COMMUNITY PARTICIPATION AND SUSTAINABILITY OF IRRIGATION PROJECTS IN GEITA DISTRICT, TANZANIA

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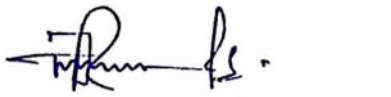
ABSTRACT

Community participation is likely to lead to a long term sustainability of a development project if it is used both as a means and as an end. Despite the good intentions of the government of Tanzania to adopt community participation as a necessary condition in implementation of agricultural development projects, failure of irrigation projects remains a problem threatening their long term sustainability. This research was conducted in Geita District, Tanzania, to analyse the potential outcome of community participation on sustainability of irrigation projects in three villages (Nzera, Lwenge and Nyamalulu). Specifically, the research aimed at assessing the nature of community participation in the projects; determining the factors influencing community participation in the projects and evaluating the conditions for sustainability of the projects. A cross-sectional research design was adopted for the research in which a combination of purposive and simple random sampling techniques was employed to select a sample of 120 respondents. Quantitative and qualitative data were collected through questionnaire survey, key informant interviews and Focus Group Discussions. Quantitative data were analysed using statistical package for social sciences (SPSS) to compute descriptive statistics and do inferential analysis while qualitative data were analysed using content analysis. The results showed that Community participation in the projects was low (< 50% except in contribution of resources), hence used more as a means than an end; training was the most significant ($p < 0.01$) factor positively influencing participation, and sustainability conditions were inadequate (< 50%) in all indicators. It is recommended that communities should be empowered to participate more in the projects.

DECLARATION

I, January Raphael Bikuba, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work done within the period of registration and that it has neither been submitted nor being concurrently submitted in any other institution.



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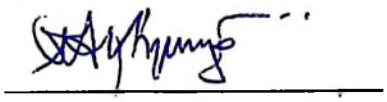

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This work is dedicated to my late father, Mzee Raphael Lubabo Bikuba who passed away in May 2012 before he could see this work accomplished. He always wished me to achieve more, May his soul rest in eternal peace. Amen.

It is also dedicated to my lovely wife Grace, our children Happiness and Hans and my young sisters and brothers Euphemia, Brigitha, Clara, Annastazia, Caroline and Obadia for whom it should serve as an inspiration.

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
AESCs	Agricultural Extension Service Centers
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ASDP	Agricultural Sector Development Programme
CMT	Council Management Team
D by D	Decentralization by Devolution
DADPs	District Agricultural Development Plans
DALDO	District Agricultural and Livestock Officer
DASIP	District Agricultural Sector Investment Plan
DCDO	District Community Development Officer
DED	District Executive Director
DSI	Development Studies Institute
FAO	Food and Agriculture Organisation
FGDs	Focus Group Discussions
GDC	Geita District Council
ID	Irrigation and Drainage
IFAD	International Fund for Agricultural Development
ILO	International Labour Organisation
IWMI	International Water Management Institute
LGR	Local Government Reforms
MA	Masters of Arts
MKUKUTA II	Mpango wa Kukuza Uchumi na Kupunguza Umaskini Awamu ya Pili (Swahili acronym for NSGRP II)

NGOs	Non- Governmental Organisations
NSGRP II	National Strategy for Growth and Reduction of Poverty
O&M	Operations and Management
PCD	People Centred Development
PPP	People's Participation Programme
PRA	Participatory Rural Appraisal
REPOA	Research on Poverty Alleviation
SFDP	Small Farmer Development Programme
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UPE	Universal Primary Education
URT	United Republic of Tanzania
USA	United States of America
VADPs	Village Agricultural Development Plans
VEOs	Village Executive Officers
WHO	World Health Organisation

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

There is a great wealth of scientific evidence demonstrating the importance of community participation for sustainability of irrigation projects. As Karamjavan (2014) notes, all over the world experts strive to find appropriate strategies to enhance the degree of participation and cooperation among farmers and local communities so that they could maintain and operationally manage the irrigation and drainage networks. He points out that, the most obvious and unchanging benefits of participation in the irrigation management result from farmers' involvement and participation in the planning phase of the management. However, as literature reveals the concept of community participation is not new in the context of development. What has been changing is a way it has been operationalised and used in different contexts.

Since the 1980s, community participation has been increasingly considered by development experts as an essential ingredient to success of various development projects (Muhammad *et al.*, 2011, Tutaleni, 2005). It is considered that giving the residents of a community a voice and a choice to participate in development projects can lead to sustainability of the projects by cultivating a sense of ownership of the projects that are implemented (Komalawati, 2008; Olukotun, 2008; Naison, 2008; Aref, 2011).

The importance of community participation was realised following the 1980s worldwide economic recession and external debt which forced many countries to cut back development programmes, mostly affecting developing countries (Kimani and Kombo, 2011; Mazibuko, 2007). More impetus was added to this participatory development when

it was discovered that many large scale government intended development projects, from schooling to health, to irrigation systems were performing poorly (Olukotun, 2008). So community participation was adopted as a new strategy to revitalize rural development aiming at releasing the energies of rural people and fully guarantee their share in the fruits of their efforts (Kimani and Kombo, 2011).

According to Kimani and Kombo (2011), in Africa, the participatory theme in the development process has become very prominent, such that development is virtually defined in terms of people's participation in development programmes and projects. This follows the realisation that empowerment of the people, their involvement in decision making, in implementation and monitoring process is a condition that is indispensable for socio-economic recovery and transformation (Tagarirofa and Chazovachii, 2010).

In Tanzania, as in most of other African countries, soon after independence, the adoption of African Socialism (Socialism and self reliance in the case of Tanzania), and its application in planning under scored the importance of participation by all Tanzanians in implementation of development projects that aimed at improving their livelihoods (Marsland, 2006). Nevertheless, the government of the United Republic of Tanzania has shown further commitment to achieve community participation in development projects, by making it one of the priorities in various national development policies, strategies and programmes including the National Strategy for Growth and Reduction of Poverty (NSGRP II) and the 2009 irrigation policy (URT, 2010a). However, this cannot be taken for guaranteed.

Community participation is likely to lead to long term sustainability of development projects if it is used both as a means and as an end (Komalawati, 2008). However, the interpretation and practices of community participation are so diverse that it became different things to different people (Okui, 2014). There have been some attempts to operationalise and extend the participation of people in rural areas' development projects (Mwakila, 2008; Taylor, 2004). According to Mwakila, this aims at making the project concept originate from local communities.

There is a need to consider the way community participation is used in implementation of the irrigation projects in Tanzania so as to enhance the sustainability potential of the projects. The 2011-12 to 2020-21 Tanzania agriculture and food security investment plan (TAFSIP), (URT, 2011a) recognises Promotion of effective participation of both women and men in initiation, planning, implementation and operation and maintenance of irrigation schemes as one of key priority activities. This also forms one of the objectives of the 2009 Tanzania's irrigation policy (URT, 2009b). However it is not clear about how this is going to be achieved.

The development of Tanzania's irrigation potential is still modest. It is, for example, indicated that irrigation potential is estimated to be 29.4 million ha (2.3 million ha of high potential, 4.8million ha medium potential and 22.3 million ha of low potential). However, only 450 392 (1.53%) is used (URT, 2009b). Furthermore, only 5% of households use irrigation facilities. This calls for not more investment in the irrigation su-bsector, but also making the projects sustainable.

Irrigation, as Kayandabila (2013) points out, plays a very important role in mitigating vagaries of weather due to climate change. Therefore enhancing sustainability of irrigation projects through enhanced community participation is important so as to boost

the sub-sector and performance of the Tanzania's agricultural sector at large for poverty reduction. Hence, studying community participation in the irrigation projects is necessary. This is in order to avoid the shortfalls of community participation practices which contributed to failure of other participatory agricultural development projects in the past.

The irrigation projects in Geita District form an important part of agricultural development projects that are implemented under the Agricultural Sector Development Programme (ASDP). The projects are reported to be implemented on a participatory basis, giving an opportunity for the community to participate fully in decision making and implementation (GDC, 2009). However, literature shows that, one of the most challenging aspects of many development projects has always been that of achieving active community participation (Komalawati, 2008).

1.2 Problem Statement

Various studies on community participation (Kimani and Kombo, 2011; Olukotun, 2008; Mwakila, 2008) show that a lot of efforts have been done in the past decade by the governments of African countries including Tanzania, and the international development agencies to promote community participation in the planning and implementation of development projects aimed at improving rural livelihoods. In implementation of the irrigation projects, Geita District has adopted community participation as an important factor for long term sustainability of the projects (GDC, 2009).

Despite the aforementioned efforts above, evidence from literature (Howllet and Nagu, 2001) indicates that Tanzania has experienced the rise in participatory agricultural development projects failures as they did not achieve their desired results. If not addressed, the shortfalls in community participation which might have affected these

projects may similarly affect the sustainability of irrigation projects. Some recent studies in Tanzania, Matekere and Lema (2012) and Mahoo *et al.* (2012) indicate that there has been a decline in performance of some of the projects.

There is a sizeable literature on the importance of community participation in furthering the sustainability of rural development projects in general. This includes, for example, a work by Komalawati (2008), Mwakila (2008), Naison (2008), Zadeh and Ahmad (2009), Kimani and Kombo (2011), Muhammad *et al.* (2008) and Wabwoba and Wakhungu (2013). However, little work has been done to consider how community participation is used in the context of participatory irrigation projects especially in Tanzania. The available studies on community participation in irrigation projects, most of which were done outside of Tanzania do not focus on how community participation is used in the projects. These include, for example, Koopman *et al.* (2001), Mwakalila and Noe (2004), Khalkheili *et al.* (2008), Phadnis (2010), Karamjavan (2014) and Yami (2014).

Therefore, lack of clarity and inadequate information of what community participation and its practical implementation entail in irrigation projects were and remain the major knowledge gap which this study sought to fill. For this reason, this study was conducted to assess the nature of community participation in the irrigation projects using the case of Geita District to identify the likely sustainability of the projects.

1.3 Justification of the Research

Irrigation practice is one of the effective means of increasing and stabilising food crop production and productivity for curving food shortages (URT, 2011b). Therefore, this research is timely as it has came out amidst an increasing global, regional and national concern over increasing productivity of agricultural water with the objective to increase income and improve livelihoods of smallholder farmers (ASARECA, 2012; Matekere and

Lema, 2012; Phadins *et al.*, 2012). This research on community participation and sustainability of the irrigation projects is in line with the NSGRP II priority of improving food security through community based irrigation schemes for food crops (URT, 2010a); and Tanzania's Vision 2025 and the Millennium Development Goals 2015 projection for high quality livelihood (URT, 2009a). These aspirations can be achieved if the sustainability of the irrigation projects is ensured. However sustainability of the projects will be ensured if community participation in the projects is improved.

The findings from this research may provide a basis to enhance the likelihood of sustainability of the irrigation projects in the study area and other parts of Tanzania. The identification of key issues and recommendations on how they can be resolved can contribute to the sustainability of other development projects. This may also be useful for the government to be assured that the funds for the projects have been used optimally. Additionally, the findings may be useful for project implementers as guidelines for improving the future performance of the projects. Moreover the research will contribute in stimulating further discussion about community participation.

1.4 Objectives of the Research

1.4.1 General objective of the research

The main objective of this research was to analyse the potential outcome of community participation on sustainability of irrigation projects in Geita District.

1.4.2 Specific objectives of the research

The specific objectives of the research were to:

1. Assess the nature of community participation in the irrigation projects
2. Determine the factors influencing community participation in the irrigation projects
3. Evaluate the conditions for sustainability of the irrigation projects

1.5 Research Questions

The research questions guiding this research were:

1. Is community participation currently used in irrigation projects likely to lead to long term sustainability of the irrigation projects in the study area?
2. Was community participation in the projects active or passive?
3. What is the most significantly positive factor influencing community participation in the irrigation projects?
4. Are the conditions for sustainability adequate for supporting sustainability of the projects in the long term?

1.6 Limitations and Delimitations of the Research

The research was constrained by limited time and financial resources. Thus, the sample size had to be limited to 120 respondents. Also, during the training efforts was made to familiarise the five research assistants to the research tools to make data collection more efficient and reliable.

Availability of the respondents for interview and focus group discussions in the study communities was sometimes difficult in morning. To overcome the limitation, the interview and discussions had to be rescheduled to take place between 1.00 PM and 5.00 PM when most of them were back from farm work.

Also reluctance of some of the respondents to cooperate effectively due to negative rapport with previous researchers posed a big challenge. This was overcome by spending more time to give thorough explanation to the respondents to win their trust.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 The Importance of Community Participation in Irrigation Projects

Community participation is considered important in enhancing sustainability of irrigation projects by making management of such projects more efficient. As Phadnis *et al.* (2010) notes, in present situation, it is difficult to keep record of water distribution, number of water deliveries, revenue collection and conflict management of such a large group of farmers by irrigation department. Hence, according to Phadnis *et al.* (2010), it is widely accepted that promoting community participation through Water Users Association can be the best strategy for long term sustainability of Irrigated agriculture. In relation to this view, Karamjavan (2014) points out that, farmers can mobilize substantial resources for construction, operation and maintenance of irrigation systems.

2.2 The Nature and Concept of Community Participation

2.2.1 Participation in the context of development thinking

As Chambers (2004) points out, participation is among the words which have come close to the mainstream of much development discourse during the past two decades. Chambers shows further that participation is among the words which are mostly used in current development discourse about power and relationships. According to Chambers (2004), it is considered as a means by some and an end by others, and is used to describe a range of practices stretching from compulsory labour to spontaneous self-organisation.

The prominence of participation in development thinking is evidenced by how the concept has been used to put human development at the centre stage of development initiatives. For example, Nyerere (1973) argues that a man develops himself by joining in

free discussion of a new venture, and participating in the subsequent decision; he is not being developed if he is herded like an animal into the venture.

The application of the concept of participation in development practice has been backed up by the spread of participatory rural appraisal (PRA) as an emerging family of approaches and methods. This is, as Chambers (1994) notes, through experiential learning and changes in behaviour, with different local applications. According to Chambers (1994), PRA is used to describe a family of approaches and methods to enable local people to share, enhance and analyze their knowledge of life and conditions, to plan and to act.

2.2.2 The meaning of participation

A meaningful appreciation of the nature and concept of community participation needs to start with the meaning of participation. In the context of rural development, participation refers to people's involvement in decision-making processes, implementing development programmes, sharing the benefits of development and their involvement in efforts to evaluate such programmes (Guimaraes, 2009). However, it should always be qualified by reference to the type of participation (Howlett and Nagu, 2001). According to the authors, this has been one of the greatest deficiencies in the conventional project cycle where there has been little or total absence of involvement and participation of the intended beneficiaries.

2.2.3 Types of participation

Citing Pretty (1995), Satterthwaite *et al.* (1995), Adnan *et al.* (1992) and Hart (1992), Howlett and Nagu (2001) identify seven types of participation. The types include manipulative participation, passive participation, participation by consultation,

participation for material incentives, functional participation, interactive participation and self mobilisation (Table 1).

Table 1: Types of Participation in Development Programmes and Projects

	Type	Characteristics
1.	Manipulative participation	Participation is simply a pretence, with people's representatives on official board but who are unelected and have no power
2.	Passive participation	People participate by being told what has been decided, or has already happened. It involves unilateral decisions by project management without any listening to peoples' responses. Shared information belongs to professionals.
3.	Participation by consultation	People participate by being consulted or answering questions. External agents define problems and gather information, and control analysis. This process does not concede any share in decision making and professionals are under no obligation to take on board people's views.
4.	Participation for material incentives	People participate by being contributing resources e.g. Labour in return for food, cash, or other material incentives. Farmers may provide the field and labour, but are not involved in experimentation or the process of learning. This process is often called participation, yet people have no stake in prolonging technologies or practices when the incentive ends.
5.	Functionalpar ticipation	Participation is seen by external agencies as a means to achieve project goals. People may participate by forming groups to meet predetermined objectives related to the project. Such involvement may be interactive and involve shared decision making, but tends to arise only after major decisions have already been made by external agents.
6.	Interactive participation	People participate in joint analysis, development of plans, and formation or strengthening of local institutions. Participation is a right, not just the means to achieve project goals. The process involves interdisciplinary methods that seek multiple perspectives and use structured learning processes. As group take control over local decision and determine use of available resources they have a stake in and ownership in maintaining practices, or project outcomes.
7.	Self mobilisation	People participate by taking initiatives independently of external institutions to change systems. They develop contacts and projects with external institutions for resource and technical advice they need but retain control over how resources are used.

Source: adapted from Howlett and Nagu, 2001

As shown in Table 1, interactive participation and self mobilisation highlight the main characteristics required for sustainability as in these types the people actively participate in the development of projects to help ensure they meet their needs and objectives.

2.3 Definition of Community Participation

Community participation is among the contested concepts (Naison, 2008). However, for this research the idea of 'popular participation' is used. This is defined as "the organised effort to increase control over resources and regulative institutions in a given social situation on the part of groups or movements hitherto excluded from such control" (Komalawati, 2008). This corresponds to the type six and seven of participation (Table 1). According to Kimani and Kombo (2011), popular participation has been thought to be a positive move in the running of affairs that directly concern and affect people. Participation in this form can give beneficiaries the power/knowledge on issues such as sustainability, helping them to take control of their destinies by making decisions and having control over resources that affect their lives and hence be able to attract and manage resources in an efficient way (Komalawati, 2008).

2.4 The Concept of Community Participation

The concept of community participation in development gained prominence in development discourse in the 1970s through the influence of Paolo Freire's work on the concept of conscientisation and analysis of the structural obstacles to the development of Latin American peasantry which stressed the dialogical approach to project work (Tagarirofa and Chazovachii, 2010). According to Tagarirofa and Chazovachii (2010), since then literature on the subject has grown significantly. Frere's argument was that the peasant should be the subject and not the object of development and this orientation helped affirm the importance of participation (Tagarirofa and Chazovachii, 2010).

Notably, Catanese (1984), cited by Tagarirofa and Chazovachii (2010), reiterated that the idea of community participation in planning had been a long standing and intrinsic part of the history of planning. Thus, according to Tagarirofa and Chazovachii (2010), the words

'participation' and 'participatory' development appeared for the first time in the development jargon during the late 1950s while the term popular participation entered into the international discourse on development during the 1960s and became most prevalent in the 1970s, especially in respect of the field of rural development.

Following the afore discussed development, in the 1980s local participation became a major concern for United Nations agencies such as International Labor Organisation (ILO); the World Health Organisation (WHO); the Food and Agricultural Organisation (FAO); the International Fund for Agricultural Development (IFAD); and the United Nations Educational, Scientific and Cultural Organisation (UNESCO). For example, the FAO identified participation as central to future strategies to tackle rural underdevelopment and more specifically, to realise the success of the Small Farmer Development Programme (SFDP) in Nepal launched in 1980, which included the People's Participation Programme (PPP) (Bortei-Doku, 1999; cited by Tagarirofa and Chazovachii, 2010).

Thus, since the 1980s, many resources have gone into the promotion of participation in rural development. Participation seemed to gain ground again in the 1990s with the hopes that it would emancipate people from the bedeviling crises of their collapsing livelihoods (Tagarirofa and Chazovachii, 2010). According to Tagarirofa and Chazovachii (2010), this revival was marked by the International Conference on Popular Participation in the Recovery and Development Process in Africa which was held in Arusha, Tanzania in 1990. They point out that, at the conference, it was affirmed that the democratisation of the development process, by which it is meant the empowerment of the people, their involvement in decision making, in implementation and monitoring process is a condition that is indispensable for socio-economic recovery and transformation.

As a result of this revival, in Africa, the participatory theme in development process has become very prominent, such that development is virtually defined in terms of people's participation (Kimani and Kombo, 2011). According to Kimani and Kombo (2011), the reality is that Africa has not only increased development activities in rural areas but has also had an increase in people's participation in development projects.

2.5 Theoretical Background

2.5.1 The people centred development paradigm

This research was guided by the People Centred Development (PCD) paradigm as propounded by Chambers (1992) and used by Tagarirofa and Chazovachii (2010). Its point of departure is the assumption that society is shrouded in suffering and oppression (Tagarirofa and Chazovachii, 2010). Thus the goal of this theory is to 'free' the communities from the cradles of domination and oppression. By being dominated and oppressed, the communities are not able to participate in development projects; a situation which is prevalent in current development endeavors (Kottack, 2001; Gukurume and Nhodo, 2010; cited by Tagarirofa and Chazovachii, 2010). As such, this perspective questions whether current practices address social justice and empowerment. It is from this background that this research proceeded from within this theoretical framework since the theory explicitly demonstrates commitment to the full realisation of effective community involvement in any development efforts aimed at improving the living conditions of the community.

2.5.2 Community participation as a means vs community participation as an end

For analytical ease, community participation can be conceptualised on two ends to one continuum: community participation as a means at the lowest level and community participation as an end at the highest level (Komalawati, 2008; Russel *et al.*, 2008; CAG,

2009; Heylen and Chappel, 2010; and CANARI, 2011). When used as a means this implies that community participation is used only as a tool to achieve project sustainability by developing the sense of ownership of the people concerned (Komalawati, 2008). Participation implies also participation by contribution to the project without any control over the resources and decision making (Howllet and Nagu, 2001; Heyllen and Chappel, 2010). The interest of external agents is only to legitimise their presence in the project without any intention to really involve them (White, 1996, cited by Komalawati, 2008; Howllet and Nagu, 2001; and Namwata, 2010). It is also referred to as passive participation (Howllet and Nagu, 2001; Namwata, 2010). Participants assume their role is to be receptive and attentive to the suggestions of the proponents (Howllet and Nagu, 2001; Komalawati, 2008; Heylen and Chappel, 2010).

The main argument for using this form of community participation rests on the efficiency and equity issues (Vos, 2005, cited by Komalawati, 2008). It is argued that, resources available for development projects will be used more efficiently and fewer costs will be incurred if the people themselves are responsible for the project (Koopman *et al.*, 2001). Also, designers and sponsors of projects have ample time to make special efforts to address and overcome barriers of the project in order to make the voices of the poor to be heard (Komalawati, 2008).

The arguments for using community participation as a means above may be appealing. However, it is argued that participation as a means is only a short-term exercise that will not lead to sustainability of participation after the project is completed (Komalawati, 2008). Additionally, community participation as a means can be seen as a form of mobilisation to get things done which will still be "a state directed, top down mobilisation, sometimes enforced to achieve specific objectives" (Bigdon and Korf, 2002, cited by Komalawati, 2008).

On the other hand, community participation as an end is an active and dynamic form of participation that leads to an increasing role of local people at every development activity (Howllet and Nagu, 2001; Komalawati, 2008; Russell *et al.*, 2008; Mwakila, 2008). It can also be seen as empowerment (Russell *et al.*, 2008; OECD, 2012). It is also called transformative participation (Gómez *et al.*, 2010). Community participation does not have a fixed objective, or even direction, but is a process, the outcome of which is an increasingly meaningful participation in the development process (Bigdon and Korf, 2002, cited by Komalawati, 2008).

However, there are some theorists who see active participation as both participation as a means and an end (Vos, 2005; UNDP, 2001; cited by Komalawati, 2008). According to Komalawati (2008) this type is seen as participation in empowering and defined as a way to expand people's capabilities, increase their self esteem and improve performance by obliging agencies to involve users in decision- making through participatory research, and by subjecting their activities to direct popular control". This requires giving full opportunity to beneficiaries to participate in all the activities related to development not only in the implementation and distribution of the benefits but also in the early stages of project formulation as well as decision making and the final project evaluation (Komalawati, 2008).

By giving full opportunity to stakeholders to participate, capabilities and creativity for the actualisation and fulfilment of groups and individual will be enhanced (UNDP, n.d; cited by Komalawati, 2008). This will increase their sense of ownership to development projects and in turn will lead to the sustainability of the projects (Komalawati, 2008). As Gonzalez (1998), cited by Komalawati, (2008) states, the projects which treat participation as both a means and an end achieve a higher degree of sustainability. The conceptualisation of 'community participation as a means Vs community

participation as an end' is based on the ideas which were developed by various prominent theorists in development (Table 2) between 1971 and 2005.

Table 2: Categorising Passive and Active Participation in the Literature

Development Theorists	Passive Participation	Active Participation
Arnstain (1971)	Manipulation Therapy Informing Consultation Placation	Partnership Delegated power Citizen control
Oakley (1991a, 1991b)	Contribution Organisation	Empowerment
Pretty (1995)	Manipulative Passive Consultation Participation for material incentives Functional	Interactive Self mobillisation
White (1996)	Nominal Instrumental	Representative Transformative
Narayan (1995)	Information sharing Consultation	Decision making Initiating action
Lyons, *et al* (2001)	Participation as involving	Participation as empowerment
Bigdon & Korf (2002)	Participation as a means	Participation as an end
Vos (2005)	Instrumental Nominal Cosmetic Pseudo-participation	Transformative Developmental Educative Genuine

Source: Adapted from Komalawati (2007)

2.6 Factors Influencing Community Participation

Although mobilisation of communities to participate in decision making and implementation of development projects is essential still the individual decision to participate or not to participate can be influenced by certain factors. Various factors have been found to positively influence community participation in different development projects (Muhammad *et al.*, 2011; ADB, 2004). Therefore, it is necessary to determine the factors which significantly have a positive influence on participation in a given context of development projects and promote them to enhance community participation (Khalkheili and Zamani, 2008).

The ability to read, economic status, and the number of hectares cultivated has been considered to influence farmer participation in community action groups (Beach, 1993; cited by Khalkheili and Zamani, 2008). However in recent studies family size, ownership of irrigated land, sex of respondents, training and membership in local community organizations has been reported to influence participation in irrigation projects (Khalkheili and Zamani, 2008). Some of these have also been reported to influence participation in other participatory development projects implemented in rural areas (Kimani and Kombo, 2011; Muhamad *et al.,* 2011).

2.7 Government and Community Participation

Governments are responsible for promoting the welfare of their communities. For this reason, development policies world over seek to improve the living standards of the rural communities (Kimani and Kombo, 2011). Similarly, in most African countries, development policies seek to improve the conditions of the majority of rural communities (Kimani and Kombo, 2011). This requires the recognition that the local communities who in this case are the reason for being of these policies and their programmes are quite critical in development projects undertaken in their own areas (Naison, 2008). This requires that the government makes the environment conducive by having in place supportive policies in order to enable community members to effectively participate in decision making and implementation of development projects (Olukotun, 2008).

2.8 The Nature and Concept of Sustainability

For this research, sustainability is defined as "maintaining capacity to produce and keeping the outcomes and impacts that arise as the result of project interventions" (Mazibuko, 2007). It can be short term or long-term (Komalawati, 2008). The project is considered to be sustainable in short term when the project activities and benefits

continued at least 3 years after the life of the project (Komalawati, 2008). Meanwhile, as Komalawati (2008) further observed, when the project activities and benefits can be maintained more than five years beyond the project period, the project is considered sustainable in the long-term. According to Komalawati (2008), the importance of institutional and financial sustainability needs to be acknowledged in the sustainability of benefits in the long-term and therefore the sustainability of institutions and financial sustainability needs to be seen as a means to achieve sustainability of benefits.

Sustainability of a development project or programme can only be evaluated after the funders have been withdrawn from the projects (Costanza and Patten, 1995; Molund and Schill, 2004; Stockman, 1997; cited by Komalawati, 2008). However, analysis of sustainability can be done during the implementation phase to identify the likely sustainability of development projects in the future (Costanza and Patten, 1995; Molund and Schill, 2004; Stockman, 1997; cited by Komalawati, 2008). The study of the likely sustainability of development projects is important in the evaluation process because it can identify and address problems related to the impact of projects in the long-term beyond the project period. Hence, it will help to improve the project outcomes and its sustainability in the future.

2.9 Paucity in Literature

Based on the literature reviewed for this study, it was found that empirical studies focusing on the way community participation is used in implementation of irrigation projects are generally scarce. Most of the available studies such as Naison (2008), Zadeh and Ahmad (2009), Kimani and Kombo (2011); and Wabwoba and Wakhungu (2013) have made a great contribution to the understanding of the role of community participation in sustainability of development projects in general. This is through

highlighting some key issues related to community participation and introduction of quantitative analytical techniques, to determine factors influencing community participation upon which this study builds. A good example for this is a work by Muhammad *et al.* (2008).

Another example can be drawn from a study by Wabwoba and Wakhungu (2013). Their study was conducted to evaluate factors affecting the sustainability of community food security projects funded by various organizations between 2005 and 2009 in the Karai and Ndeiya divisions of Kiambu County, Kenya. They found that the sustainability of community food security projects is affected by group members' participation. However, these studies were conducted outside Tanzania.

The review further revealed that even those studies which are closely related to community participation in irrigation projects such as that by Phadnis (2010), Karamjavan (2014) and Yami (2014) pay little attention to how CP is used. For example, Khalkheili and Zamani (2008) conducted a study to identify the factors affecting farmer participation in irrigation management in Doroodzan dam irrigation network in Fars province, Iran, using survey research. They found that, farmers' attitudes towards participation in irrigation management and attitudes toward personnel of the State Water Authority and the Agricultural Extension Services Centres (AESCs) were among the factors affecting their nature of participation. However studies in focusing on other development projects, for example Kimani and Kombo (2011), suggest a possible influence of other factors such as gender and education. Further testing of other factors influencing CP in irrigation projects was considered important.

A study of similar nature was conducted by Karamjavan (2014) to identify factors which affect farmers' participation in the management of Zonouz irrigation network in Iran. Although the studies lay a foundation for studying CP in irrigation projects, they do not go further to consider how it is used. Therefore, this research was deemed important to fill this knowledge gap in the context of Tanzania. This is by assessing the nature of community participation in addition to the factors influencing community participation in irrigation projects in Geita District.

2.10 Conceptual Framework of the Research

A conceptual framework is defined as a research tool intended to assist a researcher to develop awareness of and understanding of the situation under scrutiny and to communicate this (Kombo and Tromp, 2006). For this research, the conceptual framework (Fig. 1) was developed to provide a clear link from the literature to the research objectives and research questions. The nature of community participation as used in implementation of the irrigation projects was assumed to be the reason for their failure by leading to inadequate conditions for sustainability of the projects.

The conceptual framework attempts also to show how community participation can be influenced by a number of factors. It is hypothesised that if improved some of those factors can significantly lead to the improvement in community participation which in turn my lead to improvement in the conditions for sustainability and finally sustainability of the irrigation projects. The conceptual framework attempts to show further that the overall outcome of these relationships on sustainability of the projects can be explained the view of the theoretical background of whether community participation is used as a means or as an end which determines the nature of community participation. It is hypothesised that community participation may lead to sustainability of a development project if it is used both as a means and as an end.

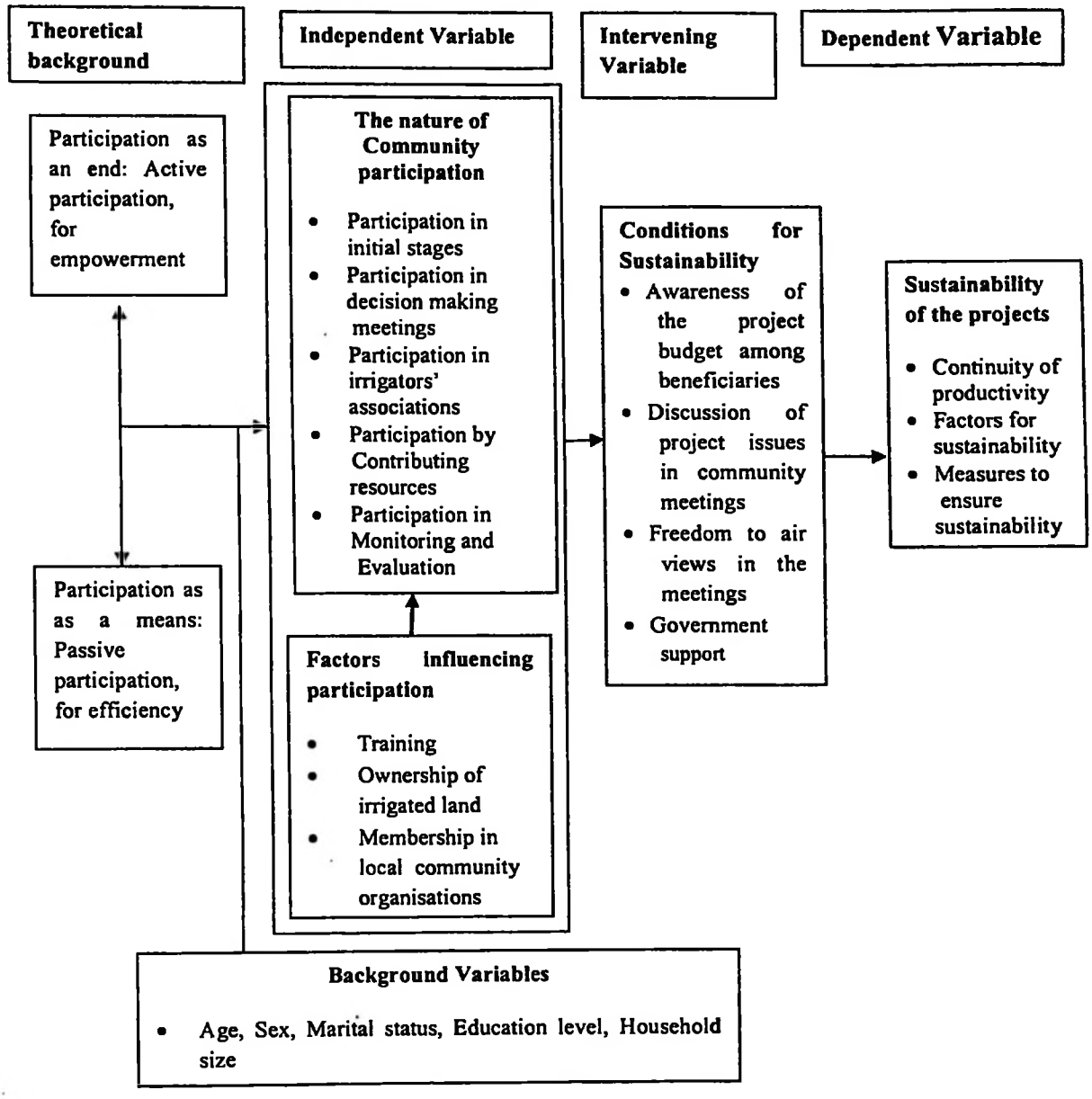

Figure 2: The conceptual framework for the research

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Description of the Study Area

3.1.1 Location

Geita District is one of the 5 districts of Geita Region. According to its 2013 socio-economic Profile (GDC, 2013), the district (Fig 2), covers 5 702 km^2 of which 4 652 km^2 is dry land and the remaining 1 050 km^2 is covered by Lake Victoria. The district is made up by 4 administrative divisions, 35 wards and 146 villages. It is located on the shores of Lake Victoria, lying between 2^0 28' and 3^0 28' South and 32^0 to 32^0 45' East. The district borders Biharamulo and Chato Districts to the West. To the North-East it shares borders with Sengerema District and Lake Victoria to the North. To the South it is bordered by Kahama and Nyang'hwale Districts.

3.1.2 Economic activities

The main economic activity for more than 90% of the population in Geita District is agriculture. The district is characterized by loam, clay and sand soil suitable for growing various crops, where the majority of its inhabitants, the Zinza and Sukuma people live by engaging in keeping cattle, goats, sheep, pigs and chicken. They do also engage in fishing and petty trade. Most households grow maize, rice, cassava, beans, millet, sorghum and sweet potatoes for food while cotton and ground nuts are grown as cash crops. In order to conform to the National Strategy for Growth and Reduction of Poverty (NSGRP), the district has been implementing various irrigation projects as part of the strategy to improve livelihood of the rural farming households in the District (GDC, 2012).

3.1.3 Justification for selection of the study area

Geita District was considered relevant for this research because of being one of the highly populated districts in Tanzania, presence of gold mining activities and its location along the shores of Lake Victoria. According to the 2012 population and housing census (URT, 2013), Geita District is estimated to have a total population of 807 619 as compared for example to 564 604 of Katavi Region. The district's annual population growth rate is estimated to 3.5 which is above the national rate of 2.7. Average household size in the district is estimated to be 5.9, which is above the national average of 4.8. Presence of gold mining activities attracts a lot of people from various places to work in small and large scale gold mines.

The district's location makes access to rice markets of the neighbouring countries of Uganda and Kenya more convenient. All these factors combine to create a high demand for rice which is one of the most important staple cereals next to maize. Therefore, searching for ways to make the rice irrigation schemes sustainable in this district was considered to be important. This is supported by one of the concerns of the national irrigation policy, (URT, 2009b) that due to increasing pressure of population on food supplies, expansion of cultivated land and/or crop intensification particularly for irrigated agriculture is important.

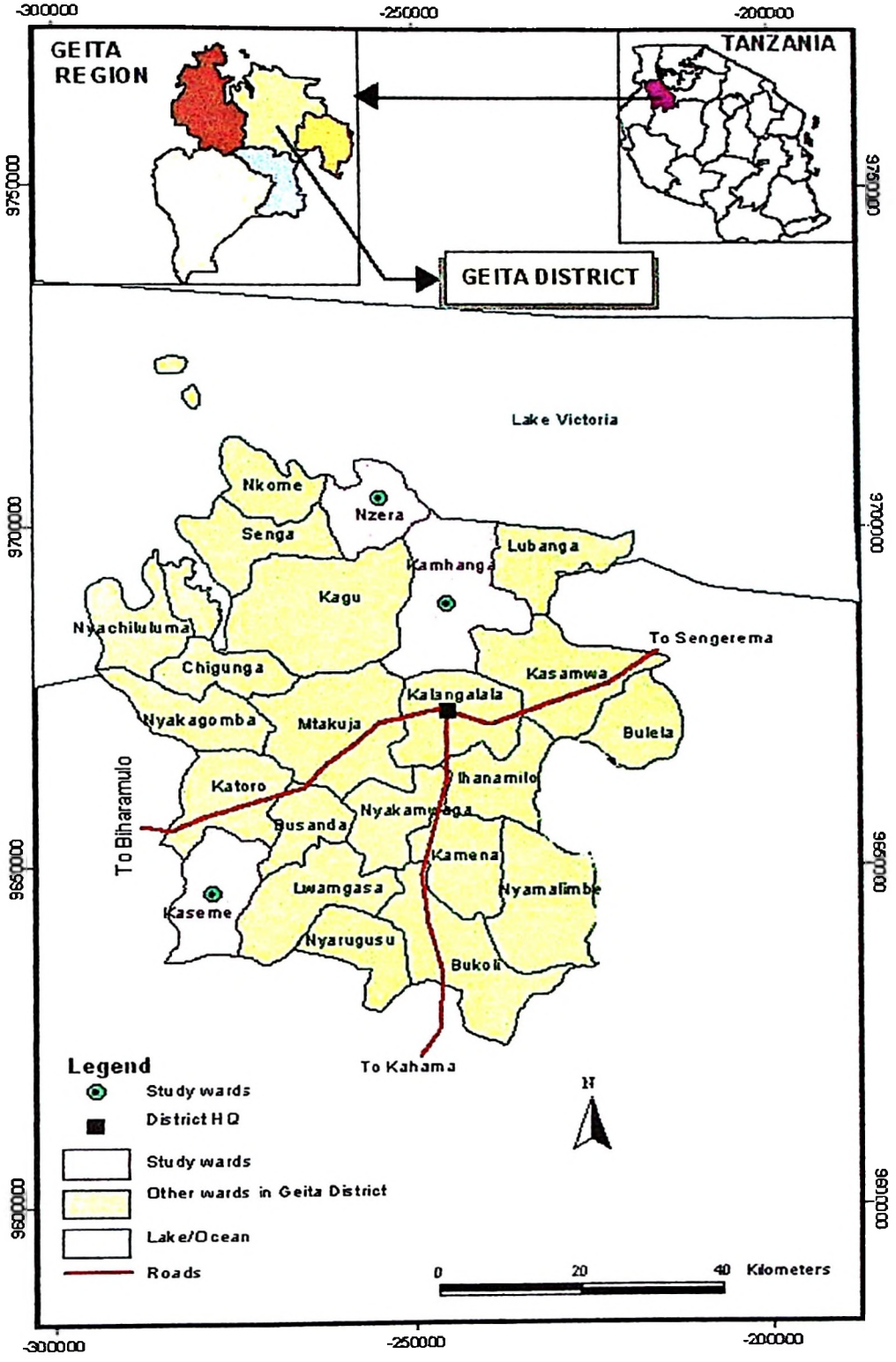

Figure 3: A Map of Geita District Showing Physical and Political Boundaries

Source: Adopted from GDC (2013).

3.2 Research Design

The study adopted a cross-sectional research design. The design was adopted based on the nature of the study. The design is cost-effective and allows one to collect the required data in a relatively short period of time. According to Bailey (1998), the design involves collection of data on more than one case, at a single point in time and it is a design which is typically associated with both quantitative and qualitative research.

The research used both qualitative and quantitative research methods. A combination of the methods was suitable for this research because they helped in soliciting full, in-depth accounts of the levels of participation of the project beneficiaries in the target communities. As observed by Tagarirofa and Chazovachii (2010), this complementary usage of the methods helps in the acquisition of comprehensive data about the variables under investigation. According to the scholars, combination of merits of the designs implies that the demerits of each can be eliminated by the advantages of the other. Therefore, combining these two methodologies obviously yields added advantage to the reliability of the findings relative to using a single research design.

Quantitative methods were used to measure variables that were linked to the research problem in the study area. The rationale behind using qualitative methods, in addition to quantitative methods, was to increase understanding about dynamics, opinions and perceptions of people in the study area about the effectiveness of their participation in implementation of the irrigation projects.

3.3 Study Population

The studied population involved project beneficiaries from the project villages. It also involved key informants who included the local government officials at all levels from district to village.

3.4 Sample Size and Unit of Analysis

According to Bailey (1998), the minimum sample or sub sample for a research in which statistical data analysis is to be done is thirty (30) cases. Therefore, the study covered a sample of 120 respondents from three villages with 40 respondents from each village. The unit of analysis for the study was the household.

In addition, five sessions of focus group discussions (FGDs) were held comprising eight participants each. Focus groups are a form of qualitative interviewing that uses a researcher-led group discussion to generate data (Given, 2008). It was considered that, by bringing together people who share a similar background, focus groups would have created the opportunity for participants to engage in meaningful conversations about the topic of this research. These were supplemented by in-depth interviews with sixteen key informants.

Key informants are individuals who are articulate and knowledgeable about their community (Given, 2008). The use of key informants was considered important to help the research team to establish a link between them and the community. The key informants included the District Agricultural and Livestock Development Officer (DALDO), the District Irrigation Officer (DIO), the District Community Development Officer (DCDO), the District Planning Officer (DPLO), three Village Executive Officers (VEOs) from the study wards, three agricultural field officers, and representatives of the of irrigators associations.

3.5 Sampling Methods

The study used a combination of different sampling techniques; these were purposive sampling and simple random sampling. Purposive sampling was used in order to allow

the researcher to select three wards and three villages with the major rice irrigation schemes in the study district. This is because as Kothari (2004) notes, in this type of sampling, items for the sample are selected deliberately by the researcher; his choice concerning the items remaining supreme.

Based on the registers which were obtained from the VEOs' offices in the respective villages; simple random sampling was used to obtain a sample of 120 (40 respondents per village) from among the households benefiting from the irrigation projects in the study villages. This was considered as the best technique of selecting a representative sample for this study by giving each house in the study wards an equal chance of being included in the sample. This is because as Kothari (2004) notes random sampling from a finite population gives each possible sample combination an equal probability of being picked up and each item in the entire population to have an equal chance of being included in the sample.

3.6 Data Collection Procedure

A pilot study was undertaken in the three study villages. The pilot study was done in order to pre-test the interview's schedule aimed at testing the reliability and validity of the tools. Based on the findings, some revision was done to remove ambiguous questions and add new ones which were relevant for the study. Five research assistants comprising of 3 males and 2 females, were trained to assist the researcher in conducting the interviews. Data collected were used for simple statistical analysis, interpretation and determining the relationship between different variables focused on the time of the survey using a questionnaire. The data from questionnaires were supplemented by the information collected through indepth interviews with key informants and FGDs.

3.7 Data Collection Methods and Tools

Various methods were used for collecting primary data, these include, structured interview schedules. According to Mouton (1996) structured interviews help to reduce the effect of errors due to reactivity that is deliberately misinforming the researcher. Other methods used for primary data collection were focus group discussions (FGDs) and key informant interview (in-depth interview). According to Neumann (2003) such interviews help in understanding the perspectives of the respondents about the causes and reasons of the occurrence of particular phenomena. The interviews allow the researcher to interact with people involved in a study area, record what they say, namely their words, gestures and tone and observe specific behaviours within the context in which they appear and which are of relevance to the aspects of the study.

In the course of primary data collection various tools were employed. These include three different questionnaires with open and close ended questions (Appendix 1). The tool was used to collect quantitative data. The second instrument (Appendix 2) was the checklist which comprised both focus group discussion guides and key informant guide. These interview guides were used to collect qualitative information.

3.8 Data Analysis

3.8.1 Quantitative data analysis

Descriptive and inferential analysis was used to analyse quantitative data. Quantitative data from the questionnaire were collected, edited, summarised, coded and thereafter analysed by using the statistical package for social sciences (SPSS). SPSS was used to analyse descriptive statistics which included, frequencies, percentages, standard deviation and mean, minimum, and maximum. Inferential statistics (Logit regression model) was used to determine the factors that influenced beneficiary participation in planning of the irrigation projects in the study area.

3.8.2 The logit regression model

Logit regression model, unlike other regression models, such as the probit model, which are used where there are several decisions, each between two alternatives, is used where there is a single decision among two or more alternatives (Greene, 2003; Greene and Hensher, 2009). Thus, for this research, the logit regression model was adopted to determine the factors influencing community participation by estimating the probability of the respondents' participation given the factors X_1.....X_7 as stated below. Based on the probability estimates, the decision was made on what is the most significant factor influencing community participation in irrigation projects among the seven factors which were involved in the regression.

The logit regression model imposes a condition that predicted values must be on the unit interval. Thus, it is preferably useful over other regression models when the goal is to predict probabilities as it ensures that the predicted values make sense as probabilities (Auld, 2013). For the research, the logit model used was based on the cumulative logistic distribution function expressed by Gujarat (1995) and adopted by Muhammad (2011). It is stated as:

$$Pi = \frac{1}{1+e^{-z}} \quad \text{.....(1)}$$

If ρi is the probability of participation in planning of the irrigation projects then the probability of otherwise is $1 - Pi$ which, in logistic function, can be expressed as:

$$1 - Pi = \frac{1-1}{1+e^{-z}} \quad \text{.....(2)}$$

$$= \frac{1}{1+e^{z}} \quad \text{.....(3)}$$

The ratio of equation (1) and (3) will give the odds ratio:

$$\frac{Pi}{1-Pi} = \frac{1-e^{-z}}{1+e^{z}} \quad \text{.....(4)}$$

$$\frac{Pi}{1-Pi} = e^{z} \quad \text{.....(5)}$$

The equation (5) is the odds ratio in favour of participation in planning of the agricultural projects. It is the ratio of the probability that a respondent in planning of the agricultural projects to the probability that he/she did not.

Taking the natural log of both sides of equation (5);

$Li = \frac{1n\mu_i}{1-p_i} = Z$ ..... (6)

Li =Log odds ratio or logit

$Z = \beta_{0+} + \beta_1 x_1 + \beta_2 x_2 + \beta_7 x_7 + \cdots \beta_7 x_7 + \mu$ ..... (7)

Though Z (cumulative logistic distribution) is a linear combination of a variable that has both upper and lower bounds, no bounds can be assigned to the variable Z itself as values assigned by Z depend on the values of the unknown parameters $\beta_1 - \beta_7$ also. To obtain the value of Z , the likelihood of observing the sample was formed by introducing dichotomous response variable Yi, such that:

Yi= 1 if i^{th} respondent participated

=0 if i^{th} respondent did not participate

X_1=Sex of respondent (Male= 1, otherwise 0)

X_2= Age of respondent (Years)

X_3= Family size (Number of persons)

X_4= Training (Any farmer or community training by the council or other institutions)

X_6= irrigation land (Ownership of land in the irrigation project area)

X_7= Mutual help (Membership in any mutual help group in the community)

3.8.3 Analysis of qualitative data

Analysis of the qualitative data was done through content analysis. Content analysis is a systematic examination of forms of communication used to objectively document patterns (Given *et al.*, 2008). The aim of content analysis in this study was to reduce the total

content of qualitative information into a series of variables. Verbal discussion held with the purposefully selected local people and government officials representatives were broken down into meaningful information using codes analysing similarities and differences in the responses.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Background Variables

4.1.1 Sex of respondents

Sex of the household head in a family may influence status of the household's participation in development projects. The findings of this research (Table 3) reveal that 50.8% of the respondents interviewed were female. Some recent research (Mahendeka, 2007; Ganja, 2008; Nyakerario, 2011) found that women participation in rural development projects tends to be constrained by socio-cultural factors including the patriarchy system, restriction by husbands, many responsibilities and lack of confidence. This means that empowerment measures targeting women are necessary to enhance their participation in the irrigation projects in the study area.

4.1.2 Marital status of respondents

The study findings (Table 3) show that, out of the 120 respondents, 54.8% of female respondents were married as compared to 45.2% of their male counterparts. This situation can have an implication by limiting women's active participation in the irrigation projects. Recent studies on community participation, point out that restriction by husbands is among the factors hindering married women's participation in many rural development projects, irrigation projects included (Mahendeka, 2007; Nyakerario, 2011).

Table 3: Composition and marital status of respondents by sex (n=120)

Description	Males		Female	
	(n)	(%)	(n)	(%)
Composition	59	49.2	61	50.8
Single	8	33.3	16	66.6
Married	40	54.8	33	45.2
Divorced	6	66.7	3	33.3
Widow/Widower	5	45.5	6	54.5
Separated	0	0.0	3	100

4.1.3 Age of respondents

The minimum and average ages of the respondents were 20 and 37.0 respectively. One-tenths of the interviewed respondents were aged 38 years. This, like in other rural areas, as observed by Ngailo *et al.* (2007) in Maswa District, indicates that most of the population in the study area was generally still active and could afford to carry out various productive activities.

4.1.4 Education of respondents

Education is always considered as a means of liberation from ignorance as developing human skills and knowledge empowers the community to participate in development activities. It is a key determinant of the lifestyle and status an individual enjoys in a society (URT, 2010a). In this research, respondents were asked to state their years of schooling attained.

The study findings (Table. 4) show that 28.3% had attained 7 years of schooling. The findings further showed that the proportion of female respondents with 7 years of schooling 37.7% was higher than that of their male counterparts which is 18.7%. The differences in percentage of male respondents with 11 years of schooling and above might be due to socio-cultural factors constraining girls' access to secondary and higher level education. The 5.8% of respondents without any formal education (0 years of schooling) is something that could be expected, given Tanzania's recorded achievement in Universal primary Education (UPE).

However, this might be due to lack of awareness on the importance of education which has been recently noted to be a cause of a slight increase in illiteracy in some communities (URT, 2010a). The p-value ($p = 0.01$), below Table 4, indicates that the pearson Chi-square measure was significant ($p < 0.05$). This implies that there was a

significant difference in education attainment (in terms of years of schooling) between male and female respondents in the study area. Therefore, women engagement in planning of the irrigation projects was likely to be constrained. The observation from the above findings are in consonant with a study on participation done by Ganja (2008) who pointed out that socio-cultural factors are among the causes of variation in gender participation in community development projects.

Table 4: Years of schooling of respondents (n=120)

Years	Male		Female	
	n	%	n	%
0	4	6.8	3	4.9
1	1	1.7	0	0.0
3	0	0.0	2	3.3
4	2	3.4	3	4.9
5	3	5.1	2	3.3
7	11	18.6	23	37.7
8	1	1.7	5	8.2
9	9	15.3	8	13.1
10	0	0.0	4	6.6
11	22	37.3	6	9.8
12	3	5.1	1	1.6
13	1	1.7	0	0.0
14	2	3.4	4	6.6

Pearson Chi-Square = 26.287 (p = 0.01), Likelihood Ratio = 30.347 (p = 0.02), Linear by linear Association = 1.951 (p = 0.16) 20 cells (76.9%) have expected count less than 5.The minimum expected count is 0.49

4.1.5 Main occupation of respondents

The study findings (Table 5) show that 78.3% of the respondents were involved in farming as their major occupation. Other respondents, 8.3%, 5.8% and 4% were engaged in livestock keeping, fishing and small business as their major livelihoods respectively. The rest 2.5% of the respondents were involved in other activities such as civil service and small scale mining. Generally, based on these findings it is said that the majority of the residents' households in the study area were farming households. Therefore, their participation is important for the sustainability of the irrigation projects and their livelihood.

Table 5: Distribution of respondents by their main occupation (n = 120)

Main occupation	Respondents	Percentage
Farming	94	78.3
Livestock keeping	10	8.3
Fishing	7	5.8
Small business	5	4.0
Others	3	2.5

4.1.6 Household size

The study findings revealed that the minimum and maximum family sizes in terms of household members in the study area were 1 and 11 respectively. The average family size was found to be 5.01 members. This deviates very little from the finding by the 2010 Tanzania Health and Demographic survey (TDHS), (URT, 2010c), which shows that the average family size is 5.0 members with the average being lower in the Mainland (4.9) and Zanzibar (5.6).

These findings can have implication on beneficiaries' participation in the study area. Nevertheless, information about household size is important because it is associated with household welfare (URT, 2010c). According to the report, economic resources are often limited in large households. Therefore, they are likely to contribute less time and resources to the projects. For the case of women, large family size can be a problem because it implies increase in responsibilities, whereas recent studies, for example Mahendeka (2007), pointed out that multiplicity of responsibilities are among the socio-cultural factors hindering women participation in planning of agricultural projects.

4.2 The Nature of Community Participation in the Irrigation Projects

The first objective of this research was to assess the nature of community participation in the irrigation projects in the study area. The results (Table 6) show that, 56.7% of the respondents participated by contributing resources. The results further show that, 48.3% in initial stages,

46.7% in decision making meetings and 36.7% in irrigators' Associations. The relatively low percentage of respondents participating in initial project stages implies a possibility of the beneficiaries' participation in unilaterally determined decisions by project management with minimal listening to peoples' responses. This as shown in Table 1, is a characteristic feature of passive participation. Nonetheless, as Komalawati (2008) observed, giving full opportunity to communities to participate enhances capabilities and creativity for the actualisation and fulfilment of groups and individuals. This increases their sense of ownership to the development projects leading to their sustainability (Komalawati, 2008).

Table 6: Distribution of respondents by participation in the projects (n=120)

	Yes		No	
Variables	(n)	(%)	(n)	(%)
Participation in initial stages	58	48.3	62	51.7
Participation in decision making meetings	56	46.7	64	53.3
Participation in irrigators' Associations	44	36.7	76	63.3
Participation by contributing resources for project implementation	68	56.7	52	43.3
Participation in Monitoring and Evaluation	41	34.2	79	65.8

4.2.1 Beneficiaries understanding of community participation

The findings (Table 7) show that over a quarter (27.5%) reported of understanding participation as referring to contributions in terms of manpower or cash. Furthermore, the findings show that involvement in planning meetings had (15%) of respondents, while formation of groups had (15.8%) of respondents. This implies that, the beneficiaries of the projects participated more by contributing to the projects but lacked control over the resources and decision making. So it is considered that community participation in this case was used more as a means than as an end, with more interest in efficiently achieving the set project objectives than empowering the project beneficiaries.

Table 7: Beneficiaries' understanding of participation (n=120)

Understanding	No. of respondents	%
Contributing in terms of manpower or cash	33	27.5
Involvement in planning meetings	18	15.0
Formation of groups	19	15.8
Learning	9	7.5
Do not know anything	15	12.5
Involvement in the planning process	26	21.7

4.2.2 Participation in the projects by gender

The findings (Fig. 3) show that only 37.5% of female respondents reported participating in the projects as compared to 62.5% of male respondents. The findings indicate that the participation of women were generally limited. This can be attributed to reliance on O&OD. As Ganja (2008) notes, since O&OD insists much on consensus as an indicator of participation, the approaches ignore gender groups and individuals' socio-cultural conflicting interests and differences. However, as Koopman *et al.* (2001) notes. participation in irrigation projects is more effective when women are involved.

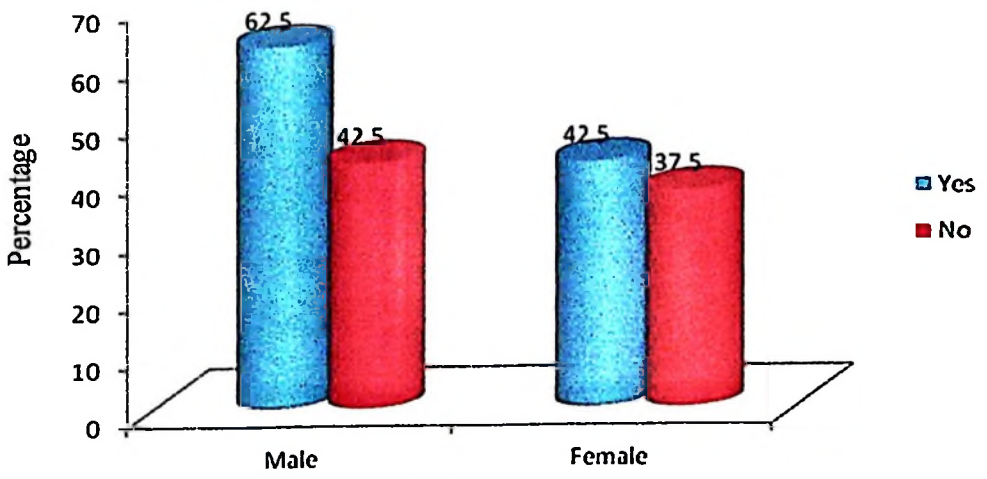

Figure 4: Gendered participation in the irrigation projects

4.2.3 Findings from key informant interviews and FGDs

The quantitative findings in relation to the nature of community participation in the projects are further confirmed by the qualitative findings from key informant interviews and FGDs. During the key informant interview it was remarked that:

"*Formulation of the three Irrigation projects (Nyamboge/Nzera, Lwenge and Nyamalulu) was based on a systematic assessment of the existing situation and was developed through a participatory approach involving key agricultural stakeholders. A team of agricultural stakeholders at the district level in collaboration with the field extension officers from the respective wards prepared an initial focus question on how low income households and households with food insecurity problems caused by low agricultural productivity would be addressed, which was later presented to the communities to get a shared perception of the problems they wished to overcome*" (Geita District Irrigation Officer-DIO).

However, for effective community involvement in irrigation projects, it is required that the project team has to spend considerable time with the beneficiaries to outline the strategies for implementation of the project and seek their inputs. It is in this way that, effective community participation in initial stages can be ensured (Irrigation Futures, 2011).

The concern for lack of active community involvement in the design of the projects featured in almost all of the Focus Group discussions (FGDs). In all villages the discussants raised concern over lack of effective mobilisation for the communities to participate in early stages of the projects, inadequate community meetings concerning the projects, lack of clear information regarding their involvement in the formed irrigators' associations and setting of the contributions for the projects. One participant remarked that:

"*Generally, I can say that our involvement in this irrigation project, as a community, is limited. We were not consulted to give our views, may be our leaders. The project team came from the district with their ideas and the meeting was just used as a rubber stamp to inform us about their pre-conceived ideas. We are also informed that each beneficiary will be required to contribute a bag of rice per year for the project operations and maintenance fund but we were not involved in discussing all of these issues*" (a young man from Nzera village).

These remarks further highlight the lack of active community participation in initial stages of the projects. Thus, in the light of 'community participation as a means', it can be considered that the communities were just mobilised to get things done, a top down type of mobilisation, which was enforced to achieve the pre-determined project objectives imposed from above. This remains the case while the literature on community participation shows that giving the beneficiaries an opportunity to actively participate in all aspects increases their sense of ownership of development projects and in turn leads to sustainability of the projects (Komalawati, 2008; Ahmad and Talib, 2010).

The understanding of community participation as contribution of resources was also evident in the findings from key informant interviews. During the interviews one respondent had this to say:

"*Participation is a wide concept implying not only community involvement in the whole development process as initiators by giving their ideas, but also contributing resources for accomplishment of the development initiative. In this way, the community members can feel that they own the outcome of the initiative. But in most cases it is used to refer to community contributions*" (The DCDO)

The findings from FGDs were also similar to those of key informant's interview as explained by one discussant who had this to say:

> *"What I understand is that participation is about contributions. Even if I go to meetings, at the end of the day we are told to contribute, so I do not see the meaning of wasting time for meetings unless it happens that I have time. After all I always pay for the contributions whenever I am needed to do so"*
>
> (A woman from Lwenge village).

In connection to the findings above, Marsland (2006) argues that in Tanzania, at least two contradictory meanings of participation are circulating amongst development workers whereby one concerning empowerment and the facilitation of local decision-making, is associated with international development discourse and the other, concerning the obligation of Tanzanian citizens to contribute to the development of the nation, can be traced back to the philosophy of Julius Nyerere namely Socialism and self reliance. Under Socialism and self reliance, local beneficiaries were required to participate in the central government determined development projects by contributing labour and resources. On the other hand, Bashir (2006) pointed out that, community participation in the context of irrigation projects should be seen as a total commitment of both the initiators and beneficiaries in carrying out a mutually planned project to its completion through the involvement of participating agencies and recipients using a multi-sectoral approach in which the rural people take part in the decision making.

Other findings as reported by key informants are the existence of problems associated with participatory planning process of the projects. These include conflict of interest among different social groups; cultural and political constraints; time consumption and

complexity of the participatory process and difficulty of accommodating all views from the people. During the key informant interview one of the interviewees had this to say: "*Participatory planning is desirable but very complex and frustrating. It consumes a lot of time and resources. It is sometimes constrained by conflicting political interests and it is sometimes difficult to accommodate the views of all people in the community. Therefore, amidst the constraints of resources we face and limited time typical of our planning cycle, if care was not taken we would have ended up with no decision on implementation of the projects*" (District Planning Officer-DPLO).

However, the findings are in line with IFAD, (2003) and Koopman *et al.* (2001) who show that participation of many different groups (men, women, owners, tenants) in planning, implementation of the irrigation projects and in the formation of irrigators' organisations enhances the technical, social, economic and environmental sustainability of the irrigation schemes.

On the other hand, participants in FGDs reported that the planning of the projects was characterised by lack of knowledge and illiteracy among the communities, lack of support from the local government and lack of transparency. Some of them said that these problems limit their participation in the planning process for the projects. Findings similar to these have been reported in other studies by Mwakila (2008) and Komalawati (2008) who highlighted that problems associated with community participation can raise conflicts amongst the groups' (irrigators' associations in the context of this study) and thus can threaten the sustainability of the groups in the future.

The findings show further that there was a limited use of participatory planning methods during the planning process including the lack of a specific strategy for involvement of

women and other marginalised groups. As reported during the key informant interview, the process relied entirely on O& OD, and there was no specific guideline to ensure that women and other marginalized groups participated effectively. This might have led to the observed difference in participation between male and female respondents as shown in Fig. 4.

4.3 Factors Influencing Community Participation in the Irrigation Projects

The second objective of this research was to determine factors that significantly influenced community participation in irrigation projects in the study area. Age and sex of respondents; household size; training; land ownership and more specifically ownership of land in the irrigated area and membership in local community organisation have been identified in literature as factors influencing community participation in development projects. The logit regression model was used to test the statistical significance of these factors to determine which of these significantly influenced community participation in the irrigation projects (Table 8).

The results reveal that training was the most significant ($p < 0.0000$) and positive factor influencing community participation in the projects in the study area. This, as suggested by positive coefficient (3.3624), means that those beneficiaries who had received training through any participatory programme were more likely to participate in the projects. The findings are in line with what has been reported by other studies including IFAD, (2003); Salam *et al.* (2005); Morales and Mongcopa, (2008) and Kimani and Kombo (2011) in both of which training was reported to have an influence on community participation in irrigation projects and other development projects.

Table 8: Logit regression Estimate of factors that influenced participation

Factors	Coefficients	P-values
Constant	-4.1968	0.0246
Sex (X1)	0.5713	0.0154**
Age (X2)	0.1143	0.7144
Family size (X3)	0.5659	0.2259
Training attendance (X4)	3.3624	0.0000***
Landownership (X5)	0.5713	0.2259
Ownership of irrigated land (X6)	3.6248	0.0001***
Membership in mutual help groups (X7)	-0.4511	0.4663

McFadden- Pseudo R-squared= 0.4251; Ben/Leman= 0.7668
***Significant at 1% **Significant at 5%

The results (Table 8) further show that, among the seven variables selected as factors that influence community participation, three variables were found to have a positive and significant ($p < 0.05$) influence on community participation in irrigation projects. These factors include training attendance which showed the highest significant ($p = 0.0000$) and positive influence on community participation in the projects. Ownership of irrigated land had the next highest significant ($p = 0.0001$) and positive influence on community participation. In addition, sex of the respondent had the next highest significant ($p = 0.0154$) and positive influence on community participation in the projects.

The findings above are in line with Khalkheili and Zamani (2008) who found that those beneficiaries who expect more profit are more likely to participate in the development projects and that beneficiaries with irrigated land have greater need for water, hence they participate more in irrigation projects. Further to the findings above, Koopman *et al.* (2001) explained that participation of other marginalized beneficiaries, especially tenants, can be beneficial as they were found to have an impact on success of the irrigation projects.

Although the influence of sex on community participation has been rarely considered in irrigation projects, some recent research findings (Kimani and Kombo, 2011; Ahmad *et al.*, 2011 and Nyakerario, 2011) reveal that sex of the beneficiaries can greatly influence community participation in development projects. On the other hand, Nyakerario (2011) found that women in rural areas are isolated, confined and marginalized through the non-interactive government policies, and these impacts on their participation in development projects. Therefore, male beneficiaries were more likely to participate in the projects than their female counterparts. The results indicate that the following variables: Age, Family size, Landownership and Membership in mutual help groups did not show any significant influence on community participation in the projects.

The Ben /Lerman (0.7668) and McFadden- Pseudo R-squared (0.4251) fit measures (at the bottom of Table 8) indicates that the overall fitness of the model was good; hence it was appropriate for prediction. This is based on Greene's observation, (Greene and Hensher, 2009) that, McFadden pseudo-R2 must be >20% and Ben/Lerman must be above 40% for a good discrete choice model.

The findings from FGD also, as discussed by the participants, show that training was recognised by many discussants as playing an important role in influencing community participation in the projects. This is testified by the following remarks as given by one of the discussants:

"*We were mobilised through meetings but so far no education has been provided by either the Agricultural office or the Community development office to leaders and prospective members on such important issues like gender. As a result, the majority of the community members do not know even their role in participation and even the role of women tends to be ignored. So I think training in these issues should be provided and*

extended to as many community members as possible" (a middle aged Woman from Lwenge village).

4.4 Conditions for Sustainability of the Projects

The third objective of this research was to evaluate the conditions for sustainability of the projects. The findings (Table 9) show that, the majority of the respondents (>50%) in all indicators of the conditions for sustainability thought that the necessary conditions for project sustainability were inadequate. With regard to the discussion of the project issues in community meetings, 59.2% of the respondents were of the view that the issues are not regularly discussed in community meetings. While on the freedom to air views in the meetings, 51.7% of the respondents thought that there was no adequate freedom for everyone to give his or her views in the meetings, on government support, only 52.5% of the respondents were of the view that there was not adequate government support for the projects.

Table 9: Views on the conditions for sustainability of the projects (n=120)

Respondents' views (n=120)		Respondents	Percentage
Awareness of the project budget	Yes	56	46.7
	No	64	53.3
Discussion of projects issues in community meetings	Yes	49	40.8
	No	71	59.2
Freedom to air views in the meetings	Yes	58	48.3
	No	62	51.7
Government support	Yes	57	47.5
	No	63	52.5

The findings suggest that there was lack of transparency and accountability, and limited government support. However, as Olukotun (2008) found, the sustainability of community based initiatives depends crucially on an enabling institutional environment, which requires government commitment, and on the accountability of leaders to their

communities. Based on the findings above, it can be considered that the situation is likely to affect the sustainability of the projects in the long term if community participation is not prioritised.

The above findings are further confirmed by the findings from the Focus Group Discussions (FGD). The discussants in almost all FGD discussions identified lack of transparency and accountability as being among the main challenges to sustainability of the projects. They linked them to poor governance pertaining to the local government and the irrigators' associations. One participant remarked that:

> *"Among the things threatening our project are corruption, lack of transparency and weak accountability. These are common both in our village government and in the irrigators' associations. You find for example that training opportunities are offered to some individuals who do not deserve. However, the worst of all is that, income and expenditure reports of many development projects including this irrigation project, are rarely disclosed to the public as supposed"* (a middle aged man from Nyamalùlu village).

This is in line with the findings by Olukuton (2008) that:

> *"The leaders must be out rightly accountable and answerable to beneficiaries rather than to political and bureaucratic superiors. Their records should be well kept in simple language and accessible to every members of the community. The leaders should be transparent in their dealings with members of the community and call for regular meetings where the people are briefed on the sustainability efforts of the community and the challenges ahead"*

In addition, it was discussed during FGDs that there is inadequate supply of agricultural inputs (fertilisers, improved seeds, extension services and tractors). Thus, it was observed during the discussions that these are the issues which had to be addressed to ensure sustainability of the projects. This is related to government support. One FGD participant in Nzera village remarked that:

"We hear that the council in collaboration with SUMA JKT is offering tractors on a loan basis. I think if it is committed to support this project it would consider supporting the farmers by facilitating our irrigators' association to get a tractor under this loan scheme. Supply of fertilisers, improved seeds and extension services should also be enhanced" (a man, aged 48, Nzera village).

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The main objective of this research was to analyse the potential outcome of community participation on sustainability of the irrigation projects in Geita District. To achieve this objective, the research focused on assessing the nature of community participation in the irrigation projects, determining the factors influencing community participation in the projects and evaluating the conditions for sustainability of the projects as its specific objectives.

The findings, with regard to the nature of community participation in projects, show that, the participation was passive. This was indicated by a small percentage of respondents who reported participating (<50% in all aspects except participation by contributing resources to the project); a relatively large percentage (27.5%) of respondents who reported understanding participation as contributing in terms of manpower or cash and a limited use of participatory techniques (mainly relying on O&OD only) as reported in key informant interviews. In the light of 'community participation as a means vs community participation as an end' this means that community participation was used more as a means than an end.

With regard to the factors influencing community participation in the projects, training was found to be the most significant ($p < 0.0000$) factor positively (coefficient = 3.3624) influencing participation in the projects.

Meanwhile, the findings on the conditions for sustainability of the projects was found to be inadequate as indicated by the percentage of respondents (> 50% in all indicators) who reported of thinking that there were adequate conditions and supported by qualitative findings from FGDs. This implies weakness of the enabling institutional environment, which requires government commitment and the accountability of leaders to their communities.

In view of the above findings it is concluded that, community participation as used in the irrigation projects in Geita District is likely to lead to sustainability of the projects in the short term, but if a long term sustainability of the projects is to be achieved, adoption of community participation as a means and an end is necessary. This will be likely to enhance the participation of target participants and therefore the projects' long term sustainability.

5.2 Recommendations

(a) Improvement measures

The recommendations given here mainly focus on improving the performance of the irrigation projects in Geita District and other similar projects in the future.

i. In view of the finding that community participation in the projects is passive; it is recommended that there should be concerted efforts to sensitise and mobillise the community members to participate in all aspects of the projects from problem identification to implementation. Participation should be enhanced by applying more innovative participatory approaches like PRA in addition to O&OD. Local government officials should be trained on the use of participatory approaches with a focus on participation as a means and participation as an end. Community members should be facilitated to understand deeply the meaning of participation

and their roles in participatory process. Provision of gender education to local government officials and community leaders should be strengthened. Regular monitoring of the projects should be undertaken to identify gaps in participation and act on the situation accordingly.

ii. In view of the finding that training is the most significant factor positively influencing participation in the projects; it is recommended that the government at all levels should undertake training needs assessment and intensify training to cover more beneficiaries in the community. The training may focus on agricultural knowledge, matters relating to the projects, participation and crosscutting issues especially gender. The training is likely to enhance active participation by giving the beneficiaries especially women a confidence to participate in the projects.

iii. On the basis of the finding that the conditions for sustainability of the projects are inadequate, it is recommended that legal action should be taken against project and grassroots local leaders who fail to account to the public on project funds; this will serve as precedence to other future corrupt and dishonest leaders, therefore improving transparency and accountability. Also frequent facilitation, support and monitoring from relevant institutions at different levels of project implementation should be undertaken.

(b) Further research

i. It is recommended that further research should be conducted covering even larger samples to focus on other aspects of the participation continuum planning covering more irrigation projects and other rural development projects.

ii. It is further recommended that further research should be conducted to determine the training programmes that can be more appropriate and how best they can be delivered to facilitate active participation of the beneficiaries in the irrigation projects.

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APPENDICES

Community Participation and Sustainability of Irrigation Projects in Geita District, Tanzania

Appendix 3: An interview schedule for a research

Analysis of the potential outcome of Community participation on sustainability of Irrigation Projects in Geita District

Dear Respondent,

You have been selected randomly to participate in a research that is on-going in Geita District. The research which has been approved by the DED's office is about Community Participation in the irrigation projects. The aim is to get the views of the residents of this district about their participation in decision making and implementation of the projects. The results of this research will be useful for drawing recommendations to the Geita District Council's Management on how best to improve beneficiaries' participation in decision making and implementation of the development projects which affect their well being. All the responses you will give about yourself, your household and in general will be treated confidentially. Therefore, you are kindly requested to respond to all questions openly and truthfully.

A: Where the respondent resides (circle the appropriate answer)

Division.....

Ward.....

Village.....

B: THE RESPONDENT'S SOCIO-DEMOGRAPHIC ATTRIBUTES

1. Socio-demographic attributes

To begin with, please let me ask you about yourself

Serial numbers	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Sex (1=M; 2=F)												
Year of birth												
Years of schooling												
Marital status												
Main occupation												
Family size												

Key to Question Number 1

Marital status	Main occupation	Family size
1. Single	1. Farming only	1. Less than 4 members
2. Married	2. Farming, Livestock keeping and Small business	2. Between 4 and 8 members
3. Divorced	3. Farming and fishing	3. More than 8 members
4. Widow/	4. Farming and small business	
5. Separated	5. Farming, Livestock keeping and	
	6. Others (Specify)	

C: Participation in the Irrigation Projects

2. Did you participate in your village's irrigation project? **1) Yes 2) No**
3. In which aspect of the project did you participate?

Aspect of participation	**Yes**	**No**
Participation in initial stages		
Participation in decision making meetings		
Participation in irrigators' Associations		
Participation in Monitoring and Evaluation		

4. What is your understanding of community participation?
5. Have you ever attended any kind of training? **1) Yes 2) No**
6. Do you own a land? **1) Yes 2) No**
7. Is any part of the land you own irrigated? **1) Yes 2) No**

D: Conditions for sustainability of the Projects

8. Do you think there is adequate awareness of the project budget among the beneficiaries? **1) Yes 2) No**
9. Are the irrigation project issues discussed regularly in the community meetings? **1) Yes 2) No**
10. Is every one free to air his/her views in the meetings? **1) Yes 2) No**
11. Do you think the government is adequately supporting the projects? **1) Yes 2) No**

THANK YOU VERY MUCH FOR YOUR COOPERATION

Appendix 4: Key informants interview guide

1. How did the communities come about to selecting the irrigation projects?
2. What was the role of the communities in planning stage at the village level?
3. To your understanding what does it mean by community participation?
4. What steps have been taken by the council to make sure that the projects are understood, accepted and institutionalised, given the experiences of people about mistrust of some government and other development agencies officials?
5. How do communities participate in the planning processes?
6. Are there enough resources to facilitate participatory planning?
7. As a council, do you have a strategy designed for facilitating the marginalised groups including women to participate in the projects?
8. Are there any problems associated with community participatory planning?

Appendix 5: **Focus Group discussion Guide**

1. Do you think the beneficiaries are empowered to participate actively in all aspects of the irrigation project in your village?
2. In your opinion, do all groups of the community actively and equally participate?
3. What is your comment on your participation in the process?
4. What is your understanding of community participation?
5. What do you think are the factors that influence community participation in the projects?
6. Do you think the project and community leaders are running their activities in accountable and transparent manner?
7. In your opinion, the government doing enough to support the irrigation projects in your district?
8. Do you the irrigation project is likely to continue being productive for long time to come?
9. What do you might be the challenges to continuity of the project?
10. What do you think should be done to enhance the sustainability of the project?

THANK YOU VERY MUCH FOR YOUR COOPERATION