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AN ASSESSMENT OF GENDER MAINSTREAMING IN WATER RESOURCES MANAGEMENT: A CASE STUDY OF MKOJI SUB CATCHMENT IN USANGU PLAINS, TANZANIA.

By

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A dissertation submitted in partial fulfilment of the requirements for the Master of Science degree in Integrated Water Resources Management.

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July 2009

ABSTRACT

From the late 1980s onwards, the Gender and Development (GAD) approach was developed with the objective of removing disparities in social, economic, and political balances between women and men as a pre-condition for achieving people-centred development. Much of the work in the water sector today is informed by this approach. However, there are many perspectives in this approach and no one plan for enabling equality and equity in water resources management. The many different ways in which water is used and managed often has distinct implications for men and women users. Use, access and control over natural resources such as land and water, and tasks, means and responsibilities are highly gender-specific and may vary considerably for different water uses. However, gender awareness varies widely across the water sector, and no concerned attempts have been made in the past to consider the gender perspectives in an integrated way. The major aim of this study was to investigate the extent to which gender is being mainstreamed in water resources management in Mkoji Sub-catchment in Tanzania. The specific objectives were to analyse, explore and assess the uses, accessibility, participation and management of water resources, institutional arrangements on Water Resources Management (WRM) and an assessment of the Tanzania water policy with respect to gender mainstreaming in Mkoji Sub-catchment (MSC). Data presented in this study were collected using both qualitative and quantitative methods; structured questionnaires, focus group discussions, participatory observation and key informant's interviews. Quantitative data were analysed using the Statistical Package for Social Science (SPSS) and the qualitative data were analysed using thematic approach. The major findings of the study were; there is no equitable accessibility and uses of water from the irrigation canals, both formal and informal institutions are available in the management of water resources but gender mainstreaming has been ignored as women and men do not participate equally in WRM. The gender provisions of Tanzania water policy have not been implemented neither are these understood by most of the people in the lower MSC and as result most of the villagers do not know their water rights. The study concluded that; gender mainstreaming issues are neglected and misunderstood by most of the people in MSC. The legal framework for WRM does not address issues of gender, but provides the foundation for the involvement of both men and women in water resources management though its emphasis on the stakeholder participation and on the institutional level; there is limited understanding of the gender mainstreaming issues among individuals in MSC. There is unequal participation of men and women in all aspects of WRM. There is a need of introducing new legal framework on gender mainstreaming and water resources management. The study recommends that it is essential to advocate for the direct involvement of both women and men at all levels: national governments; regional/local governments and it is important to mobilize and encourage women to get involved in technical training while at the same time breaking the myth of female inferiority and enhance educative programmes to women and men on gender partnership where both of them have equal roles in MSC.

DECLARATION

I, ELINA ADRIAN LUSUVA declare that this dissertation is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other university.

Signature……..

Date……

DEDICATION

This thesis is dedicated to my lovely little boy Newman Brian for his true love and understanding during the period I was undertaking my studies. He has been the inspiration to my life and the reason for my forward movement. May he grow up and get the rights to access, use and participate in water resources management.

ACKNOWLEGEMENTS

My sincere gratitude goes to Our Almighty God, for leading me this far and for giving me strength and confidence throughout my academic career. Lord, you have been the light and comfort to my life, may your name be glorified, honoured and praised.

I would like to thank Water Net for funding my studies and my fieldwork, special thanks to my supervisors; Mr. Collin Mabiza and Mr. Krasposy Kujinga for their willingness support and constructive ideas which enabled me to move on with my thesis, without you I would not make it. Thanks to Engineer Hoko and Ms Nomathemba for the literatures and invaluable suggestions.

Thanks to Mbeya zonal irrigation officers, Rufiji water basin officer Mr L. Mbuya, Agriculture extension officer; Mr Fred and special thanks to Mr Steven Kasele for his moral support, time and suggestions during my field work, to Mr. A. Sikaona, I am very gratefully for the efforts you made, your contributions and encouragement would never be taken for granted, May God bless you.

Special and heartfelt thanks to my parents Mr and Mrs Lusuva for their support and encouragement throughout the period of my studies, thanks for taking good care of my son Brian, thanks to my young sisters Emmie and Erica and brothers, Edger and Phillemon, to my friends; Leochrister, Ulimbakisya and Grace-thanks for always being there for me.

I would also like to express my gratefulness to Civil Engineering and Integrated Water Resources Management lecturers and staffs of the University of Zimbabwe for their constructive ideas. Special appreciation to Miss J. Chipwaila and Mr. D. Kambuku; you contributed a lot of ideas in write up of my research- Thanks for the support and encouragement, Mr. N. Mpembe- you have been more than a brother to me. You all gave me strength to accomplish my journey. To my colleagues IWRM students 08/09 – It was the best and wonderful class. May God bless all who has participated in one way or another in the fulfilment of my masters Programme. I owe a great debt of gratitude.

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LIST OF ACRONYMS

FAO	Food and Agriculture Organization
FGD	Focus Group Discussions
FWCW	Fourth World Conference on Women
GAD	Gender and Development
GRRB	Great Ruaha River Basin
GWA	Gender and Water Alliance
IWMI	International Water Management Institute
IWRM	Integrated Water Resources Management
MATI	Ministry of Agriculture Training Institute
MSC	Mkoji Sub-catchment
MWALD	Ministry of Water and Livestock Development
PRA	Participatory Rural Appraisal
RBWO	Rufiji Basin Water Office
SHARDI	Southern Highland Agriculture Research Development Institute
SMUWC	Small Scale Water Management and Catchment
SPSS	Statistical Package for Social Sciences
URT	United Republic of Tanzania
VEOs	Village Extension Officers
WRM	Water Resources Management
WUA	Water Users Association

CHAPTER ONE
INTRODUCTION

1.1 Background to the study

The importance of involving both women and men in the management of water resources has been recognized at the global level. The first significant recognition of gender issues in the water sector was at the United Nations Water Conference at Mar del Plata in 1977. At the conference it was noted that gender issues needed to be taken into account, it was also highlighted that there was a need to make equitable access to safe and adequate water for domestic needs, sanitation, food security and environmental sustainability which are the basic rights for both men and women in the promotion of poverty eradication. It was realised that poverty eradication could not be achieved without addressing gender issues. It has also been realised that the needs for water between men and women are different, (Machibya, 2003). In most cases, because of culturally imposed roles in the household and in society at large, men and women access and use water different. These issues have led to the importance of gender mainstreaming in the water sector, and in the study of gender in water resources management.

The theory of gender mainstreaming applies to Integrated Water Resources Management, (IWRM) as it advocates for the participatory management of water resources involving all users, planners and policy makers at all levels. This participatory management of water resources must involve both men and women. Furthermore the Principle of IWRM clearly recognized the central role of women in the provision, management and safeguarding of water resources. Other global commitments on gender and water include;

2002-World summit on sustainable Development in Johannesburg had some declaration as: insurance of women's empowerment, emancipation and gender equality, facilitation of women participation in policy and decision making in water resources.

2001- International Conference on fresh water with a ministerial declaration on gender that states that; Water resources management must be based on the participatory approach involving both men and women, and the women's role must be strengthened and their participation broadened.

2000- Millennium Summit, New York

At this summit the Millennium Development Goals (MDGs) were developed. The two MDGs on gender and water are MDG 3 to promote gender equality and empower women and MDG 7 to halve the population without access to safe drinking water.

1998- Commission on Sustainable development, New York

Decision 6/1 of this commission was on the strategic approaches to water management and Governments urged to mobilize financial resources and mainstream gender in all aspect of water resources management.

These high level meetings have recognised the need to empower women to participate at all levels in water resources programmes, including decision-making and implementation and to secure their equal voice in managing the sustainable use of water resources and sharing the benefits.

Women and men play different roles in relation to IWRM and they have different and unequal access to water resources, they also have generally unequal access to decision making at water bodies, (SIDA, 1993). In most southern African societies women are the main providers and users of water at the household level. Men make decisions about water resources management and development at both local and national levels. Tanzania's gender equality policy states that, there should be no negative effects on women, and all water policies and projects should benefit women at least as much as men and should in fact prioritise women's needs in order to improve the sustainability of water services.

In developing countries like Tanzania, women perform a greater role in agricultural activities; Boserup (1970) described women as the main producers in agricultural production as compared to men, in sub-Saharan Africa. In spite of their participation in agricultural production, their contribution is still under measured. Women experience much of the constraints in agricultural sector, they participate much in agricultural activities particularly in rural areas, but they face problems; in time availability, resources ownership like land, and other inputs. Most of the resources are owned by men and so hinder women's performance in agricultural activities (Sirima, 1993). Regardless of growing awareness of gender gap and increasing initiatives there has been little success and there are definite limits to what women can do in water resources management.

1.2 Problem statement

Although in some southern African countries efforts have been made towards addressing gender issues, a gap exists between how men and women access, use and involved in the management of water resources, (RNE, 1994). Gender differentials in the water sector have persisted mainly because in some cases the attitudes of water users towards women have not changed to accommodate women. In some cases even the official state policy on water has not changed to reflect the changes in perception on gender. Where policies have changed to reflect gender needs, practices at the water user level to mainstream gender practices have lagged behind and this affects women.

Gender mainstreaming has not been translated into practice in MSC, women have limited access to water for productive purposes and the water allocation systems are not gender sensitive and hence women are then left poor and food insecure. Women are not adequately involved in water issues and there has been an inadequate attempt to involve women especially at decision-making, management and technical levels.

Understanding gender issues at the water user level is important because it is at that level where households are influenced by gender issues of access and use of water. At that level it is also possible to make the most differences in water resources management. In the light of these issues, it is therefore necessary to investigate how gender impacts on access, uses and management of water resources in a sub-catchment.

1.3 Problem Justification

There are many different ways in which water is used and managed, often have distinct implications for users. Access and control of natural resources such as land, water and tasks, means and responsibilities are highly gender-specific and may vary considerably for different water uses. However, gender awareness varies widely across the different water sectors, and no concerned attempts have been made in the past to consider the gender perspectives in an integrated way (SIDA, 1993).

1.4 Objective

1.4.1 General Objective

The aim of this study was to investigate the extent to which gender is being mainstreamed in water resources management in Mkoji Sub-catchment.

1.4.2 Specific objectives

- Examine how gender is being mainstreamed in accessing water for domestic and productive uses in different villages.

- Analyse the influence of gender mainstreaming in participation, use and management of water resources.

- Identify the water resources management institutions in Mkoji sub-catchment and analyse their role in mainstreaming gender.

- Assess how the Tanzania National water policy and legislation highlight gender mainstreaming issues in water resources management.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature covering descriptions by different stakeholders on how they conceive gender aspects and understand the importance of involving both men and women in Water Resources Management.

2.1 Definition of concepts

2.1.1 Gender

Gender refers to the roles and responsibilities of men and women and the relationship between them, gender does not simply refer to women or men, but to the way their qualities, behaviours and identities are determined through the process of socialization. These roles and responsibilities are culturally specific and can change over time. Gender is seen as the social construction of men's and women's roles in a given culture or location. Gender roles are distinguished from sex roles, which are biologically determined. (Narayan, 1995).

"Gender is a social, not a biological concept," the word gender does not just mean men and women and the relationship between them. Gender encompasses a much larger social context of diversity, equity, social inclusion, Poverty and so on. On gender issues in water managements, women and men need to be involved in participatory water management and that they should have an equal voice in managing resources and in particular the role of women needs to be strengthened (GWA, 2003).

Gender is the concept used to identify a human being as male, female or intersex. Usually it is used to highlight the social distinctions between men and women; for example the positions they occupy the roles they play and the social status they have are socially constructed and allocated, (Narayan, 1995). Attention to gender is essential to the development practice and at the heart of economic and social progress. Development cannot be optimized and sustained without explicit attention to the different needs and interest of women and men. If the realities and voices of half of the population are not fully recognized then sustainable development will not be achieved, (UNDP, 2003).

Gender is an important concept as it influences the interaction of men and women in the society. There are specific obstacles created by gender inequalities; men and women make different assessments on the participation and yet still women have little time to spare for participation, men and women have different levels of literacy and thus differ in experience and confidence, intra house and intra family relations that may make women fail to speak out in front of men and elders, (UNDP, 2003).

2.1.2 Gender equality

Is the result essential for all development and necessary condition for poverty eradication, it ensures that women and men enjoy the same status and have equal conditions for realizing their full human rights and potential to contribute to national, political, economic, social and cultural development. Gender equality can be seen as the equal valuing by society of both the similarities and differences between women and men and the varying roles they play, (status of women in Canada, 1996). In the water sector, it means women and men share contributions, control, assets and benefits equitably and fairly.

2.1.3 Gender equity

Is the process of being fair to women and men, in order to ensure fairness, measures must often be available to compensate for historical and social disadvantages that prevents women and men from otherwise operating on a level of playing field (status of women in Canada, 1996). In the water sector for example, women's roles in water and land use management need to be recognized along with those of men. Gender equity is the process and gender equality is the result.

2.1.4 Gender Mainstreaming

Gender mainstreaming is a way of ensuring that gender considerations are taken into account given that unequal power and resources make men more able to access and demand their rights to natural resources. Gender mainstreaming means taking into account the perspectives, roles and responsibilities of both women and men in development initiatives. It involves integrating an understanding of gender and gender power relations in all departments, projects and processes rather than just designing projects that target women exclusively. This means exploring the gender issues in sectors such as infrastructure which may initially appear as if they affect all people equally irrespective of gender or any other

difference, (UNESCO, 1997 in GWA 2003). In the water sector, gender mainstreaming goes further as it is the appropriate active involvement of both men and women in the decision making process.

Gender balance requires those women's views, interests and needs shape the development agenda as much as men's, and that the development agenda supports progress toward more equal relations between women and men. Within the water sector, gender influences the ways in which burdens, benefits and responsibilities in water, sanitation and hygiene projects and services are divided between women and men of different classes, age groups, socio-economic status, ethnicity, caste and religion. (UNDP, 2000). As a basis of water resources development and management, a gender sensitive approach seeks to analyse:

- How women and men use water resources and for what purposes
- How are contributions (labour, time, payments and contributions in kind) to the development and management of water resources divided between women and men, rich and poor
- Who makes the decisions at various levels
- Who benefits from projects and programme resources, such as knowledge, jobs and training
- Who benefits from water resources development and has control over these benefits
- Who carries the costs and disbenefits of a project or programme
- Do women and men from different age, wealth, religious and ethnic groups benefit equitably

Gender mainstreaming was established as the key strategy to promote gender equity and the Empowerment of women at the Fourth World Conference on Women, (FWCW) held in Beijing in 1995. The Beijing Platform of Action which was adopted thereafter articulated the strategy which has since become widely accepted. Since 1995 gender mainstreaming as a strategy has been implemented in all sectors with varying degrees of success. Various tools have also been developed to support the strategy. Nonetheless, continuing challenges remain, especially linked to monitoring and evaluating the impact of gender mainstreaming on the condition of women and men. Some of these challenges are related to the absence of appropriate and context-specific indicators that can capture the impact of interventions to promote gender equality and the empowerment of women, (UN, 2006).

Gender mainstreaming is a process of revision of key concepts in order to understand more adequately a world that is gendered rather than the establishment of a nationalist gender theory, (Walby, 2003).

Feminist theory is an approach to gender that exclusively focuses on the position of women in the society. In the context of development, the feminist theory was a response to the realization that modernization was impacting differently on men and women with the largely exclusion of women. The major approach to address the isolation of women was referred to as Women In Development (WID) approach to gender mainly focused on women's participation in the Development process, (Razavi and Miller, 1995). Strategies to address WID approach was exclusively targeted women in isolation of the wider social environment in which women live. Focusing on women's lack of access to resources like water and land, the role of gender relations was ignored. Then there was a shift in approach over the years which was influenced by the recognition of the limitations of focusing on women in isolation, the focus of gender rather than women makes it critical to look not only at the category 'women', since that is the only half a story but at women in relation to men, the way in which the relations between these categories are socially constructed, (Moser, 1993). Women's movement, academics and policy makers were recognizing that gender equity depended on addressing the fundamental intersections between these global forces on women's disempowerment. WID as the policy approach was being highly criticized by Southern and Northern academics. It had become clear that women s lives would not change by integrating women into development process unless gender relations and the nature of development changed also. In the International development circles, Gender and Development (GAD) approach was the new paradigm. A focus on gender meant that development had to tackle the socially defined causes of women's subordination and the existing power relations between women and men, (Razavi and Miller, 1995).

The challenge of gender mainstreaming is to build a new partnership between men and women and to ensure that both participate fully on all areas and the benefits of the progress are equally distributed among them, (Moser, 1995).

2.2 The triple role of women

In most low income third world households women have a triple role, women's work includes not only reproductive work, the child bearing and rearing responsibilities, required to guarantee the maintenance and reproduction of the labour force. It also includes productive work, often as secondary income earners. Also women undertake community managing work around the provision of the items of collective consumption, undertaken in the local community, (Moser, 1993).

A number of gender-based issues are common to all sectors. These include rights of access, ownership, and institutional limitations embedded in policies and legal frameworks, highlighting a strong need to mainstream gender issues. So, while it is convenient to analyse gender issues in water for food, domestic supply, sanitation and nature individually, there is a strong interdependency too. Management of water for food, domestic supply and sanitation are all clearly impacted by environmental degradation related to loss of water for nature. Insufficient water for natural vegetation and ecosystems can have an adverse effect on water quality and quantity, impacting on supplies of water for domestic and agricultural purposes as well as increasing the severity and occurrence of floods and droughts. So, work to combat gender inequities at a community level may be undermined by broader issues of water resource management, such as water allocation policy, where gender considerations were not identified, Likewise the effective management of water for domestic supplies and availability of water for irrigation, (UNDP, 2000).

2.3 Gender roles and responsibilities

In most societies, women have primary responsibility for management of household water supply, sanitation and health. Water is necessary not only for drinking, but also for food production and preparation, care of domestic animals, personal hygiene, care of the sick, cleaning, washing and waste disposal. Because of their dependence on water resources, women have accumulated considerable knowledge about water resources, including location, quality and storage methods. However, efforts geared towards improving the management of the world's finite water resources and extending access to safe drinking water and adequate sanitation, often overlook the central role of women in water management, (Alouka, 2006).

Gender aspects tend to have different domestic responsibilities as women more than men tend to balance responsibility for the home (e.g. food preparation, child care, and cleaning) with their responsibilities to earn incomes. These responsibilities may limit the time women have available to pursue opportunities as well as limit their mobility. They also influence what women define as priorities for local investment e.g. women may put clean water ahead of road construction, (Rathgeber, 1996).

Women have universal responsibilities for water supply throughout the World; Moriaty *et al.*, (2004) argues that it is important to work with women in all water development projects, recognizing their multiple roles as domestic and productive water users, and this should not be overlooked by planners and policy makers. Water has never been a 'free good' for the poor, particularly women, who bear a disproportionate burden with respect to their access to and 'control' over water resources. (GWA, 2003).

Over the past decades, planners assumed that women are the only ones who are concerned with domestic water and men for productive water use, (Upadhyay, 2004). In order to ensure efficient, equitable and sustainable water use, to reduce poverty and improve the well being of the community, irrigation and water resources policies need to take into account all uses and users of water for better allocation of the resource. Water resources management should be based on a participatory approach as both men and women should have equal voice and involvement in the management and sustainable use of water resources, (Upadhyay, 2004).

2.4 Description on water sector and gender issues

The assumption that, "both women and men will benefit equally" is false. The division of labour and responsibilities (who does what work), social attitudes, and unequal access to resources all contribute to a situation where policies and programmes have a different impact on women and men, (for example, education initiatives and poverty reduction strategies). Furthermore, these differences and inequalities influence how women and men participate in and respond to new initiatives. (FAO, 1995).

In most African societies men's and women's situations, interests, and priorities are different not because of biological differences, but because society's conception of male and female roles and qualities positions of the two groups in a specific relationship to one another.

Another underlying root cause of different priorities of men and women in relation to water and sanitation programmes is the low value which is placed on women's time (SIDA 1993). Women have traditionally been assigned most of the domestic roles, such as cooking, disposing human waste, drawing water etc. to the point that their public life is severely limited (IDRC, 1985). Their narrowed public life is further restricted since men hold positions of authority. This confirms Kazinja's argument in her paper that; "Women are still regarded as a subordinate group in the society"

2.5 Gender Aspect in Land and Water

Patriarchal relations also express themselves in control over land rights**.** Water rights are often closely tied to land tenure arrangements and are often transferred with land. In many places, land rights are passed from father to son. Thus, though women may be working on the land, they often have no right to participate in organizations that take decisions regarding its use. Moreover, both in Latin America and Asia, they are culturally excluded from irrigation and hence from decisions and activities involved in water provision, (Kweka, 1998).

In many African countries, analyses relating land tenure by sex with irrigation show that whereas men own and work irrigated land, women are not in this same advantageous position. Again, it is often the case that irrigation is regarded symbolically and culturally as an activity for men, even though many women take part in it, and there is a mistaken perception about the distribution of productive tasks within rural families that causes the work carried out by women to be overlooked. These conditions mean that women are not consulted when infrastructure work to improve irrigation projects are being planned and in general they are denied participation in decision making and benefits, which further exacerbates the discrimination and insecurity they suffer, (SIDA 1997).

2.6 Gender in the different water sectors

In the development and management of water resources it is still rare for implementing organisations and programme staff to ask who requires water for what purposes at household or community level, and what effects demand regulating measures and management structures have on these uses and user groups. For many years programmes dealing with irrigated agricultural, domestic water supply, environmental sanitation and industrial development have seen the household as the lowest homogeneous unit of production,

consumption and decision making. Yet in most cultures men and women, often supported by children, do different work, have different access to resources and different areas in which they can make decisions and exercise control over resources and benefits (Overholt *et al.*, 1991).

2.6.1 Gender and agricultural water use

Agriculture is the prime subsistence and economic activity in developing countries. It accounts for by far the largest proportion of water used. Especially in rural areas agriculture determines to a large extent in what way water is managed at community and household level and plays an important role in the division of water related tasks, means and responsibilities of men, women and children. (Carter, 1989)

In many rural societies men and women take on different tasks from a young age onwards. Analysis of the gender division of labour in Dang, Nepal, (Bruins and Heijmans, 1993) found that men dominate land preparation and irrigation activities, whilst women tend to be responsible for transplanting, weeding and harvesting. Furthermore women dominate all tasks, bar ploughing, on non-irrigated crops and provide twice as much labour input to irrigated crops. These findings are backed up by research on the Gujurat Medium Irrigation Project, India, (Gopinath and Kalro, 1985).

2.6.2 Domestic water supply

When an irrigation scheme brings water nearer to homes it is generally also used for domestic purposes. Although planners may recognise this, irrigation systems are rarely structured or planned to continuously improve access for such uses, thereby failing to optimise the positive impacts of the system. Irrigation canals and control structures can have a positive impact on family life, as time saved in collecting water may be used on other work or social duties, (Kirimbai and van Wijk, 1983).

Practices of supply and management of irrigation water can improve, but also worsen domestic water supply conditions, especially when the source for irrigation is groundwater. In Maharashtra, India, the boom in sugar production, also stimulated by a considerable subsidy on electricity for water pumping, multiplied the number of deep tube wells for sugar cane irrigation. The shallower sources for domestic water fell dry and women saw their burdens of

fetching water to serve the household needs considerably increased. This development has in particular a negative effect on poorer women who have no access to the private wells for domestic use (Rao, 1991).

2.7 Gender aspects and water projects

When water projects are undertaken, those involved are generally male staff and male local authorities. Local institutions in which women are present, such as women's organizations, church groups and schools are seldom involved in contacts between projects staff and village authorities. Channels used for information and communication, such as public meetings and written materials are also male-oriented. Women cannot attend public meetings as easily as men and if they can, they have to stay on the edge and keep silent. They also have less access than men to written information because of the lower proportion of literate women and lower knowledge of official languages. As a result the knowledge and expertise of women, which differs from that of men because of their different tasks, cannot play a role and its value is not acknowledged. Projects which assume that information and communication with women can take place through men do not recognize that in many cultures each group has their own channels and topics of communication and hence information and consultation of the women will not take place (Van Wijk, 1985:56).

Women are often the ones most motivated to establish and maintain an improved water supply, yet do not necessarily participate in decisions and management. In a women's dance the women in Misalai, Tanzania, expressed their dissatisfaction over a drinking water supply project, which had failed to bring water to all parts of the village. The community had volunteered to dig the trenches and women had turned up in much higher numbers than men. But when the pipes were finally laid and the water had been connected, it went only to the part of the village where the government leaders were living. The women criticized this result and said that unless the issue was solved they would no longer turn up for volunteer development work (Mlama, 1994).

2.8 Uses and control over water

Where good water is scarce and men and women need it for different purposes, such as household uses and cattle, competition and conflicts over its division are common. Examples are livestock areas in Botswana, northern Tanzania and Gujarat and areas with a high fluoride

content in groundwater which damages teeth and bones of humans and animals, e.g. in parts of Andhra Pradesh in India. Conflicting interests in water and land use in the catchment areas of community water supply systems also have an increasing negative impact on the availability and quality of drinking water.

2.9 Policy Issues in Water Resources Management

2.9.1 Water Resources Allocation

The new water policy document of Tanzania states that "every citizen has an equal right to access and use of the nation's natural water resources for his/her and the nation's benefit" Although the notion of equality is captured in this item it is important to realise that special windows need to be created for women to access water resources on an equal basis with their male counterparts because women's rights at law in cultural and traditional settings are inferior to those of men. In this regard constitutional, legal, administrative and institutional frameworks that are gender sensitive need to be put in place to address gender imbalances that women's capacity to access water resources readily and on an equal and equitable basis. Realistic quota systems based on the fact that women constitute at least 50% of the population must be provided for in programmes designed to implement water resources management systems.

2.9.2 Gender aspects and water policy and rights

In many cases water resource policies and programmes have proven detrimental to women's water rights and, therefore, to their sustainable management and use of water. Interventions such as irrigation habitually fail to take into consideration the existing imbalance between men's and women's ownership rights, division of labour and incomes. By raising the value of the land, irrigation brings about social change which usually favours men. Irrigation systems also tend to favour mono-cropping, often for the production of cash crops, and thus may exclude provisions for a more diversified cropping pattern supporting a variety of food crops. As cash crops are usually controlled by men, decisions regarding the scheduling of irrigation water tend to be made without consideration for women's farm and household activities, (UNCED, 1992). Women play an important role in water management. They are most often the collectors, users and managers of water in the household as well as farmers of irrigated and rain-fed crops. Because of these roles, women have considerable knowledge about water resources, including quality and reliability, restrictions and acceptable storage methods, and

are input to the success of water resources development and irrigation policies and programmes, (UNCED, 1992).

Gender has been consistently translated in policy into the involvement of women in water projects; (Joshi, Lloyd and Fawcett 2003).When viewed against the backdrop of women's earlier exclusion from involvement in projects, evidence of their inclusion is partially encouraging. Reports include women learning new skills – from basic literacy and numeracy to plumbing and masonry, being involved in decision making regarding water management, receiving new respect in their homes and communities and turning water projects into income generating projects, (Cleaver and Kessler 1998). Particular emphasis has been given to the need to base water development and management on a participatory approach, involving users, planners and policy-makers at all levels.

2.10 Gender sensitive approaches for water management

Several challenges have been identified in the management of water resources in the new water policy document. The issue of gender equality and equity is not included in the challenges. Yet it is stated earlier in the document that in rural areas women and children struggle to access water for domestic use. It important that the gender disparities are presented as some of the major challenges, in order to design water management strategies that incorporate gender issues; "unequal and inequitable responsibilities between women and men regarding the provision of water for domestic consumption places a heavy burden on women and thus calling for legal and institutional mechanisms that places joint responsibility on both women and men," (Zwarteveen 1998).

A study by Makoni *et al.*, (2004) in Bikita and Mt. Darwin showed that women and men usually rank uses of water differently. In the two districts in Zimbabwe, the survey established that women were playing more roles in water use and it was clear that they were the most users and managers of household water. However, although many studies have shown the roles and responsibilities played by women in water use and management, their knowledge have not received any sufficient attention they deserve, (Mkandla, 2004).

2.11 Gender implications of water resources management principles

While the overall effect of water conservation and demand management should be of benefit to all members of society, some of the mechanisms used to manage water demand can have detrimental effects on women's daily activities.

*Water pricing***;** in the desire to economize water use and reduce wastage the concept of water as a basic human need tends to be overshadowed by the idea of water as a commodity. However, water pricing has several gender specific implications. For instance, women tend to have more limited access to monetary than men; similarly women's income is more likely to be earmarked for different forms of expenditure than men's. Through households men and women do some extent pool and share money, but again this is generally biased against women, so that they tend to have restricted access to money. A high pricing of water can be difficult to especially poorer women from access to improved water supply for basic hygiene, consumption and food production.

In the drinking water sector, properly designed stepped tariffs can help to subsidise poorer sections of the community, but there is a danger that less discriminating pricing mechanisms, such as water rationing and intermittent supplies will further marginalise women. Such mechanisms frequently lead to long queues, and may drive women, as water carriers, to more distant and less safe water sources.

Nor should it be forgotten that the increasing costs of drinking water production is partially caused by over withdrawal of (ground) water for irrigation and contamination of surface water by industries and lack of proper excreta and waste disposal by households. How fair is it to ask in such cases that the domestic water users pay a tariff of which part of the amount is caused by lack of integrated water resources management. To avoid negative impacts from a more economic pricing of water, the relationship between price and value and the divisions between productive and domestic water uses needs to be clarified in terms of requirements of men and women users (SIDA, 1994).

*Ownership***;** another aspect of the move towards the market system is the issue of property rights and ownership. The desirability of ownership is a much repeated and rarely challenged theme in recent statements about water, with ownership of water supply facilities being associated with responsible water use and improved operation and maintenance. The creation

of property rights over any resource inevitably involves the power to exercise these rights to exclude non-owners. It is known that women are in a disadvantageous position in relation with property rights, particularly over productive resources, such as land, livestock, even their own labour. It is optimistic to assume that vesting ownership of a water source in the community will give women equal rights over that resource, and far more likely that the creation of ownership rights will confer opportunities for the rich and powerful to appropriate preferential access to the resource. Management at the lowest appropriate levels should facilitate the desired fuller involvement of women at management and policy levels, through including gender analysis in all procedures involved in water resources management.

*Management***;** However, the practical and strategic constraints for women to take part in management from the lowest levels cannot be underestimated. While the differential needs and interests of women and men with respect to water resources management may call for the inclusion of both in planning and decision making, women and men will often have different perceptions on the costs and benefits involved in participating in users' groups. The attractiveness of participation may be less for women, partly because the costs and time spend for travelling or attending meetings may be relatively higher for them, but also because social norms and values are not always supportive of women engaging in public meetings and managing organisations (Van Wijk, 1985, Zwarteveen, 1994).

Similarly, an irrigated rice project in Cameroon was unable to pay for itself because women, who were not assigned land but were expected to work in their husbands fields, withheld their labour in order to grow sorghum for family subsistence outside the irrigation scheme (World Resources Institute et al 1994). In Kenya, the Mwea Irrigation Scheme appropriated all available land, investing control in the scheme managers, who were men. Women lost rights to land they had traditionally used to grow food crops for subsistence. Consequently, women were forced to turn to their husbands for cash to buy food and became more dependent on men than they had ever been in the past (Zwarteveen, 1994).

Research in Kenya on smallholder rice irrigation in the Kano Plains revealed similar inequities (Hulsebosch, 1993). Most women were not active members of the water users associations in the rice schemes and those who attended meetings were not allowed to speak before men or to express opinions in opposition to those expressed by men, although women performed up to 61 percent of the requisite labour in their own and their husband’s plots.

Even when both men and women participated in irrigation schemes, their needs and priorities sometimes differed. Women were less interested in night irrigation because cultural norms made it difficult for them to work after dark. Men wanted to have watering places for cattle; women wanted communal areas for washing clothes and dishes. These different perspectives were not effectively represented by the water users associations because women were under represented and were not given an equal voice in decision making.

In India, women also tried to negotiate informal agreements to solve their irrigation related problems. When water projects made provisions to ensure that at least one woman was on water user committees, the effects were minimal and tended towards tokenism. Experience showed that at least one-third and preferably one half the members should be female and women should have specific responsibility and be made signatories to project bank accounts (Pangare 1998). In general, female participation is minimal in water users' organizations in South Asia (Meinzen-Dick and Zwarteveen 1998). However, in Ecuador, although women's participation in water user associations was generally weak and their decision-making role was limited, women who had higher than average levels of education did occupy positions of leadership in the water users' organizations (Bastidas, 1999).

In most parts of the Sub Saharan Africa, women make a substantial contribution to the provision of farm labour, especially in the rain-fed areas. For example, a FAO study in Lebanon showed that women were responsible for sowing, weeding, harvesting and processing. Their workloads were greater in non-irrigated than in irrigated areas, due to poorer economic standards in non-irrigated areas (FAO 1995). However, they often have little influence on decision-making processes, especially in the planning and implementation of farm activities. Since women have been excluded from irrigated agriculture, efforts to improve dryland or rainfed agriculture should be focused on women and women's crops. Yields can be improved with moisture preservation and good crop management, mulching, in-site water harvesting and short cycle varieties (Wolter, 2002).

CHAPTER THREE
STUDY AREA AND METHODOLOGY

3.1 Overview

This chapter begins by describing the study area and then presents the methodology used in the study. The chapter describes the main sampling techniques, and the methods which were used for data collection.

3.2 Description of the Study Area

3.2.1 Location

The Mkoji Sub-Catchment is the largest of 11 sub catchments of the Great Ruaha River. It is located upstream of the Usangu plains in Southwest of Tanzania, The Usangu plain receives 600-800mm of average annual rainfall (Lankford *et al* 2004:137), it is relatively close to the borders with Zambia and Malawi. The population density is relatively low, with a population of about 146,000 people on an area of about 3400 km^2 (SWMRG-FAO, 2003). Most of the Mkoji sub-catchment lies within the Mbeya Rural and Mbarali districts, with smaller portions within the Makete and Chunya districts. The sub-catchment is located along a major transportation route that connects Tanzania's city Dar es Salaam with Zambia and Malawi on the African mainland. The main urban centre in the region is the city of Mbeya, which is located on the west, just outside the Mkoji sub-catchment.

Water management issues in Mkoji Sub-Catchment are characterised by an increasing and intensifying competition for water resources during the dry season, where different water users and uses increasingly compete, and even fight, for access to scarce water resources. During the dry season the water resources of Mkoji SC are not enough to satisfy all demand, resulting in the drying-up of river stream flows roughly half way the catchment, and its associated intensification of water conflicts among the different water users and uses

3.2.2 Identification of agro-ecological zones

Three distinct agro-ecological zones can be identified in the Mkoji sub-catchment, each of which offers a different livelihood platform to the local farming communities. Each of these zones has distinct climatic conditions and differs in the availability of land and water resources.

The Upper Zone, which mainly covers the Mbeya Rural District in the upper part of the sub-catchment, is characterized by a mountainous landscape and a semi-humid to humid climate that allows year round cultivation. The Upper Zone consists of a mountainous area, with elevation ranging from 1,100 up to 2,400 m above mean sea level. The majority of the lands in the Upper Zone are under cultivation, although there are also some uncultivated grassland, woodlands and evergreen forests. Traditionally, the availability of arable land with moderate slopes has been the main limitation to the expansion of existing agricultural activities in the upper parts. Recently, cutting and burning of trees and vegetation has given rise to concerns of land degradation and soil erosion, (Sokile and Van Koppen, 2003).

The Middle Zone has a less favourable climate, but the land and water resources allow for paddy rice cultivation and irrigation in parts of this zone. It is mainly covered by woodlands and cultivated lands, with a large part constituted of irrigated small-holder plots for paddy rice production. The availability of suitable land poses limits on the possibilities to expand the area under paddy rice cultivation.

Plains are dominating the Lower Zone's landscape in the centre and the east, bordered by some highlands on the west. Towards the lower and eastern part of the sub-catchment, there are some wetlands that extend into the Ihefu wetlands that are located just outside the Mkoji sub catchment. Land cultivation is scattered as land use is driven by local variations in opportunities.

The dependence on irrigation water for dry season agriculture in the lower parts of the Upper Zone and the upper parts of the Middle Zone has led to the expansion of the irrigated area, enabled by a relatively favourable upstream location within the Mkoji sub-catchment, combined with expansion and improvements of irrigation infrastructure. In the Lower Zone, an expansion has been observed in the area under extensive rain fed agriculture.

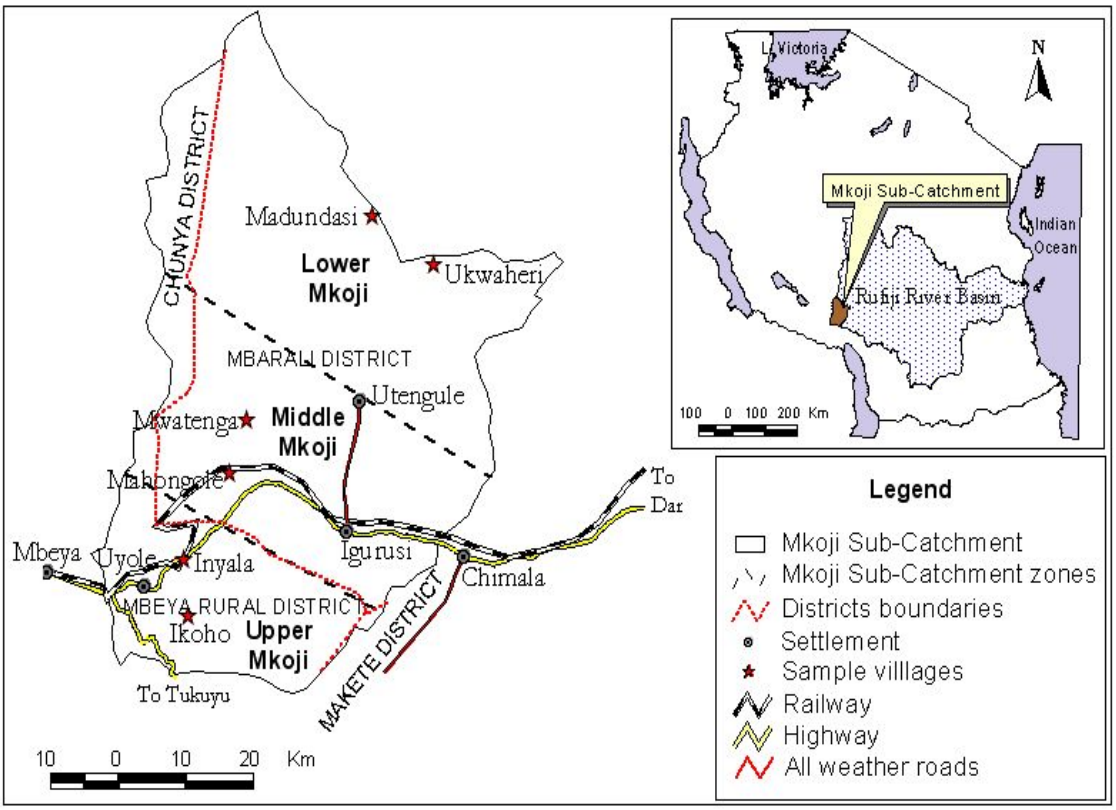

Figure 1: Map of the Mkoji sub-catchment

3.3 Water resources

3.3.1 Rainfall

The rainfall pattern in the Mkoji sub-catchment shows a single rainy season, starting from the end of November and ending in April/May. Hardly any rain falls in the rest of the year, especially in the lower parts of the sub-catchment. Rainfall varies considerably in different years, with variations for the rainy season ranging from 34% to over 100% for dry or wet years (SWMRG-FAO, 2003).

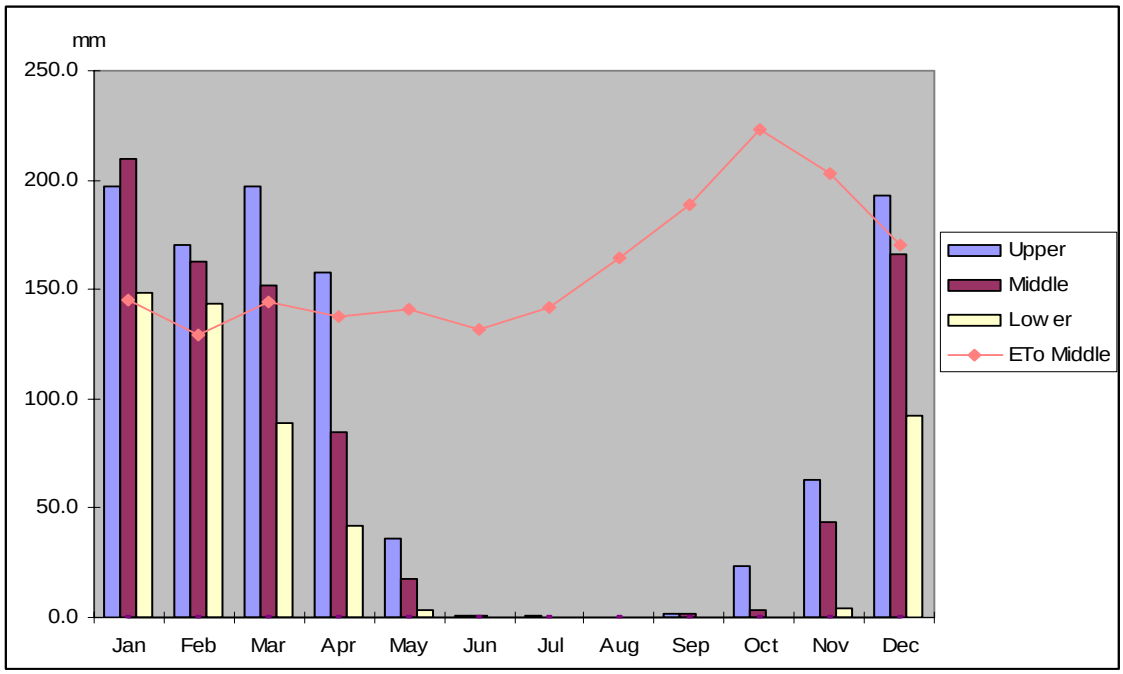

Figure 2: Average monthly rainfall in different zones

Data sources: (Allsa farm rainfall station and Igurusi climatic station, 2003)

The available data do not allow for a complete water balance for the Mkoji sub-catchment, but only for a rough estimation of water supply and direct human-related water consumptions. Although far from sufficient, these figures can nevertheless serve to provide a first impression of the availability of water resources and runoff during the wet and during the dry season the streams run dry halfway through the sub-catchment.

3.3.2 Surface water

All the rivers draining the Mkoji sub-catchment, including the Mkoji River, are perennial upstream of the Tanzania-Zambia Highway. However, a few kilometres downstream of this highway, all these rivers dry up during the dry season and are perceived as seasonal. This is mainly due to dry season irrigated agriculture, which uses all the water that would have kept them flowing otherwise. The distance from the highway to the points where the rivers dry up varies from river to river and is a function of the number, capacity and location of water abstraction canals in a particular river.

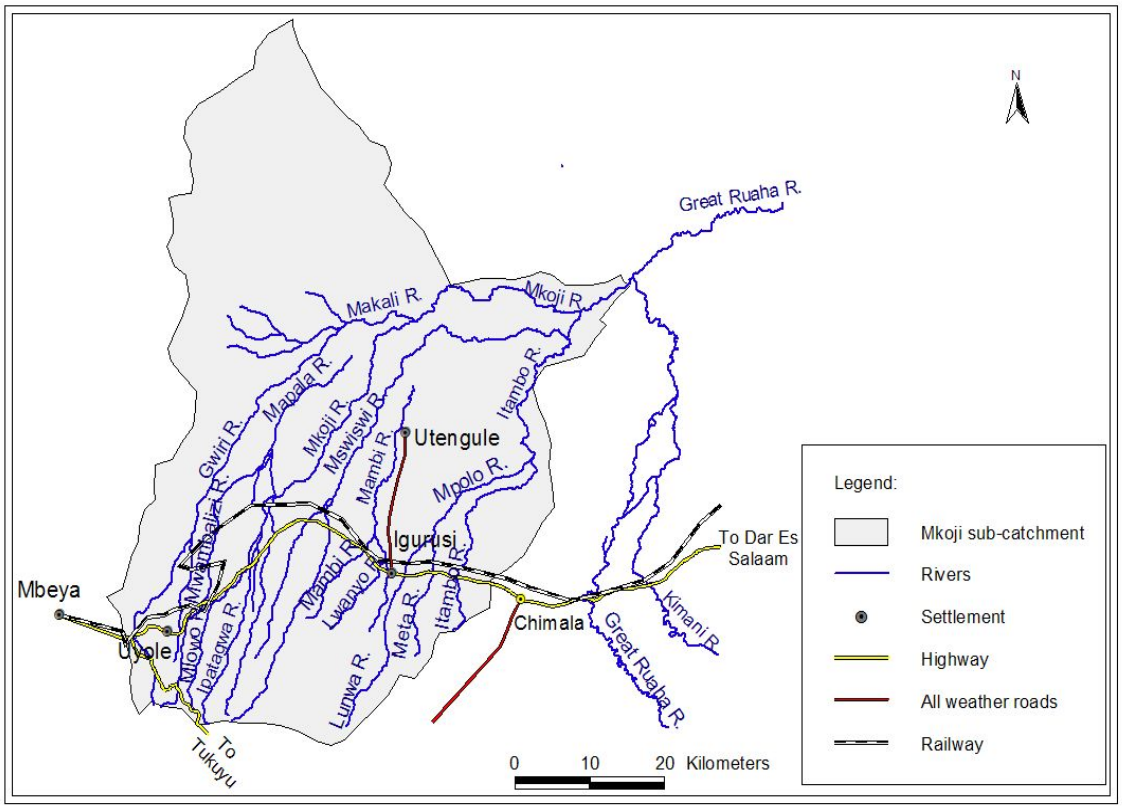

Figure 3: The Mkoji sub-catchment river systems (FNPP, 2003).

3.3.3 Ground water

Ground water resources are not well monitored and not much data is available on their occurrence. There are some shallow wells in the Usangu flats, characterized by a drop in the water table during the dry season and a rapid recovery during the rainy season. A limited portion of the MSC has ground water in basement rocks, but monitoring results from some ground water wells show that the yields are small. Nevertheless, the yields are suitable for small-scale domestic water supplies.

3.4 Research Design

A research design is a framework or plan for a study used as a guide in collecting and analyzing data. This study used a case study approach. A case study uses a single case to generalize a phenomenon. A case study approach was chosen because it enables the researcher to make a detailed examination of the issues under study, and to draw general conclusions from the study. It also enables one to have an in-depth understanding of the study

matter. In general, research methods or approaches are divided into two broad divisions: quantitative and qualitative ones ((Neuman, 2000, p122). The methods differ in their orientation and use different techniques in collecting data for their purposes.

A quantitative approach to research focuses on quantifiable data in terms of numbers and measures that can be analyzed statistically. "Quantitative researchers are more concerned about issues of measurement and sample because their deductive approach emphasizes detailed planning prior to data collection and analysis" (Neuman, 2000: p122). In quantitative research validity is concerned with whether or not the study indeed measures that which it is intended to measure and reliability with whether the study can be replicated by another researcher in the same context (Allan, 1991).

In contrast, qualitative researchers are more concerned about issues of richness, texture and feeling of raw data because their inductive approach emphasizes developing insight and generalization out of the data collected. For the purposes of this study, the research decided to utilize both quantitative and qualitative research methods; this was done so as to complement the two methods in data collection.

3.4.1 Selection of sub-catchments and villages

The Mkoji sub catchment is about 3,400 Km^2. Villages for inclusion in the study were picked through random sampling. Firstly the researcher divided the sub-catchment into three zones; upper, middle, and lower. The upper zone has 27 villages, the middle 19, and the lower 7, from each zone two villages were purposively chosen to capture the variability in livelihoods and the different uses of water by men and women in Mkoji sub-catchment. The most important criteria used for selecting the villages were: (i) Sub-zonal representation within the major zone; (ii) Inclusion of a wide range of production systems (including irrigated and rain-fed crop production), and (iii) Availability of secondary data, the total sampled household was 120.

3.5 Data collection methods

Data for this thesis was mainly collected using a structured questionnaire, unstructured interviews, focus group discussions and key informant interviews.

3.5.1 Structured questionnaire administration

A structured questionnaire contains a list of questions to which an individual has to respond by choosing his/her best appropriate answer from the ones given by the researcher (Ogunniyi, 1992). One standard questionnaire was administered to the respondents. The questionnaire administered focussed on getting information concerning the issues of water and gender mainstreaming. In each village 20 questionnaires were administered, and in the whole sub-catchment a total of 120 questionnaires were administered.

Establishing validity and reliability

The first draft of the questionnaires was pre- tested at Inyala village, one of the villages in the project. Five male members of the water committee and two women participated in the pre-test. The pre-test group was completely different from the one used in the main study.

3.5.2 Focus group discussion

The study employed focus group discussions (FGDs) in the six sampled villages where fieldwork took place, that is, Shamwengo and Inyala in the upper zone; Ilongo and Mwatenga in the mid zone; Luhanga and Madundasi in the lower zones. Each focus group had almost equal number of men and women and elders of the villages six FGDs were carried out with ordinary people from all the six villages and only two FGDs were done with the water committee. The elders were selected based on the fact that they were knowledgeable on issues of gender and water resources management. Those who attended the focus group discussions were chosen from the village register book. The criteria for the selection of the villagers' representatives were to have equal representation of village clusters, water users both men and women in equal numbers, wealth categories based on their ages. Representatives, who were key informants, were the leaders of the village and water committee and the elders of the villages.

3.5.3 Unstructured interviews

Unstructured interviews were used because they allow the respondent to give their views and opinions on a particular subject. The researcher only had a list of main issues discussed with the respondent, and the researcher was able to ask follow-up questions and probe where it was necessary. This allowed the researcher the opportunity to address certain issues with depth, (Rubin, 2005).

3.5.4 Key informant Interviews

Interviews were carried with key informants in the sub-catchment, and these included the elders and other knowledgeable people in the village such as water committee leaders who carry out a number of water management activities. Interviews were conducted by using the developed checklist that helped to direct and guide the interviewer. The key informants were purposively sampled by the researcher, and Swahili language was used to during the interview and each interview had taken 10 to 15mins.

3.5.5 Participatory Observation

This method was used to observe all the day to day activities which are being carried out by both men and women in the issues of water. The methods include the researcher being the observer. The researcher managed to verify certain practices which had been mentioned in the discussions with the villagers during informal discussions. This enabled the researcher to validate the data obtained using other techniques. The researcher observed different water practices and the main water users from the water sources and also the situation of all the water points which were available in the villages.

3.5.6 Respondents characteristics

The study area has multiple water users including direct water users in agriculture namely farmers and domestic users, water resources and agricultural experts, and water managers especially in irrigated systems. The survey of smallholder farmers covered 6 villages and 120 households selected randomly. The experts' category was formed by 75 other stakeholders from agricultural village extension officers, MATI Igurusi tutors, Southern zonal irrigation officers, researchers from SHARDI Uyole, Rufiji basin water resources officers and local government leaders southern highland zonal irrigation officers, Rufiji basin water officers and local government leaders who were considered as indirect water users.

3.6 Data Analysis

Quantitative data collected using questionnaires was entered in the Statistical Package for Social Sciences (SPSS) computer software and later analysed. Qualitative data were analysed using the thematic approach. The main themes under which the data was categorised and analysed include the issues of gender mainstreaming and access to water and in water resources, water user institutions and gender mainstreaming and water legislation and policy and gender mainstreaming.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the study findings based on interviews, response from questionnaires and observations from the fields and deductions from focus group discussions from Mkoji Sub-catchment (MSC). The chapter starts by describing the characteristics of the respondents then follows by thematically organized four sections. Section 4.3 presents sources of water which are available in MSC, the uses of water and access to water for domestic and productive purposes for both men and women. Section 4.4 is on the management and participation of men and women in water committees in MSC. Section 4.5 analyses the water user institutions and gender issues and section 4.6 explains how the Tanzania water policy and legislation mainstream gender in WRM.

4.2 Demographic and Socio economic Characteristics in MSC

Table 1 shows the distribution of participants in the research by gender and marital status. More men (65%) than women (35%) participated in the research. Of the females who participated in the research the majority were married (56.7%).

Table 1: Respondent characteristics in Mkoji sub- catchment.

Parameter	**Frequency**	**Percentage (%)**
1. Gender		
• Male	78	65
• female	42	35
2. **Marital Status**		
• Single	23	19.2
• Married	68	56.7
• Widowed	10	8.3
• Divorced /Separated	19	15.8
3. Main occupation		

• Agriculture • Livestock • Petty business • Housewife	 94 19 05 02	 78.3 15.8 4.2 1.6
4. Education level • No formal education • Primary education • Secondary education	 25 85 10	 20.8 70.8 8.3

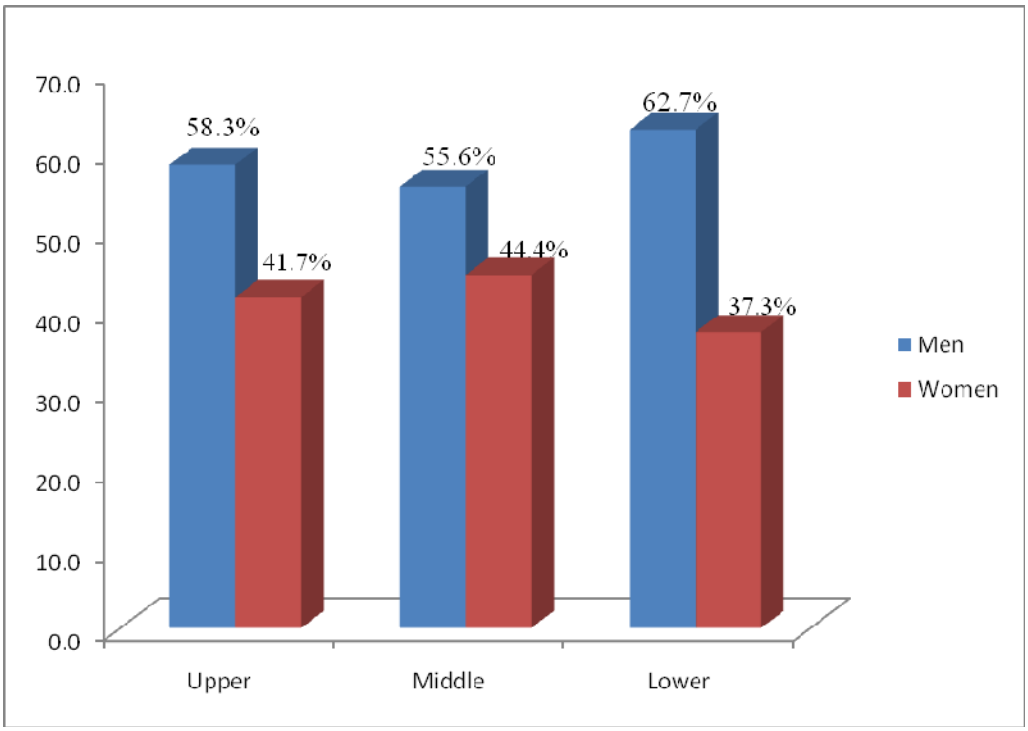

Figure 4: Distribution of respondents by gender

It was observed that in the upper zone there were 58.3% of men and 41% of women respondents, in the lower zone there were 55.6% men and 44.4% women respondents and in the lower zone there was less percentage of women as only 37.3% of the women that responded while the percentage of men was 62.7%.

4.3 Sources of water in MSC

The main source of water in the Mkoji Sub-catchment is the Mkoji River which is a perennial river. The Mkoji River has two main canals which channel water from the upper zone to the lower zone. The river is used for all the activities which take place in Mkoji; agriculture, domestic use and livestock watering. There are eighteen irrigation schemes in MSC which get water from the Mkoji River. The table 2 shows some of the irrigation schemes found in MSC.

Table 2: Irrigation Schemes

Zone	**Irrigation scheme**
Upper zone	Ipatagawa, Luanda, Mkombozi, Ihalu, mandawa, mwamana, Usharika and Madaraka
Middle zone	Mashauri, Ihanzu, Mshikamano, Maajabu, Ihametu and Njombe
Lower zone	Madunda, manyanyu and Malele schemes

Mkoji sub-catchment has a population of about 146,000 people who depend on the Mkoji River for daily activities as it is the only source of water in Mkoji. The quality of the water from the river depends with the season; during rainy season water from the river becomes turbid due to runoff and in dry season the river is clear but people has to boil the water before using it for drinking. The canals which channel water to the villages are modern ones which are lined up with concrete and the traditional canals which are lined up with only stones.

Plate 1: Concrete irrigation canal

Plate 2: Conventional irrigation canal

In the upper zone of the MSC there used to be a piped water scheme which supplied water to Inyala and Shamwengo villages. There were two communal taps which were mainly used for domestic purposes. The taps which were the main source of water for domestic purposes

were used to deliver water from the river, but the water from the taps was also not clean. The piped water scheme in the upper MSC is no longer functioning because of poor maintenance.

4.3.1. Uses of water

It was established that during the rainy season, which is from the end of November to April, the irrigation canals are full of water and so there are no problems in accessing water for domestic, livestock and agriculture practices. Men and women differ in the uses of water. Most women both elderly and young ones pointed out that they mainly use water for domestic purposes. In traditional Tanzanian societies women look after the family, providing meals and other household needs so they are the ones responsible for fetching water. Women also need water for production but their priority is domestic use of water while men give priority to productive uses of water. Traditionally men are responsible for productive uses of water, mainly the use of water for crop production. Men use water for agriculture and they are the ones who manage all the irrigation water in MSC.

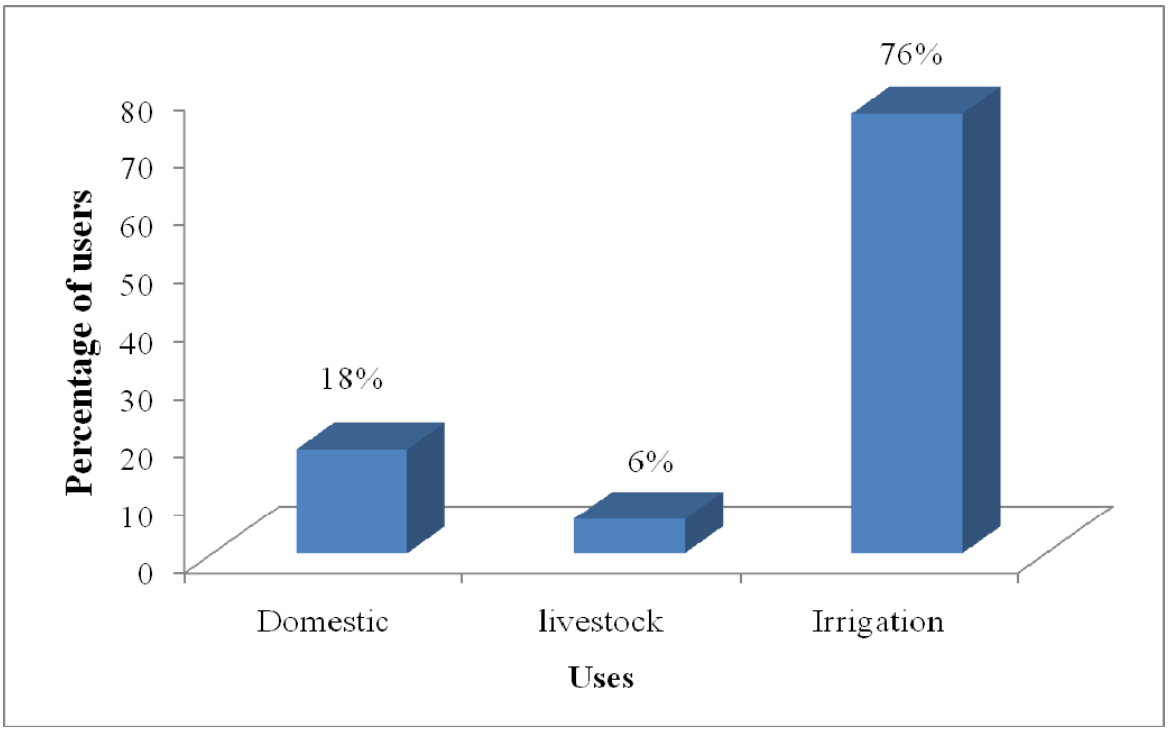

Figure 5: Major water uses

The results from figure 5 showed that 76% of the people from MSC are using water from the canals for irrigation purposes, 18% of the people use the water for domestic purposes and only 6% of the people are using water from the irrigation canals for livestock.

Table 3: Distribution of Water users by Gender

Parameters	Frequency	Percentage (%)
1.Domestic		
Men	5	22.7
Women	17	77.3
2. Livestock watering		
Men	3	42.9
Women	4	57.1
3.Irrigation		
Men	78	85.7
Women	13	14.3

Plate 3: Use of water in Commercial farms

The results on the distribution of water users had shown that 77.3% of women are using water for domestic purposes and only 22.7% of men are getting water from the canals for domestic uses. 42.9% of men are using water for livestock and 57.1% of women are using water for livestock and 85.7% of men are using water for irrigation purposes and only 14.35 of women are using water for irrigation.

As the results have shown, in MSC the higher percentage of men are using water for irrigation than women. The most important use of water from the irrigation canals is for

agriculture, and the crops which are grown in MSC are rice, vegetables, sorghum and maize. In the upper zone and middle zone the crops are grown throughout the year as there is water for irrigation in the canals throughout.

Men and women grow the same type of crops but in different quantities as women are known to do subsistence farming due to the size of the land which they occupy and men in most cases grow crops for sale, as they own more land. Men and women differ in the usage of water for irrigation; men have more access to irrigation water due to the larger portion of land they own while women have less access to more irrigation water due to their small plots of land that they occupy in MSC.

Plate 4: Use of water in a subsistence farm

4.3.2 Access to water

This section looks at access to water both in terms of the physical distances between the source of water and the households, and also in terms of the methods which are used to get water. For domestic water, there are no differences between men and women in terms of access to water. Both fetch water at the same points, and there are no restrictions on how much water one can fetch.

In the sub-catchment access to water for productive purposes is linked to the access to land. In most places under MSC, people who have more land have more rights to water and most of the people who own the land for productive purposes are men so women had to depend on them. Access to land in Mkoji is gained by inheriting, buying the piece of land or renting from other people.

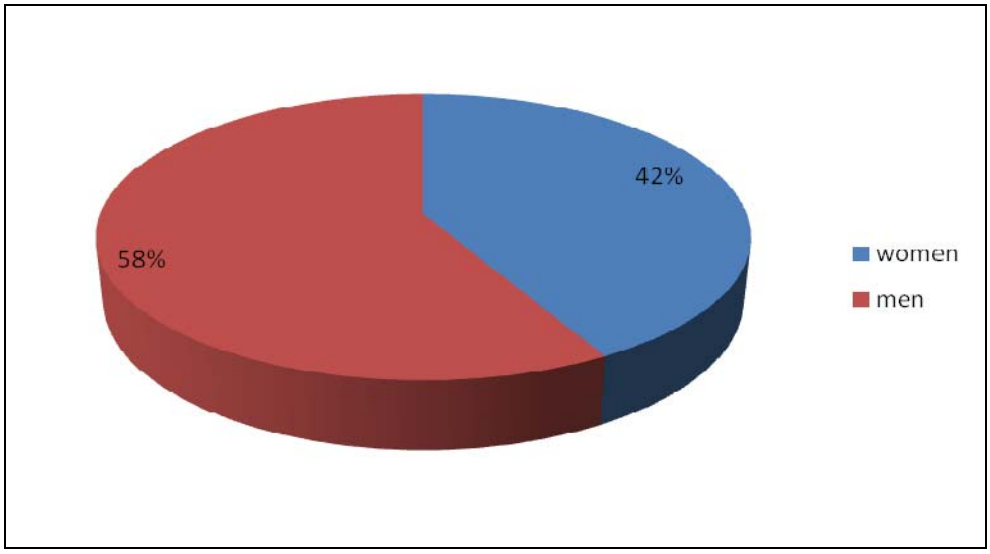

Figure 6: Access to water

Figure 6 presents distribution and accessibility of water between men and women in Mkoji subcatchment. It was established that in most parts of Mkoji sub-catchment, women form the majority of farmers depend on the subsistence farming for food, and tend to need more water but they are however marginalized interms of access, control and ownership.

The results from the study show that, both women and men have got access to water but differs in the amount of water they get and use for irrigation as 42% women who owns land access water for irrigation from the canals and 58% of men gets water from the irrigation canals for the productive purposes. During rainy season there are no differences in accessing water among women and men in most of the places of MSC as water is abundant in all the irrigation canals so all the people can access water at any time without segregation. In dry season (from July to September), there are a lot of difficulties due to the fact that water is not enough for the whole community in MSC. In the lower zone of Mkoji, water from the canals does not reach them as the demand for water is higher in the upper and mid zone. During dry

season in most cases gender equity issues are not taken into account, women become worse off as the women in most places of MSC lost their right to land traditionally where they used to grow food crops and so they were forced to turn to their husbands for food and hence become more dependent on them. In most cases women are ignored in terms of accessing water for productive purposes. Conflicts and emergencies that exacerbate water scarcity can lead to a double hardship for women in MSC.

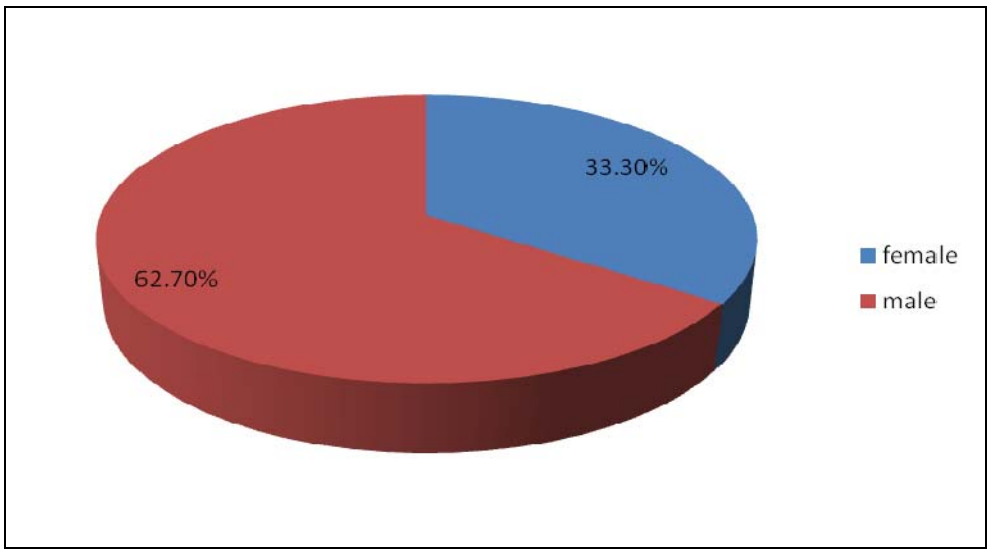

Figure 7: Access to land

It was found out the higher percentage of the land 62.7% is owned by men and only 33.3% of the female respondents had their own plots; the rest depended either on common household farm or on their husband's farm. in such a situation limits the ability of women to produce enough food for their families. Lack of land denies right to women on getting enough water for irrigation.

The percentage of female owners of lands, compared to the percentage of the corresponding males, shows considerable variation across the three zones case study areas. The percentage of female owners of lands was related to the relatively large number of widows and the relatively high rate of marriages where the couple settled near the wife's parental house after marriage. Such a distribution has a large effect on food production and availability especially

when it comes to female headed household. The low income and increasing uncertainties and risk that women face in their production activities is compounded by the lack of access to land, pushing many of them out of traditional agriculture.

When gender equity issues are not taken into account, women can become worse off – both absolutely and/or in relation to men. For example, in Kenya, the Mwea Irrigation Scheme appropriated all available land, investing control in the hands of the male scheme managers. Women lost rights to land they had traditionally used to grow subsistence food crops. Thus, women were forced to turn to their husbands to buy food and became more dependent on men, (Zwarteveen, 1994).

Access to land and water resources is likely to influence the livelihood activities of women and men in farming households. The overview of sources of income of MSC households showed that poor and very poor households' rely more on off-farm activities as sources of income than the average households. Given their limited access to land and water resources, they are not able to generate sufficient income from agriculture and therefore they have to supplement their household income with income from non-farm activities and selling labour. These observations confirm observations from other studies in semi-arid areas in Tanzania, that the poor are more and more relying on off-farm livelihood diversification (Morris *et al.*, 2002)

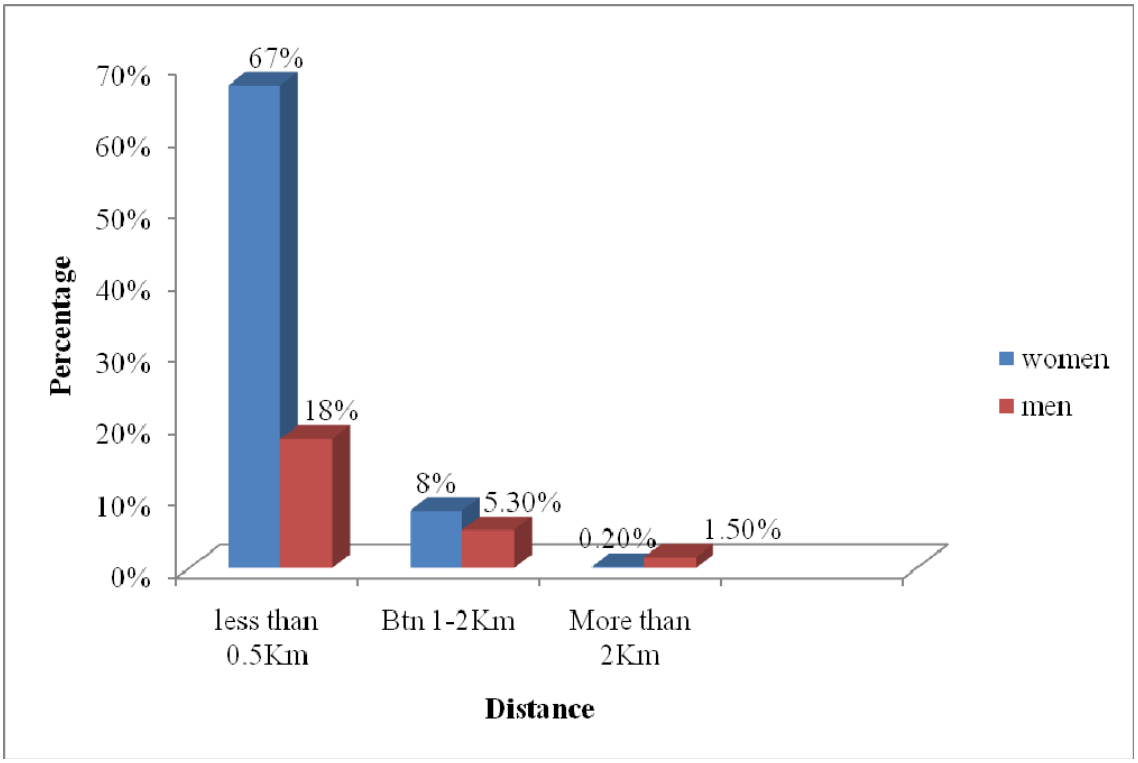

Figure 8: Distance from Water Points

As shown in figure 8, higher percentage of people are not moving long distances in search of water, 67% of women are getting water in a less than half a kilometre and 18% of men are also getting water in a less than half a kilometre, and 8% of women walk between 1-2km in search of water and in the dry season men have a hand in helping women in search of water in a more than 2km distance where they have to use carts and bicycles. It has been observed in this study that, women are the major participants in the activity of fetching water as compared to men. Results show that, 89.3% of women respondents did participate compared to 10.7% of men

Plate 5: Women fetching water

For most water users the distance between households and the water sources, which are the canals, is less than half a kilometre. When water is scarce, women and girls may have to travel longer distances from where the water points are to their houses, they can walk up to 3-5 km in order to get water. Women have to walk up to where the river Mkoji starts, and this is far from some parts of the catchment. Women spend a lot of time up to 5 hrs per day in search of water for domestic uses and so they do not attend on other activities in their villages. In rare cases men do participate in the collection of water. These observations are consistent with earlier findings that in rural society's women have the primary responsibility for domestic work, including water collection (Cleaver and Elson, 1995; Crow and Sultana, 2002).

This burden of searching water in dry season falls disproportionately on women, who play a vital role in household water management. All over the developing world, it is the women and children who are primarily engaged in collection and use of water for household chores. A significant amount of their time and energy is devoted to performing this essential function, which remains largely ignored and unappreciated. As pointed out by Khosla and Pearl (2003: 3), 'the inordinate burden of fetching water inhibits women's and girls' involvement in other activities such as education, income generation, cultural and political involvement, and rest and recreation.' One third of women in Egypt walk more than an hour a day for water; in other parts of Africa, women spend as much as eight hours collecting water.

The average distance walked by women in Africa in search of water is six kilometres per day (UNFPA 2002).

4.4 Management and Participation in Water resources

There are several local institutions managing water in Mkoji sub-catchment. In the upper zone and middle zone, there are irrigation committees which are responsible for irrigation and there are also village committees which are responsible for managing domestic water.

One of the issues which were discussed in the FGDs was on the management of water sources. The question asked during the FGD was, "who is responsible for management of the water sources in the village.'' Findings show that both men and women consider water resources management to be every water user's responsibility. Mrs Andilile, one of the water committee members put it, "in order to control all the water sources everybody has to participate in formulating rules as for those who try to mismanage water resources are punished and the punishment is to clean the irrigation canals and or paying some amount of money as the fine. The village water committees are responsible for punishing offenders.

The study noted that, both men and women in collaboration with the water committees have formulated by-laws that address the use of irrigation furrows within the village.

- *Maintenance of the irrigation system.*

Maintenance is to be undertaken regularly by all members, and that those who fail to attend maintenance work or contribute the specified amount of money are fined Tsh 500/day. Women complained on this law as they said, it was too harsh and most of the time they are the ones who tend to clean the canals.

- *Allocation of water.*

Improved and modern irrigation by-laws give some system for rotating water between secondary canals and that those who fail to follow the allocation sequence are fined a certain amount of money. Women and men tend to benefit equally through this law but it's happening for some people especially men to break the rules and get more water than women by even sneaking to the canals at late hours. Women, because of culture cannot go out at night by themselves.

- *Expansion of the system.*

Farmers are not allowed cut new secondary or tertiary canals without the prior permission from the leaders. Failure to ask for permission will result in a fine.

- *Use of water.*

People are not allowed to wash their clothes in the furrow or river, or foul the water in any other way. Both men and women are supposed to be familiar that, they are not suppose to do any kind of the washing where the sources of water starts as this will dirty the whole canal and all of them might be in the risk of getting diseases.

- *Watering of Livestock.*

Livestock owners are not allowed to water their livestock directly from the canals. Those found watering their cattle in the irrigation furrow will be fined

In most cases only women were following the laws but men don't follow the laws neither paying the fines, and this tends to discourage the women in MSC. Both men and women herd cattle, but men break rules.

4.4.1 Management of water for domestic uses

Village Water Committees: are the water committees which are responsible for the domestic use of water. Both men and women are active members of the committee and they have equal voices in decision making.

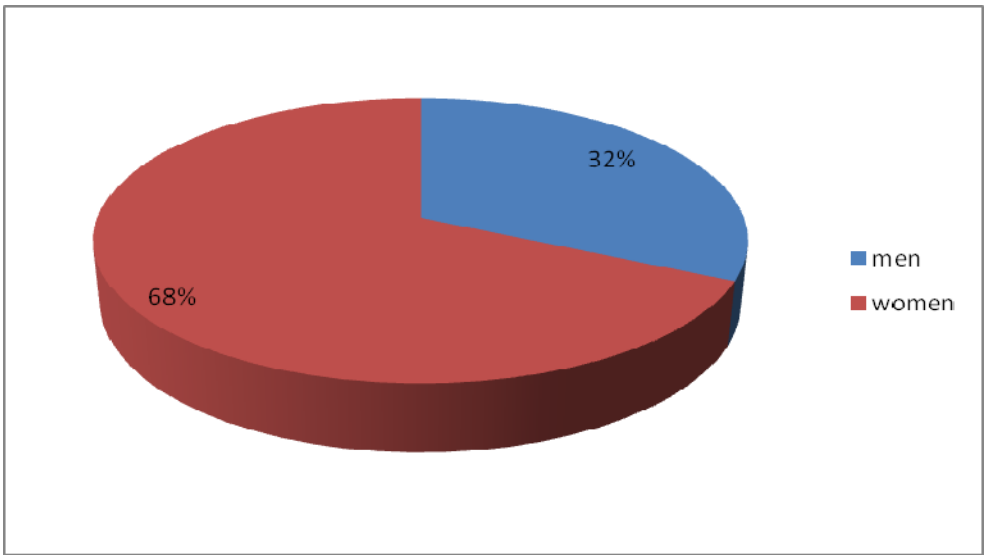

Figure 9: Distribution of members of VWC

The results had shown that in the village water committees the number of women were more than men, that is 68% of the women are members and participants of the VWC where by 18% among the women were the young married women, 20% were elderly women and 30% of the women were widow and 32% of men are involved in the village water committees.

4.4.2 Water management in formal irrigation schemes

Irrigation institutions can be defined here as the collective arrangements through which irrigation infrastructure is constructed, rehabilitated, maintained. Water in MSC is derived from streams and allocated and distributed and thus resources for these purposes are mobilized. Irrigation institutions play a great role in the sustainability of irrigated agriculture towards poverty alleviation among farmers. Women and men are both benefiting from the institutions which are available in MSC.

The researcher observed that, some form of irrigation committee organizes traditional irrigation systems. These committees usually have a Chairman and a number of other ordinary members. The number of ordinary members usually depends on the size of the furrow and number of secondary canals, but the number usually varies between 3 and 15. Irrigation committees are part of the village administration. Sub-committees which are there include the Village Social and Economic Development Committee. However, although many of the committee members are also part of village government, the irrigation committee for a specific furrow tends to act independently, and rarely needs to refer to village government. Committee members are elected, with the regularity of these elections varying between places. They can also attend furrow meetings, but may not be allowed to vote when new leaders are being elected. Those who come from several miles away and rent land only occasionally are expected to attend any maintenance work that takes place while they are there, but otherwise the land owner is expected to contribute to furrow maintenance on their behalf. Water users have been formally registered with the government as either an association or a co-operative. Associations are registered under the Ministry of Home Affairs, while co-operatives are registered under the Ministry of Agriculture and Co-operatives. A condition for being granted a statutory water right is that the holder of the right be a legally registered body.

4.4.3 Gender and culture in the management of water resources

It was established that in Mkoji sub-catchment there are some places, especially those ones which are far from the road such as Luhanga and Madundasi in the lower zone where people still follow traditional practices. Part of the culture is that women defer to men, within the family always men comes first in everything so even in water issues, men have to be satisfied first at the household level and then others can be allowed to come in and use the water. It was established that at the household level, men have to be given first priority in the use of water, even during dry season the little water that can be accessed in the families must be used for men of the houses. In one FGDs women were saying that; they are limited by culture in terms of accessing and using water as in some cases they are not allowed to fetch water in the early mornings and sometimes they are not allowed to irrigate their farms at night due to different taboos which had originated from their ancestors.

Traditional knowledge and resources management systems have also been found to be gendered, with differences between women and men with respect to needs, roles and interests in natural resources (Berkes, 1999; Singh, 2000). Cross-cultural studies in gender conceptualize women's lives as organized by prevailing social institutions. As members of a family and social groups, their social interactions, rights, powers and opportunities are patterned by institutions based on social stratification, kinship and family and religion with systematic variations through the different phases of life as well. These studies propose that gender refers to the way women and men are perceived, evaluated and expected to behave, and that societies differ with respect to the cultural phrasing of the relations between the two (Schlegel, 1990).

4. 4. 5 Participation in WRM

It was found that in Mkoji sub-catchment, women and children often have little or no direct representation on decision-making bodies in the irrigation water committees despite being the managers in use of many natural resources. Where women are represented in public-decision making they often claim that they go just to listen, and that they did not have the words to articulate their concerns in these meetings.

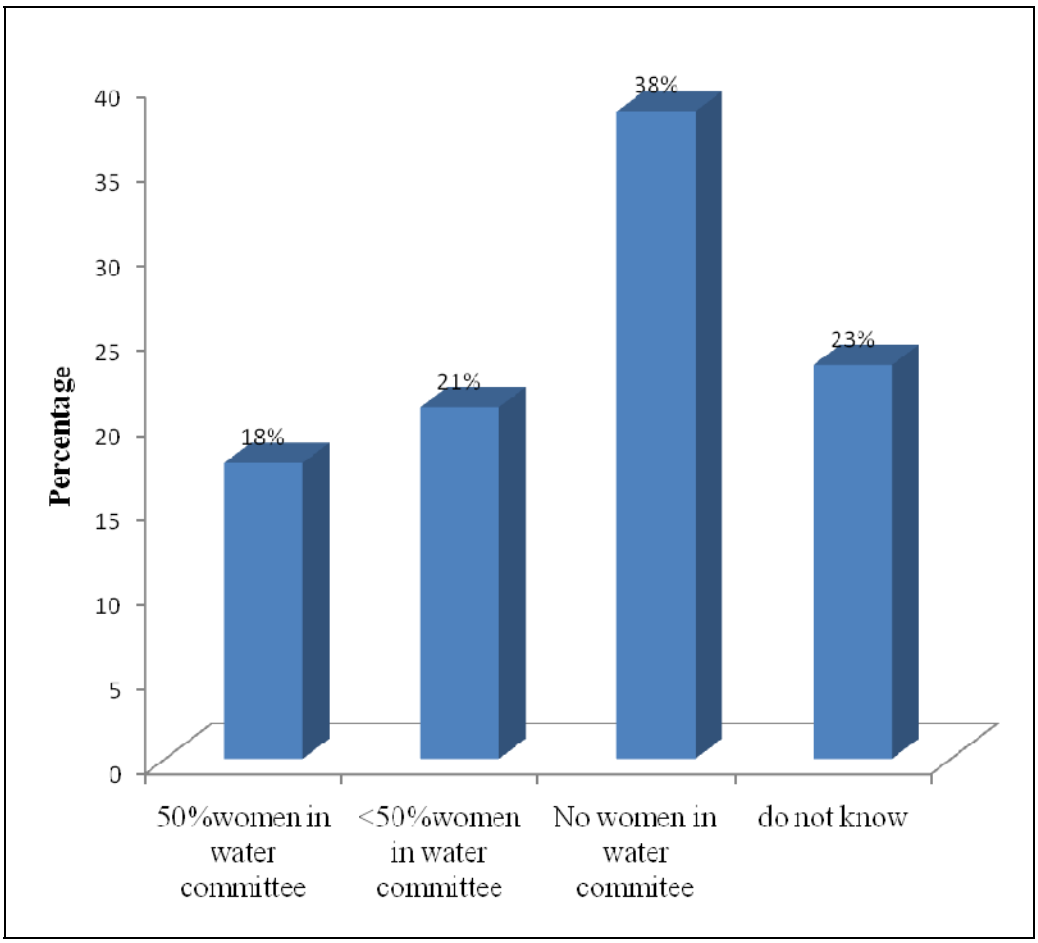

Figure 10: Water committee members

As shown in figure 11, irrigation water committees in Mkoji sub-catchment do not have women, only 18% of the people said there are 50% of women in the committee, 38% showed there are no women in water committee. It was found out that in the irrigation water committees the number of men were more than the number of women, most of the irrigation committees have twenty members and among them only 5 to 8 participants were found to be women.

The results showed that women participation in water irrigation water committees is very low. During the interviews with the groups of women, they gave some differences. In some villages especially mid and lower Mkoji, there are no women in irrigation committees and when the researcher asked them, why they were not participating in the committees, they responded that they did not see a reason for them being in the committee while their contribution in most cases is not taken seriously. One woman said; when they are in the committee it's only to increase the number of members and try to balance the number of men and women involved in the meetings but in reality they are not interested in all the meetings.

Very few women are active in Water Users Associations; the lowest level of water management organization. This is particularly a consequence of the restricted land ownership of women in many villages in Mkoji sub-catchment. The presence of women in most irrigation and water supply agencies is increasing but in most cases still far from the potential.

During FGD meetings, the question whether women also took part in the discussions or expressed their opinions during the meetings caused some amusement among the respondents. "No, of course not," was the common response. "Why should we, we only come to the meetings if there is no one else to go, we only come to listen to the decisions taken," the women explained. The question whether women would attend meetings if at least 50 percent of the participants were females, gave rise to even more amusement. "Yes, I probably would as there is more freedom" said some, but also indicated that it was a good opportunity to meet and chat with the other women present.

In the Upper zone villages (Inyala and Shamwengo), women were elected as members of the village committees which were responsible for managing the distribution of water during dry seasons but their participation in decision making was not recognized. "Yes, women participate in most of the village discussions; we have a councillor for women on the village committee. She is the one responsible for allocation of water resources'' Other women said that although women participate, their views are often not taken seriously: "You might be elected to be a member of one of the village committees but you are of no use. They do not involve you in anything they do".

In the village leadership there are both men and women but when it comes to serious issues like starting a new water schemes and related water projects, instead of involving both men and women; it is only men who make the decisions." From interviews with women in Madundasi and Luhanga, they said that the role of women in village-level decision making seemed to be less pronounced. When asked what role women may play in these decisions one woman said, "It is not common for women to talk, although men do listen to their opinion, they do not value women's contribution very much, the sole decision-makers are men." The elders, such as fathers and others are the ones who have to make top decision within the community and family level, women in most cases normally agree with these decisions only because the elders of the village have said so.

In Focus group discussion in Inyala, most of the women were saying that; they were not given a chance to give their views in the planning of water projects, they claimed that there were water projects in their village but they have collapsed, but stated failure of the water projects was not their responsibility, they had complained that it was necessary for them to join every discussion in the formulation of the water projects in the village so they would have chosen a suitable place for the water pump. The projects were implemented by Non Governmental Organization which didn't consider the presence of women participation in planning.

An analysis of 121 rural water supply projects around the world found that only 17 per cent of the projects achieved high levels of women's involvement (Narayan, 1995). A more recent study based on two World Bank projects in India found that women's participation was largely token and that applying a quota system is not a sufficient step to move women from tokenism to active participation (Prokopy, 2004).

Van Wijk has observed, 'it is often difficult or impossible for them to attend predominantly male meetings, especially in male meeting places. Men heads of household represent the family and it is assumed that the women are informed and influenced by their husbands, even though research shows that much communication is gender-segregated, and so male family members will keep the information to themselves.' This cultural bias against public participation, even in matters where women have more experience and expertise than men, is one of the most serious impediments to women's involvement in modern water management,

for it has ingrained itself in the minds of both men and women for centuries and expresses itself concretely in the composition of local and national management and decision-making structures. It is deeply linked with concepts of male and female identity, and with the fundamental machinery of power and hierarchy. Hence, for modern freshwater management systems to utilize the traditional knowledge and concern women have displayed, it is necessary to address these cultural and power impediments, (UNDP, 2001).

These studies have attempted to show that several barriers prevent women in parts of the developing world from reaching more meaningful levels of participation even when they are ostensibly members of water management and water use committees (Evertzen, 2001; van Wijk- Sijbesma, 1995, 1998; World Bank, 1996). Two types of factors can be identified as responsible for such a situation. First there are individual factors that include a disinterest in political decision making processes, lack of confidence, low levels of education and professional experience outside the household and lack of leadership experience. Secondly, there are institutional factors that include lack of support from husbands or family with respect to domestic responsibilities, religious and patriarchal norms and values that may exclude women from public life, all of which may influence their practical limitations such as their availability to attend meetings and be present in particular locations, (Cornwall, 2000).

Water resources management should be based on a participatory approach. Both women and men should be involved and have an equal voice in managing the sustainable use of water resources and sharing the benefits. The role of women in water-related areas needs to be strengthened and their participation broadened, (Bonn, 2001).

According to Evertzen (2001), three reasons to promote women's participation in Water resources Management:

Justice: Since women constitute roughly half of any country's population, they should justly constitute half of the decision making bodies so that they can feel truly represented and recognized in the democratic process.

Efficiency: A decision making structure that does not exploit women's experiences and resources alongside men's are arguably less efficient than it might be.

Diversity: Since women and men live in different economic and social conditions and perform different roles, their political interests are different—women's interests lying more

pertinently in the allocation of local resources. Women's active participation in decision making is essential in order to ensure that they can promote and defend their specific needs and interests. They can be prime actors in promoting gender sensitive governance that addresses the interests of both and enhances equal access to and control over local resources (Evertzen, 2001).

Table 4: Water related conflicts in the different Zones

	Upper Zone	**Middle Zone**	**Lower Zone**
Typical conflicts	Upstream downstream conflicts within and between irrigation schemes	Conflicts within and between irrigation schemes. Conflicts between irrigators and livestock keepers	Conflicts between cattle holders over grazing lands. Conflicts in other Zones with local water users or authorities
Occurrence	During dry season	During dry season, and at the onset of the wet season (peak)	During dry season
Severity	Usually solved informally or through irrigation committee	Several court cases reported, sometimes armed fights	Unknown. Lack of local level conflict resolution mechanisms

When the conflicts are happening in the villages due to the competition for water in dry season, they tend to cause effects on women as they are the weaker group who can't participate in any kind of conflict so they end up without water. During times of water scarcity in the middle zone, there is the tendency of the 'survival for the fittest' in issues of water for irrigation.

Currently conflicts concentrate more in the Middle Zone. In the Upper Zone, the situation during the dry season is less critical, while in the Lower Zone, there is simply little water to fight over. The competition for water resources is getting increasingly fierce in the Middle Zone during the dry season and the start of the wet season. In the dry season, there are

conflicts between irrigators, especially upstream and downstream conflicts and conflicts over the bypassing or obstruction of the irrigation rotation schedule.

At the start of the wet season, there is a struggle among farmers to obtain water for early rice transplanting, especially in years when the onset of the rainy season is delayed. This may sometimes result in conflicts, whereby competing farmers destroy water canals and intakes to allow water to flow to their own fields. These conflicts may even erupt in armed fights and sometimes result in court cases, in most cases the competition and conflicts over water during dry season tend to cause lots of harm to women and they remain being poor by lacking water for their agriculture practices. During FGD, some of the women said it's sometimes important to have the responsible water committees throughout the year so as they can control the distribution and allocation of water even when it's scarce. Water committees with the help of different irrigation schemes have formulated water rotation so as to make sure all the zones get water for irrigation especially during dry season.

4.5 Traditional institutions

In MSC traditional leaders include chiefs and village headsmen and their role in the villages are recognized as to uphold the traditional culture and norms e.g. the cultures that women should not speak in public and that they should only be housekeepers tend to limit women participation in decision making. Normally the traditional leaders are only men, and the chiefs who are known as "*mamwene"* are inheriting the post but the village headsmen are elected during the meetings after every ten years. These informal and traditional arrangements leaders influence water allocation and distribution, the chiefs "*mwene*" played an important role in the traditional water management arrangements. They tend to oversee conservation of water resources and they are the chairpersons for the environment subcommittees of village governments.

4.5.1 Institutions in upper zone

In most villages which are in the upper zone, there are presences of the village committees which deal with specific issues. Most villages in the Upper Zone have village water committees that deal with domestic water, and irrigation committees for irrigation water. The irrigation committees are only present in the lower parts of the Upper Zone, where dry season irrigation is practiced.

The irrigation committees have sub-committees or canal committees which comprises of both men and women participation in the overseeing of the day-to-day water allocation, using inter-scheme and intra-scheme water rotations, and that mediate or arbitrate in conflicts. They have formulated several bylaws to enhance management, although in most villages these bylaws have not been fully operational due to a weak enforcement capacity. Women are members of the village water and irrigation committee and in most cases the committees comprises of equal number of men and women but women do not fully participate due to more responsibilities that they have got at the household level.

The irrigation committees usually concentrate on the core tasks of repair and maintenance of intake structures, as the members of the irrigation committees can only commit limited amounts of time due to high labour demands (Lankford, 2004)

4.5.2 Institutions in Middle Zone

In the Middle Zone it was found that water resources management institutions than in the Upper Zone. Water resources are primarily allocated and distributed based on the existing local water rights' arrangements and the traditional village institutions. Water rights are linked to the ownership or rent of land or canals or to labour provided for the maintenance of irrigation canals, as there are generally no strong formal water management institutions to enforce these arrangements, conflicts are in first instance resolved informally. When serious conflicts erupt due to the competition of water, they are taken through the existing institutions, from the village governments to the ward tribunes and primary courts of law.

4.5.3 Institutions in Lower Zone

It was established that no formal water resources management institutions in the Lower Zone. Rain fed agriculture produces very little interdependencies among water users, thus eliminating the need for collective water management arrangements. However, the situation in this zone has changed recently, with interdependencies growing between users in the Lower Zone and in other parts of the MSC. This increases the need for water management institutions in the Lower Zone, during dry season this zone experience hardships and both women and men tend to compete for the little water that flows in their irrigation canals.

4.5.4 National institutions for water resources management

The increased water scarcity problems, especially during the dry season, increase the need for coordination on the sub-catchment level. Although the traditional water management institutions certainly have their merits, they are not well equipped to deal with the recent increase in water demands for the MSC's water resources. They are designed for local arrangements and as a result they are not very well suited to deal with the interdependencies between users on the catchment level.

The water resources in the Mkoji sub–catchment are managed as part of the larger Rufiji River Basin. The legal basis is provided by the 1974 Water Utilization Act, which is currently being reviewed and updated, and the National Water Policy, which was recently updated by the Ministry of Water and Livestock Development (MWLD, 2002). Water rights are central in the institutional framework, and each water use requires a water right. The allocation of water rights is delegated to the level of the river basin, to the Rufiji Basin Water Officer (RBWO), who report directly to the Ministry of Water and Livestock Development (Kashaigili *et al.,* 2003).

However, recent institutional transitions provide possibilities through the coordinated allocation of formal water rights by the RBWO and the establishment of local WUAs.
These water sector reforms are part of a larger trend in institutional development, with increased decentralization, privatization and liberalization in various sectors. Among those sectors are water and agriculture, where an ambitious Agricultural Sector Development Programme has recently been started. Part of the agricultural sector reform is the participatory development of District Agricultural Development Plans as a starting point for decentralized planning, (Sokile and Van Koppen, 2003).

4.6 Water policy and legislation

4.6.1 Awareness on water Policy

The New water policy of 2002 states that "every citizen has an equal right to access and use of the nation's natural water resources for his and the nation's benefit" In the MSC women bear the burden of searching for water and guardians of the living environment, however this pivotal role has seldom been reflected in institutional arrangements for the development and management of rural water supply.

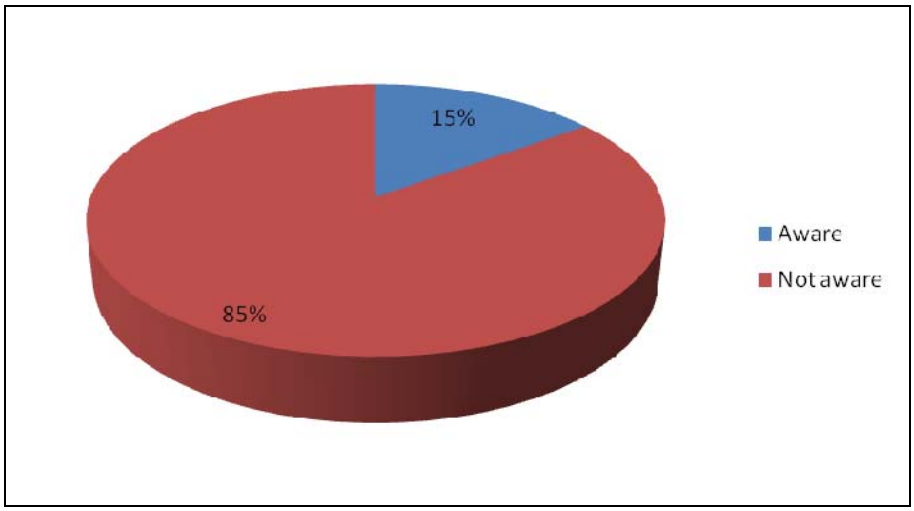

Figure 11: Awareness on water Policy

In most interior villages especially on the lower zone, in Mkoji sub-catchment people were not aware on the issues of water policy and their rights on how to use the resource, from the interviews, Only 15% were aware of what the water policy means and could explain the adequacy and inadequacy of it but more than 50% didn't know what the water policy is and its effect to their livelihood.

Although the notion of equality is captured in this policy it is important to realise that special windows need to be created for women to access water resources on an equal basis with their male counterparts because women's rights at law in cultural and traditional settings are inferior to those of men. Water Utilization Act of 1974 and its amendments is the principle legislation governing the utilization and pollution control of the water resources. This legislation and associated regulations do not adequately meet present and emerging water resources management challenges which include the participation of all stakeholders in WRM, Thus the legislation needs to be reviewed in order to address the growing water management challenges.

Gender considerations need to be made in the prioritisation of water uses. It is important to acknowledge the vital role that women play in the provision of water for basic human needs in adequate quantity and acceptable quality will receive highest priority. Women participation at all levels of the planning of water use is essential as their view in the delineation of appropriate water use is important. Further, just the fact that women constitute at least 50% of the population is significant enough to call for their involvement at all levels of decision-

making. Gender mainstreaming and sensitivity are important tools in ensuring women's active participation in this important aspect of water resources management.

The legal and regulatory frameworks for water resources management provide an important basis for equal and equitable access to and allocation of water resources. These instruments must be anchored on national, regional and international human rights and gender equality and equity norms and standards to create legal and regulatory regimes that take full cognisance of women and men's roles and needs in water resources management. Such instruments include the national constitution, the national gender policies; the SADC Gender Declaration that Tanzania is a signatory to, the Convention on the Elimination of All Forms of Discrimination against Women, and the Beijing Platform of Action.

The policy states, "Relevant customary law and practice related to water management will be institutionalised into statutes". While this is a welcome development, it is important to acknowledge the gross gender inequalities and inequities that arise from customary law and practice in relation to the position of women. It is a well known fact that customary law and practices subordinate women's rights in accessing and owning and controlling economic resources such as land and water. Yet with respect to water, in communal areas, women play an important role in providing water for domestic and food security purposes. Therefore the legal and regulatory frameworks must be such that they incorporate customary and traditional practices that enhance the management of water resources based on non-discriminatory principles of human rights and gender equity and equality. Women's rights to water under customary law must be protected in the constitution in such a way that they have equal and equitable access to water and play an equitable role in the management of water resources.

CHAPTER FIVE
CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Gender is a critical factor in ensuring efficiency and sustainability and hence overall success of water projects. Gender mainstreaming is a way to ensure that there is adequate representation of men and women in planning, operation, maintenance and management of programmes and projects. The assumption that; “both women and men will benefit equally” is false, The division of labour and responsibilities (who does what work), social attitudes, and unequal access to resources all contribute to a situation where policies and programmes have a different impact on women and men, (for example, education initiatives and poverty reduction strategies). Furthermore, these differences and inequalities influence how women and men participate in and respond to water resources management. Women and men are not being treated equally in the aspects of water use, access and management of the water resources in Mkoji Sub-catchment.

Gender mainstreaming is often overlooked and misunderstood, despite policy commitments to gender equality and the recognition that these issues are relevant across the entire range of development thinking and action. In many development initiatives, programmers and analysts often lose sight of the primary objective of a concern for gender, that is, to move towards more equitable relations between women and men. All too often gender issues are conceived as solely concerning the number of women participants or the development of marginal side initiatives for women within mainstream programmes. Without an explicit recognition and understanding of gender inequalities and differences, development initiatives can worsen women’s situation and gender relations.

In MSC, gender mainstreaming in access, use and management of water resources is not equal between men and women. Most of the men own bigger portion of the land and they tend to grow commercial crops while women have small portion of the land and their main products are subsistence crops. Women are still depending on men for food production and this makes them remain poor. Water and land are linked so those who have large portion of the land have more access to water.

Water resources management should be based on a participatory approach; both women and men should be involved and have an equal voice in managing the sustainable use of water resources and sharing the benefits. The role of women in water-related areas needs to be strengthened and their participation broadened.

Despite New Tanzania Policy commitments to gender equality in water resources and the recognition that gender issues are relevant across the entire range of development thinking and action, gender issues are often neglected. There is a need for strong political will to ensure that gender aspects in all aspects receive adequate attention and the requisite technical competence so that they are effectively addressed within the communities.

The legal framework for WRM does not address issues of gender, but provides the foundation for the involvement of both men and women in water resources management though its emphasis on the stakeholder participation and on the institutional level there is limited understanding of the gender mainstreaming issues among individuals in MSC. There is unequal participation of men and women in all aspects of WRM. There is a need of introducing new legal framework on gender mainstreaming and water resources management and also the legal framework should facilitate the establishment of lower level water management organizations which will bring together users and all stakeholders of the same source, become centres for conflict resolution in water allocation and water use in MSC.

5.2 Recommendations

Women are not adequately involved in water issues and there have been inadequate attempts to involve women especially at decision-making, management and technical levels. Based on the identified gaps it was recommended that there should be fair representation of both women and men in water user committees, urban water supply and sewerage boards, district water boards and other water sector decision making bodies. Furthermore empowerment of women to actively participate in decision-making, planning, supervision of implementation and management of operations and maintenance of water supply schemes should be ensured.

The lack of access to land and water are symptoms of a greater problem in most parts of MSC. The government of Tanzania should take adequate measures to ensure that women who are part of the smallholder farmers in the catchment have access and control over land and water resources. There is need to provide women and especially the rural women, with secure

property rights. For instance, this lack of access to land and water rights has negatively affected women's contribution to food security.

In order to ensure that the gender perspective is successfully incorporated into the global water resources management, it is essential to advocate for the direct involvement of both women and men at all levels: national governments; regional/local governments; communities and civil society organizations; donors; and international organizations.

- *Education and Awareness on Gender Issues*

Water education at all levels is of utmost importance for increasing the awareness of the public and the government bodies. Little is done in this important area compared to the actual needs, enhancing educative programmes to women and men on gender partnership where both of them have equal roles to play legally, socially and economically. Mobilizing and encourage women to get involved in technical training while at the same time breaking the myth of female inferiority.

- *Gender analysis*

Gender analysis is a tool to provide an understanding of how people are socialised from birth to hold certain attitudes and values about what is appropriate behaviour for men and women. There is urgent need for a more rigorous implementation of existing guidelines and/or new ones for the undertaking of gender analysis during the formulation and implementation of projects and the enactment of water policies. This will ensure that water development projects will benefit in an equal manner women and men

- *Develop capacity and encourage participation;*

Introduce affirmative action programmes for training women in technical and managerial careers in the water and sanitation sector, Ensure that a minimum percentage of women participate in decision making from the ministerial down to village levels, Provide assistance to facilitate research into gender considerations in water resource management and encourage both women and men to participate in businesses involved in water resource management.

- *Land and Water ownership inheritance legislation*

Gender sensitive legislation should be put in place and effectively implemented. In fact, even in cases where the law provides an equal opportunity for men and women regarding the

inheritance of goods by the heirs there is often a considerable difference between law and reality. Social habits and other traditions inflict serious discrimination to women and few countries establish discriminating criteria when the heirs are women.

- *Participation of Women in Water Governance*

Very few women are active in Water Users Associations and Water Cooperatives; this is particularly a consequence of the restricted land ownership of women in many Mediterranean countries. The presence of women in most irrigation and water supply agencies is increasing but in most cases still far from the potential.

- *Cultural Heritage and Social Norms*

Education and awareness are essential to support positive changes overcoming those social and cultural norms that are the cause of gender inequity and inequality.

- *Access to Information*

A better knowledge among men and women about their own rights and an increased access for needed information and technology are urgently needed.

There must be the development of the strategies to ensure equal participation of men and women in decision-making and eliminate the obstacles that work against inequitable participation in water resources management.

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APPENDICES

Appendix 1: Questionnaires

Assessment of Gender Mainstreaming in Water Resources Management in Mkoji sub-catchment, Tanzania.

A. Background information

1.1 Interviewer

Name of Interviewer

Date of Interview

1.2 Village

Name

Sub-Village Name

Location on top sequence

1.3 Respondent

Name

Sex

Age

Status in the HH

Relation with HHH

1.4 Household head

Name

Sex

Age

HH size

1.5 Education;

None	Primary education	Secondary education
1	2	3

1.6 Livelihood;

Agriculture	Livestock keeper	Petty business	Housewife
1	2	3	4

1.7 What is the current climatic condition in the village?

Has the climate affect any of your socio-economic activities?

Yes	No
1	2

If yes in the above Qn19, which activities were affected?

Agriculture	Livestock	Others(specify)
1	2	3

B. Access to water for domestic and productive uses

1. What are the sources of water in the study area?

Taps	Rivers	Others (specify)
1	2	3

2. Description of the sources of water; 1. Are the rivers perennial, ephemeral

2. Shallow wells: do they dry up in the summer/winter

3. How far from households are the sources of water?

4. Who are allowed to fetch water from the sources?

Men	women	Children	Both
1	2	3	4

5. Which sources of water are used by men, women?

Taps	Rivers	Others
1	2	3

6. How is each source accessed?

Only Irrigators	Only Domestic	Both	Others
1	2	3	4

7. Who makes decisions over each source?

Men	Women	Water committees
1	2	3

8. Do you have gender equity in the access to water?

Yes	No
1	2

9. Who manages the water sources?

10. What are the rules of access; sanctions etc-who enforces these?

11. Are you allowed to use water for any purposes at anytime?

Yes	No
1	2

12. Who are the main users of water?

Irrigators	Livestock	Domestic	Others
1	2	3	4

13. Do you have any cultural norms which segregate women and men in allocation of water?

14. Do you have any water committee?

Yes	No
1	2

15. Are you one of the members, why do you have water committees in the village?

16. What are the roles of these committees?

17. Does the water committee consider the balance of women and men participation?

18. How many women are in the committees?

19. What are their roles of women in the committees?

20. Do you have access to all the water sources in the village?

21. Which sources are used more by men, which ones by women, and then why it is like that?

22. What are the differences between men and women in access to water, what differences are there; how do they occur; where do they occur; what is their impact

C. Influence of gender participation in Water resource Management

23. Do you have gender balance (representation of men and women) at all water management and decision making levels in the catchment?

24. How does the community participate in the management of water sources?

25. Who is in the community?

26. Are women allowed to make contribution in decision making?

27. What contributions have women made in the management of water.

28. How is the management of water resources conducted?

29. Who makes decisions in the water resource management?

30. What structures are there in water resource management?

31. How are women represented? How many women are represented in water resource management?

D. Water policy in addressing gender issues

32. Is there a national water policy in the village?

Yes	No
1	2

33. How does the water policy operate in the village?

34. How effective is the water policy in addressing issues of gender aspect in water resources

35. What do the policies say? How have they been applied? Have they had an impact?

36. What should be done to improve the efficient of the weak policies in the catchment?

E. Institutions available in MSC

37. Are there any institutions in MSC?

38. Is there a gender balance in the institution arrangement?

39. How are women treated?

40. Do the women participate equally as men in decision making?

41. Do you have water committees in the village?

Yes	No
1	2

42. Mention the water committees, how are they conducted?

43. Is there a gender balance in the water committees?

43. Are the water committees helpful to the community?

44. How is gender treated in the water committee?

Are there any institutions dealing with water?

Yes	No
1	2

45. What are the responsibilities of the institutions?

Appendix 2: Checklist

For how long have you been in this village?

Do you understand issues of gender and water management?

How many sources of water are in the village?

What are the sources of water in the village?

Who owns these sources of water?

Are there any rules in accessing water from all the sources in the village?

Which priorities are given in the access of water?

Is the water used equitably in domestic and productive uses?

What are the roles and responsibilities of men and women in the management of water?

Is the water allocation process equitable enough?

Is there a national policy on water and gender?

How inclusive is it of water and related issues? How about its implementation mechanisms?

Are there any institutions in your village? How many are they?

What are the responsibilities of these institutions?

Is there gender balance (representation of men and women) at all water management and decision making levels in all the institutions?

What are your views in the gender issues in management and allocation of water?

Appendix 3: Focus Group discussion -Water committee

When was the water committee established?

Why do you have water committees in your village?

How many committees are there?

Do you all understand your obligations?

What are the responsibilities of these committees?

How were you selected to be members of the water committee?

Was there any aspect of gender perspective in the selection of the members?

How many members are in the water committee?

How do you attend the water rotation during dry periods?

Are women in the committee allowed to make any decisions?

Do all the members get enough water?

How many irrigation furrows are in your village?

Do all the committee members understand water policy issues?

How do you contribute to the water projects developments in the village?

Are there any successes after the formation of the water committees?

Appendix 4: Focus Group Discussion -Community Participation

What are the sources of water in the village?

Who owns these sources of water?

Is there gender sensitivity in accessing water?

Which priorities are given in the access of water?

Are there rules on how to access water in the village?

Is the water used equitably in domestic and productive use?

What are the roles and responsibilities of men and women in the management of water?

Is the water allocation process equitable enough?

How about people's survival pattern in the absence of equitable water allocation in the sub-catchment?

Is there a national policy on gender?

How inclusive is it of water and related issues? How about its implementation mechanisms?

Are there any institutions in your village?

How many are they?

What are the responsibilities of these institutions?

Is there gender balance (representation of men and women) at all water management and decision making levels in the catchment?

Are you allowed to use water for any purposes at anytime?

What are your views in the gender issues in management and allocation of water?