on the level of management of the challenges by the project management team. Study findings reveal that all the groups experienced challenges ranging from financial, conflict related, lack of cooperation between stakeholders, delays in delivery of materials to low skilled personnel. These challenges were grouped into seven categories namely; financial, conflicts, human resource, management, procurement, security and technical services. This information is presented in Table 6.1.

Table 6.1: Challenges encountered by water resource development groups

Type of challenge	Examples
Technical services	Delayed provision of technical services especially by the ministry of water and irrigation
Financial	Delayed disbursement of funds by stakeholders Variable costs of materials Delayed payment of bills High cost of replacing vandalized and stolen water pipes and taps
Conflicts	Disagreements between groups and contractors on quality of work Disagreements amongst group members on pipelines Time management issues during project meetings
Human resource	Unskilled manpower Reliance on trained artisans who sometimes are unavailable during critical stages of project implementation Reliance on stakeholders for verification of work standards
Management	Delays in decision making by project management team Non action by management on members who delay paying their subscriptions
Procurement /Quality of work	Delay in payment of suppliers leading to delayed delivery of materials Procurement of low quality items Poor quality work
Insecurity	Theft of materials such as water pipes Vandalism of laid water pipes and taps

Other challenges unique to specific agro-ecological areas were difficult terrain and bad state of roads. These challenges were encountered by groups in the escarpment and the valley.

From the study, a number of challenges were identified as contributing to non-effective group members participation, contributing slow implementation of projects. These challenges included; firstly, inadequate and delayed provision of technical

expertise from government line ministries especially the ministry of water and irrigation. In instances where their services were required to verify the quality of materials supplied and or work done by a contractor, there were delays leading to delayed implementation of work and therefore delaying project results and benefits to the beneficiaries. The resultant effect of this was that group members across the groups were de-motivated therefore not actively participated and this led to project cost overruns in project implementation.

The second challenge identified by groups and FGDs was delayed disbursement of funds by CDF. Whereas group members made their cash and material contributions for project implementation on a timely basis, CDF delayed disbursing money meant for purchase of essential water development materials such as pipes and for payment of contractors. Such delays sometimes lasted for over 3 months. The implication of this included delayed decision making and implementation of the projects, delayed delivery of materials, and variation of material costs due to inflation which was not captured in project budgets. Ultimately, these led to delays in project completion and added costs to the projects which were borne by the members.

Conflicts were identified as a challenge in project implementation. These conflicts were mainly internal over issues of resource use and member subscription to facilitate project activities. In some cases, however, there were conflicts between the group and contractors and or suppliers over delays in payments for items supplied. Though groups were not entirely to blame for delayed payments, such stakeholders could not understand since groups contracted them to supply materials. Such conflicts led to mistrust amongst members and between the groups and suppliers/contractors. In certain instances, suppliers would even deliberately delay delivering materials since

payments were not being made promptly. This negatively affected timely decision making and ultimately delayed project implementation.

Over-reliance on skilled labour from outside the group/community was identified as a human resource challenge contributing to low members participation in project activities. This arose from low group members' capacity, resulting in low and slow participation in project implementation phase. Many groups did not have skilled personnel in artisan based fields such as masonry and plumbing. This situation compelled them to seek the services of skilled manpower from outside the community. Such manpower proved to be both expensive and unreliable in times of need. Skilled labour from outside the community was expensive in the sense that such labour required accommodation, sometimes transport and also security all at the cost of the group. This again necessitated that group members make additional contributions to shoulder such expenses thereby increasing the project costs. This challenge negatively impacted on their participation at project implementation stage. The chairman of Kibusien water project in the escarpment made the following comments regarding inadequate skilled manpower,

> *"One of the major challenges faced by our groups remains the inadequacy of skilled personnel in artisan based courses. Masons and plumbers are particularly important in water projects yet are rarely found within the community. The absence of people with such skills has pushed the cost of procuring labour from outside the community".*

From the study, delayed decision making by the groups' leadership was pointed out as a management challenge. This was in relation to payment of members' subscription either as the groups' contribution as a requirement for implementation of water projects or for group operations. Delays in making the subscriptions led to delayed decision making on group activities negatively affecting group members active

participation especially at the project implementation stage which requires cash, labour and material resources for accomplishment of work. This challenge can be attributed to members low levels of education and inadequate experience in managing projects.

Procurement and quality of work was classified as a challenge in water project development. This challenge relates to delays in payment of contractors and suppliers occasioned by delayed disbursement of funds by CDF which in some instances led to procurement of low quality materials, subsequently culminating in poor quality work. Delays in delivery of materials de-motivated group members as they would wait for long to implement the water projects. This negatively affected their work plans and delivery of the projects for use by the members.

Insecurity of water projects materials was the last challenge identified. Water pipes and other materials were occasionally stolen from project sites especially water tank construction and water distribution projects. As a result of such thefts, groups incurred extra costs of replacing stolen items. This negatively affected their participation as this delayed implementation of activities and completion of work.

In relation to the group theory, all these challenges acted as negative forces which singularly or in combination negatively affected group members active participation in water development process. The impact of the challenges varied from one group to another, for instance the challenge of insecurity of project materials affected groups in the valley most compared to the escarpment and the highland zones. Overall, the challenges de-motivated members' from active participation especially at decision making and implementation stages of the project cycle, resulting in delayed implementation and completion of water projects according to schedule.

The African Development Fund (2014) in its progress report on rural water development projects identified delays in disbursement of finances, slow procurement processes in addition to delays by contractors and consultants to deliver their services as major challenges facing rural water development projects. These challenges negatively affected water users participation in water resources development as found out in countries including Cameroon, Comoros, Kenya, Mauritania, Zambia, Madagascar and Central African Republic.

Speranza et al (2016) in a study of the effectiveness of community based water projects in Laikipia, Kenya, found out that poor and inadequate funding, poor leadership and management, lack of appropriate skills were the major challenges to water development in the study area.

In a study by Ngaruiya and Sceffan (2016) in Loitokotok, Kenya on actors and networks in resource conflict resolution, they found out that conflicts negatively affected the performance of local groups in water resources development. The role of informal structures such as council of elders was found to be instrumental in conflict resolution. In addition, they recommended the development of the capacity of community groups to address water related challenges.

Ted et al (2016), in their study on social actors in water development projects in Malawi and Zambia found out that vandalism and the culture of theft of water facilities was common in rural areas. These findings are in agreement with the study findings in which vandalism of water facilities was reported by the respondents.

6.3 Impacts of challenges on water resource development

Project challenges pose a threat to projects in a variety of ways. If not properly managed, they may lead to early project termination (though this was not found in this study) and subsequently deny project beneficiaries the anticipated benefits. Respondents were asked to indicate the impacts of challenges on projects. Table 6.2 represents information on the impacts of the challenges on water projects.

Table 6.2: Impacts of Challenges on Water Resource Development Projects

Type of Impact	No of Responses	Percentage
Delay in project implementation	90	63.38
Increase in project cost	27	19.01
Poor quality work	25	17.61
Total	**142**	**100**

Results from Table 6.2 indicate that a great majority of the respondents (90) which represent 63.38% pointed out that challenges contribute to delays in project implementation. This statement is confirmed by the number of groups which completed their projects on time. Out of the 23 water resource development projects, only five were completed on time, implying 21.7% of the groups had managed to complete their projects. This leaves out 18 projects (78.3%) which were not completed on time, others having delayed completion by one year.

A small number of respondents (27) indicated that project challenges increased the cost of implementation of projects, this represent 19.01% of the respondents. This is explained by variations in the cost of items as pointed out in table 6.1 under financial challenges. In addition, the high cost of project implementation was explained from the point of view of delays in disbursement of funds by stakeholders leading to

payment of penalties imposed by contractors as agreed during contract signing. A smaller percentage of respondents (17.61%) indicated that project challenges were responsible for poor quality work. This point is validated by the challenge of inadequacy of trained personnel in the community thereby leading to over-reliance on stakeholders who sometimes may not be available when required.

These results agree with study findings by Ndeti (2013) who found out that financing mechanism for Water Resource Users Associations (WRUAs) greatly delayed project implementation and completion in Kibwezi, Kenya. Respondents in the study indicated that inconsistencies associated with the funding cycle occasioned, delays in funding, slow operations at Water Resources Management Authority offices, inadequate funding and bureaucracy, all contributed to project implementation delays. The study also found that the WRUAs relied majorly and almost entirely on Water Services Trust Fund funding to implement their sub catchment management plans. This compares to the water groups in the study which almost entirely depend on CDF for their funding.

In the same study, Ndeti (2013) found out that the level of training influenced the performance of WRUAs in conservation of water catchment areas in Kibwezi. From the findings, low levels of trainings of WRUA members negatively affected their performance in catchment conservation. These results agree with the study findings on the effect of the levels of capacity of group members on the implementation of water projects. This is in relation to delays occasioned by over-reliance on skilled labour from outside the group which was found to be both unreliable and costly.

A study of integrated water resources management in Africa by the United Nations Economic Commission for Africa found out that inadequate funds and trained personnel

had resulted in unsatisfactory operation and maintenance of water supply and sanitation systems. In addition, mechanisms for integrated multipurpose development of river basins as a basis for socio-economic development remained largely undefined in many of the African countries (Donkor & Wolde, 1998). These results agree with the study findings on the financial and human resources challenges in water resource development.

A study by Rutto et al (2011) on the contribution of project integration services to successful implementation of CDF projects in Eldoret North constituency reveal that inadequate finances, slow disbursement of money, lack of political good will were some of the challenges facing projects in the study area. These results agree with the study findings on the slow disbursement of funds which negatively impact on completion of planned projects on time. Text box 6.1 provides an example of a water project which failed due to a combination of project challenges.

Chebati water project (1982-2011)
Chebati water project was started in 1982 by a retired chief of Kiptuilong location and a few community members in the escarpment of Keiyo North sub-county, then Elgeyo Marakwet district due to severe water shortages which faced more than 50 households. The walking distance to the nearest water point for the residents was estimated at 8 kilometres. The water project was upon completion expected to serve three sub-locations in the area namely; Kipka, Kapterik and Setek. The group had a membership of 43 drawn from the three sub-locations. After meeting all the registration requirements and putting in place a project management committee, the group wrote a proposal to the Rural Development Fund for initial funding, which was approved and the work of dam construction at Kipka began. Due to internal conflicts, the project stalled in 1985. ASAL came in to finance the project between 1985 and 1988, but due to mismanagement of finances, it pulled out. The project stalled for ten years. In 1998, SARDEP, a local NGO supported the group with financial and technical expertise sourced from the ministry of water and irrigation. The same year, Iten-Tambach town council, through LATF allocated some funds to the project. The efforts by the two funding agencies did not yield much as the project resources were mismanaged and the members were reluctant to contribute 30% of the project cost leading to a halt in project implementation in 2002. In late 2003, the project committee applied for funding from the then nearly established CDF to facilitate implementation of work. The project was funded and made significant in pipe work to communal water points across the three sub-locations. In 2008 due to leadership wrangles, and non-accounting for resources from CDF, it was never funded by CDF, leading to another stall. In 2009, WV, Soin ADP revived the project after the project committee wrote a proposal to the NGO for support. The NGO supported the group through provision of water pipes and paid the contractor for pipe laying. Two years later, the NGO stopped supporting the group due to mismanagement of resources and non-commitment by group members to pay their monthly subscription fees of fifty shillings for operations and maintenance. In 2011, World Vision formally informed the community of its decision to pull out and reasons for the same. The community was then left to run the project having frustrated efforts by several agencies to complete it. To date the project is incomplete though over 60% of the intended beneficiaries can access water at approximately 2 Kilometers away from their homesteads. The project has been implemented for over 29 years yet it was anticipated to be completed in 5 years. Chebati water project has seen its project leadership changed 16 times due to mistrust by the members over resource use. This project gives an illustration of how a culmination of issues leads to project failure to meet its objectives and especially when the community does not own the project from the inception stage. In addition, stakeholder collaboration in helping the group solve its problems contributed to delays in project implementation.
(Fieldwork notes, 2014)

Box 6.1: Chebati water project

It can be concluded from the discussions that the many challenges affecting water projects implementation in the study area across the three agro-ecological zones negatively affected group members' participation in project activities culminating in many effects. Challenges such as delays in funds disbursement by CDF strained groups' active participation due to cost overruns while underdeveloped human resources lowered groups' participation in project activities.

6.4 Measures put in place to address the challenges

To reduce the negative impacts of challenges on projects, several measures were put in place by groups. Most of the measures were group generated and situation specific. One of the measures taken by groups to reduce delays in implementation of work was conducting local fundraising to purchase materials such as water pipes and other accessories. Part of the money raised went into partial payment of contractors and artisans. This strategy worked fairly well across groups. Once stakeholders disbursed funds, those who contributed their monies were refunded.

To address the challenge of conflicts, stakeholders were called upon to provide trainings on conflict resolution strategies. These stakeholders included the Catholic Diocese of Eldoret, KVDA, JICA and ministry of water and irrigation. Of particular focus on conflict resolution was the role of effective communication between parties involved in specific conflicts such as delayed payment of bills. Groups also had committees dealing with conflict resolution and their recommendations were later presented to the whole group for adoption and subsequent implementation.

Human resource and management challenges were addressed by providing training to project management committees (PMCs) by stakeholders which included World Vision, ministry of water and irrigation and Catholic Diocese of Eldoret. The trainings focused on issues such as human resource management, time management, contract management, decision making and allocation of tasks and tracking of project progress. Members of groups were also trained on how to monitor and evaluate progress of projects.

On procurement and security challenges, key informants indicated that PMCs were trained by stakeholders on how to check the quality of items using the quality

standards outlined in the tender documents. In addition, the ministry of water agreed to assist the groups in ascertaining the quality of items whenever they were not able to verify the quality of items procured. On security issues, groups set up committees to be regularly patrolling water pipelines to check on vandalism and report the same to group management for further action. Storage of group materials in safe custody was also adopted as a strategy by the groups. Such places identified by groups included assistant chief's/chief's offices, administration police offices, schools and ministry of water offices if located near any of the water projects. This was preferred because of security presence in these institutions.

In a study of water supply challenges in Ghana, Doe (2007), found out that chiefs, community elders, representatives of resident associations and group leaders played a key role in addressing them through organization of meetings with the beneficiaries to come up with acceptable solutions. This way public participation in water resource development was achieved.

A study of constraints to effective performance by small-scale irrigation in Ethiopia by Amede (2015) found out that institutional and technical challenges were largely responsible for the underperformance of such projects. The study pointed out minimization of conflicts, capacity building of local institutions and collective action by all participating stakeholders as key to addressing water related challenges.

6.5 Stakeholder Participation in Addressing Challenges

Stakeholders are key partners in addressing project challenges. A majority of respondents interviewed indicated that they sought the assistance of stakeholders in addressing challenges encountered. Out of the 142 respondents, 101 (71.13%) pointed out that they were aware of the fact that their groups sought external assistance during

project implementation while the remaining 41 respondents indicated that their groups sought minimal external assistance from stakeholders. This implies that stakeholder participation is high in addressing challenges in groups as evidenced by the responses.

Stakeholders which participated in addressing group challenges were many and included; ministries of devolution, interior, water and irrigation, agriculture and labour, non-governmental organizations such as World Vision, SARDEP and JICA. Areas of assistance by the stakeholders were varied and included funding, trainings, security, procurement, conflict management and human resource development.

Seven categories of challenges were experienced by all the groups in the study and indicated that sorting out the challenges required external intervention. The first challenge touching on finances was addressed substantially by CDF, though other stakeholders such as World Vision, CCF and SARDEP also came in. Financial assistance offered by these stakeholders was meant for payment of either materials or labour. This varied with groups depending on how they justified their levels of need. Therefore the stakeholders greatly complemented government and group efforts in ensuring that projects were implemented successfully.

According to key the informants interviewed, the second area of stakeholder support in addressing group challenges was capacity building and human resource requirements. This is a critical area in project management due to its central role in ensuring that beneficiaries draw long-term benefits from projects. All the stakeholders took part in providing trainings of different forms ranging from financial management, time management, stakeholder management, quality management, conflict management and issues of group dynamics. Further to addressing capacity issues, all stakeholders also engaged project management committees (PMCs) to

encourage their members enroll for artisan based courses such as plumbing, masonry, electricity and other technical courses which would enable them offers their labour for better pay whenever artisan based assignments were available. This would also help groups access local and reliable labour with ease and at affordable rates thereby contributing to faster project implementation.

Security and conflict related challenges were mainly addressed by government agencies, notably the ministry of interior in helping groups trace stolen and or vandalized materials. Those found to have committed the offences were arrested and prosecuted; however, the success of this exercise heavily relied on cooperation between the general community and the law enforcement agencies. Different forms of conflicts were experienced by groups, these ranged from internal to external and included payment conflicts, decision conflicts, results based conflicts and resource use conflicts. A number of stakeholders were instrumental in helping groups sort out the conflicts. These included ministry of water and irrigation, CDF- Keiyo North constituency, KVDA, Catholic Diocese of Eldoret, CCF, World Vision and SARDEP. In some instances, the department of social services would be called upon to help in addressing conflicts especially those related to decision making touching on the groups' by-laws.

Procurement challenges were entirely addressed by CDF-Keiyo North constituency and the ministry of water and irrigation. This is because the two stakeholders were directly involved in quality issues and project implementation in all the groups. Occasionally, other stakeholders which provided financial assistance to the groups such as World Vision and CCF would follow up on the procurement of materials of quality standards outlined in the tender documents.

To address challenges faced by groups in water development, FGDs suggested the need to set up joint stakeholders committees to oversee project implementation, conflict resolution as well as fast tracking the timely disbursement of resources by all stakeholders which pledged to make such contributions. The importance of organizing regular stakeholder meetings to review progress made in project implementation was proposed. Such forums would be used to clearly spell out the roles and responsibilities of every participating stakeholder in the water projects.

In summary, stakeholders are special partners in project work whose inputs at various stages of execution shape the results of the project. Cooperation on the part of the project implementing team or PMCs reinforces the contribution of stakeholders and works to enhance the attainment of project deliverables.

6.6 Rating of the effectiveness of assistance offered by stakeholders on challenges

In this study, respondents were asked to rate the effectiveness of the assistance offered by stakeholders during project implementation. The rating levels were four, namely very effective, effective, fairly effective and ineffective. Table 6.3 provides information on the rating levels.

Table 6.3: Rating of the effectiveness of assistance offered by stakeholders on project challenges

Category of rating	Number of respondents	Percentage
Very effective	21	14.79
Effective	90	63.38
Fairly effective	25	17.61
Ineffective	6	4.22
Total	**142**	**100**

Results from table 6.3 indicate that a few respondents (21) rated the assistance as being very effective, a large majority of the respondents (90) rated the assistance as being effective, a significant number of respondents (25) rated assistance as being fairly effective while a small number of respondents (6) indicated that the assistance was ineffective. From the findings, it is clear that groups strongly believe that stakeholders contribution works well in addressing their challenges as pointed by 63.38% and 14.79% of the respondents whose rating of assistance was effective and very effective respectively. The two combine to 78.17% of the respondents interviewed from the twenty three groups which is high enough to confirm their high rating of assistance from stakeholders.

6.7 Group strategies designed for successful project implementation

In order to ensure group plans are implemented, strategies are important to guide the execution of activities to guarantee anticipated results. Groups outlined a number of strategies whose implementation would facilitate putting into action the planned activities. Four strategies were outlined by groups to ensure proper implementation of project activities.

The first strategy was the formulation and implementation of group by-laws with the aim of reducing internal conflicts and thereby enhancing cooperation and delivery of project results. To deliver the strategy, groups organized regular meetings and educated members on the provisions of their by-laws, including penalties attracted by breaking any of the by-laws. Groups also established internal mechanisms of conflict resolution which involved the setting up of a conflict resolution committee.

The second strategy adopted by the groups was ensuring that members made their monthly/annual subscriptions. This would help groups meet their bills such as

stationery, snacks during meetings, communication and travel. The treasurer is in charge of collecting such subscriptions and would deposit the same in the group's bank account. Expenditure plans were made by the PMCs and this guided the group leadership in releasing the funds. Accountability structures were also put in place, in which the group leadership was expected to provide the financial status of the group on a monthly basis.

The third strategy adopted by groups was that of use of water meters by members connected with tap water to measure consumption levels and a charge calculated for water use. Members were therefore expected to promptly pay for the water consumed so that the proceeds would then be channeled to meet costs of purchase of water treatment chemicals, operation and maintenance and salary for the water operator and meter readers. Any monies which remained after meeting these needs would go into the group savings accounts.

The fourth strategy implemented by groups was conducting regular general meetings attended by all members for purposes of updating them on project progress. Such meetings were also used to obtain information from members on changes they would want incorporated to the projects to attain set out results. In such meetings, members would be given an opportunity to present ideas on how and where to get support in areas like funding and technical support. Project Management committees played a crucial role in such meetings by updating members on the status of project implementation. Representatives of some stakeholders such as the ministry of water and irrigation, World Vision, SARDEP and KVDA were sometimes invited to such meetings to guide groups on how to attain project results.

To further enhance the implementation of the strategies, groups organized community meetings (*barazas*) and invited stakeholders to disseminate information on the importance of water resources in development across sectors such as agriculture, health and sanitation, processing and education. The meetings were also used to encourage community members to join and or from groups to help them develop water resources for domestic and commercial uses. Notable stakeholders which attended such meetings were CDFC members, ministry of water and irrigation and NGOs which had taken part in sponsoring specific water projects.

Other than forums organized by groups, CDF – Keiyo North constituency organizes meetings with all funded groups to educate them on fund management and how to monitor project implementation especially by contractors. They are equally educated on accounting for funds disbursed to them and project progress reporting procedures and methods. The ministry of water and irrigation occasionally organizes meetings with PMCs to educate them on project implementation. Areas of emphasis in such meetings include tracking implementation using the implementation schedule, quality issues, testing of the functioning of water taps and adherence to timelines in the delivery of project results.

These study findings are in agreement with those of Basu et al (2015) in a study of water insecurity coping strategies in India support localized solutions to water development. They found out that effective community participation in collaboration with development agencies is critical in ensuring water security in rural areas.

6.8 Chapter Summary

This chapter presented information on the various challenges faced by groups implementing water resource development projects which included financial, management, human resource, procurement, conflicts, capacity and technical expertise. The chapter analyzed the impacts of the challenges and various strategies employed by groups to improve members' participation and enhance implementation of projects in order to attain planned results. In addition, the contributions of various stakeholders to addressing the challenges highlighted are captured.

CHAPTER SEVEN

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This chapter provides a summary of study findings conclusions and recommendations. Conclusions are presented in order of the study objectives. In addition, recommendations are presented according to the areas covered by the research in the order of the study objectives.

7.2 Summary of Findings

The purpose of this study was to analyze the impacts of water users participation on the outcome of rural water development projects with a focus on Elgeyo Marakwet county. This was done through an analysis of the participation of groups at various levels of participation and their impacts on water development. The study was guided by three objectives, viz; to identify and describe the characteristics of groups undertaking water development projects in the study area, to assess the levels and impacts of water users participation on water development projects and to analyze the challenges faced by local groups in the implementation of water development projects. A summary of the study findings is presented in the subsequent sections.

The study findings indicated that a majority of groups in the study area are located in the escarpment and the valley, while a few are in the highland. This was explained by the little amount of rainfall in the two zones compared to the highland. Many groups in the study operated in more than one agro-ecological zone and operate in more than one location. More than 50% of the groups were formed after the introduction of CDF

and was explained by the huge capital costs required to undertake a water project; CDF therefore provided an opportunity to groups to engage in water development.

On group size and gender composition, slightly over a third of the groups have a membership of over 30, while the remaining have a smaller membership size. The difficulty of obtaining water for domestic and agricultural production in the escarpment was given as the main reason why community members joined water development groups. The male gender was found to be over-represented in 20 groups, gender parity being attained by only 3 groups. Low awareness levels on the need for inclusion of both genders in development projects was cited as the cause of the under-representation of women in water development projects.

Four types of water projects were undertaken by the groups, these being; tank construction, dam construction, spring protection and water distribution in the three agro-ecological zones. A majority of the members of groups had completed secondary level education with a few having professional courses in agriculture and teaching, however, there was no evidence of how the post secondary level qualifications had positively impacted on project implementation.

Group leaders were chosen by members using the election method, in certain instances however, nomination method was used. Both formal and informal methods of information dissemination were used by the groups, while agenda development for project meetings was developed by the leaders. Other than financial conflicts, all the other types of conflicts in groups were internally resolved.

In all the groups, members participated at the different levels, especially decision making and implementation as these are the two levels where they had a lot of input in terms of ideas, materials and labour.

Proper explanation of the aims and objectives of public participation to community members are a prerequisite for effective participation of the public in water projects. Their roles, which include cost sharing in the project and expected benefits from the project are essential to elicit participation.

Stakeholder participation in project work was noted as being instrumental to the success of water projects. Both government and non-government stakeholders made varying contributions to the implementation of water projects in the study area. Government ministries which participated in water project development included ministries of water and irrigation and agriculture, departments such as social services, CDF, government parastatals included KVDA and WRMA. Non-governmental organizations included World Vision, CCF, SARDEP, JICA and the Catholic Church.

A major theoretical finding from this study regards the usefulness of Arnestein's (1969) ladder of citizen participation in water resource development. This study found out that community members were directly consulted and through their leaders made decisions affecting the projects. However, not much technical information was shared between agencies such as the ministry of water and irrigation and the community on the water projects. This may in future negatively affect the capacity of the community to maintain the water projects.

Public participation in water development positively affected the outcome of water projects through cost reduction, faster completion of projects, stakeholder motivation, ultimately enhancing their contributions to project implementation and enhanced project ownership and sustainability by the project users.

Trainings offered by various stakeholders on a wide range of issues to include leadership, resource management and conflict management among others enhanced public participation in water project implementation.

Two categories of water development challenges were identified - internal and external. Delays in disbursement of money by CDF and untimely provision of technical services by the ministry of water and irrigation were pointed out as the main challenges. Other challenges included; financial, conflicts, inadequate trained personnel and insecurity of water materials. All these had different impacts on water projects implementation.

Different proposals were made on how to address the water development challenges. Key among them being; timely disbursement of finances, designing internal mechanisms to address conflicts, constant stakeholder consultation and collaborative decision making, proper resources management, provision of security, timely provision of technical expertise and capacity building of group members.

7.3 Conclusions

Based on the study findings, the following conclusions are made:

Water project completion depends on group size, balanced gender composition, educated members, effective leadership, good communication and quick resolution of conflicts are instrumental in facilitating successful completion of water projects. In addition, the bottom up approach to water resource development enhances participation and positively contributes to faster implementation of projects and contributes to project ownership and sustainability by the beneficiaries.

Effective public participation in water development projects right from project conception to evaluation improves the chances of successfully implementing water projects. However, participation is affected by the level of education of group members, the more educated members are, the higher the quality of participation, subsequently leading to successful completion of water projects. Public participation significantly contributes to reduced costs in project implementation. Group contribution of affordable labour, local materials such as sand, timber and stones or bricks acts a motivator to group members to actively participate in project work.

Capacity building of groups improves their ability to better manage water projects. This was done both by government and non-governmental organizations across areas such as group management, resource management, including financial and dispute resolution. Capacity building of PMCs acts as a catalyst to project implantation. This empowers committee members to better handle all issues related to project work right from financial management, quality control, procurement, monitoring and evaluation and dispute resolution.

Stakeholder participation in rural water development projects improves chances of project completion and adds value at different stages of the project. Equally stakeholders provide technical and monetary support to community projects. Government and non state actors are of equal importance in the implementation of water projects in rural areas.

Project sustainability is key in assuring project beneficiaries continued generation of project benefits. Public participation enabled the beneficiaries introduce water user charges as a way of sustaining project operations through fees paid by members consuming water. In addition, other project sustainability drives were innovated

which included start up of income generation activities (IGAs) such as fish farming, crop production, animal production, horticultural activities. Such initiatives are key to meeting continued project obligations. Creativity in fundraising is key to continuous project implementation. Initiatives such as member subscription, contribution of labour and materials ensured many groups implemented their projects, awaiting disbursements from CDF and other funding agencies.

External factors remain a major hindrance to effective group participation and project completion. This was demonstrated by the slow completion of projects in the study area due to delays in disbursement of finances by CDF and the inadequacy/late provision of technical services by concerned government agencies. In addition, procurement of labour and materials remain other contributory challenges to late completion of rural water projects.

A combination of internal and external efforts by water development groups to address challenges is paramount to ensuring active group participation and subsequently, successful implementation of the projects. Sustaining such efforts, calls for commitment from all the concerned parties.

This study concludes that group and stakeholder participation in water projects development is key in project implementation in rural areas.

7.4 Contribution of this Thesis to Knowledge

This thesis while confirming that water users participation at higher levels improves water projects outcomes in rural areas, external factors significantly affect active participation by water users thereby negatively affecting project outcomes. From the findings, groups participation in collaborative projects was found to be significantly

higher than in projects funded by the national government constituencies development fund. Further, group participation in project activities reduces project costs, enhances project ownership whilst contributing to project sustainability.

Stakeholders in collaboration with group structures have the capacity to elicit active group participation and successfully implement rural water projects. It is therefore clear that the bottom-up approach to development applies to water projects development in rural areas.

7.5 Recommendations

The study findings indicated that in almost all the groups, the highest level of education was form four with no post secondary training, while one of the main challenges experienced by groups was inadequacy of skilled manpower in artisan skills-based areas such as masonry and plumbing which are useful in water resource development projects. In order to address this particular challenge, there is need therefore to provide training to members on skills-based courses by vocational training institutions such as youth polytechnics so as to avoid relying on external labour which is both expensive and unreliable, subsequently causing unnecessary project delays and subject groups to incur extra costs. Such trainings are offered by local and national polytechnics and are affordable; therefore members can apply for the trainings in these training institutions.

Whereas group participation in project activities right from idea generation to implementation is an indicator of project ownership, there is need to include the groups in project evaluation activities so that they may evaluate the performance of the entire project especially the contribution of stakeholders. This will specifically inform the stakeholders on their expected roles and how they have been doing them

with a view to addressing project delays resulting from stakeholder ineffective participation in project work, for instance in areas of disbursement of financial or material resources and provision of technical expertise, where stakeholders have always delayed providing them causing project delays. This will inform stakeholders on what they need to do to improve service delivery to groups and contribute to overall project performance.

The Constituencies Development Fund (CDF) – Keiyo North and all development groups within the constituency should agree on a workable funding agreement which allows projects which can be completed within one year to be financed fully in one financial year. This arrangement will not only reduce delays in project implementation but also reduce cost overruns in projects brought about by prolonged implementation periods. Implementing such a plan will also enable project beneficiaries realize project benefits within a relatively shorter time period.

The government of Kenya should guarantee timely provision of technical services to development groups across all sectors. This will enable groups implement their activities on time, reduce financial losses, guarantee high quality work and delivery of the project to the beneficiaries on time. The provision of technical services can be devolved to locational levels where operation costs to groups seeking such services will be relatively low compared to instances where such services are procured from sub-county or county offices.

The need to incorporate government agencies in designing sustainability strategies for groups is paramount to the existence of groups. Given their low levels of education, expert inputs especially from the ministries of water and irrigation and agriculture should be sought by the groups. This can be done by organizing community

workshops, seminars where key speakers on enterprise development and sustainability issues are invited to make presentations on the two areas and use case studies of best practices for illustration.

7.6 Areas For Further Research

This study recommends further research be carried out in the following areas:

i. Impact of group dynamics on rural water projects development in arid and semi-arid areas.
ii. The place of stakeholder participation and sustainability strategies in water resources development in rural areas.
iii. Impacts of inclusivity and gender issues on rural water projects.

7.7 Chapter Summary

This chapter has made important study conclusions on the impact of water users participation on the outcome of water resource development in arid and semi-arid areas. Notably, public participation significantly reduces project costs, leads to community ownership of the project and educates water users on the importance of initiating IGAs for purposes of project sustainability. A major impediment to timely completion of water projects was noted as the slow disbursement of funds by CDF. For effective participation and attainment of project results as planned by community groups, the study recommended that CDF ought to disburse money timely to facilitate faster projects implementation. In addition, provision of artisan based training to group members is necessary to ensure active members engagement in water project work with regard to provision of semi-skilled labour to enhance water projects implementation according to plan.

REFERENCES

African Development Fund (2014). *Rural Water Supply and Sanitation Initiative (RWSSI) 2013 Annual Progress Report*. ADF. Abuja.

Agarwal, B (2001). Participatory exclusions, community forestry, and gender: an analysis for South Asia and a conceptual framework. *World Development 29 1623–48.*

Ahwoi, K. (2010). *Local Government & Decentralisation in Ghana*. Unimax Macmillan, Accra.

American Water Resources Association (2012) *Case Studies in Integrated Water Resources Management: From Local Stewardship to National Vision*. AWRA. Middleburg.

Amede, T (2015). Technical and Institutional attributes constraining the performance of small-scale irrigation in Ethiopia. *Water Resources and Rural Development. Vol. 6. Pp 79-91*.

Ananga, E. O (2015). The Role of Community Participation in Water Production and Management: Lessons From Sustainable Aid in Africa International Sponsored Water Schemes in Kisumu, Kenya. Unpublished PhD thesis. University of South Florida.

Anokye, N, A (2013*). Stakeholder participation in water resources management: the case of Densu basin in Ghana*. Unpublished PhD thesis. Vrije University, Amsterdam, Netherlands.

Armah, A.F (2008). *Local Participation in Water Resource Management: Case Study of Old Fadama Community, Ghana*. Unpublished M.Sc Thesis. Lund University.

Arnstein, S (1969) A Ladder of Citizen Participation. *Journal of the American Planning Association*, Vol 35, No. 4: 216-224.

Ashton, P.J. & Neal, M.J. (2005). Public involvement in water resource management within the Okavango River basin. In: C. Bruch, L. Jansky, M. Nakayama & K.A. Salewicz, (Eds), *Public Participation in the Governance of International Freshwater Resources.* United Nations University, Tokyo. Pages 169-195.

Baharoglu D. and Kessides C. (2004), Urban Poverty, In: *PRSP Sourcebook: Volume 2 - Macroeconomic and Sectoral Approaches*. World Bank, Washington D.C., pp: 124-495.

Ballester, A and Lacroix, K. E. M (2016) Public Participation in Water Planning in the Ebro River Basin (Spain) and Tucson Basin (U.S., Arizona): Impact on Water Policy and Adaptive Capacity Building. *Water 2016, 8, 273 pp 1-20.*

Basu, M; Hoshino, S and Hashimoto, S (2015). Many issues, limited responses: Coping with water insecurity in rural India. *Water Resources and Rural Development. Vol. 5. Pp 47-63.*

Becker D., Harris C., McLaughlin W. and Nielsen E. (2002). A participatory approach to social impact assessment: the interactive community forum, *Environmental Impact Assessment Review* Vol. 23, pp: 367-382.

Bendavid-Val, A. (1990). *Rural Area Development Planning: A Review and Synthesis of Approaches*. FAO. Rome.

Beyene, H. (2012). *Factors affecting the sustainability of rural water supply systems: The case of Mecha Woreda, Amhara region, Ethiopia*. Unpublished Masters project. Cornell University. USA.

Bhandarkar, P.L & Wilkinson, T. S (2002). *Methodology and Techniques of Social Research*. Himalaya Publishers. Mumbai.

Blears, H & Mulgan, G (2004). *People and Participation: How to put citizens at the heart of decision making*. Involve. London.

Boakye, M. K and Akpor, O. B (2012). Community Participation in Water Resources Management in South Africa. *International Journal of Environmental Science and Development, Vol. 3, No. 6. Pp 511-516.*

Bodorkós, B (2010). *Public Participation in Sustainable Rural Development: The Potential of participatory Action Research*. Unpublished PhD Dissertation. Szent István University.

Boateng, J. D., Kendie, S. B. (2015). Factors influencing the participation of Women in Rural Water Supply Projects in the Asante Akim South District. *Journal of Arts and Social Science*,3 (1), 220-242.

Breslin, E.D. (2003). Demand response approach in practice: Why sustainability remains elusive. *Discussion Paper, Water Aid Mozambique, Water Aid* 2003.

Brett, E, A (2003). 'Participation and Accountability in development management; *Journal of Development Studies*, 40 (2): 1-29.

Cauvery, R; Nayak, U.K.S; Girija, M & Meenakshi, R (2003). *Research Methodology.* S. Chand & Company Limited. New Delhi.

Carr, G (2015). Stakeholder and public participation in river basin management—an introduction. *WIREs Water. Vol 2, Issue 4 pp 393–405.*

Carr, G; Blöschl, G and Loucks, D.P (2012). Evaluating participation in water resource management: A review. *Water Resources Research, Vol. 48, W11401, Doi:10.1029/2011wr011662, 2012.* Accessed 20/3/2017.

Center for Transboundary Cooperation (2005). *Background Paper on Public Participation in Transboundary Water Cooperation*. Center for Transboundary Cooperation St. Petersburg.

Cernea, M.M. (1985). *Putting People First: Sociological Variables in Rural Development*. Oxford University Press. London.

Chambers, R (1997). *Whose reality Counts? Putting the Last First.* Intermediate Technology Publications. London.

Chitere, O. P. (1994). *Community Development: Its Conceptions and Practice with Emphasis on Africa*. Gideon S. Were Press. Nairobi.

Chitere, O.P and Mutiso, R (2015*). (Eds) Working with Rural Communities: Participatory Action Research in Kenya (2nd Ed)*. University of Nairobi Press. Nairobi.

Chitere , P. O., & Veronica, N. (2017). County Governments In Kenya: People's Awareness and Perceptions of their Governance Systems and Participation in their Leadership and Poverty Reduction Projects. *Advances in Social Sciences Research Journal, 4 (6) 125 – 149.*

Church, S. P., & Prokopy, L. S. (2017). The influence of social criteria in mobilizing watershed conservation efforts: A case study of a successful watershed in the Midwestern U.S. *Land Use Policy*, 61, pp.353–367

Clark, J. (1991) *Democratizing Development*. Earthscan Publications. London.

Clarke, R (1993). *Water: The International Crisis*. Earthsacn Publications. London.

Cleaver, F (1999). Paradoxes of Participation: Questioning participatory approaches to development. *Journal of International Development. 11, pp.597-612.*

Cooke, B and Kothari, U eds (2001). *Participation: the new tyranny?* Zed Books, London.

Cornwall, A. (2002). *Making spaces, changing places: situating participation in development, IDS Working Paper 170*. Institute of Development Studies, Brighton.

Cullet, P (2015). Public participation and water regulation in the Indian context. *Public participation and water resources – Where do we stand in International Law? UNESCO, Paris pp 20-29.*

Crow, B.; Swallow, B., & Asamba, I. (2012). Community Organized Household Water Increases Not Only Rural incomes, but Also Men's Work. *World Development*, 40, 528–541.

Dagg, S, Aschemann, R., and Palerm, J. (2003) Public and stakeholder participation in environmental decision-making. *Journal of Environmental Assessment Policy and Management, Vol. 5, No. 3. Pp v-ix.*

Davies, H.R.J. (1986). *Rural Development in White Nile Province, Sudan*. The United Nations University. Tokyo.

Davis, J., & Lyer, P. (2002). *Taking Sustainable Rural Water Supply Services to Scale: A Discussion Paper.* Washington, DC.

De Freitas, D. M. (2010). *The role of public participation, spatial in formation and GIS in natural resource management of the dry tropical coast, northern Australia*. Unpublished PhD thesis. James Cook University, Townsville, Australia.

Desai, V., & Potter, R. B. (2008). *The Companion to Development Studies*. Hodder Education. London.

Doe, H. W (2007). *Assessing the Challenges of Water Supply in Urban Ghana: The case of North Teshie.* Unpublished Masters thesis. Royal Institute of Technology. Stockholm, Sweden.

Donkor, S.K.M., & Wolde, Y.E. (1998). *Integrated Water Resources Management in Africa: Issues and Options*. United Nations Economic Commission for Africa. Addis Ababa.

Dorcey, A. H. J. (1991). Towards agreement on sustainable development in water management: Learning from the differences. In A. H. J. Dorcey (Ed.). *Perspectives on Sustainable Development in Water Management*. Westwater Research Centre, University of British Columbia. Vancouver. pp. 531-553.

Drapa, A (2013) Public participation and water management in Romania. In Tignino, M and Sangbana, K (2013). *Public participation and water resources management: Where do we stand in International Law?* UNESCO. Geneva. *Pp 30-37.*

Dungumaro, E. W., and Madulu, N. F. (2003). Public participation in integrated water resources management: the case of Tanzania. *Physics and Chemistry of the Earth 28 pp. 1009–1014.*

Engel, S, Iskandarani, M., and del Pillar, M. (2005). "*Improved Water Supply in the Ghanaian Volta Basin: Who uses it and Who Participate in Community Decision Making?"* International Food Policy Research Institute, Environment and Production Technology Division, *Discussion Paper No.129* Washington DC.

Eskerod, P., and Jepsen, A. L. (2012) *Project Stakeholder Management.* Farnham. Gower.

Esman, M., and Uphoff, N. (1984) *Local Organizations: Iintermediaries in Rural Development.* Cornell University Press, Ithaca, NY.

European Commission. Environment. http://ec.europa.eu/ourcoast (Accessed on 16/11/14)

European Environment Agency (2014) *Public participation: contributing to better water management: Experiences from eight case studies across Europe.* EEA, Luxembourg.*pp18-30;38-49.*

Forsyth, D. R. (1990). *Group Dynamics*. Cole Publishers. Belmont.

Fritsch, O. (2017). Integrated and adaptive water resources management: exploring public participation in the UK. *Regional Environmental Change, 17 (7). pp. 1933-1944.*

Gachenga, E. (2015). Gender Dimensions of Customary Water Resource Governance: Marakwet Case Study. In Hellum, A; Kameri-Mbote, P and Van Koppen, B (Eds*) Water is Life: Women's Human Rights in National and Local Water governance in Southern and Eastern Africa*. Weaver Press. Avondale. *pp 179-214.*

Gamboa, M.H.T.C (2014). Stakeholder engagement to enhance integrated water management in the context of a river basin in Portugal. Unpublished PhD thesis. University of Salford, UK.

Garande, T., and Dagg, S. (2005). Public Participation and Effective Water Governance at the local level: A Case Study from a small under-developed area in Chile. *Environment, Development and Sustainability (2005) 7:pp 417–431*.

Gaventa, J. (2004). Towards Participatory governance: Assessing the Transformative Possibilities. In Hickey, S and Mohan, G (eds.) (2004) *Participation: From Tyranny to Transformation? Exploring New Approaches to Participation in Development*. Zed Books. London. *Pp 25-41*.

Gbedemah, F. S. (2010) Management, Uses and Values of Demand-Oriented Domestic water facilities in the Akatsi district of Ghana. Unpublished PhD thesis. University of Leicester.

Giordano, R., Passarella, G., Uricchio, G. F., & Vurro, M. (2007). Integrating conflict analysis and consensus reaching in a decision support system for water resource management. *Journal of Environmental Management, 84*, 213-228.

Githua, R. W and Wanyoike, D. M (2015). Factors influencing performance of community water projects in Njoro Sub County. *International Journal of Economics, Commerce and Management* Vol. *III, Issue 11. Pp 967-990.*

Gleitsmann, B, A; Margaret M. Kroma, M, M.., and Steenhuis, T (2007) *Analysis of a rural water supply project in three communities in Mali: Participation and Sustainability. Natural Resources Forum 31.* Blackwell Publishers. Oxford :*pp 142-150.*

Government of Kenya (1965) *African Socialism and its Application to Planning in Kenya*. Government Printer. Nairobi.

Government of Kenya (1999). Sessional Paper No. 1 of 1999 on *National Policy on Water Resources Management and Development.* Government Printer. Nairobi.

Government of Kenya (2001) *Keiyo District Poverty Reduction Strategy Paper 2001-2004*. Government Printer. Nairobi.

Government of Kenya (2003) *District Development Plan – Keiyo District 2002-2008*. Government Printer. Nairobi.

Government of Kenya (2003) Constituencies Development Fund Act. Government Printer. Nairobi.

Government of Kenya (2009) *District Development Plan – Keiyo District 2008-2012*. Government Printer. Nairobi.

Government of Kenya (2009) *Integrated Water Resources Management and Water Efficiency plan for Kenya*. Water Resources Management Authority. Nairobi.

Government of Kenya (2010) Constitution of Kenya, 2010. Government Printer. Nairobi.

Government of Kenya (2012) *National Water Policy*. Government Printer. Nairobi.

Government of Kenya (2013) Constituencies Development Fund Act. Government Printer. Nairobi.

Government of Kenya (2015) National Government Constituencies Development Fund Act. Government Printer. Nairobi.

Government of Kenya (2014) *National Water Master Plan 2030*. Government Printer. Nairobi.

Government of Kenya (1983) *District Focus for Rural Development*. Government Printer. Nairobi.

Government of Kenya (1998) The Local Authority Transfer Fund Act. Government Printer. Nairobi.

Government of Kenya (2002) The Water Act. Government Printer. Nairobi.

Government of Kenya (2016) The Water Act. Government Printer. Nairobi.

Hari, M. (1995). The Role of Social Actors in Promoting Participatory Development at Local Level: A View from India, In: Schneider, H. and Libercier, M. (eds.), *Participatory Development from Advocacy to Action, Organization for Economic Co-operation and Development*, Paris, pp: 153-167.

Haq, M.A., Hassan, S. M., and Ahmad, K (2014) Community Participation and Sustainability of Water Supply Program in District Faisalabad, Pakistan. *Journal of Quality and Technology Management Volume X, Issue II, December 2014, Page 125 – 137.*

Hartley, N., and Wood, C (2005) Public participation in environmental impact assessment—implementing the Aarhus Convention. *Environmental Impact Assessment Review Vol. 25 pp.319–340.*

Hickey, S., and Mohan, G. eds (2004) *Participation: from tyranny to transformation? Exploring new approaches to participation in development*. Zed Books, London.

Heinonen, U.K (2009) *Can the Poor Enhance Poverty Reduction? Rural and Urban Perspectives on Water Resources, Poverty & Participatory Development in the Tonle Sap Region and Phnom Penh, Cambodia*. Unpublished PhD Thesis. Helsinki University of Technology.

Hering, J.G., and Ingold, K.M (2012) Water resources management: what should be integrated? *Science 336 pp. 1234–1235.*

Hickey, S., & Mohan, G (2005) 'Relocating participation within a radical politics of development', *Development and Change*, 36 (2): 237-262.

Holmes, T., and Scoones. I. (2000) Participatory environmental policy process: experiences from North and South. *IDS Working Paper 113.* Institute of Development Studies. University of Sussex. Brighton. http://www.ids.ac.uk/ids/bookshop/wp/Wp113.pdf. Accessed 6/6/2016.

Hundie, B. (2006) *'Property Rights among Afar Pastoralists of Northeastern Ethiopia: Forms, Changes and Conflicts'*. Berlin: Humboldt University of Berlin.

Iacofano, D. S., and Lewis, N. K. (2012). Maximum feasible influence: The new standard for American public participation in planning. *Journal of Architectural and Planning Research, Vol. 29, No. 1. Pp 30-44.*

International Association for Public Participation. Louisville, USA. www.iap2.org (Accessed on 12/10/2014)

International Fund for Agricultural Development (IFAD) (2002). *Managing for Impact in Rural Development*. IFAD. Washington.

International Institute for Environment and Development (IIED) (2010). *Deepening participation for social change: Case studies from Africa and Asia* (Online). http://pubs.iied.org/G02726.html?g=(Africa)&w=NR&b=t. Accessed 7/9/2015.

International Monetary Fund (2015). Issues in managing water challenges and policy instruments: Regional Perspectives and case studies. (online) https://www.imf.org/external/pubs/ft/sdn/2015/sdn1511tn.pdf. Accessed 23/11/2015.

Jampel, D., Paul, F.M., Drew, G., Stefan, C., Kelly, K.C., and Tom, P.E. (2016) Community water governance on Mount Kenya: An assessment based on Ostrom's Design Principles of Natural Resource Management. *Mountain Research and Development. (36) 1: 102-115.*

Jan, J. F., Linda, D., & Machaya, J. C. (2017). When Policy Hits Practice: Structure, Agency, and Power in South African Water Governance. *Society & Natural Resources*. http://www.tandfonline.com/loi/usnr20.

Jansky, L., Sklarew, D, M., and Uitto, J. I. (2005). *Enhancing public participation and governance in water resources management*. United Nations University press. Tokyo.

Jenkins, M.W, Lelo, F.K, Chiuri, L.W, Shivoga, W. A., and Miller, S.N. (2005) *Community Perceptions and Priorities for Managing Water and Environmental Resources in the River Njoro Watershed in Kenya*. Egerton University. Njoro.

Jingling, L., Yun, L., Liya, S., Zhiguo, C., and Baoqiang, Z. (2010) Public participation in water resources management of Haihe river basin, China: the analysis and evaluation of status quo. *Procedia Environmental Sciences 2 pp. 1750–1758.*

Jones, S. (2011) Participation as citizenship or payment? A case study of rural drinking water governance in Mali. *Water Alternatives*, 4 (1) pp. 54-71.

Jonsson, A. (2005) Public participation in water resources management: Stakeholder voices on degree, scale, potential and methods in future water management. *Ambio, 34 (7), pp 495-500.*

Kane, E., & Salmen, L. F. (2006) *Bridging Diversity: Participatory Learning for Responsive Development.* The World Bank. Washington D.C.

Karikari, K (1996) "Water Supply and Management in Rural Ghana: Overview and Case Studies", in *Rached, E. Rathgeber,E and Brooks, D B. (Editors) Water Management in Africa and the Middle East: Challenges and Opportunities*, IDRC http://www.idrc.ca/en/ev-31158-201-1-DO_TOPIC.html. Accessed 15/2/2016.

Keating, M (1993) *The Earth's Summit Agenda for Change*. Center for Our Common Future. Geneva.

Kerlinger, F. N. (1973) *Foundations of Behavioural Research*. Holt, Rhinehart & Winston Inc. New York.

Khan, A. R (1990) *Trade, Planning and Rural Development*. McMillan Press. London.

Khasankhanova, G (2003*) Public participation to improve water resource management in Uzbekistan*. Diffuse Pollution Conference Dublin 2003.

Kleeimer, E (2002) *'The impact of sustainability: An analysis of the Malawi rural piped scheme program'. World Development 28, 929–944*.

Kothari, C. R (2007) *Research Methodology: Methods & Techniques*. New Age Publishers. Delhi.

Kujinga, K (2002) Decentralizing water management: an analysis of stakeholder participation in the management of water in Odzi subcatchment area, Save Catchment. *Physics and Chemistry of the Earth 27 pp. 897–905.*

Kumssa, A & Ngau, P (2004) *Research Design, Data Collection and Analysis*. UNCRD. Nairobi.

Krueger, R. A (1988) *Focus Groups: A Practical Guide for Applied Research*. Sage. Newbury.

Lane, M. B (2005) Public Participation in Planning: an intellectual history. *Australian Geographer, Vol. 36, No. 3,pp. 283-299.*

LeMoigne, G. (1994) A *Guide to the Formulation of Water Resources Strategy.* World Bank Technical Paper No. 263. World Bank, Washington.

Lencha, A, T (2012) *Rural water supply management and sustainability in Ethiopia with special emphasis on water supply schemes in Adama area*. Swedish University of Agricultural Sciences. Uppsala.

Lewin, C & Somekh, B (2005) *Research Methods in the Social Sciences*. Vistaar Publications. New Delhi.

Lewin, K (1961) Group theory. Online source. https://www.bl.uk/people/kurt-lewin.

Lisk, F (1988) *Popular Participation in Planning for Basic Needs*. Gower Publishing Co. Aldershot.

Lock, D (2013) 10th ed. *Project management*. Farnham. Gower.

Lockwood, H. (2004). *Scaling-up Community Management of Rural Water Supply*. Delft. IRC.

Lucie, L; Ruth, M.N and Lotte, F (2016) Addressing governance and management challenges in small water supply systems – the integrity management approach in Kenya. *Aquatic Precodia. Vol. 6: 39-50.*

Madrigal, R., Alpízar, F., & Schlüter, A. (2011). Determinants of Performance of Community-Based Drinking Water Organizations. *World Development*, 39, 1663–1675.

Mahama, V, A and Badu-Nyarko, S.K (2014) Community participation in water delivery services and sustainability in the Savelugu/Nanton Municipality, Ghana. *African Educational Research Journal.Vol. 2(2), pp. 54-60.*

Mansuri, G., & Rao, V. (2004). Community-Based and -Driven Development: A Critical Review. *The World Bank Research Observer*, 19(1), 1–39.

Marijani, R. (2017) Community Participation in the Decentralized Health and Water Services Delivery in Tanzania. *Journal of Water Resource and Protection*, 9,pp. 637-655.

McIvor, C (2000) *Community Participation in Water Management Experiences from Zimbabwe*. D+C Development Cooperation. Deutsche Stiftung fur internationale Entwicklung.

Mihaihescu, I & Mendras, H (1982) *Theories and Methods in Rural Community Studies*. Pergamon Press. Oxford.

Milleiv-Rushing, A; Primack, R and Bonney, R. (2012) The history of public participation in ecological research. *Frontiers in Ecology and the Environment, Vol. 10, No. 6. Pp. 285-290.*

Mikkelsen, B (2005) *Methods for Development Work and Research*. Sage Publications. New Delhi.

Ministry of Water and Irrigation (2005) Kenya National Water Report 2005: Prepared for the second UN World Water Development Report 'Water: A shared responsibility' Ministry of Water and Irrigation, Nairobi.

Moraa, H and Otieno, A (2012) *Water governance in Kenya: Ensuring Accessibility, service delivery and citizen participation*. iHub Research. Nairobi.

Mubangizi, B and Dascah, M.O (2014) Public participation in South Africa: What is Participation? *Journal of Social Science, 39(3): 275-284.*

Mukui, J. T, Munguti, K. K and Mungai, W (2002) *Kenya Community Driven Development: Challenges and Opportunities*. The World Bank. Nairobi.

Muley, D. M (1987) *Rural Development Administration: Problems and Prospects*. Chugh Publications. New Delhi.

Mumma, A (2005) Kenya's new water law: an analysis of the implications for the rural poor. Paper presented during the International workshop on '*African Water Laws: Plural Legislative Frameworks for Rural Water Management in Africa*', 26-28 January 2005, Johannesburg, South Africa.

Mugenda, A.G (2008) Social Science Research: Theory and Principles. Nairobi. ARS press.

Mwakila, W (2008) An assessment of community participation in water supply and sanitation services: A case study of Yombo Dovya Tanzania. Unpublished M.A. Thesis, Hague University, Netherlands.

Nassef, M and Belayhun, M (2012) *Water Development in Ethiopia's Pastoral Areas: A synthesis of existing knowledge and experience*. Save the Children USA and Overseas Development Institute. Addis Ababa, Ethiopia.

Ndeti, L. N (2013) *Factors Influencing Performance of Water Resource Users' Associations on Conservation of Water Catchment Areas in Kibwezi, Kenya.* Unpublished M.A. Project. University of Nairobi, Kenya.

Neysmith, J. and Dent, M. (2010) Non-statutory barriers and incentives to stakeholder participation in reducing water pollution: A South African case study. *Water SA*, 36 (5), pp. 577-587.

Ngaruiya, G.W and Scheffan, J (2016) Actors and networks in resource conflict resolution under climate change in rural Kenya. *Earth System Dynamics, 7: pp 441-452.*

Nisha, N.K (2006) *Community Participation in Rural Water Supply: An analysis using Household Data from North Kerala*. Institute for Social and Economic Change. Bangalore.

Njoh, A. J. (2002) Barriers to community participation in development planning: lessons from the Mutengene (Cameroon) self-help water project. *Community Development Journal*, 37 (3), 233-248.

Nyanchaga, E. N (2011) *Importance of water in Kenya: Challenges and Reforms. Paper presented at* Tampere University of Technology, August 2011.

Odhiambo,M & Taifa, A. P (2005) *Devolved Funds and Development: A Handbook on Participation*. Clari Press. Nairobi.

Ofuoku A. U (2011) Effect of community participation on sustainability of rural water projects in Delta Central agricultural zone of Delta State, Nigeria. *Journal of Agricultural Extension and Rural Development Vol. 3(7), pp. 130-136.*

Orris, J; Bailey, A; Turner, R. K & Bateman, I. J (2001) *Rural Planning and Management*. Edward Elgar Publishers. Cheltenham.

Overseas Development Administration (ODA) (1995) *A guide to Social Analysis for Projects in Developing Countries*, HMSO, London.

Page, B (2003) "Communities as the Agents of Commodification: The Kumbo Water Authority in Northwest Cameroon", *Geoforum* 34 483-498.

Parkins, J and Mitchell, R (2005) Public participation as public debate: a deliberative turn in natural resource management. *Society & Natural Resources*, 18 (6), 529–540.

Phunthavongsa, K; Iwai, C, B and Kaewjampa, N (2014) Public Participation on Water Resources Management in Lao PDR: Case Study Banhome Village, Hadsayfong District *International Journal of Environmental and Rural Development Vol 5 No. 2 pp. 105-109.*

Pretty, N. (1995) Participatory learning for sustainable agriculture. *World Development 23*(8) : 1247 – 1263.

Prinz, D & Singh, A. K (2000) *Water Resources in Arid Regions and their Sustainable Management*. University of Karlsruhe. Kaiserstr.

Priscoli, J. D (2004) What is public participation in water resources management and why is it important? *Water International. Volume 29. No.2 pp 221-227.*

Prokopy, L. S (2005) The relationship between participation and project outcomes: Evidence from rural water supply projects in India. *World Development,* 33, 1801–1819.

Rahmato, D (1999) *Water resource development in Ethiopia: Issues of sustainability and participation*. Forum for Social Studies discussion paper. Addis Ababa. Ethiopia.

Rahmi, Y. K; Paulus, W; Haryoto, K and Setyo, S. M. (2017) Citizen engagement to sustaining community-based rural water supply in Indonesia. *International Journal of Development Issues*. Vol. 16 Issue: 3, pp.276-288.

Rahnema, S. (1992). Work Councils in Iran: The Illusion of Worker Control. *Economic and Industrial Democracy , 13*, 69-92.

Rakodi, C. (1983) The World Bank experience: mass community participation in Lusaka upgrading project. In: Moser, C (ed.) *Evaluating Community Participation in Urban Development Projects,* DPU Working Paper No. 14, London, University College, 18-33.

Republic of South Africa(1998) The National Water Act. Act No. 36 of 1998. Government Gazette. RSA.

Robinson, L W; Sinclair, J. A and Spaling, H (2010) Traditional pastoralist decision-making processes: lessons for reforms to water resources management in Kenya. *Journal of Environmental Planning and Management. Vol. 53, No. 7, Pp. 847–862.*

Rogers, P. and Hall, A.W. (2002) *Effective water governance, Draft GWP Background Paper for virtual dialogue, Stockholm, Global Water Partnership,* 1–48.

Romano, S. T (2017) Transforming Participation in Water Governance: The Multisectoral Alliances of Rural Water Committees and NGOs in Nicaragua *International Journal of Water Resources Development. pp 1-16.* https://doi.org/10.1080/07900627.2017.1363722.

Rono, P.K and Abdillahi, A. A (2003) The role of popular participation and community work ethic in rural development: the case of Nandi District, Kenya. *Journal of Social Development In Africa Vol 18 No 2 (77-103).*

Ross, H; Powell, B and Hoverman, S (2008) *Public Participation and Community Engagement for water resource management in the Pacific: Australian Water Facility Policy Brief. May 2008.*

Rutto, R., Kungu, D. M and Chesire, M (2011) Project Integration Services and their Contribution to Successful Implementation of Projects for the Realization of Millennium Development Goals: A Survey of On-Going CDF Projects in Eldoret North Constituency. *International Journal of Current Research. Vol. 3, Issue, 11, pp.076-081, November, 2011.*

Sam, J.M.O (2016) What community characteristics lead to the successful outcome of rural water projects? Unpublished PhD thesis. University of Alaska.

Schindler, P.S & Cooper, D. R (2007) Business Research Methods. Delhi. McGraw Hill.

Schutt, R. K (2009) *Investigating the Social World: The Process and Practice of Research*. Pine Forge Press. London.

Schneider, H. and Libercier, M. (1995), *Participatory Development from Advocacy to Action*, Organisation for Economic Co-operation and Development, Paris.

Shanyisa, A. K (1992) *Groundwork: African Women as Environmental Managers.* Acts Press. Nairobi.

Sharon, B.M; Susanna, E and Elyon, S (2017) Water governance, Stakeholder engagement and Sustainable water resources management. Water, 9, 190. www.mdpi.com/journal/water Accessed 27/09/2017.

Sinclair, A.J and Diduck, A.P (2009) Public participation in Canadian environmental assessment: enduring challenges and future directions. In: Hanna, K. S (ed) *Environmental impact assessment process and practices in Canada*. 2nd ed. Toronto: Oxford University Press, 56–82.

Singh, A (2002), Poverty alleviation And Social Development Through Integrated Watershed Management Approach- a Case Study, In: 12th Stockholm Water Symposium, Abstract Volume, Balancing Competing Water Uses- Present Status and New Prospects, Stockholm International Water Institute, Stockholm, pp: 46-48.

Singh, N. (2008) Equitable gender participation in local water governance: An insight into institutional paradoxes. *Water Resources Management,* 22 (7), pp. 925-942.

Smit, T. (2003). Catchment management forums in the Eastern Cape Province of South Africa. (Online). Available: http://www.waterforfood.nl/msp/content/uk/southAfrica/articles/Forum%20report%20Tim%20Smit.pdf. Accessed 10/11/2015.

Smith, G. (2003) *Deliberative democracy and the environment*. London. Routledge.

Solitare, L. (2005) "Prerequisite Conditions for Meaningful Participation in Brownfields Development.," *Journal of Environmental Planning and Management*, vol. 5, no. 6, pp. 917-935.

Southern African Institute for Environmental Assessment. *Environmental Legislation in SADC*. Windhoek, Namibia. www.saiea.com (Accessed on 2/11/14).

Southgate, C.R.J (2006) Ecotourism in Kenya: The Vulnerability of Communities. *Journal of Ecotourism*, 5:1-2 Pp 80-96.

Speranza, C.I; Kiteme, B; Wiesmann, U and Jörin, J (2016): Community-based water development projects, their effectiveness, and options for improvement: lessons from Laikipia, Kenya. *African Geographical Review:* DOI: 10.1080/19376812.2016.1253485. http://dx.doi.org/10.1080/19376812.2016.1253485. Accessed on 23/02/2017.

Sultana, F (2008) *Community and participation in water resources management: gendering and nurturing development debates from Bangladesh*. *Royal Geographical Society. Pp 347-363.*

Sultana, F. (2009) Community and participation in water resources management: gendering and nurturing development debates from Bangladesh. *Transactions of the Institute of British Geographers*, 34 (3), pp. 346-363.

Sutton, X.F (1990) *A World To Make: Development in Perspective*. Transaction Publishers. New Brunswick.

Sya, B. K (2017) "Preemptive Participation" and environmental awareness across Indian water quality policy. *The Journal of Environment and Development*. Vol. 26. Issue 3. Pp 272-296.

Tadesse, A; Bosona, T and Gebresenbet, G (2013) Rural Water Supply Management and Sustainability: The Case of Adama Area, Ethiopia. *Journal of Water Resource and Protection*, 5, 208-221.

Tambudzai, R; Mapedza, E and Zhou, G (2013) Decentralizing Zimbabwe's water management: The case of Guyu-Chelesa irrigation scheme. *Physics and Chemistry of the Earth. Vol.66; pp 139-147.*

Taylor, D.R.F. & Mackenzie, F. (1992) *Development from Within: Survival in Rural Africa*. Routledge. London.

Technical Center for Agricultural & Rural Co-operation (TCARD) (1996) *Review and Assessment of Rural Development Programmes in Africa*. ACP-EU. Arusha.

Ted, S; Obinna, P. U; Tahseen, J; Blessings, C; Peter, M; Joseph, C; Lilian, M. Z; Mwansa, M; Lucy, N; Brian, M. and Kevin, C. (2016) The role of social actors in water access in Sub-Saharan Africa: Evidence from Malawi and Zambia. *Water resources and rural development. 8 pp 25-36.*

The World Bank (2006) *Information and Communications for Development. Global Trends and Policies.* The World Bank. Washington D.C.

The World Bank (1989) *Sub-Saharan Africa: From Crisis to Sustainable Growth*. The World Bank. Washington D.C.

The World Bank (1996) *Participation Sourcebook.* The World Bank. Washington D.C.

The World Bank (2004) World Development Report: Making Services Work for Poor People. The World Bank. Washington DC.

Thomas, J.C. (1995) *Public Participation in Public Decisions: New skills and strategies for public managers.* Jossey Bass Publishers. San Francisco.

Thornhill, A; Lewis, P & Saunders, M (2003) *Research Methods for Business Students*. London. Prentice-Hall.

Thwala W.D.A (2001). Critical Evaluation of Large-Scale Development Projects and Programmes in South Africa 1980-1994. Unpublished Msc thesis, University of the Witwatersrand.

Thwala, W. D (2010) Community participation is a necessity for project success: A case study of rural water supply project in Jeppes Reefs, South Africa. *African Journal of Agricultural Research Vol. 5(10), pp. 970-979.*

Tignino, M and Sangbana, K (2013) *Public participation and water resources management: where do we stand in International Law?* UNESCO. Paris.

Tripathi, S.K and Bharat, L (2001) community participation in rural water supply – Indian Initiative. Paper presented during the 27th WEDC Conference. Lusaka, Zambia.

Turner, J. H (1988) *A theory of Social Interaction*. Polity Press. Oxford.

Turton, A.R., Ashton P.J. and Cloete T.E. (2003) *"An introduction to the hydropolitical drivers in the Okavango River basin"*, In Turton, A.R, Ashton P.J.and Cloete, T.E (eds), *Transboundary Rivers, Sovereignty and Development: Hydropolitical Drivers in the Okavango River Basin*, Geneva: Green Cross International, Pages 6-30.

UNCHS (1985) *Building Groups in Dandora: a Case Study in Community Organisation.* UNCHS (Habitat), Nairobi.

UNCHS (1986) *The Role of Women in the Execution of Low-Income Housing Projects,* Nairobi, UNCHS. (Habitat). Nairobi.

UNDP/World Bank Water and Sanitation Program (1996) *Community participation in rural drinking water and sanitation projects: A comparative study of five projects in India*. UNDP/World Bank. New Delhi.

United Nations Centre for Human Settlement (1994) *Community Participation in Bolivia*. Grupo Design. Nairobi.

UNESCO (2015) *The United Nations World Water Development Report (2015): Water for a Sustainable World*. UNESCO. Paris. http://unesdoc.unesco.org/images/0023/002318/231823E.pdf. Accessed 12/11/2015.

United Nations Environment Program (1982) *Environment and Development in Asia and the Pacific: Experience and Prospects*. UNEP. Nairobi.

UNWWAP (2003) *Water for People, Water for Life: The UN World Water Development Report*. UN World Water Assessment Programme, March 2003.

Uphoff, N. and Wijayaratna, C.M (2000) Demonstrated benefits from social capital: the productivity of farmer organizations in Gal Oya, Sri Lanka. *World Development* , 28(11): 1890–2000.

Varitwuttikul, K; Tana, S; Wannasubchae, S & Pampasit, R (2017) History of water resources development and water resources management in Thailand. *International Journal of Social Sciences*. Vol.3, Issue 2. Pp. 1540-1557.

WaterAid (2008) *"Ghana: Effective Financing of Local Governments to Provide Water and Sanitation Services".* Ghana Report on Think Local, Act Local, WaterAid, Accra.

Water Resources Group (2016) *Annual Report 2016: Partnerships for Transformation: Water Security Partnerships for People, Growth and the Environment.* 2030 Water Resources Group. www.2030wrg.org. Accessed 20/04/2017.

World Bank group (2016) *A Water Secure World for All*. World Bank Group. Washington, D. C.

Yufei, P; Xueying, Z; Min, L ; Rui, Z and Lei, S (2007) *Transparency and Public Participation in Water Resources Management in China*. State Information Center. China.

APPENDICES

Appendix I: Consent Form

I hereby consent to willingly participate in this research and affirm that I will not communicate or in any way disclose publicly information filled in/discussed during the course of this Interview / Focus group discussion. I agree not to talk about material relating to this study or interview with anyone outside of my fellow focus group members / interviewee and the researcher.

Name:----------

Signature:----------

Individual/ Group Agreement for Maintaining Confidentiality

Appendix II: Focused Group Discussions Guide

1. What are the general characteristics of groups which undertake water development projects in Keiyo North district?
2. In the implementation of water development projects, at which levels are local groups involved?
3. Which are the main organizations that undertake water development projects in Keiyo North district?
4. What are the major achievements of local groups in water development in Keiyo North district?
5. How do water projects implemented independently by the government compare to those implemented by both the government and local groups in terms of completion and sustainability?
6. Which types of challenges are commonly faced by local groups which undertake water development projects in Keiyo North district?
7. Which strategies are employed by local groups in addressing the challenges faced during the implementation of water development projects?
8. How can partnerships between the government, Non-Governmental Organizations and Local groups be enhanced to ensure faster implementation of water development projects in Keiyo North district?

Appendix III: Key Informant Interview (Kii) Schedule

My name is Michael Chesire, a student at Moi University pursuing a Doctorate degree in Sociology on the topic 'The Impact of water users participation on the outcome of rural water development projects in Elgeyo Marakwet county, Kenya'. The purpose of my visit is to obtain information from your office regarding the above topic for academic purpose only. Feel free to offer your opinions and thoughts based on your experiences.
Thank you for your willingness to participate.

KII 1. Keiyo North Sub-county Water Officer

1. What role does the ministry of water play with regard to water development?
2. Which types of water projects are implemented by the community in this sub-county?
3. How is the spread of the water projects across the three agro-ecological zones?
4. Which are the main and minor water uses in this sub-county?
5. How would you describe water development in the sub-county?
6. How is the community involved in water development?
7. How do groups participate in water development?
8. At which levels do such groups participate in water development?
9. How would you rate the participation of the community in water development?
10. What is the effect of community participation on water development?
11. What lessons can be drawn from community participation in water development?
12. How would you rate the implementation of water projects in the district first by the community and secondly by the government? Successful or not?
13. Which factors are responsible for the success/failure of water projects?
14. Which constraints are encountered in water development endeavours?
15. How would you rate the completion of water development projects before and after the introduction of CDF to finance water projects?
16. Comment on the importance of water for community development
17. What are your recommendations for improvement of community groups to develop and manage water projects?
18. What are the challenges of community participation in water development projects?

KII 2: Keiyo North Sub-county Crops Officer

1. In which ways does you office relate with community water groups?
2. Which types of crops are grown under irrigation by the community water groups?
3. How would you rate the performance of such groups in water development?
4. How has irrigation impacted on the community?
5. Which factors would you point out as being responsible for the success/failure of water development in the sub-county?

6. Are there any challenges faced by community participation in the management of irrigation projects in particular and water development projects in general?
7. What are your recommendations for improvement of water development projects in the sub-county?

KII 3: Keiyo North Sub-county Livestock Production Officer

1. How does your office relate with water development groups?
2. Which types of water projects across the ecological zones support livestock?
3. Which types of livestock are supported by water projects in the sub-county?
4. What is the significance of livestock rearing to the lives of the communities in the sub-county?
5. Which factors are responsible for the success/failure of water projects in the sub-county?
6. How would you rate the performance of water development groups in the three agro-ecological zones?
7. What are your recommendations for the improvement of water development in the sub-county?

KII 4: Community Development Officer – County Council of Keiyo (defaunct)

1. How does the county council participate in water development in Keiyo North sub-county?
2. How do water community groups participate in water development in the sub-county?
3. Are there any challenges posed by community participation in implementation of water development projects?
4. How do you rate the participation of such groups in water development?
5. What is the contribution of water to the development of rural communities in Keiyo North sub-county?
6. How would you rate the development of water projects in the sub-county?
7. Which factors are responsible for the success/failure of water development projects?
8. What are your recommendations for the improvement of water development in the sub-county?

KII 5: Constituencies Development Fund Committee (Project Monitoring and Evaluation Member) – Keiyo North Constituency

1. Are there water development projects funded by CDF in Keiyo North sub-county?
2. Who identified/initiated the water projects funded through CDF?
3. What are the characteristics of water development groups in Keiyo North sub-county?
4. How is the distribution of the groups across the three agro-ecological zones?
5. How do the groups participate in water development?
6. How do you rate the performance of the groups with regard to water resource development?

7. What are the factors responsible for the success/failure of water development in the sub-county?
8. How have water development projects financed by the constituencies development fund impacted on the lives of the residents of the sub-county?
9. In your view, what improvements can be done to enhance water development in the sub-county?

KII 6: Sub-County Development Officer – Keiyo North sub-county

1. Which types of water projects are implemented in Keiyo North sub-county and how is their spread?
2. How do groups participate in water development?
3. How is the rating of the water development groups?
4. Which factors are responsible for the success/failure of water development in the sub-county?
5. Which sectors of the economy has the water resource been of benefit to most and how?
6. Which are the main collaborators of groups undertaking water development projects and how do they participate?
7. What are your recommendations for the improvement of water development in the sub-county?

KII 7: World Vision/Other NGOs

1. How does your organization relate with groups undertaking water development projects in Keiyo North sub-county?
2. Does your organization have a water development component? If yes, how does it work? Who are your collaborators and what is their contribution?
3. How is the community involved in the development of water projects?
4. How do groups implementing water development projects perform their activities?
5. Which types of water projects does your organization implement? In which areas are these projects found and why?
6. How do you rate the performance of groups undertaking water development projects in the sub-county? Support your response with reasons.
7. Which sector of the economy has the water resource benefitted and how in Keiyo North sub-county?
8. Which factors are responsible for the success/failure of water development projects in the sub-county?
9. What are your recommendations for the improvement of water development in the sub-county?

Appendix IV: Questionnaire for the Local Groups

Dear Respondent,
My name is Michael Chesire, a student at Moi University pursuing a Doctorate degree in Sociology on the topic ' Impact of water users participation on the outcome of rural water development projects in Elgeyo-Marakwet County, Kenya'. In order to obtain information for the study, members of local water development groups are requested to provide responses to the questions contained in this questionnaire frankly and honestly. Your response shall be kept strictly confidential for research purposes only.

Thank you so much for your time and co-operation. I greatly appreciate your input in furthering this research endeavour.

Cordially,

Michael Chesire,
Ph.D. Student, Moi University.

Section A: General Information

1. Please indicate your gender by placing a tick in the appropriate box

Male ☐
Female ☐

2. Please indicate your age by placing a tick in the appropriate category

Less than 20 Years ☐
20-29 Years ☐
30-39 Years ☐
40-49 Years ☐
50-59 Years ☐
60 Years & above ☐

3. Could you indicate your highest level of education
i. Primary
ii. Secondary
iii. Diploma
iv. Degree
v. Masters degree
vi. Others (Specify)

4. Do you possess any professional qualifications?
i. Yes
ii. No

5. If Yes, in which field?……..

6. How do you utilize the professional qualifications in advancing the activities of your group?.....
   .....
   .....
   .....
7. Do you have any previous experience in managing a development project? If yes,
   specify……
   ……
   …….
8. Indicate the name of your group…….
9. For how long have you been a member of this group……
10. For how many years has this group operated since inception?

    Less than 1Year ☐

    1-2 Years ☐

    2-3 Years ☐

    3-4 Years ☐

    4- 5 Years ☐

    5 Years & Above ☐

Section B: Characterization of Local Groups

1. In which location(s) does your group operate?.....
2. How many members does your group have?.....
3. What is the composition of your group?

Male……

Female…….

4. How are group leaders chosen in your group?

i. Elected by the group members
ii. Nominated by the group members
iii. Nominated by the chief
iv. They volunteer
v. Others (specify)

5. How do you rate the capacity of the members of the group to successfully implement the water development projects?

Very capable…….1

Capable…….2

Averagely capable…3

Incapable……..4

6. Does this group deal with water projects only?

Yes ☐

No ☐

7. If Yes, which type of water project does the group implement?.....
.....

8. If No, which other projects does the group deal with?.....

9. How is information relayed from the leadership to the members in your group?
   Verbal through meetings ☐
   Use of telephone calls ☐
   Through letters ☐
   By word of mouth from member to another ☐

Others (Specify)……

10. How do you rate the effectiveness of the above method in relaying information?
    Very effective……..1
    Effective……..2
    Moderately effective……3
    Ineffective……4
11. If ineffective, which method(s) would you propose for information dissemination from the leadership to the group members?.....
12. Does your group have planned meetings?
    Yes ☐
    No ☐
13. How frequent does your group hold meetings?
    Once a week…….1
    Twice a Month……2
    Once a month……..3
    Once in three months……..4
    Others, specify……5

14. Are group meetings attended by all members?

Yes ☐

No ☐

15. How is the agenda of the meetings developed?

i. The agenda is prepared in advance by a committee
ii. The agenda is developed by the members in the meeting
iii. The chairperson develops the agenda

iv. Others (specify/explain)……
……..

16. During major decision making sessions, how often does the group reach consensus?
Always……1
Occasionally……2
Rarely……..3

17. How are resolutions reached in group meetings?
i. By consensus
ii. By majority vote
iii. The chair decides
iv. The three group officials decide

18. Has the group encountered any form of conflict?
i. Yes ii. No

19. If Yes, which form of conflict was it?
i. Financial ii. Non- implementation of projects iii. Delayed dissemination of information iv. Change of decisions by the group leadership v. Others (explain)……
……..

20. How was the conflict resolved……

21. Who played a key role in solving the conflict?
i. The chairperson ii. The Secretary iii. The Treasurer iv. Other group Members v. Others, specify……

Section C: Participation of Local Groups in Water Development Projects

22. How does your group participate in water development projects?
……..
……..

23. At which level does your group participate in water development projects?
i. Idea generation
ii. Consultation
iii. Decision making
iv. Initiating action/Implementation
v. Evaluation
vi. All the above
vii. Others, specify……..

24. Is participation at the above level voluntary or compulsory?
i. Voluntary
ii. Compulsory

25. Does the group feel that it should have participated in other levels but was not given a chance?
i. Yes
ii. No

26. If Yes, which level is that?.....

27. Why do you think participation at the above level is important……
……

28. Who developed the project proposal for the water project(s) the group is undertaking?

i. Group members
ii. The Government
iii. A consultant
iv. Others, specify……

29. Did you have a plan for this project before it begun?

i. Yes
ii. No
iii. Not aware

30. Has the implementation of the project in your view been according to plan?

i. Yes……
……
ii. No……
……
iii. Not aware

If No, why?.....

31. Did you participate in the siting of the location of this water project?

i. Yes
ii. No

32. If No, are you satisfied with the location of the water project?

i. Yes
ii. No

33. During project implementation, did the group make use of government technical expertise?

i. Yes
ii. No
iii. Not aware

34. If Yes, how do you rate the technical support received from the government?

i. Excellent
ii. Good
iii. Fair
iv. Poor
v. Do not know

35. Did the community participate in the implementation of this water project?

i. Yes
ii. No
iii. Not aware

36. If Yes, how did the community members participate?

i. Free Labour
ii. Free materials
iii. Paid labour
iv. Paid local materials
v. Contribution of ideas

vi. Others,
specify……
……..

37. Apart from the government, are there any other stakeholders participating in the implementation of the water project?
i. Yes
ii. No
38. If Yes, which stakeholders are these?.....
.....
.....
39. Which role do these stakeholders play in the implementation of the water project?.....
.....
.....

40. How would you rate the participation of your group in water development projects?
i. Excellent
ii. Good
iii. Fair
iv. Poor
v. Don't know

Section D: The Impacts of the Participation of Local Groups on Water Development Projects

41. How would you rate the level of completion of water development projects with participation by your group?
i. Completed within time
ii. Completion delayed by 3 months
iii. Completion delayed by 6 months
iv. Completion delayed by 1 year
42. Are there water projects which have not been completed because of involvement of local groups?
i. Yes (explain giving reasons)…… ……
ii. ……
……
iii. No (explain giving reasons) ……
iv. ……
……
v. Not aware
43. Are there water development projects which have been terminated because of lack of co-operation of local groups?
i. Yes
ii. No
iii. Not aware
44. If Yes, which ones?.....

45. Has the participation of local groups led to any changes in the cost of water projects?

i. Yes
ii. No
iii. Not aware

46. If Yes, are these changes cost overruns or savings?

i. Cost Overruns
ii. Savings

47. Has the participation of the local group motivated other stakeholders to participate in the implementation of water development projects?

i. Yes
ii. No

48. If Yes, which organizations are these?.....

49. How do they contribute towards the completion of water development projects?

……

50. How would you describe the impact of local groups participation on water development projects?

i. Has led to project ownership by the groups
ii. Led to improved sustainability of water projects
iii. Improved project completion rates
iv. Delayed project completion
v. Others, specify……..

Section E: Challenges Faced by Local Groups in Implementation of Water Development Projects

51. Which types of challenges are encountered by local groups while undertaking water development projects?

……..
…….
…….

52. Are these challenges common amongst different groups undertaking water development projects?

i. Yes
ii. No

53. How do these challenges affect the implementation of water development projects?

i. Cause delays in project completion
ii. Increase project costs
iii. Contribute towards poor quality work
iv. Others, specify……..

54. Which mechanisms does the group employ to reduce the effects of the challenges faced in project implementation?

……
……..

55. Does the group seek external assistance in dealing with challenges encountered in project implementation?

i. Yes
ii. No
iii. Not aware

56. Which organizations assist your group in addressing the identified challenges?

……
……

57. How do you rate the effectiveness of assistance offered by the organizations in addressing the challenges?

i. Very effective
ii. Effective
iii. Fairly Effective
iv. Ineffective

Section F: Proposals on How Local Groups can serve as Focal points for overall Community Development

58. Are there strategies put in place by you group to ensure successful project implementation?

i. Yes
ii. No
iii. Not aware

59. If Yes, which ones?

……
….
……
….
……
….

60. Are these strategies internally designed or externally sourced?

i. Internal
ii. External

61. How effective are these strategies in ensuring that water development projects are implemented successfully?

i. Very effective
ii. Effective
iii. Fairly effective
iv. Ineffective

62. How can these strategies be harnessed for better performance of the local groups undertaking water development projects and other development projects?

……
……

……
……

63. Are there forums organized by your group which are attended by stakeholders to share information on the progress of water development projects?

i. Yes
ii. No

64. How does your group share lessons learnt from project implementation with the community, government and other stakeholders?.....
……
……
….

65. Which suggestions would you give to local groups that could assist them enhance the implementation of water development projects?.....
……
……
……

Thank You for Your Participation.

Appendix V: Research Permit

PAGE 2

THIS IS TO CERTIFY THAT:
Prof./Dr./Mr./Mrs./Miss/Institution: Michael Chesire
of (Address) Moi University
P.O Box 3900-30100, Eldoret
has been permitted to conduct research in

Location: Keiyo North
District: Eldoret
Province:

on the topic: Public participation and its impact on the success of Rural Water Development in ASAL Areas.

for a period ending: 31st December, 2014

Applicant's Signature

PAGE 3

Research Permit No. NCST/RCD/14/012/1593
Date of issue: 29th November, 2012
Fee received: KSH. 2,000

Secretary
National Council for Science &Technology

CONDITIONS

1. You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officers will not be interviewed with-out prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) four(4) bound copies of your final report for Kenyans and non-Kenyans respectively.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

RESEARCH CLEARANCE PERMIT

GPK6055t3mt10/2011

(CONDITIONS–see back page)

Appendix VI: Research Authorization Letter from Sub-County Office

OFFICE OF THE PRESIDENT
PROVINCIAL ADMINISTRATION AND INTERNAL SECURITY

Telegrams: "DISTRICTER" Iten
Telephone: (053) 42007
Fax : (053) 42289
E-mail: dckeiyonorth@yahoo.com
When replying please quote

DISTRICTCOMMISSIONER'S OFFICE,
KEIYO DISTRICT,
P.O. BOX 200-30700
ITEN

PUB. 24/2 VOL. III/44 **4th February, 2013**

All District Officers
KEIYO DISTRICT

RESEARCH AUTHORIZATION – MICHAEL CHESIRE

The above named has been authorized to carry out research on "Public Participation and its Impact on the Success of Rural and Water Development in ASAL Areas" for a period ending 31st December, 2014. He will be undertaking the study in Keiyo North District

Please accord him necessary assistance.

M. K. LILAN
DISTRICT COMMISSIONER
KEIYO DISTRICT

CC

The County Commissioner
Elgeyo Marakwet County
P.O. Box 200
ITEN

The District Education Officer
Keiyo District
P.O. Box 214
ITEN

Appendix VII: Authorization Letter from Education Office

MINISTRY OF EDUCATION

Telegram: .....
Telephone: Iten
When replying please quote

DISTRICT EDUCATION OFFICE
KEIYO DISTRICT.
P.O. BOX 214- 30700
ITEN.
Date: 23rd January, 2013.

REF: KYO/298/VOL.II/66

TO WHOM IT MAY CONCERN

RE: PERMISSION TO CARRY OUT A RESEARCH

The holder of this letter is Mr. Michael Chesire. He is registered student in Moi University taking a research on "Public participation and its impact on the success of Rural Water Development in ASAL Areas in Keiyo North District.

He has permission to carry out research on the Success of Rural Water Development in ASAL areas.

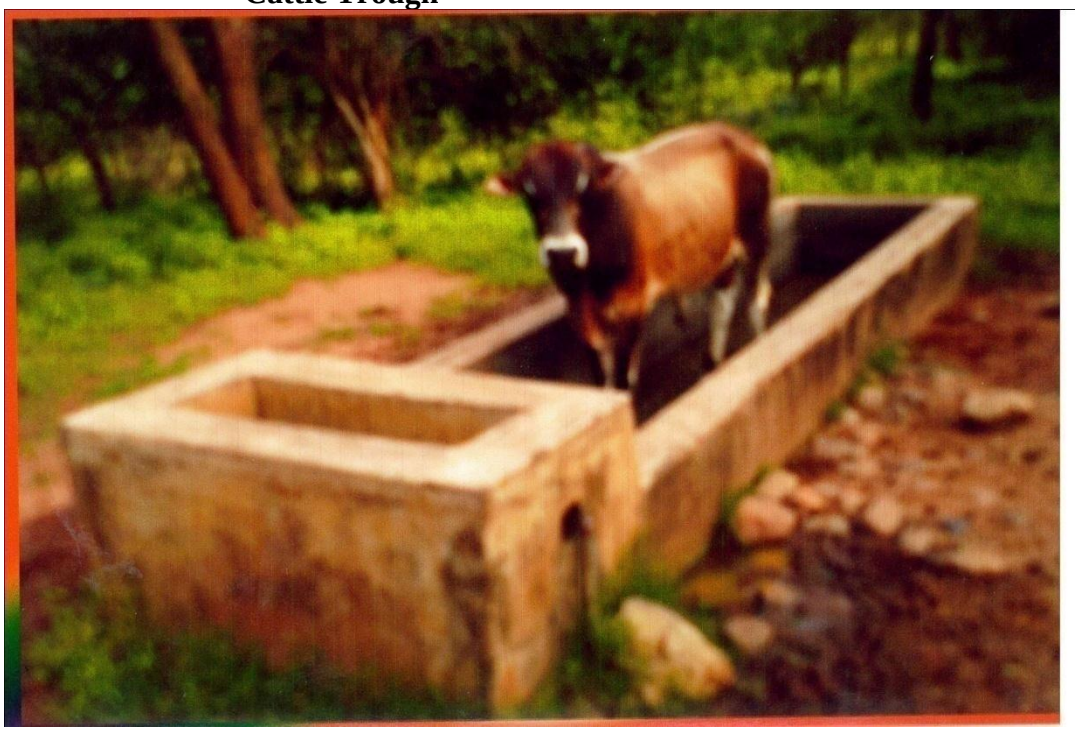
I request you to accord him the necessary assistance.

23 JAN 2013

LUKA M. CHEMOIYWO
FOR DISTRICT EDUCATION OFFICER
KEIYO DISTRICT.

Appendix VIII: Enou Water Distribution Project; Cattle Trough and Communal Water Collection Point

Appendix IX: Ematu Emkong Spring and Water Distribution Project – Cattle Trough



Appendix X: Chepkeikei Water Distribution Line

Appendix XI: Kibusien Spring Protection Water Project

Appendix XII: Simotwo Water Tank

Appendix Xiii: Logogo Water Dam

Appendix XIV: Chebinyiny Catchment Area in the Kerio Valley