

**THE CHALLENGES FACING WOMEN PARTICIPATION IN  
RURAL WATER PROVISION: A CASE STUDY OF KABATI,  
KITUI DISTRICT**

**BY**

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**This Thesis is submitted in partial fulfilment of the requirement for the degree of**

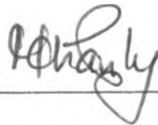
**Masters of Arts (MA) in Urban and Regional Planning,**

**University of Nairobi**

**SEPTEMBER, 1997**

## DECLARATION

This Thesis is my original work and has not been presented for a degree in any other University.



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This Thesis has been presented for examination with my approval as University Supervisor.



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Dr. Peter Ngau

(Supervisor)

## DEDICATION

This theses is dedicated to my late father Alexander Mutunga and my dear Mum Rosalia Mutunga for their love, kindness, support and encouragement over all the years of my study.

## ACKNOWLEDGEMENTS

I must unreservedly acknowledge my deep debt of gratitude to several people whose great help and contribution enabled this study to become a reality. I am grateful to numerous authors whose great and mastery work was consulted.

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The ideas reflected in this report are however my own opinion. Any mistakes, defects or omissions therein are my responsibility and should not be attributed to any of the above mentioned persons.

## ABSTRACT

Participation emerged in the 1970s as a new force in development, and since then literature on development has highlighted an increasing support of participation, culminating in creation of new and systematic approach to development.

It is now widely recognised that community participation especially by women is essential to the success of water provision in developing countries. This is because women are the major users of water system in rural areas and have many ideas about how this could be improved.

It is essential to increase women role in water sector both as beneficiaries of, and contributors to its development. This in turn requires the identification of specific problems and constraints under which such contribution takes place.

However literature on participation has focused too much on the promotion of participation and its virtues and has given little attention to the challenges facing the development of participation, challenges which must be explored.

This study therefore was an attempt to identify relevant issues and gaps in the area of women participation in water provision in rural areas. It was done as a case study in Kabati Division, Kitui District. The target group consists of the members of registered water projects. The main areas of investigation included sources of water and extend<sup>t?</sup> of water problems in the division, and constraints to participation.

The study shows that water is a central factor around which households and farm duties are organised. Water is fetched by women, often assisted by children who cover an average distance of four kilometres per day. The residents rely on open, unimproved surface water sources which are prone to contamination. Due to water scarcity, women in the area have come together to form water projects to solve the problem.

The study also revealed that factors that inhibit women's participation in water projects are social, economical, technical and political. These arise due to mistakes or shortcomings associated with planners, donor agencies, the community and the role of government in monitoring and evaluation of water projects.

To ensure full participation of women in rural water projects practical action is needed. There is need to know the challenges that women face in their participation and look for ways in which they can be overcome. The study has found it justifiable for women to be involved in all stages of water projects to promote development and ensure project sustainability. Donors should support institutional structures in place and government should provide an enabling environment under which full women participation can occur.

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# CHAPTER ONE

## INTRODUCTION

### 1.0 Introduction

Water is a basic requirement for human, animal and plant life. It forms a vital part of social infrastructure, playing a key role in health, industry, agriculture, energy and general consumption for human welfare for which there are no substitutes (Torori, 1995). Thus the dictum 'water is life' is as true today just as it was when it was first coined. Planning of water resources is a multi-sectoral and interdependence activity with other development sectors as it involves the general raising of living standards of people in an economy. However total amount of water that is available is generally limited.

The United Nations recognised the critical importance of improving water supply and launched the International Drinking Water Supply and Sanitation Decade 1980 -1990. Yet, at least one in every three people in developing countries still lack this basic requirement.

In 1992, the United Nations Conference on Environment and Development-the Earth Summit, adopted a Global Action Plan, Agenda 21, which firmly established that water and sanitation are crucial to human and economic development and warned that fresh water resources must be managed within the context of sustainable development.

Kenya also has a development goal, the provision of clean drinking water for all by the year 2000. This however, has not been an easy task to achieve and is still far from being realised.

About 70% of projects have been funded by government either directly or through donor agency leaving only 30% of the projects having been financed through *harambee* donations. Another feature of the projects has been little recognition of the role of community especially women in such projects. Over the years the government role has been declining due to lack of funds, and thus in the development plan 1994-96, the government proposed to ensure water resources conservation while, the community will be fully involved to ensure sustainable water supply development and management.

Women in rural areas through the self-help groups, with the help of non-governmental organisations and donor agencies thus will continue to play a leading role towards the provision of water in these areas (Kenya, 1994). However, women's role in water supply programmes has not yet received full recognition, partly due to traditional ways of thinking on the part of the planners of water programmes and partly due to lack of knowledge, since women's role in relation to water supply problems has been given a very low priority in terms of research.

Given the declining involvement of the government, women groups will continue to play a significant role in rural development and especially in water supply sector. In addition virtually all domestic chores are attended to by women in rural Kenya and fetching water takes a disproportionate portion of the daily work for many of these women. It is imperative therefore, that the needs of women and their active participation in water supply be taken seriously by engineers, planners and policy makers.



Further more the provision of water for all by the year 2000 which was a goal worth pursuing in the last decades has become critical now because of the increased population, a decreased farming area and declining agricultural activity. Removing the barriers which prevent women from making full contribution to rural water sector should be a high priority issue because of enormous benefits that a country can obtain by enabling women to expand their role in water provision and management and other community services. Hence the need to examine ways in which women and community at large may be best involved in planning, implementation and management of water projects.

## **1.2 Statement of the Problem**

Since the late 1960s, there has been considerable support for the view that development in third world has for too long benefitted the few and excluded the many. The means by which this trend could be reversed, it is urged is the process of participation (Oakley, 1991). Since then literature on development has highlighted an increasing support for participation within the framework of development planning process. Development agencies, donors, Non-governmental organisations, governments, academic and research institutes have thus adopted a wide range of participatory approaches in development practice and research programmes.

However, to date, literature on participation has been dominated by conceptual analyses, broad explanations of participatory strategies and arguments in support of them, but there is limited literature and understanding on how this participation occurs and the challenges that the communities and especially rural women face in the process of participation.

Development policies in Kenya seek to improve the living conditions in the rural areas whereby 85% of the Kenyan population live. Statistics show that women constitute nearly two-thirds of the rural population (Boserup, 1970; Palmer, 1974). However, the rapid urbanisation growth accompanied by its related problems has resulted in many of the rural development issues receiving minimal attention, thus leaving the rural communities to develop their areas.

Kenya's strategy for rural water sector is geared at providing potable water within four kilometre distance to every household by the year 2000. The community is expected to play an active role through participation. It must be appreciated that a large proportion of the rural population in Kenya is made up of women and it is women who shoulder most of problems resulting from lack of water provision. Their full participation is therefore essential to improve the water situation in rural areas given the government limited funds. Hence they are a resource which governments of developing countries can no longer ignore if they wish to realise the potential of [water supply] development for supporting economic growth and for establishing infrastructure for social advance and productivity improvements (UNCHS 1987). There is need to find ways in which women's role and status in rural water sector can be strengthened to achieve national goals.

This study seeks to examine the extent women are involved in rural water supply and identify the challenges facing their participation in rural water provision in a semi arid area of Kabati in Kitui District.

The study seeks to understand the contextual barriers which hinder women's participation in water provision. It raises the questions as to what limits women's participation in water

provision in rural areas, what are their causes and the parameters around which such limitations emerge and whether women participation can have sustainable impact in semi arid areas of Kenya, such as Kitui.

The main issue concerning women's participation in water projects is not simply the in-cooperation as they are already very much active participants. Rather it is necessary to make women participation more effective, productive and easier. This in turn requires the identification of specific problems and constraints faced by women. It is then essential to note that for women to contribute effectively in rural water sector, constraints under which such contribution takes place should be understood and rural women participatory self-help capacity need to be strengthened.

### **1.3 Research Objective**

The aim of this study is to examine the extent to which women are involved in planning and implementation of rural water projects and the problems they face. The study will seek to meet the following specific objectives.

1. To assess the water situation in Kabati Division with regard to sources, methods of water supply, distance, time taken, mode, problems, and household expenditure on water.
2. To examine the nature and adequacy of women's participation in rural water projects.
3. To identify factors that constrain women participation in rural water provision.
4. To find out ways of enhancing women's participation in water sector.

### **1.4 Hypothesis**

The study aimed to test the following three hypotheses;-

1. That women play a greater role in rural water provision than men.
2. That socio-economic factors constraint women's participation in rural water provision.
3. That in spite of technological advances, women's role in water provision takes more of their labour time, thus rural development has increased rather than decreased women's burden in rural water provision.

## **1.5 Assumptions**

The study was set against the following assumptions :-

1. That a great majority of the population in Kenya live and will continue to live in rural areas despite the current rural- urban migration
2. Any successful and sustainable water project in rural areas must involve women in planning, implementation and management.
3. Women groups will continue to play a significant role in rural water provision given the government strained resources.
4. That inadequate water policies and programmes have considerable social and economic consequences.

## **1.6 Justification of the Study**

The search for the ways to develop rural areas and especially in water supply continue to occupy the attention of Governments, Non-governmental organisations and the communities. Despite the efforts made water has continued to be a scarce commodity in developing countries and especially in rural arid and semi-arid areas. Studies show that 78% of the rural population in developing countries do not have reasonable access to safe drinking water (WHO,1992).

In Kenya only 13% out of the 90% of the rural population has access to improved water supplies (Torori, 1995). Therefore, 87% rely on traditional sources with a burden of long distance coverage to water sources. This has been an obstacle to achieve the equitable rural-urban balance addressed in the Sessional Paper No. 1 of 1986 on Economic Management for Renewed Growth.

Development of water sector has in the past been based on the premise that water is a basic need and also a catalyst for acceleration of both social and economic development in Kenya. This perception led to the policy goal in which the government set out to supply water to Kenyans by the year 2000.

Many of the water supplies in Kenya were developed in the years when donor funds were plenty. Unfortunately the schemes although well intended were constructed without due consideration for the community participation and hence projects have been designed with very little if any, grassroots participation.

However, with the donor fatigue the government cannot undertake the development and maintenance of water projects solely. This has led to need of involving the communities in the entire process of water project cycle.

Although much has been said about the acute problems women face as far as water is concerned, there has not been any analytical efforts to specify the essential indicators of the role of women in water sector. This vacuum in knowledge of the problems facing women in participating in rural water programmes is one of the major reasons for the visible absence of gender-sensitive policies and programmes in water sector and this should be a priority in developing countries.

With the governments cutbacks in social services full community involvement is essential to ensure adequate provision of water. The Kenya government objective of having adequate water supply available to entire population by the year 2000 may not be realised in arid areas like Kitui.

In Kenya, women spent a great deal of time and energy collecting and carrying water. This task leaves less time for other essential activities. The interest women have in the establishment of safe and reliable water supply is therefore obvious. Hence their participation in water projects should not be considered just as passive beneficiaries. Yet in Kenya community contribution especially women has not been properly quantified or documented.

There is need to know the challenges that women face in their participation and look for ways in which they can be overcome. Until there is a proper understanding of women's participation in planning and implementation of rural water projects, there is no likelihood for policy makers to devise appropriate means of helping them to do better in water provision and in rural development as a whole.

The above factors show that it is necessary to develop new models and strategies to foster women participation in water provision. Also the rationale for identifying the challenges facing women participation in rural water sector stem from the belief that participation promotes development and ensures project sustainability. In addition potable water supply system in rural areas are a major component in development.

## **1.7 The Scope of the Study**

The study was aimed at examining the extent to which women are involved in planning and implementation of water projects in rural areas. It seeks to identify the factors that may assist or hinder women's participation in such projects.

The study was done as a case study in Kabati Division, Kitui District. The target group consisted of the members of registered water projects in the area. The main areas of investigation include the extent of water problems in the area, sources of water in both wet and dry seasons, distance and time taken to water sources, mode of water delivery and household per capita water consumption and problems associated with water.

The study further looks at the nature of women's participation on water projects, how they are involved, their contribution and problems that they face and how their participation can be improved and how the problem of water in the area can be solved.

## **1.8 Research Methodology**

### **1.8.1 Sampling**

The study utilised a representative sample due to limited amount of time, cost and labour resources.

Three water projects dealing with different aspects of water supply were used as sample focal points. These were randomly chosen out of the ten water projects registered under the



Ministry of Culture and Social Services in the division. The water supply systems considered included earth and subsurface dams, shallow wells and borehole projects.

Systematic random sampling, taking ten percent from each of the water project was used to select 75 households who are members of these water projects in the study area.

**Table 1.1 Sampling frame**

<b>WATER PROJECT</b>	<b>TOTAL MEMBERSHIP</b>	<b>SAMPLE</b>	<b>%</b>
<b>Kabati Borehole Project</b>	350	35	<b>10</b>
<b>Kiteete Women Project</b>	200	20	<b>10</b>
<b>Kyeni kya Kitote Project</b>	200	20	<b>10</b>
<b>Total</b>	<b>750</b>	<b>75</b>	<b>10</b>

Source: Field survey 1996.

## **1.8.2 Data Collection**

Data for this study was obtained from both primary and secondary sources.

### **1.8.2.1. Primary Data Sources**

The main method used was interview schedule by way of standard questionnaires. The questionnaires which consisted of a set of closed and open ended questions was administered to 75 households selected through systematic random sampling .

Informal interview were also held through focus group discussion with government administrators including the District Water Engineer, Division Social Development Officer,

and Community Development Assistant among others. Others were local leaders and the three projects committees members. The aim was to clarify certain issues that were not captured in the household interview schedule. Opinions and expectations were accommodated.

Participant observations was another important tool used during the data collection employed to gain knowledge of how the projects operate. This was done through attending the groups activities, water committee meetings and chiefs *baraza*.

Photography was also used to show the exact physical aspects of rural water provision. Some of the thematic photographs taken included different of water sources and common mode of water delivery.

#### **1.8.2.2. Secondary Data**

Official records and publications were reviewed in search of information on the past and current situation of water supply and the changes that the sector has undergone since the water decade and the role of women in water sector.

The main source of secondary data were library, where published and unpublished materials were used and official records including monthly and annual reports and statistical records at the local level.

### 1.8.3. Data Analysis

Data was analyzed using descriptive statistics which enabled computations on average distances to water sources and household time allocation to water fetching. Analysis also included the modes of household water delivery, money spend on water per month and frequency of meetings.

Cross tabulation are used to show the nature of relationship between the participation and age, participation and income and participation and occupation. The data was analyzed using the Statistical Package for Social Scientists (SPSS) and Harvard Graphics.

### 1.8.4 Data presentation

The study utilised a variety methods such as tables to show frequency and statistical distribution such as percentages, measures of central tendency, graphics and maps.

### 1.9 Definition of Key Terms

The following definitions will be used here

**Rural area:** Refers to un-urbanised area of Kenya, such as kabati.

**Women groups:** Local community mutual association based on self-help activities.

**Level of education:** The level of schooling attained by respondent, measured in actual number of years spent in school.

**Place of residence :** Where the respondent has stayed for the last two years.

**Family monthly income:** Refers to total monetary gains for the whole family for the month.

**Participation:** Involvement of the local people in decision making, programme implementation, benefits and evaluation of such programmes.

**Safe water supply:** Refer to treated or uncontaminated water sources.

**Potable:** Water free from colour, turbidity, taste odour and smell.

### **1.10 Limitations**

Time allocation for data collection was not adequate. The study was done during the beginning of the rainy season and it proved difficult to collect data because people are busy on their farms. Also group meetings were rarely held during this season. Thus only 75 questionnaires out of the intended 100 were administered.

Respondents were unwilling to give information for fear of jeopardising their position in the water projects even after assuring them that the study was purely academic and that the information they gave will be treated in strict confidence.

### **1.11 Organisation of Thesis**

The study is organised in six chapters. Chapter one gives the general introduction of the thesis. It in-cooperates the statement of the problem; study objectives and hypothesis; the assumptions against which the study is set as well as the justification and the scope of the study. Other components include the methodology adapted in data collection and analysis; operational definition of commonly used terms; the limitation encountered during the survey and finally the organisation of the thesis.

Chapter two presents the literature review covering the theoretical aspects that are considered in the study with the aim of identifying information gaps.

This includes the concept of community participation in rural development; water situation in developing countries in general and in Kenya in particular; the importance of community participation and especially women in rural water provision. This chapter also include the Kenyan government policy on water; on arid and semi-arid areas and on women.

Chapter three presents physical and social and economic background of the study area. The physical information includes the topography and geology, climate which includes rainfall, evaporation and temperatures. The socio- economic information encompass household characterises such family size, occupation, monthly income and demographic characterises.

Chapter four presents the water situation in Kabati division of Kitui District and includes the water resources; methods of water supply in both wet and dry seasons; distance and time taken to water points during dry seasons; mode of water delivery for domestic and livestock needs; household per capital consumption and money spent on water by households per month.

Chapter five presents analysis of the respondents views on participation in water projects, how the local people are involved; their contribution and problems that hinder their participation.

Chapter six presents summary of study findings based on the objectives, recommendations and conclusion of the study.

The thesis also includes references and an appendix containing the survey instruments.

Appendix 1 presents a sample of the household questionnaire used in the study while Appendix

1 is a sample of water project committee questionnaire.

The thesis also includes references and an appendix containing the survey instruments. Appendix 1 presents a sample of the household questionnaire used in the study while Appendix 2 is a sample of water project committee questionnaire.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 Introduction

Participation emerged in the 1970s as a new force in development, and since then literature on development has highlighted an increasing support of participation, culminating in creation of new and systematic approach to development.

This chapter presents the literature review covering the theoretical aspects which includes the concept of community participation in rural development; water situation in developing countries in general and in Kenya in particular; the importance of community participation and especially women in rural water provision. This chapter also include the Kenyan government policy on water and on arid and semi-arid areas.

#### 2.1 Community Participation: Concept and Practice in Rural Development

Most governments in developing countries have shown varying concerns towards the improvement of the well being of the rural people. In this regard, the history of rural development strategies can be traced through three distinctive phases: 1940- 1950s was a period of over-optimism and rural development was viewed as uplifting rural life through extension services (Lea, 1986). Development policy makers sought to increase productivity and per capital income. However this approach benefitted only a few rural elite.



By 1970s, a new approach to rural development emerged and the issue of basic needs such as food, shelter, education and water, among others, became very vital. Over the last two decades the thinking in rural development has come to stress the involvement of the community in planning and implementation of rural projects through participation (Chaudhri, 1986). The issue of affordability and how the community were to sustain the projects became very vital. Governments, Non-governmental organisations and donors have embraced the idea of community participation with a lot of enthusiasm.

Today, participation is perhaps the single-most written issue in the field of rural development. Community participation has also become something of a band wagon. Programmes now must include at least a reference of community participation to appear creditable (Jorgensen, 1982). However it is too common for policy makers to theorize about participation, without really appreciating what it means to implement this in rural areas.

While the language of community participation has been in-cooperated in the development jargon, the concept remains cloudy; meaning different things to different people. Despite the diversity in objectives, a central consensus has began to emerge upon a working definition among organisations involved in development.

According to this definition, participation has three dimensions;- involvement of all those affected in decision making about what should be done and how; mass contribution to the implementation of the decisions; and sharing of the benefits of the programmes.

In Kenya, the District Focus for Rural Development Strategy can be seen as an attempt by the government to encourage local participation. The strategy is aimed at decentralising decision making in planning and implementation of projects and resources to Districts and sub-districts so as to encourage greater participation of local population in planning and mobilisation of local resources (Kenya, 1983).

A continued commitment to decentralisation of planning and participation is evident in Kenya governments 1989-93 development plan. However there is an increasing evidence that District focus for Rural Development has failed to meet its objective of fostering local participation. Major reforms are required to make the strategy a success. Otherwise decentralisation of planning responsibilities to district level is in itself not enough to guarantee local participation. Institutional framework of administrative planning need to be strengthened.

It has become an established fact that women have been stepping out of their traditional status of being confined to the environment of homes. They perform dynamic roles in enabling the society to advance towards development and prosperity (Chitere, 1991).

One of the most significant efforts by rural women to take development in their own hands has been in the formation of self-help and income generating groups. Kenyan women have a long tradition of participating in the community and national development since colonial days. Studies indicate that women groups in Kenya are a dynamic force in the development of rural areas.

Rural Women have always worked within the framework of mutual aid groups in Kenya. Through these groups women have helped each other in times of need and in activities requiring collective efforts. This collective response to needy situation by women has been the driving force behind much of rural development in Kenya (Malombe, 1995).

The self-help groups in rural areas are formed on the women's own initiative and desire to solve common problems that cannot be solved individually. The groups engage in a cross section of development activities related to women (DANIDA, 1991). Thus the general high level women participation in rural development stem from the fact that women are more willing to participate in such projects.

Monsted (1978), staurst (1975) and Musyoki (1985) show that women are the major actors in development activities in rural kenya. They dominate the agricultural sector in most rural areas, a situation created by massive absenteeism of men from those areas.

In fact it can be argued that the history of *harambee* (self- help) movement which is associated with the late President Kenyatta, is the history of how women initiatives and labour have made the movement such a great success.

Mbithi and Rasmussen (1977), and Mutiso (1975) show that 50% of the registered self-help projects in Kenya are initiated by women. Within the framework of women groups, Mutiso (1975) shows that women constitute 80% - 90% of the unskilled labour force in the harambee projects in Machakos and Nyeri Districts. However in most areas of Kenya illiteracy and ignorance have greatly affected the women movement. According to UNESCO (1982) over 84% of Kenyan non-illiterate population are women and the greatest percentage live in the

rural areas. At the same time studies by Fieldman and others show that lack of material, capital, poor and unreliable communication, lack of markets and technical know-how and leadership bickering have contributed a lot to the poor performance of women groups.

Nevertheless it is now recognised that community participation especially by women is essential to the success of water and sanitation in developing countries. This is due to the fact that women are the major users of water systems in rural areas and have many ideas about how this could be improved.

## **2.2 Water Situation in Developing Countries**

Water is one of the basic needs second only to air and is one of the most important resources for mans survival. Most settlements down in history have been near water sources. Fresh water for millions of people both rural and urban areas is scarce and hard won commodity. Among the reasons for this is that inland water occurs in strict limited volume. In deed, less than 0.1% of global water flow in rivers and their associated lakes and swamps and that they undergo both seasonal and yearly fluctuation and are subject to physical and biological qualities (UN, 1977). It is estimated that 80% of countries in the world currently suffer from water shortages and this is expected to worsen in the coming decades (Torori, 1995).

Data collected from 75 Developing countries shows that an estimated 78% of rural population did not have access to safe and drinking water. In absolute figures it meant that 1106 million people out of 1419 million were without water (IDRC, 1980). Governments of Developing countries are faced with problems of provision of water being outstripped by rapidly expanding

population accompanied by increased human waste and water pollution, lack of finance, lack of trained personnel and inappropriate technology which is mostly imported from Developed countries. Consequently, this has had deleterious effect on community and individual health. WHO in 1980 estimated that 30,000 people were dying everyday from diseases attributed to lack of good water and sanitation.

It is the realisation of this water problem at international level that UN declared the 1980 to 1990 decade the "International Drinking Water and Sanitation Decade" with a major goal of providing water worldwide within the reach of households. The decade was aimed at achieving improved health standards, provision of quality water and sanitation borne disease and social goal where piped water near households to reduce hardships experienced by women and herdsmen. This it was hoped would improve their welfare and release their precious time and energy for other productive activities.

However until mid 1970s the main emphasis in water programmes was on technological aspects. The assumption was that better water quality result in an improved state of health. The advantage of improved access to a more reliable water supply as well as health effect on increased volume of water were only considered as a security. It was implicitly assumed that women would benefit from the programme (Jorgensen, 1982).

The 1976 United nations Habitant conference, 1977 United Nation water conference and 1980 United Nations Women Conference marked a turning point in the recognition of the importance of the water supply especially to women. It was realised that many water projects did not function satisfactory and the installation broke down, the priority changed to increasing

emphases on improved access, increased volume of water and greater reliability (White, 1972; Saunders, 1976).

In 1992, United Nations Conference on Environment and Development -the Earth Summit - adopted a Global Action Plan, Agenda 21, which firmly established that water and sanitation are crucial to human and economic development and warned that fresh water resources must be managed with sustainable development in mind. To ensure follow up to Agenda 21, an International Ministerial Conference on Drinking Water and Environmental Sanitation was organised by Netherlands government in 1994. Agenda 21 emphasises that the water supply and sanitation problems of world are no longer technical in nature, but political and educational. The secret of success may lie in social and cultural attitudes, as much as technical know-how .

Africa despite its substantial water resources, experience chronic shortages owing to uneven distribution of water and rainfall, underdevelopment of potential water resources and poor management of existing resources. Project maintenance has been a critical problem in water provision schemes and the major cause of their unsustainability (Torori, 1995).

The consequence of inadequate clean water supply and sanitation particularly effect the women of Africa. African women are carriers, managers and users of water and family health care providers. They are responsible in this regard not only for themselves but for their families and communities at large (Dankelmen, 1988). By virtue of their many tasks associated with water they are constantly exposed to the many water pathogens. Women therefore represent the group most vulnerable to diseases (INSTRAW, 1989)

Some parts of Africa have ample supplies of water from rivers, springs wells and lakes. In these areas women still spent up to two hours a day fetching water. However in areas where water sources are scarce, women are known to spend more than half of their day doing this task (INSTRAW, 1989).

Research in Africa reveals that in Sudan women walk up to six miles to fetch water and in Tunisia they walk five kilometres. The women often have to walk over very rough terrain while carrying sixty pounds of water on each journey (Ahmed, 1985).

In East Africa it is estimated that water carrying can consume a quarter or more of daily food intake, that is 12% of daily calorie usage (Chauhan, 1980). Unfortunately various studies in Africa refer to women walking long distances for water but seldom give any idea on the way how these can be reduced.

Average African domestic water consumption is mere ten litres per capita per day compared to 300-600 litres in industrial countries (White, 1972). In Europe 59 out of 100 people have access to piped water while in Africa 90 out of 100 do not have.

Large number of people with no access to safe water is a matter of global concern. The per capita consumption in some of these developing countries is low to five litres per day, which may be minimum necessary to sustain life. Table 2.1 shows WHO survey results in the 1970s on average water consumption in rural areas of developing countries.

The table shows that Africa has the lowest margins which may have been as a result of the continent low budget on rural water and lack of policy commitment.

**Table 2.1 : Average Daily per capita water consumption.**

WHO Region	Minimum	Maximum
Africa	15	35
South East Asia	30	70
Western pacific	30	95
Eastern Meditererian	40	85
Average for developing countries	35	96

Source :Hannan-Anderson:1982.

Water consumption in Kenya is estimated at nearly 600 million cubic metres per year. Of this 69% is used for agriculture, 18% for domestic and 13% for industry. Projection of annual water demand by year 2000 range between 250--5900 million cubic metres (Torori, 1995).

Although the government has made efforts to make safe water available, only a small proportion of the population has access to such supplies and most are concentrated in urban areas. This problem of water scarcity can be illustrated by the fact that out of current urban population of about 4 million only 75% have access to reliable clean water supply and only 25% of rural population enjoy the same. Overall only 35% of the present population of about 23 million is assured of clean water supply at a reasonable distance (Kenya, 1989). Table 2.2 show the population target by government to be served by organised water points during nthe period 1994 to 1996.

Thus the percentage of the total urban population served by organized water points was projected to increase from 66.5 % in 1993 to 74% in 1996-while for rural area the percentage



was projected to increase from 44.5% in 1993 to 50 % in 1996. Overall the total average coverage was projected to increase from 55.5% in 1993 to 63% in 1996.

**Table: 2.2      The population target to be served by organized water points.**

YEAR	1990	1991	1992	1993	1994	1995	1996
Urban population	62.5	64	65.5	66.5	68	70	74
Rural population	42	43	43.5	44.5	48	48	50
Total	52	53.5	54.5	55.5	57	59	62

Source: National Development plan 1994/1996

However, with the rise in Kenya's population, the pressure on existing supplies and demand for additional water has also grown. To satisfy projected demands major investment on water development will be needed. This will require that new measures be taken to ensure that the needs of future generations are met while satisfying current demands.

### 2.3 The Scope of Rural Water Problems in Kenya

In rural Kenya water supply is subject to occasional fluctuations in response to climate seasonality. This is due to differences in climatic and physiographic features, topography and geology which make water inadequate in rural area of Kenya. Pickford (1973) argued that water crisis is prevalent due to insufficient and absence of hydro-geological insights and dry spells.

Rainfall failure in arid and semi-arid areas such North-Eastern and Eastern areas of Kenya is another periodic phenomena. This is worsened by lack of data on water potentials in these areas. Also little hydrological information of catchment areas is available. This hinders development of viable water schemes.

Limited water supply and scarcity in rural areas can be associated with limited water resources, insufficient water collection methods and inadequate supply systems. In some instances unfair distribution and uneven spacing of communal water points leads to inadequate supply.

Water inadequacy is closely associated with quality (Tschannerl, 1979). UN report on Human Environment in 1980 indicates that, with limited and seasonality varying nature of many water sources and outlets, the major problem is rate of pollution which explains the presence of water borne epidemics such as cholera and bilharzia. The incidence of water born, water vectored and water diseases continued to increase during 1980s. Africa was seriously affected during the cholera pandemic of 1960s but in 1970s and 1980s the disease become endemic.

There have been a number of recent outbreaks including one in 1984 involving Kenya among other African countries, in which 6,500 reported cases 600 people died (Seidman, 1992).

The effects of drought and perceptions of economic development and infrastructural needs led to National Rural Water Supply programme (RWS) in Kenya (Kenya, 1980). However the performance of the programme has been poor due to poor reconnaissance surveys and feasibility studies.

The community misconception of the water provision as a major hinderance to development and sustainability of water sector in rural areas. In developing countries the community conceive the provision of water as 'donor to government affair rather that donor to people undertaking'. This conception had contributed to poor performance in water supply operation and maintenance. The community tend to wait for government assistance in time of breakdown (Widstrand, 1978).

Rural water supply in Kenya has not at any time in the past kept pace with the demand. The development initiatives and management systems of water schemes have demonstrated poor performance. For instance in 1978 out of 800 complete water schemes only 200 were fully operational. 600 water schemes were therefore under-utilised. Poor maintenance and lack of initiative further heighten the distances problem to improved sources in the country (Kenya, 1989).

After independence the government undertook the provision of essential economic and social services. Targets were established on the assumption that the population will be growing on

3.1% per annum. Unfortunately the population has been growing more rapidly at 3.8% and hence the expenditures required to achieve targets earlier has grown in proportion than anticipated. So targets have been delayed in their realisation and often targets with respect to quality have had to be sacrificed in order to achieve targets with respect to numbers of people served. Thus most delivery systems are rarely constructed as planned (Kenya, 1992). Lack of adequate planning and scheduling of projects mean that implementation is also not carefully coordinated.

Moreover rural communities believe that water is for free regardless of investment cost. The provision of services by government directly to people have tended to discourage the people initiatives to provide similar services through community efforts.

The distance to improved supplies remain the major challenge in rural water supply programme (Njuguna, 1981). A lot of time is spent on water collection while occupying a greater part of daily working time of rural women.

#### **2.4 The Value of Participation in Water Projects**

Community participation is an indispensable social component of rural water supply projects. Studies show that the success of rural water supply depends on the extent to which society is considered or involved during all stages of the project. Thus community participation can play a significant role in creating awareness, a sense of responsibility and provide ownership towards rural water supply system (Jorgensen, 1982). In keeping with these trends, community

participation was adopted as one of the key strategies of drinking water supply and sanitation decade (1980-90). The united Nation agencies concerned with the decade jointly declared..

“Maximum participation by those who will benefit from the new systems is central to the approach. Members of the local community are to be involved in all aspects of water and sanitation from planning and construction to operation and maintenance”.

The involvement of the community is more likely to result in the use of local resources and appropriate technology that can be repaired or replaced rather than complex expensive high technology equipment that cannot be easily used [by the local people] (Franklein, 1982).

Experience has shown that Community participation in water projects has reduced the cost of the projects in three main ways. First there is sense of ownership by the beneficiaries which provides high chances of maintenance. Secondly the community supplies labour, local resources, and some local technical expertise. The community also gives financial contribution though this may not be very substantial.

The importance of community participation in water sector is now widely recognised in terms of the role that the intended beneficiaries can and do in implementation and management, in decision making about the design and allocation of resources.

To achieve effective and efficient management appropriate structures and organisations must be established, linking national plans and objectives to the needs required by the local community. Studies show that the success of rural water supply water programmes depends on the extend to which beneficiaries are considered and involved in all stages of planning and

implementation. In fact recent approaches to rural development rely very heavily in the involvement and the initiative of the rural people. Thus local involvement is seen as a prerequisite to local development, both for economic reasons and because the process itself is urged increases the capability and self reliance of the local community.

It is believed that local contribution in whatever form, reflect the desire for the project in question and are a response to genuinely felt needs.

Accordingly, many developing countries have started assessing appropriate arrangement for village level participation in management of water supplies. The sustainability of these arrangements depend on local conditions which include existing local institutions, government policy among others (WEDC, 1987).

Many developing countries have found that the task of developing and maintaining water supplies is beyond their capabilities due to economic strain. They have thus started efforts for mobilising existing local institutions to take over the responsibilities.

What is important is that the community cooperates according to its capabilities and resources, operation and maintenance costs are supported by the water user...(Franklin, 1982). However despite its importance community participation is not problem free and hence new ways and means should be sought to improve, diversify and expand community participation in rural areas.

## 2.5 Women as Target Group of Water Projects

In developing countries women and girls have the primary responsibility for collecting and utilising water for domestic purposes. They also have a major responsibility for family hygiene, household sanitation and waste disposal (Jorgensen, 1982). Thus water collection is a major part of the day's work for women, with distance covered and quantities needed constantly being juggled against time and energy available. However in the literature on water supply, the target group is defined as the local population. This definition is too broad and hence it has become necessary to categorise the local population into user groups.

WHO report "Women, Water and Sanitation" represents a number of studies dealing with the many responsibilities that women hold in water and sanitation and of the impact of these responsibilities have on women's health, daily work burden and status in a number of developing countries (Mills, 1992). The report confirms that women are the primary collectors of water and that men typically only assist women when water sources are very far away. While men usually have access to some form of cart, donkey, wheelbarrow or bicycle transport, women depend solely on foot transport.

While the centrality of women as collectors and users of water supply is recognised, the centrality of women to operation and maintenance is not always recognised. In the WHO report it is stated that:-

"Women are the traditional managers of water systems, yet as new water technologies are introduced to communities these roles are taken away by assumption that men should be trained in the maintenance of the facilities. However women are in the best position to take care of these facilities, as they are aware of when they cease to

function and have the most interest in their repairs. Studies show that women are capable of reporting such problems but are often impeded by community attitudes which restrict their roles in community affairs" (Mills, 1992).

Due recognition of the role of women in rural water sector is a matter of development efficiency. The reason lies in the fact that the trend towards modernization has not relieved rural women of the traditional tasks of being responsible for family water collection and hence improving opportunities for women can lead to a more success of water projects. According to studies carried by Economic Commission for Africa, the carrying of water is the most strenuous physical burden of all the tasks performed by African women. It is estimated that a 1/6 energy expended by women in rural areas is used for carrying water. Research in East Africa points that women on average spend 4-6 hours daily on carrying water (Saunders, 1976). Thus because women are the main beneficiaries of water projects they should be instrumental in every water project.

The involvement of women in water projects is a characteristic impact which women groups have meant in an effort to upgrade living conditions in rural Kenya and also to alleviate their water carrying burden. According to the Ministry of Water many water projects in rural areas even the government assisted ones started on a self-help basis with women initiative. Furthermore this involvement is as a result of rural transformation of the current social-economic conditions prevailing in most rural areas of Kenya (WEDC, 1990).

This is because formal employment has drawn men to urban areas leaving women as the sole household heads. Secondly fetching water falls exclusively on women and in rural areas women tend to have a higher sense of organisation especially in water sector than men.

Finally, due to African colonial experience of forced communal labour, many men consider it derogatory to engage in communal work. This altitude has reduced men's contribution towards self-help.

But despite all this most water projects are still planned without women being considered as an explicit target group. What is needed is a new approach to rural water supply projects. In order to make women more viable in the sense that their crucial role is duly recognised. Therefore it is of crucial importance that women are recognised as a target group of water projects from



the inception and should be consulted and involved in design and management of such projects.

## **2.6 Women Participation in Water Projects.**

It is the Kenya government's policy to provide water to every household by the year 2000. The government has been trying to achieve this in two major ways ; first through the efforts to construct natural water projects and secondly through the national spirit of harambee, the government encourages the people to contribute towards country water projects so as to induce for the contribution by either the government or donors. In this way the contribution of women is an integral part of the community effort to bring running water close to the people.

Thus the involvement of women in rural water projects is characteristic of the impact which women group have made in an effort to upgrade living conditions in rural Kenya and also to alleviate their water carrying burden.

Women are responsible for storing, using and managing water. These responsibilities indicate that women are actively involved in the planning and implementation of water supply and sanitation projects

(Foster, 1986).

Women participation in the work of water projects has not been given due attention in the literature of community participation. The important role that the women play in participation of water projects is rarely mentioned at the policy level despite the constant communication from those working on the ground level that "without women, water project in rural areas would not work".

An example from East Africa shows that although women formerly were represented in all committees, they actually did not participate (Roark, 1980). Thus women should be involved at all levels in water sector, playing an acute role. The local women should not just be thought of as some kind of free labour during construction.

## **2.6 Involvement of Men In Water Projcets**

Studies have shown that men are not interested in rural projects unless they are profitable in social and political terms. Although emphasises currently are being laid on more women involvement in water projects, this does not mean that involvement of men should be neglected (IDRC, 1995). Development and sustainability of water project requires financial and human resource which requires absolute involvement of every community member.

In essence, water supply remain community responsibility. This implies that the many connected activities, including new work to realise and sustain improvements, should not be allowed to become women's sole burden, thereby increasing the already heavy demands on their time and energy.

In addition the needs of men and women differ considerably, and both groups need to be sensitised to these differences and their implication to the water sector. Gender issues are thus very important when water programs are being planned and implemented.

Concentration on women as a target group solely would be incorrect since water development is a community concern. Further more cultural division of tasks and authority between men and women often necessitates that men be involved in water projects.

There is therefore need for gender -sensitive community participation strategy whereby special measures are taken to ensure the full participation of both men and women in water projects.

## **2.7 Technology of Water Supply**

About 50% of water supply installed in developing countries are not functioning after the first five years (White, 1972; Sanders, 1976). It is well known that it is women who are responsible for supply of water for the household for different purposes. They are also involved in construction of small scale water supplies. What is less recognised is that women therefore should be involved as direct response for the maintenance since women traditionally are responsible for the water. It is obvious that they should be trained in this work. In Angola this has resulted to a marked decrease in the number of repairs.

However in most cases men are trained and paid for doing these tasks. Women have only in very few cases been trained in maintenance and repairing water supplies. The successful application of technology depends virtually on the organisation and skills of the people who should operate and maintain the water supplies. The selection of the technology should thus be seen in relation to the local social organisation (Kristen, 1972).

## **2.8 Kenya Government Policy on Water Supply**

Water is scarce yet vital to life and development, thus its management attracts many agencies and organisations. In Kenya the responsibility of water supply development has been shared between various organisations, government ministries, local authorities, Non-governmental organisations and community based organisations. However the government through the Ministry of Land Reclamation, Regional and Water Development has the overall statutory responsibility for the conservation control and apportioned of water resources under the Water Act (cap 372) laws of Kenya. It is also responsible for water development supplies, control of water catchments, water quality and pollution (Kenya, 1970) .

The first Development 1966-1970 recognised the need for treatment of water as vital resource which should be carefully planned in a view to enhance its contribution to both economic and social welfare. The plan was concerned with the provision of water for human and animal consumption, irrigation, manufacturing and power development. A need for provision of

adequate and clean water in rural areas which had been ignored by colonial government was revisited. The constrain to this desire was seen as the heavy undertaking especially in areas of low productivity (Kenya, 1966).

The water development schemes therefore were divided into three categories. First Township supplies, due to the high growth rate in urban centres, there was need to expand and maintain the existing supplies. Local authorities with strong economic base were expected to finance their schemes with loans from central government through Local Government Loans Authority (LGLA). Smaller towns unable to finance or operate water supplies continued to be served by using central government resources until they could be able to take over.

Second is rural water schemes. The government was to make funds available by loan or grant according to financial capabilities of particular areas. After payment of loans and cost of maintenance met, the balance of revenue collected from sale of water was to be put back into further development.

The third category Water resource survey and ancillaries to ensure continuity of Kenya water resource development by carrying out hydro-meteorological surveys for the catchment areas.

In the second development plan 1970/74 the government objective therefore became to provide water to all by the year 2000 A.D. This was in response to poor health status in rural areas due to lack of clean water which was also picking up in urban areas especially in slums and squatter settlement without standard water systems and sanitation.

The major elements of the water policy in this plan were therefore; to undertake vigorous expansion of water installation in rural areas, to ensure that growth of urban system was sufficient to meet the water demand and lastly and to improve the state of knowledge of the country's water resources and hydrology and to develop adequate long term master plan for urban and rural water development.

For rural areas the local authorities did not have enough technical and financial resource for water development hence the government resolved to provide water communally at

appropriate points. Water was to be tapped from all available sources such as rocks, wells, boreholes and piped supplies which were to use both gravity and pumped types.

During this planning period, the government planned for a long term national programme which was to be a guide for water development in the country. The National Master Plan for water development was responsible for; assessing potential demand, determining criteria for scheme selection, design standards, identifying projects, establishing firm programmes and forecasting requirement for finance and man-power.

The water development division of Ministry of Agriculture was put in charge of collecting fees for water at flat rate for individual connection. In larger rural centres water was sold in water kiosks.

The third Development Plan 1974-78 the government called for a strategy that integrated water development with programmes and projects in other sectors. In 1974 a Ministry of Water Development was created as a principal agency for management, development, operation and maintenance of water supplies, sewerage disposal and pollution control. This was in recognition of the vital role played by water in promoting health, sanitation and economic growth (Kenya 1974).

In the development plan 1979-1983, the government recognised that the shortage of water supply was not due to total quantity available but due to storage and distribution facilities. Also costs of inputs had outstripped the rate of increase in resource. This was because water development had to compete with other development sectors for the scarce resource (Kenya, 1979).

The Development Plan 1984-1988 maintained the broad goal of providing potable water, in sufficient quantities and close to the entire Kenyan population. The objectives during this development period included; provision of portable water to all, balancing supplies between human needs, livestock and industrial sector, management and development of water resource to achieve multi-purpose development goals, development and control of waste water to reduce pollution water sources and bodies. Others were adoption of water distributive

practices and pricing to ensure social objectives are not ignored, provision of incentives to efficient water use, realising wasteful or environmentally harmful water use practices, and recognition of principle of cost sharing where the beneficiaries to provision and maintenance of water services (Kenya, 1984).

The 1989/93 Development Plan emphasised the water policy goal which was to facilitate the provision of water in sufficient quantity and quality to meet the needs of human beings, agriculture, livestock and industry. It aimed at providing piped water to all Kenyan by the year 2000 A.D. However the plan points that the objective has been difficult to meet due to scarcity of qualified manpower, financial resources and problems related to implementation of the projects (Kenya 1989).

The 1994-96 development plan emphasised that the basic goal of the National Water development policy is to facilitate the provision, development and distribution of water in sufficient quality and quantity for its utilisation in urban and rural areas (Kenya, 1994).

The 1997-2001 Development Plan maintains that adequate and reliable clean water in both urban and rural areas is an essential requirement for all sectors. It consents that water supply is generally inadequate for domestic, industrial and commercial uses. To pursue this problem, the Government, through Ministry of Land Reclamation, Regional and Water Development and other relevant ministries and authorities will progressively implement the policy of changing urban water tariffs at levels that are sufficient to cover capital amortization, operation and maintenance cost, and set tariffs for rural water schemes at levels that cover all operation and maintenance cost. Considering that water is one of the key issues in environmental policy issues, the Ministry of Land Reclamation, Regional and Water Development and the Ministry of Environment and Natural Resources will maintain very close collaboration with each other.

## 2.9 Government Policy on Arid and Semi Arid Lands (ASALs)

About 80% of Kenya's land fall under ASAL category and support 20% of Kenya population and half of its livestock (GOK, 1988). ASAL regions have a fragile environment which is easily degradable. In Kenya, Arid and semi arid lands are areas receiving rainfall of less than 800 mm annually and are generally hot, dry and have an evapotranspiration rate of 1500 to 2500 mm per year which is more than twice the available rainfall (Kenya, 1992). Besides this high evapotranspiration rate, the rainfall is concentrated in short durations and the rains have high intensities which result into less infiltration and more run-off.

The policy objective for Arid and semi-arid development stem from approach enunciated in sessional paper No.1 of 1986 on Economic Management for Renewed Growth and amplified in 1988/93 Development plan.

ASAL development policy is to improve the standards of living of the population by integrating ASAL into mainstream of national economy and initiate environmentally sustainable development. The sessional paper No.1 of 1986 recognised ASAL region to present a potentially important resource which if managed carefully can help serve the income, employment and food sufficiency goals of the nation (Kenya, 1986). The paper spells out elements of or continued development which included environmental protection to maintain a viable economy. Re afforestation was to serve as protection of water sheds, prevention of soil erosion and fuel wood provision.

ASAL region have a fragile environment, easily degradable as more people move to them. These areas are characterized by great heterogeneity in vegetation, soils and climates. Table 3.1 shows district classified as ASALs by extent of aridity.

**Table 2.3 ASAL DISTRICTS CLASSIFIED BY EXTENT OF ARIDITY**

<b>Category</b>	<b>District</b>	<b>% total ASAL</b>
A-100%	Isiolo, Marsabit, Garissa, Madera, Turkana, Wajir	62%
B-85-100%	Kitui, Tana River, Taita Taveta, Kajiado, Samburu	25%
C-50-85%	Embu, Meru, Machakos, Laikipia, West Pokot, Kilifi, Kwale, Baringo	10%
D-30-50%	Lamu, Narok, Elgeyo Marakwet	3%

Source: Kenya, 1988

ASAL's development policy identifies water resource as one of the areas for intervention. The policy emphasises on the development of both ground and surface sources, water harvesting and supply technologies that are sustainable and environmentally friendly. Long term programme to determine quantity and assess the quality of water resource with a view to establishing a long term programme for water resource development in the region has also been emphasised.

Strategy to provide water in sufficient quantity and quality for human consumption, livestock and agro-forest has been mapped out and government will intensify ground water exploration.



The technology available will be modified for cost effectiveness and avoid the salination problem that tends to be common (Kenya, 1988).

The government policy is based on principle that water is a basic need for every household and essential resource for increased economic activity. The Development Plan 1989/93 states that:- "Rehabilitation of livestock watering points and additional provision of such facilities intent to reduce the range of destruction caused by concentration of livestock numbers, in consultation with pastoralists and improving living conditions through increased productivity and creation of employment opportunities and generating opportunities for improving the quality of use" (Kenya, 1989).

The Development Policy for ASAL, (1992) asserted that the District Focus for Policy will provide legal and administrative framework for water supply development, Community participation, planning and implementation of all water development projects. For water development in ASAL'S, priority is given to domestic and livestock needs. The government of Kenya started a formal ASAL development programme in 1979 funded largely by donors. The government since then has occasionally been required to assist financially, usually outside its budget. For rationalizing the budget these programmes needs scrutiny similar to other development project. The programs should be integrated into policies dealing with water development.

In general a critical issue in ASAL development is integration of water development and other aspects of development planning. Each stage of project design needs to be incorporate water planning perspectives and implementation to incorporate land, water and other resources.

Therefore since 1970 the government promulgated the national water master plan with the aim of ensuring the availability of potable water within four kilometres of every household by the year 2000. However adequate and wholesome supply of water in both urban and rural areas is not readily available. In Kitui people still have to fetch water from distant water points, springs, well and dams despite government instituted measures.

In Kenya self-help in its traditional form is very old and has been part of rural life, but institutionalisation of participation in water provision is rather new.

With independence the national government took over the responsibility of providing all the basic social services and this approach created a strong dependency on the government especially in the field of water provision and its management. After independence local participation took the form of political pressure applied through influential leaders to press water provision to be located in their village. Hence the local people were not mobilised or involved in planning, installation or management on water supplies.

By 1970 the government considered self-help and local involvements the appropriate mechanism to provide more services. Involvement in the field of water supply become very important when water supplies began to face operation and maintenance problems.

The government in the 1990s introduced cost-sharing to both rural and urban consumers due to the huge costs involved in the development and maintenance of water projects. The

approach has thus been to facilitate in development and distribution of sufficient water to consumer through community participation.

However, from the participation point of view, the most fundamental but unsettled issues concerning the government policy in the water sector is how self reliance will be accomplished and how women's participation will be improved yet the government has set very ambitious targets for rural water supply.

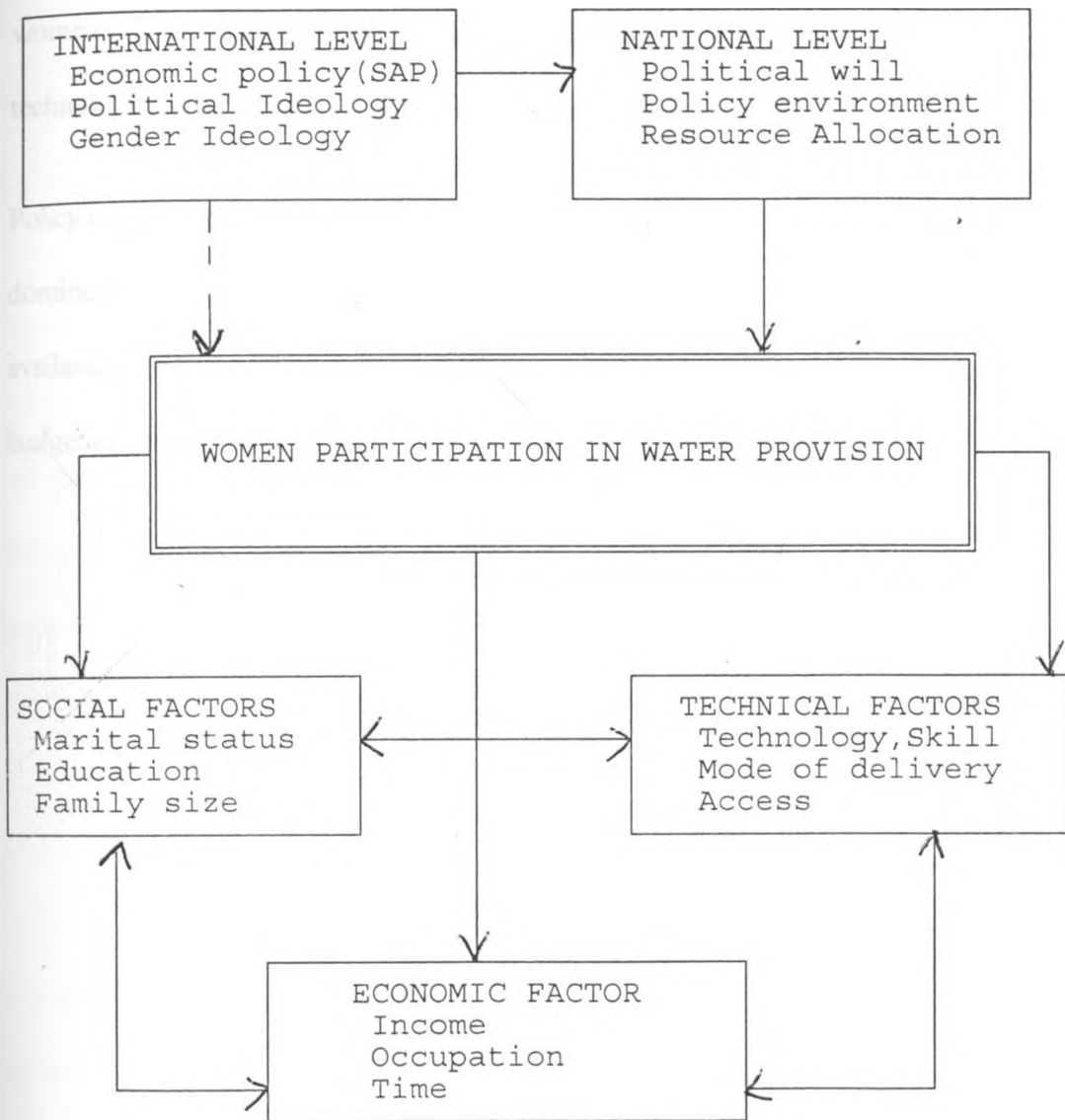
## **2.10 CONCEPTUAL MODEL**

Women's participation in rural water provision can be conceptualised to be influenced by several factors at local, national and international levels as reflected in the literature review and conceptual model shown below.

According to the conceptual model, women participation is influenced by a complex interplay between macro level policies both at international and national level. The Policy Environment both at national and international level is influenced by the dominant political, economic and gender ideologies policy decisions at international level imposed by donor or funding agent like the IMF, World Bank, among others, influence national policies.

The National Committee of Water Development thus depend largely on international level and in turn influences the availability , allocation and quality of resources at National level and local levels. Therefore policy decision at international level affect the participation of women in water projects indirectly.

**Fig 2.1 Conceptual Model for Women's Participation in Water Projects**



Source: Author

At micro level or the local level factors that effect women participation included social, economic and physical factors. Among the social factors are demographic aspects such as marital status, family size and level of education. On the economic side, factors that affect women's participation are occupation, family incomes and time. The physical factors include technology and skills, accessibility to water systems and mode of water delivery.

Policy environment both at the national and international level is influenced by dominant gender, political and economic ideologies. The national policy influences the availability and allocation of resources at the national and community levels through budgeting allocations.

## **CHAPTER THREE**

### **BACKGROUND INFORMATION TO STUDY AREA**

#### **3.0 Introduction**

This chapter gives the background information of the study area which encompasses physical and socio- economic background of the study area. The physical information includes the topography and geology, climate which includes rainfall, evaporation and temperatures, and land uses. The socio- economic information discussed in this chapter include household characterises such family size, occupation, monthly income and demographic characterises. The chapter also includes Water supply sources and water actors in Kabati division.

#### **3.1 Location and Size**

Kabati is one of the six Divisions in Kitui District in the Eastern province of Kenya. The District is located in a semi-arid area and borders Machakos and Makueni districts to the west, Mwingi district to the North, Tana river to the east and Taita-Taveta districts to the south as shown by map 3.1. The District covers an area of approximately 14502 square kilometre plus 6369 square kilometre occupied by Tsavo National Park which is not inhabited.

The forest area in the district is very small being estimated at 204 square Kilometres. This is mostly on the hills. In Kabati Division the forest areas are found in Mutonguni hills.

The district is divided into six administrative divisions as shown by table 3.1 and map 3.2 .

These are further divided into locations and then sub-locations.

**Table 3.1 Area of District by Division**

Division	Area square km
Central	603
Kabati	665
Chuluni	728
Yatta	1 140
Mutomo	6 590
Mutitu	4 776
<b>Total</b>	<b>14 502</b>

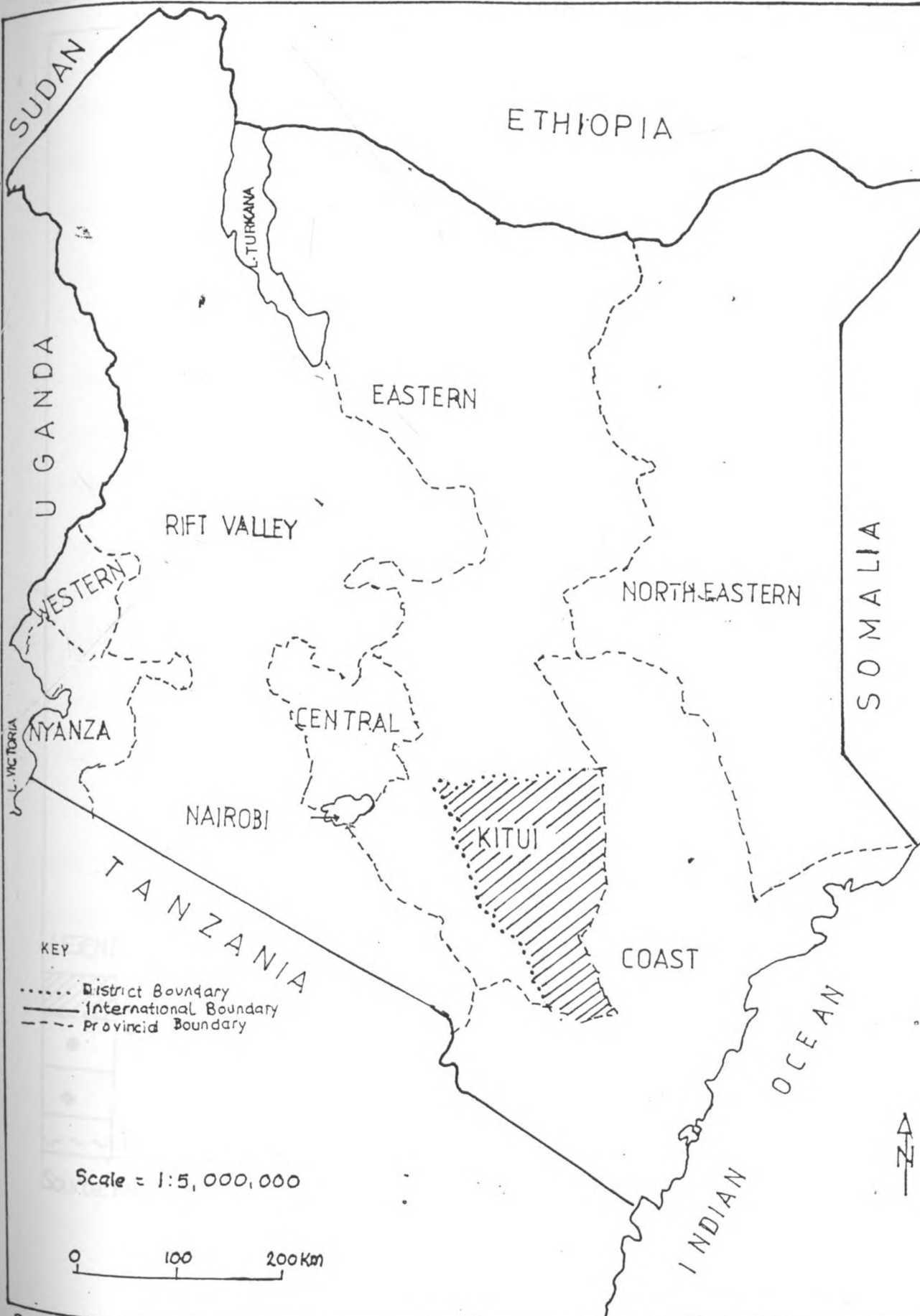
Source : Kitui district development Plan 1994-96

Note : Tsavo National Park is not included in the area of administration.

In addition to the various administrative units, there are four constituencies namely Kitui West, Kitui Central, Kitui South and Kitui East. The boundaries of the constituencies are not the same as those of the divisions. The District is thus represented by four elected Members of Parliament.

Map 1.

# LOCATION OF KITUI DISTRICT

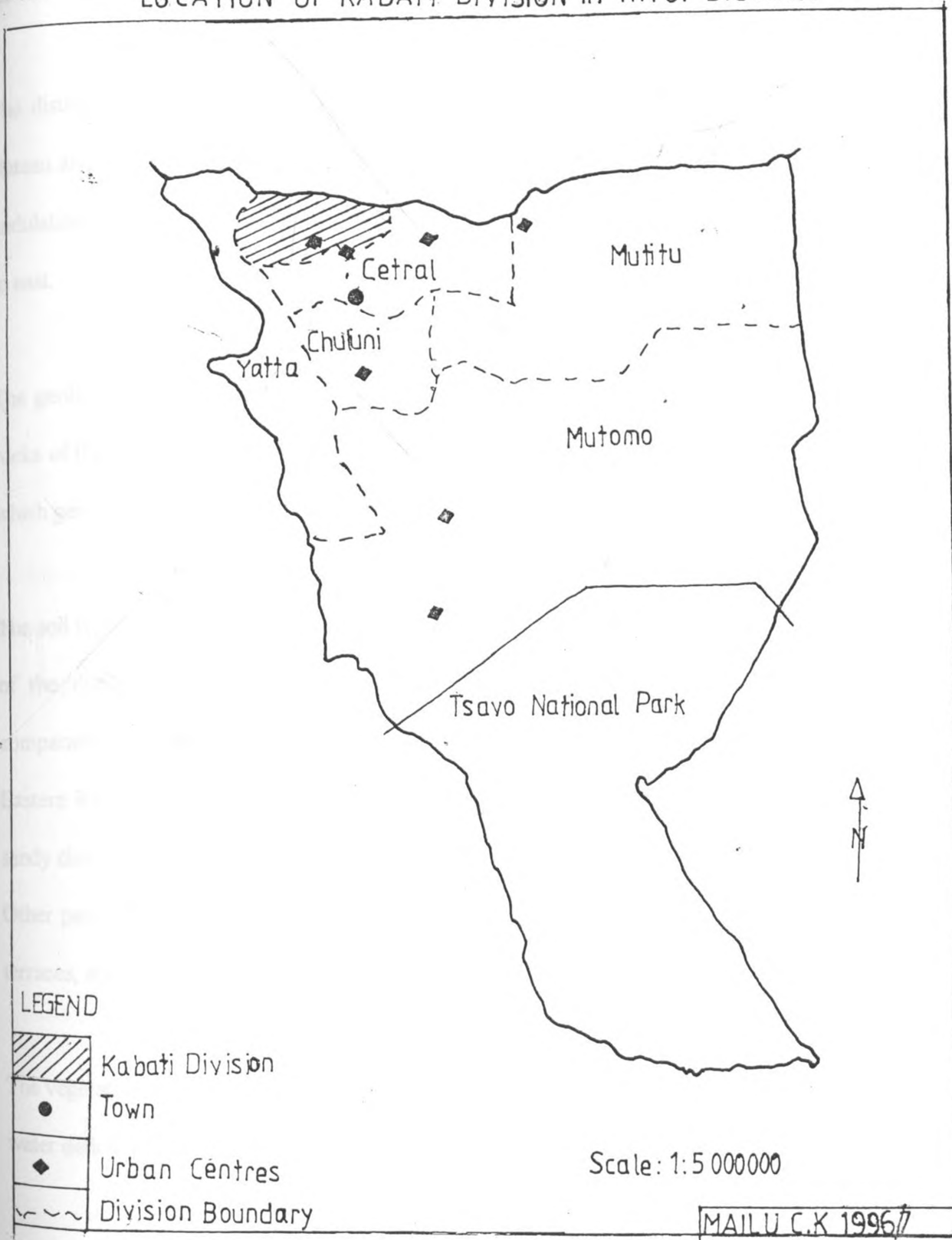


Source : Kenya, 1994



Map 2.

# LOCATION OF KABATI DIVISION IN KITUI DISTRICT



Source: Kenya: 1994.

### 3.2 Geology and Topography

The district lies between 4000 m and 1830 m above the sea level. A part from the Yatta plateau and the range of hills in the central and northern part of the district, the topography is undulating and gives way to plains towards the east. Thus the district gently slopes from west to east.

The geology of the district is characterised by metamorphic, sedimentary and some igneous rocks of the basement complex system. These rocks hold extractable water only in small cells which generally occur in low areas near streams.

The soil type in the district depends on climate rather than on the parent rock. The central part of the district has sedimentary plain usually low in natural fertility but because it is comparatively higher than the surrounding, it receives comparatively high precipitation.

Eastern Kitui has red sand plain type of soil also low in natural fertility. The soils are mainly sandy clay, shallow in some places and fairly deep in others.

Other parts of the division has black cotton soil. Along major water courses on the flat river terraces, soils of moderate to high fertility occur.

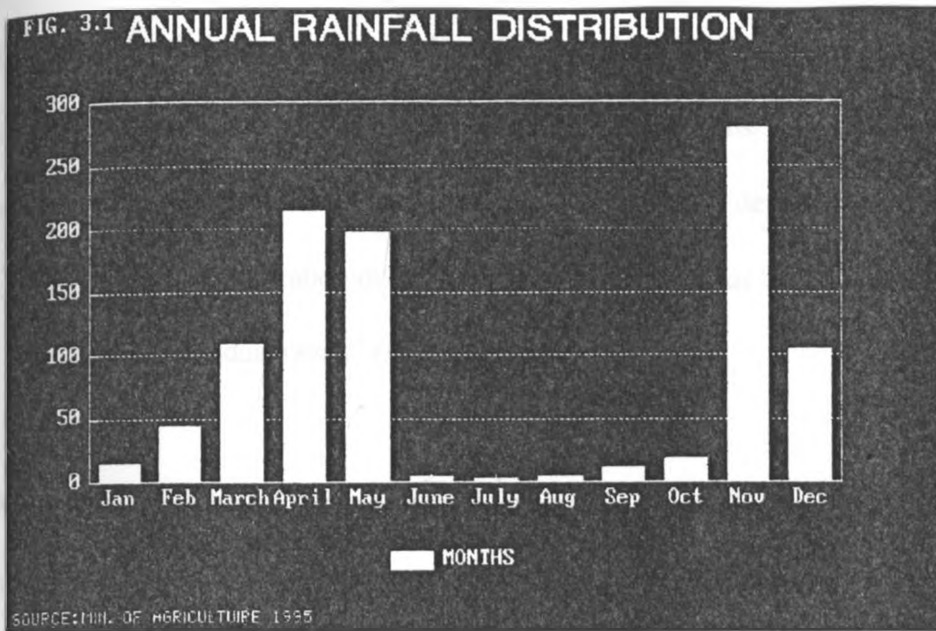
The vegetation consist of dry bush and thicket with tall grass during rain seasons, reminiscent of water deficit on soil.

### **3.3 Climate**

Climatic factors are of great significance to the availability of water resources and supplies in an area. The climate can be classified as semi arid which is hot and dry during the most part of the year. Thus climatic factors discussed here include rainfall, temperatures and evaporation.

#### **3.3.1 Rainfall**

The rainfall in Kitui is bi-modal with long rains falling during March and April and short rains during October to December. In Kabati division pronounced rainfall maximum is in April and November. The intervening months particularly June through September experience little or even nil rainfall. It has a mean annual rainfall of between 600 - 750 mm.



From figure 3.1, it can be concluded that the Kabati division records more rainfall during the short rains than in the long rainfall calendar of Kenya.

Annual rainfall statistics from the Mutonguni rain gauge for 12 years between 1961 and 1982 show that the division had a mean annual rainfall of 807 mm with a minimum annual rainfall of

205 mm and maximum rainfall of 1459 mm with a standard deviation of 334 mm. Average seasonal rainfall of 379 mm for long rains and 446 mm for short rains.

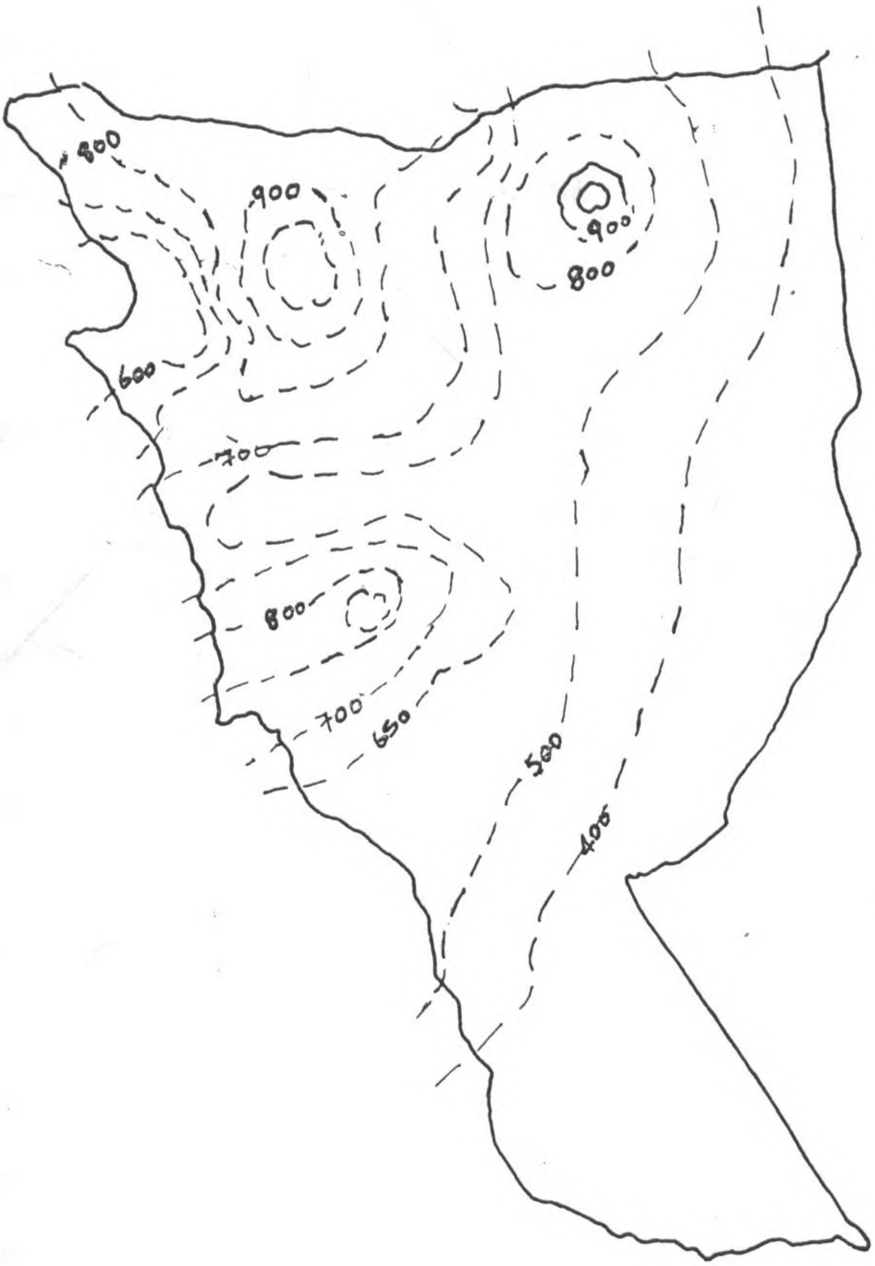
Rainfall in the division is seasonal with a 60% rainfall reliability during the growing periods of 250-390 mm and 280-490 mm divided by distinct arid seasons. Rain tends to fall in convective storms rather than from large frontal system and is mostly deposited in concentric bursts of varying intensity and duration over relatively small areas. Thus the rainfall shows a high spatial variability for individual rainfall events (Kenya, 1987).

Analysis of available records indicate that there is essentially no correlation in the form of periodically or persistency between different years. Annual rainfall is an independent random variable.

The amount of rainfall follows orthographic factors where rainfall patterns follows topographic factors of the landscape. The hills receive more rainfall (between 760 and 1050 mm) than the rest of the district. The largest part of the district receive less than 750 mm of rainfall per annum while the eastern part of the district receive less than 500 mm per annum, as shown by Annual rainfall map 3.3.

Map 3:

AVERAGE ANNUAL RAINFALL(mm)



Scale - 1:5 000 000

M.AILU C.K 1996/7

Source: Min. of Agriculture, 1983.

The district receives rain only a few days a year, ranging between 35-75 days a year with an annual average of 57 days (Kenya, 1987). The impact of these on the farming activities is that the district experiences persistent drought and resulted periodic famine.

In addition the absence of major river flowing through the district and lack of evidence to suggest regional ground water flow of a large magnitude, leads to the assumption that, rainfall provides the only major natural source of water for the district. The distribution of these water in different natural process is of interests for it suggests whether enough water is 'available to meet the district demands and what means should be used to tap this water supply.

### **3.3.2 Temperatures**

Mean annual temperatures vary between 26 and 34 degree centigrade. While the minimum mean annual temperatures vary between 14 and 18 degree centigrade in the western part of the district. Minimum annual temperatures in the eastern part of the district vary from 18-22 degree centigrade.

### **3.3.3 Evaporation**

The rate of evaporation is so high that many river/streams and dams dry up after rains. Dry sand beds are important source of water during dry seasons. Dry seasons are June to September and January to February.

There are three major paths of the rain water in the district;- evapo-transpiration, run off and infiltration. The Kitui district water resource survey suggest an annual evaporation potential of at least 1800 mm. Since the district maximum rainfall is 1190 mm there is a potential annual deficit of at least 600 mm. In estimating the water balance for the district , the study valued evapo-transpiration at 75%, run-off at 10% and infiltration at 15% (Kenya, 1987).

Therefore the high level of evaporation accompanied by unreliable rainfall are characteristic factor on the district climate. The climate has set severe limitation to the intensive and meaningful land use and other related development activities in the area.

### **3.4 Land Use**

In terms of potential land use only 2.2% of the District land mass receiving between 762 and 1270 mm (30-50 inches) can be classified as a high potential and thus suitable for any agricultural purposes. This areas include central and Chuluni divisions.

About 36.6% of land mass receiving 500-762 mm (20-30 inches) of rain is medium potential. Kabati division falls in this category. The remaining 61.2% of the district is rangelands, suitable only for livestock keeping.

In Kenya, the areas receiving 850 mm of rain and above per annum are considered high potential agricultural areas. These consist about 11.6% of the Kenya land mass. 5.4% of the country with 612-850 mm of rainfall per annum are considered medium potential.



About 72% is low potential receiving less than 612 mm per annum. 8% of Kenya's land mass is unclassified and 3% is under water (Aking'o, 1985).

Therefore according to the national classification the biggest landmass in Kitui district can be said to be a semi-desert. This can be depicted on the type of vegetation.

Rainfed agriculture is the people's main occupation in this area though the rainfall is grossly unreliable. Farm work is mostly done by women. Planting is sometimes late and in most cases untreated/uncertified seeds are used. This combined with low rainfall and lack of proper crop husbandry leads to poor harvests in most seasons. Prolonged droughts in most years result in famine and makes both crop growing and livestock keeping rather precarious. Agricultural activities are climatic dependent and therefore are very much constrained by the semi-arid condition prevailing in the district which is further exaggerated by rainfall scarcity in most parts of the year.

Large scale irrigated agriculture has never been conceived since colonial days because the two perennial rivers, Tana in the north and Athi in the south flow only peripherally to the district and thus the district has never had an abundance of water. Usually when news of the occurrence of drought and famine is reported in the mass media, response for food relief is spontaneous in Kenya. Unfortunately it is easily forgotten that areas experiencing acute shortages of food also lack water for human and livestock use and yet a person can survive longer without food than without water.

### 3.5 Demographic Characteristic

Kabati Division covers 665 square kilometres and is inhabited by 83644 persons making 12969 households (National census : 1989) This gives a population density of 126 persons per square kilometre. However this distribution is uneven with higher densities in Kalimani with 281 persons per square kilometre and low densities in Kwa-mutonga with 51 persons per square Kilometres. The varying distribution is associated with differences in area per administrative areas and the population together with variation in resource endowment. The household in the division are fairly large with an average household size of seven members.

Table 3.2 below summarises the distribution of population by location in the division.

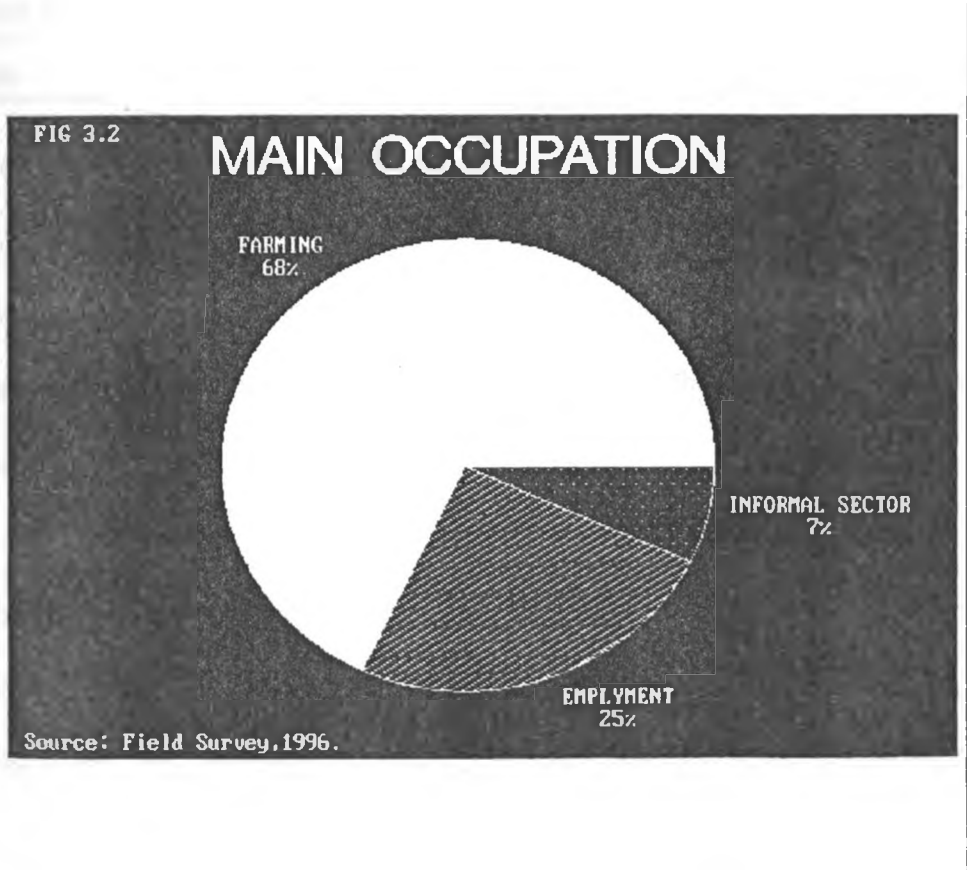
**Table 3.2: Population Distribution of Kabati Division**

Location	Male	Fmale	Total	No.h/h	Area sq. km	Den. sq.k m
Musengo	3789	4448	8237	1236	46	179
Kakeani	2886	3499	6385	1022	41	156
Kauwi	5742	6380	12122	1841	130	93
Mithinii	2074	2373	4447	733	20	222
Kivani	3164	3871	7038	1162	29	243
Kaimu	1524	1647	3171	448	40	79
Usiani	1781	2078	3859	643	38	102
Katutu	3154	3297	6451	955	96	67
Kalhivo	2521	5340	5340	834	19	281
Kalimani	2053	4377	4377	687	21	208
Kauma	1947	4319	4319	710	19	227
Kalindilo	1494	3247	3247	511	35	93
Mutulu	2103	4655	4655	732	13	38
Mutonga	1597	3401	3401	486	67	51
Kithumula	3059	6598	6598	970	57	129
<b>Division Total</b>	<b>38888</b>	<b>44756</b>	<b>83644</b>	<b>12969</b>	<b>665</b>	<b>126</b>

Source: National Population Census 1989

### 3.6 Economic Base

Agriculture is the basic economic and source of livelihood for the people of Kabati. The survey revealed that a great majority of the people in Kabati Division are peasant farmers and account for 68%. About 25% of the population are employed while only 7% are engaged in informal sector economy which range from fruit and vegetable vendors, second hand cloth (mitumba) and handcraft dealers.



The high proportion of peasant farmers has a direct effect on the level of income in the division. About 43% have of the households have a monthly income between Ksh. 1000-2000, 25% earn between ksh. 2000-3000, 18% earn between 3000-4000 and only 14% earn above Ksh. 5000 in a month.

**Table 3.3 Income Distribution**

Income Group	Frequency	Percent
Kshs 1000-2000	32	43
Kshs 2001-3000	19	25
Kshs 3001-4000	13	18
Above Kshs 5000	11	14
<b>Total</b>	<b>75</b>	<b>100</b>

**Source: Field survey 1996.**

The low incomes can be attributed to lack of viable economic activities in the area and have adverse effects on the community development projects and the development of the division in general.

The field survey also revealed that apart from the main occupation, some families have other sources of income as shown in table 3.4. About 42% have no other source of income while 33% have other source of income from sales of farm produce. About 6% get other incomes from casual employment and remittance from relatives working in urban areas. 19% have their secondary income from informal sector mainly sales of handcrafts.

**Table 3.4: Other Sources of Income**

source of income	Frequency	Percent
Farming	25	33
Employment	4	6
Informal Sector	14	19
None	32	42
Total	75	100

**Source: Field Survey 1996.**

### **3.7 Water Resources and Supply in Kitui District**

Water is one of the basic necessities of human survival. The availability of clean water within easy reach of the people, help to improve their welfare and give them time to engage in Socio-economic activities. Therefore the water resources of an area constitute one of its most important economic assets.

Water resources in Kitui district are few and comprise of water retained at various stages within the hydrological cycle. Surface water resources include rivers/streams which form the major source of water in the district. However there are only two permanent rivers with perennial flows and these run along the periphery of the district.

These are Tana in the north east and Athi in the south. However there are several seasonal rivers and streams which become flooded during heavy rainfall but turn to dry sand coarse in

dry season rivers. These form a vital source of water during dry seasons (Kenya, 1989). Other sources of surface water are dams which have been elevated to retain surface run-off.

Further considerable volume of water are trapped underground in aquifers of different depths. This has been exploited through sinking of boreholes and shallow well. Most of the boreholes were constructed during colonial era. Other ground sources include springs in the hilly areas of the District which provide the only source of permanent water supply in such areas.

Rain water harvesting is done through roof and rock catchment as another source of water despite the fact that rainfall is inadequate.

Most of the surface streams dry up during dry season and people have to dig deep wells in these dry river beds to obtain water. Frequent drought and population pressure, interference with catchment areas has affected the surface water sources. Many boreholes drilled during the colonial period are not functioning. Also of the many water schemes started in the district only three have water throughout the year (Kenya, 1988). Majority have faulty machinery due to poor maintenance and design and therefore need rehabilitation.

Water borne diseases including diarrhoeal, worm and dysentery account for 75% of all the diseases treated at the hospital in Kitui district. Diseases that arise from general state of sanitation such as tuberculoses and cholera are very common (Kenya, 1987). This imply that increasing availability of clean water would greatly improve the general health of the people.

When United Nations launched the world drinking water sanitation decade it was recalled that dirty water and lack of sanitation cause 80% of the world disease. Thus the provision of water in kitui, paying attention to the quality of the water available to the population is of importance.

Besides accessibility the quality of water is of significance concern in development planning. Data of on the quality of water is not available but nevertheless it is generally assumed that there is no serious surface water pollution. This is basically because there is very little industrial discharge of waste water to rivers and the application of agro-chemicals is not extensively used in the district.

The availability of water in adequate quantities has been the main constrain limiting agriculture production, livestock production, industrial development, health improvement, education and market centre development.

Water remains the most essential commodity in the entire Kitui District. Its development occupies the number one position in priority ranking of development project in the district (Kenya, 1994). Water is a crucial input to all other development activities and is cited as one of the bottlenecks hampering faster development in the District.

Water searching has become a significant preoccupation of every one in Kitui district. Large sums of money has been spent by the community, government, NGOs and donor agencies in water sector through the construction of boreholes, shallow wells rock and roof catchment. But despite this efforts women still spent a considerable time and energy in collecting minimum

required quantities of water from sources at considerable distances from homes. For instance in the southern part of the District women walk as much as 25 kilometres to get water during dry seasons. The inevitable search for water in Kitui district causes seasonal population mobility in the district (Kenya, 1994). Given this kind of situation the Kenya government's objective of having adequate water supply available to the entire population by the year 2000 may not be realised in Kitui District.

### **3.8 Water Supply in Kabati Division**

Water supply resources in Kabati division include both surface and ground water sources.

#### **3.8.1 Surface water sources**

Although the area is semi-arid it has a large potential for surface and subsurface water development. Surface water sources in Kabati area include the following:-

##### **i. Rivers and Streams**

Seasonal rivers are the major sources of surface water in Kabati since no permanent river flows through the area. These often have a wide seasonal fluctuation in flows as they flood during rainy season and turn to dry river beds shortly after rainy season. They form the traditional source of water, wells dug on dry river beds so that people can obtain water. The holes tap the



immediate sub-surface of the sandy river bed and constitute appreciable sources of water. The main rivers in Kabati division are Kauwi, Kaayo, Mithini and Mutendea.

## **ii. Dams**

Dams are another source of surface water in the area. The dams found here are man-made constructed for the purpose of holding water. There are many earth and sub-surface dams all over the area, unfortunately most of these dry up in dry seasons.

Two kinds of dams can be distinguished in the area; one are Earth dams;- these are constructed by filling earth or clay wall or earth bank across stream to hold back water and make a reservoir. Earth dams reservoirs are constructed by Ministry of Water Development and self-help groups include an embankment of up to five metres in height and a spillway. However dams constructed by self-help groups solely may have a lower embankment.

The other type is sub-surface dams which have a concrete wall of cement and stone constructed across a river to tap flow from seasonal rivers

## **iii. Rain water harvesting**

Rain water harvesting is another source of water in this area through roof catchment. These has been possible through the help of the Catholic and CPK Dioceses of Kitui, African Housing Fund (AHF) self- help groups and individual initiatives.

Rain water harvesting is practiced on individual bases and by institutions. However only limited volumes of water can be obtained this way.

### **3.8.2. Ground Water Sources**

Ground water sources in Kabati division include the boreholes, shallow wells and springs

#### **i. Boreholes**

These constitute another major source of water in the area. There are eight public boreholes of these six are functioning. The field survey revealed that five of these boreholes were drilled during colonial period and they have not been functioning due to poor maintenance. All the six boreholes are in operation due to the help of Danish International Development Agency (DANIDA) through the Kitui Integrated Rural Development Programme. This is the only type of water source which is designated to tap deep aquifers, normally at a depth of 50 metres and above. Water from this source is extracted with the help of mechanical machines and electricity. Although this source can provide adequate water supply in the area, it has not been well exploited due to the prohibitive costs of drilling boreholes.

#### **ii. Shallow Wells**

These are wells dug to capture the immediate sub-surface water. Two types of shallow wells are found in the area. One is the Cased type which are wells dug up to 20 metres deep, with a cement lining wall. They allow for use of hand pumps and therefore support considerably great yields.

The other type is Uncased kind of wells which are less than 10 metres deep and provide for withdrawal of water by use of rope and bucket. These dry a few months after the rains.

### ii. springs

These consist of natural releases of water from below the hydraulic spring lines along the hill sides. They provide the only source of permeant water supply in the hilly areas of Mutonguni and Musengo of Kabati division.

Table 3.5 below show the estimated yields of the water system in kabati division.

**Table 3.5 : Estimated Yields of Water Systems**

	Dam	Pit	S\s	Spring	Well	B/h
d	4500	985	2200	750	650	900
a	1050	197	605	240	254	480
D	3550	788	1595	510	396	420

d=design yield

a=actual yield

D=Deficit

Source: Kenya, 1988

The present state of water situation in kabati division is as a result of a mixture of technical and social factors. Most of the improved water supplies has been at the heart of the district, meaning the area did not get adequate attention for the development of this sector. Lack of maintenance and management, limited finances and technical resources had inhibited the development of water sector in the division.

### **3.9 Water Actors**

Water is a serious problem in the development of this area in terms of its sufficiency, adequacy and cleanliness. Its management therefore has attracted many agencies and organisation. The responsibility of water development in the division has been shared between various government ministries, Non-governmental Organisation and Community Based Organisations. The water scarcity has led the formation of community based organisations and attracted non-governmental organisation and donor agencies to supplement the efforts of the government and the community in rural water provision.

#### **3.9.1 The Government**

Like any other part of Kenya, the government through the Ministry of Land Reclamation, Regional and Water development has the responsibility of water development, catchment protection and water pollution control including major operations and maintenance in Kabati division. the ministry has the mandate for water development in the area geared to meet national objective to the year 2000.

The Ministry of Culture and Social Services provides financial support to self-help water projects which have been initiated through community efforts. This ministry identifies projects for assistance through the District Development Committees.

Other ministries involved in water development in the division include Ministry of Health, Ministry of Natural Resources and Ministry of Agriculture, all of which execute small scale projects.

### **3.9.2 Community Based Organisations**

The local people of Kabati division have realised that this is a problem they can solve. They have organised themselves into groups with a common goal of providing water through roof catchment, shallow wells and borehole.

### **3.9.3 Non-Governmental Organisations/Donor Agencies**

#### **i. African Housing Fund**

African Housing Fund (AHF) assists the poorest of the poor to improve their shelter and sanitation condition, and access to clean drinking water. AHF in Kabati division has helped self-help group to developed water systems through provision of loans and grants. Grants are provided for training, supervision, quality control, planning and project management.

Loans are provided for capital investment to establish an enterprise that can generate income and for production of members housing and water programme.

AHF water programme include, water tanks which encompasses constructing water tanks to harvest rain water for domestic purposes. Two types of water tanks are constructed with capacity of 18,000 and 22.000 cubic litres costing Kshs 15,00 and 20,00 respectively.

The field survey revealed that this programme has slacked due to political, social and economic factors. Only 250 members have benefitted from this programme. By the time of the field survey no activities were on progress.

The other programme undertaken shallow wells and sub-surface dam development. This encompasses the digging of shallow wells equipped with hand pumps and construction of sub-surface dams. This programme was started in the division in 1994 and by 1996 about 58 shallow wells had been completed and equipped with water hand pumps and 32 were on progress. Also 17 sub-surface dams were constructed and 3 were on progress. This programme however might face the same problems as the water tanks especially due to economic constrain. The cost of shallow well is about Kshs.98,000 while that of sub-surface dam range between Kshs. 60,000-90,000.

## **ii.DANIDA\KIRDP**

DANIDA through the Kitui Integrated Rural Development Programme (KIRDP) is concerned with the provision of water in kabati division and other parts of the district. This water programme has ensured support for women's involvement at all levels including design, construction, operation and maintenance, and management of water systems. The implementation is done by project beneficiaries and government officials from the Ministry of Land Reclamation, Regional and Water Development and Culture and Social Services.

DANIDA does not focus only on the construction but also support the formation of village water committees and local contribution. Training for local people and quality control mechanisms are developed before the water systems is handed over to the community.

DANIDA is involved with three aspects of water development in the area. First is Borehole development where it assist community with drilling and rehabilitation of boreholes. Since 1993 two boreholes were drilled and three rehabilitated in the division.

Secondly Spring protection, whereby two springs in the division have been protected. and finally dams construction, both earth and sub-surface dams.

### **iii. Catholic Dioceses of Kitui**

The catholic dioceses of Kitui has for a long time been very active in development of water supplies in Kabati division. The church through its water programme has assisted self-help groups to improve water supplies in the area through construction of water tanks, sub-surface dams and shallow wells.

The church meet 70% of each activity while the community benefitting from the service contributes 30%. This is mainly done to enhance the feeling of ownership of the project and hence ensure sustainability of the project long after the church has left the scene. Apart from the 30% contribution of funds the local community also provides free labour to reduce the cost of the water system.

#### **iv. CPK Diocese of Kenya**

The Church of Province of Kenya (CPK), dioceses of Kitui has also been active in constructing storage tanks for rain water harvesting for institutions especially primary schools and for household needs in the division.

Like the Catholic diocese, CPK dioceses also assist self-help groups in construction of earth and sub-surface dams.

#### **v. Institutions**

These include schools and hospitals in the division. Institutions that provide water to the community include Mutonguni Secondary school, Kyondoni girls, Kyaani girls schools and Muthale Mission Hospital.



## **CHAPTER FOUR**

### **WATER SOURCES IN KABATI**

#### **4.0 Introduction**

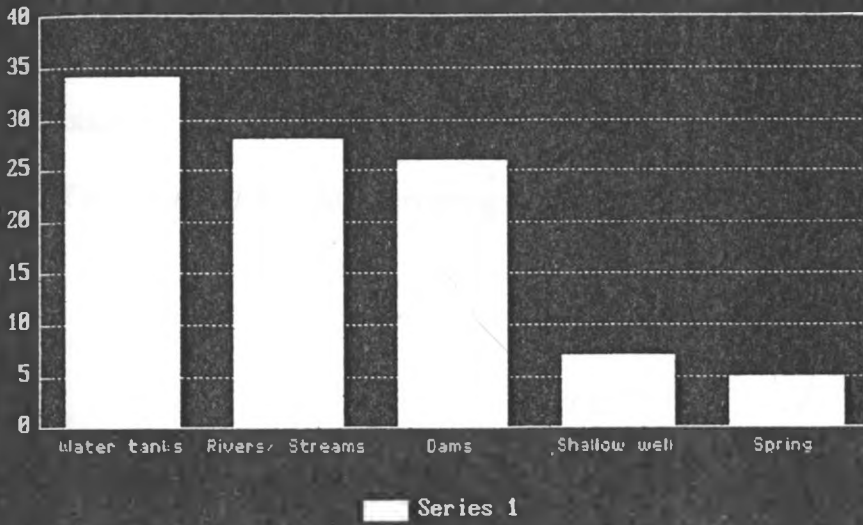
The availability of water in both quantity and quality is essential for human, animal and plant life as well as for community development.

This chapter four presents data analysis on the water situation in Kabati division of Kitui District. These analysis included the water resources; methods of water supply in both wet and dry seasons; distance and time taken to water points during dry seasons; mode of water delivery for domestic and livestock needs; household per capital consumption and households expenditure on water per month.

#### **4.1. Sources of Water in Wet/Rainy Seasons**

The figure 4.1 shows sources of water during the rainy season and indicate that 34% of the households sampled relied on water tanks through roof catchment. The water tank capacities ranged between 15000 and 50000 cubic metres. However, only 4% ensured supply throughout the year. It was found that about 50% of the water tank supply lasted between 1-2 months after the rains.

Fig 4.1 WET WATER SOURCES

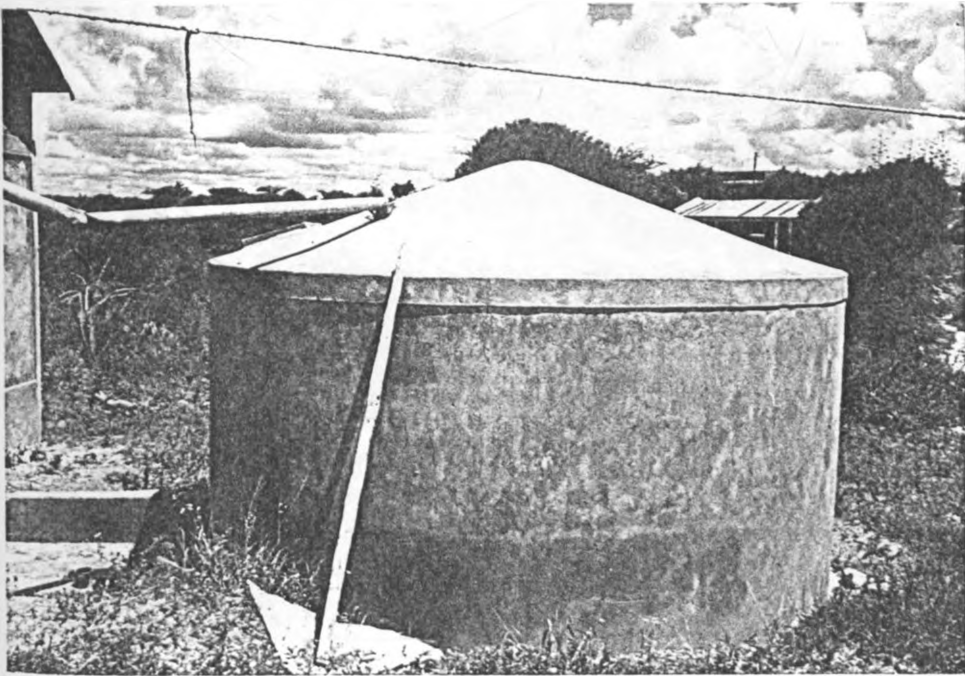


SOURCE: FIELD SURVEY 1996

Although rain harvesting could be a major source of water, it is not well exploited since the construction cost of the water tanks is very prohibitive. A water tank with a capacity of 15000-25000 cubic metres cost between Kshs.10,000 and 20,000 depending on the design and material used. Taking into account, the income, very few people can afford this source of water.

The study also revealed that 56% of the water tanks are constructed with the help of self-help groups, 12% are constructed with funds from the churches, 12% with loans and 20% from personal savings.

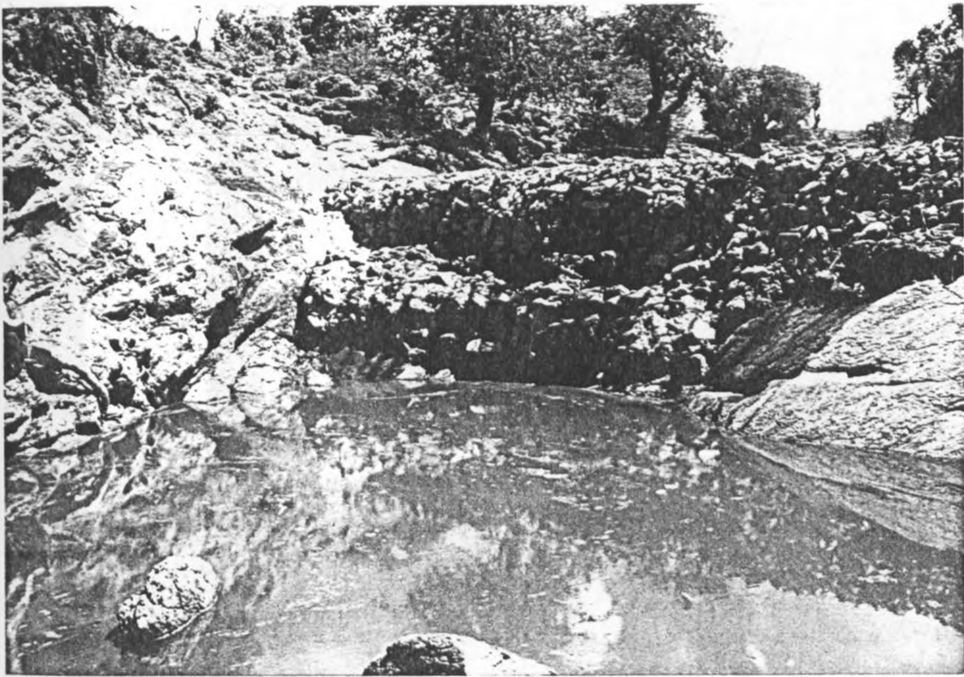
Lack of credit facilities to build houses and water tanks respectively constraint rain water harvesting. Rain water harvesting is further constraint by the prevalence of the traditional Kamba huts, built with mud and grass thatched which are common in the area. This is because grass roof is not suitable for water harvesting.



**Plate 1 : A Water Tank constructed with the help of group.**

Where credit facilities are available the respondents cited bureaucracy, collateral, recurrent famines and financial constrain as the main hinderance ti the accessibility of credit.

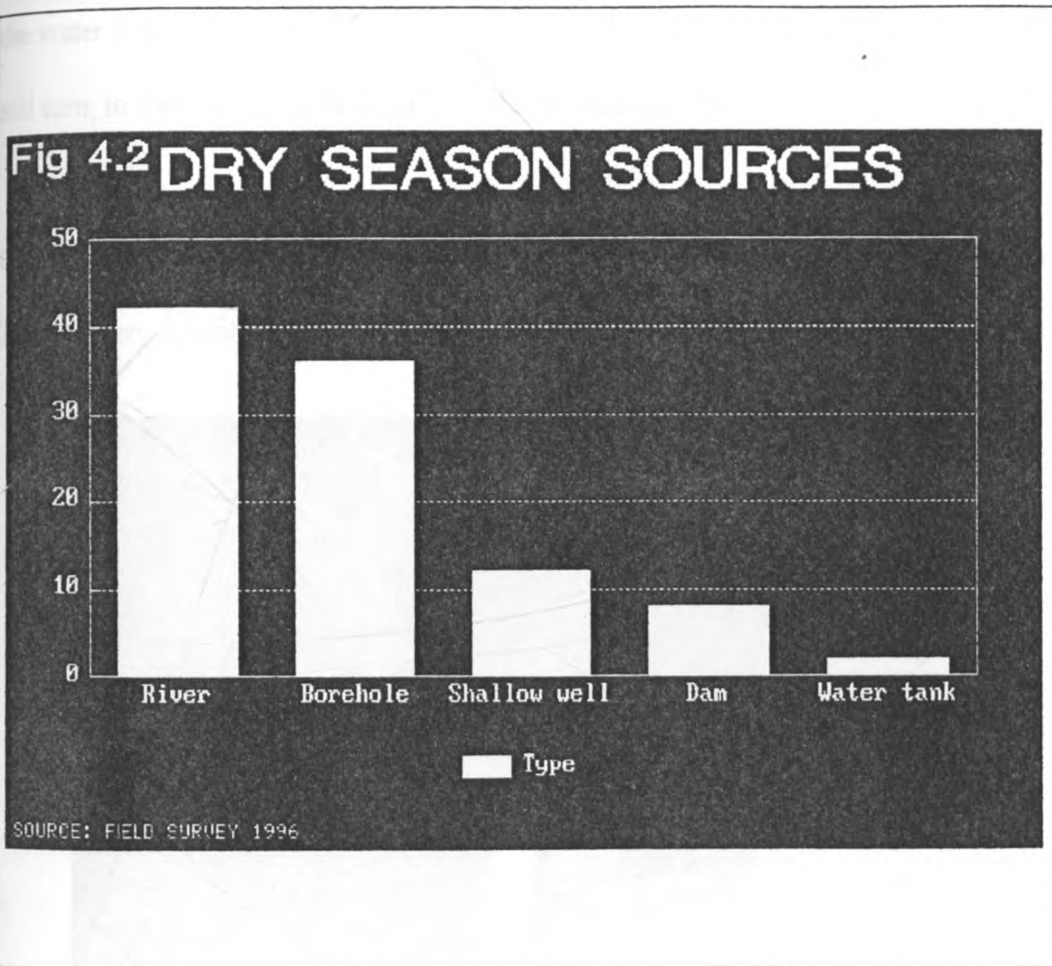
Other sources of water during the rain seasons include River/streams which accounted for 28% of the sample and dams 26%. 7 % and 5% of the sample relied on springs and shallow wells source respectively.



**Plate 2 : A Sub-Surface Dam constructed by women.**

## 4.2 Sources of Water in Dry Season

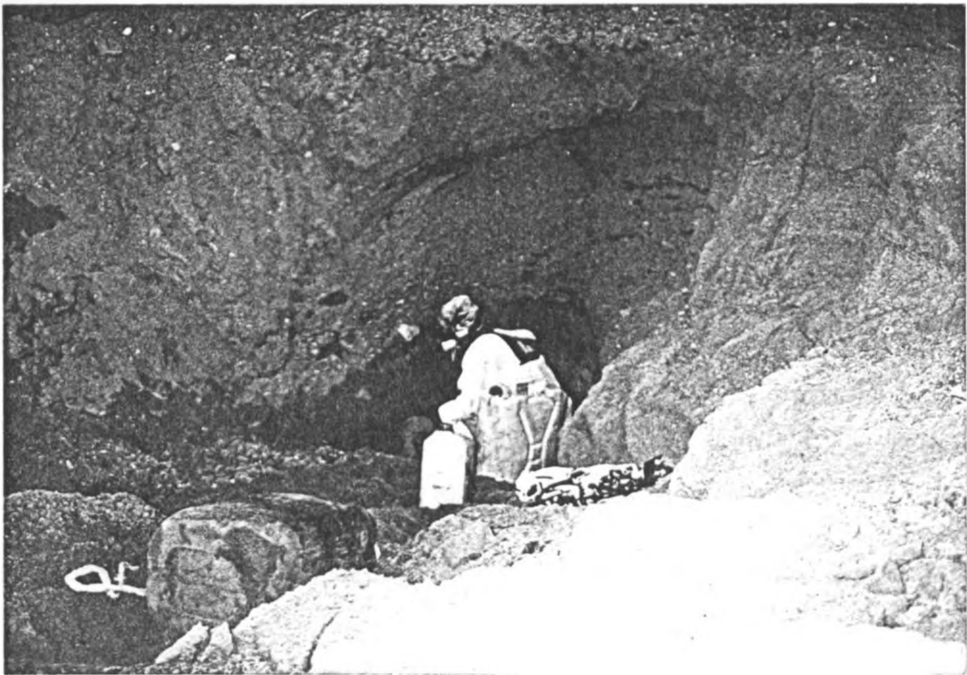
Sources of water in dry season vary from the wet/rain water sources. The survey show that 42% of the sample depend on rivers as their main source of water in dry season where they have to dig deep in dry river beds to get water as shown by fig 4.2.



In addition 36% of the sample use the borehole for their water supply. These were rehabilitated in 1994 and 1995 by the communities with the help of DANIDA through the Kitui Integrated Rural Development Programm (KIRDP).

The boreholes are managed by the community and the Ministry of Land Reclamation, Regional and Water Development provides the technical expertise. However frequent breakdowns and the water charges from these sources hinder household access to water and thus the residents still turn to their traditional sources of water in particular rivers .

Only 12% of the household in the area use shallow wells as their source of water in dry season. This is a very new phenomena in the area and has only been in operation in the last five years.



**Plate 3 : This woman has to dig into a dry seasonal river bed to get access to water.**

the shallow wells are commonly constructed along the river course by community water projects especially women groups with the help of AHF, KIRDP, and the Catholic Dioceses of [unclear]. About 8% of the respondents use water from dams .

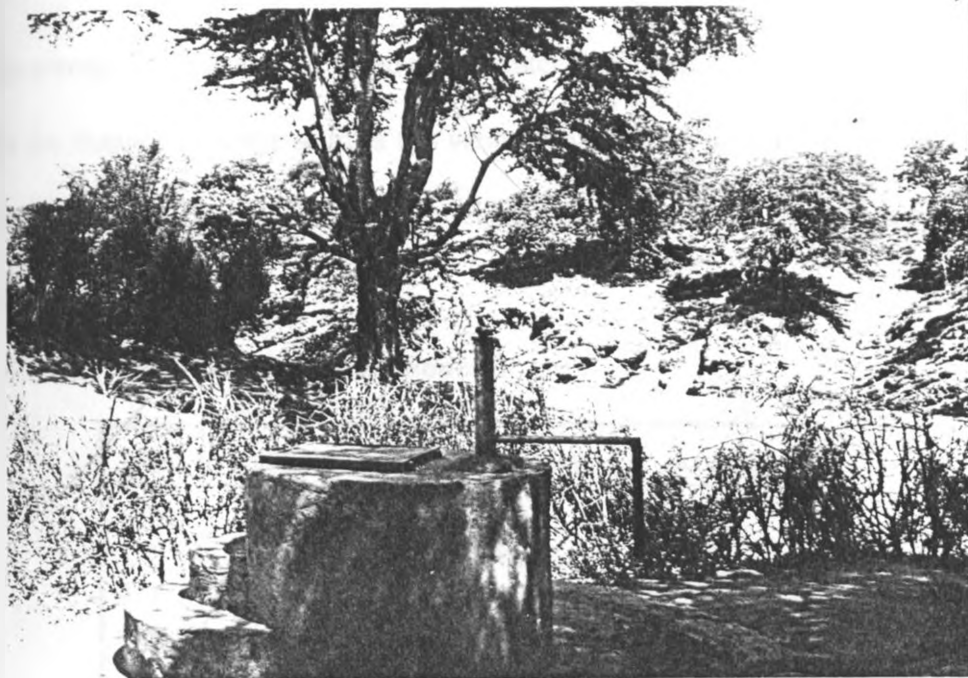


Figure 4 : A shallow well with a hand pump.

Although the rain water harvesting had been in place in the area for a long time, only 2% of households are assured of water supply throughout the year. This supply is also supplemented with water from other sources.

From the analysis of water sources in both wet and dry season, it is important to note that sources of water are usually near during wet seasons and very far during the dry season when water is only available in few water sources, mainly dry river beds.

#### 4.4 Time Taken to Water Sources

The average time taken for a round trip to water source was found to be three hours. However like the distance to water sources this varied between half an hour to the household near the water sources to five hours for the household who have to cover more than four kilometres as shown the table.

**Table 4.2: Time Taken to Water Sources**

Time in unit hour	Frequency	percent
half-1	9	12
1-2	29	38
3-4	35	47
more than 5	2	3
Total	75	100

**Source: Field survey 1996.**

An average of 3 hours is taken on fetching water daily and thus 21-28 hours per week and 90-120 hours per month is used on water fetching by the households in the division. With easy access to improved water sources this time could be used in more productive areas such income generating activities, livestock and farm management, handcraft and child rearing.



## 4.5 Mode of Water Delivery

Various modes of water delivery exist in the Kabati area as shown by the figure below.

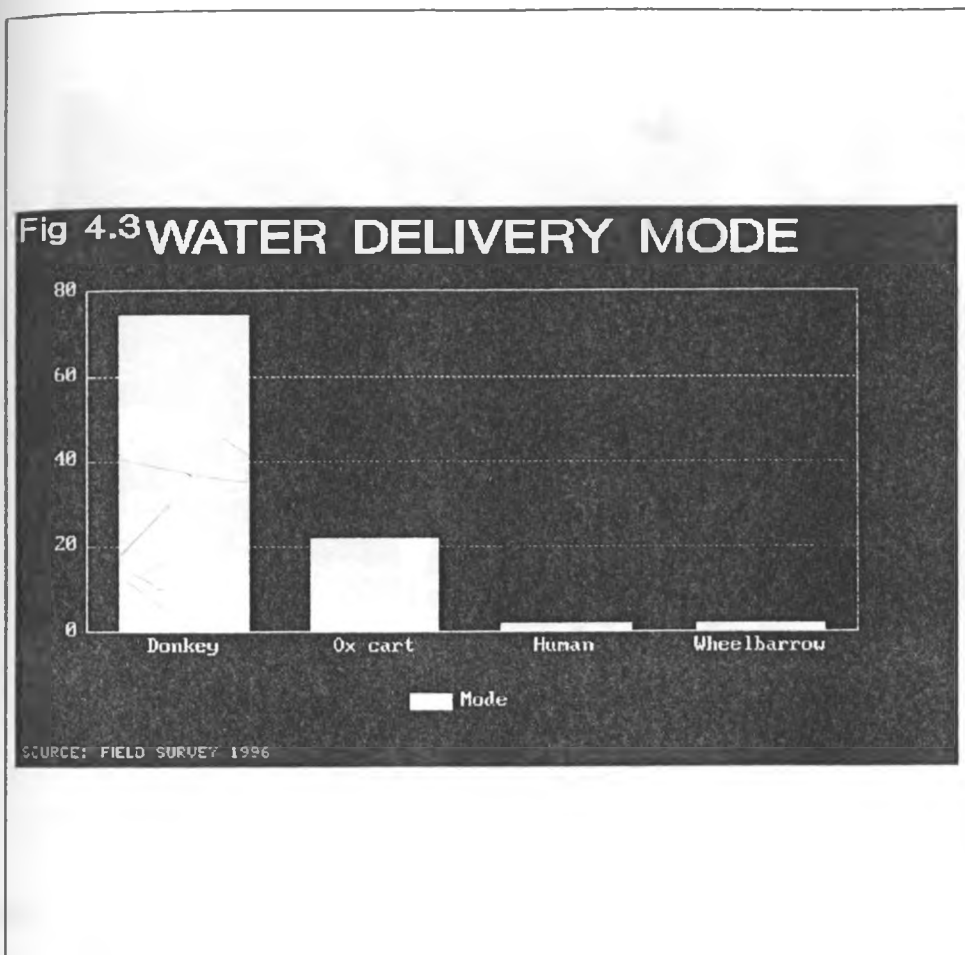


Figure 4.3 show that 71% of the sample use donkeys for water delivery, Ox-cart account for 22% while human labour and wheelbarrow account for 2% each. The wheelbarrow and human labour are used by the household who are near the water points.

About 88% of all the modes use animal power which include oxen and the donkeys. This can be attributed to the long distance to the water sources.



**Plate 5 : Donkey is common mode of water delivery.**

Water is mainly used for domestic purposes. Only 12% of the households fetch water for their animals while 88% take the animals to the water source. In some parts of the division livestock go for two days without water. The long distance and the lack of water decrease their productivity. The Ministry of Agriculture, Marketing and Livestock Development design standards for livestock consumption is 60 litres per day per standard livestock unit (SLU).

Livestock production is affected by tick borne diseases which are very common due to water shortages and especially in dry seasons. Cattle dips in this areas function only during rain seasons.

The survey show that water provision is a central factor around which most households and farm duties are organised. Household water is fetched by women, often assisted by children who collect 94% of water in the area. 64% of the water is collected by women and the girl children though about 13% is fetched by both girls and boys. This shows that the community is changing since the past tradition did not allow boys to fetch water for domestic purposes.

The survey further reveal that 8% of the household have employed house-help/ labour to assist in water collection. Nevertheless the survey show that women are the primary collectors of water and therefore water collection is a major part of women's day work with long distance to cover and quantities required by household constantly being juggled against time and energy available to them.

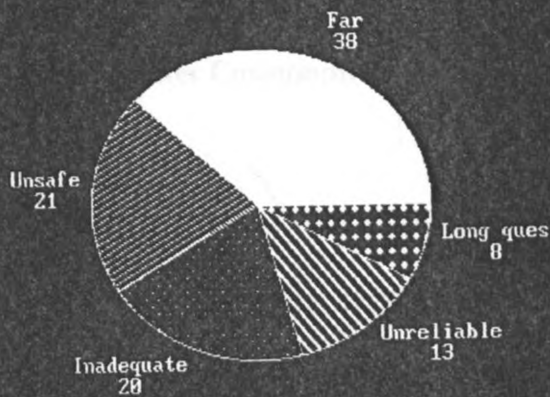


**Plate 6 : Water kiosk for the borehole.**

#### **4.6 Problems of the Water Sources**

The survey show that problems associated with the water sources in the area include long distances which account for 38% of the sample. These consume a lot of time and energy to those who fetch water especially women.

Fig 4.4 Water Sources Problems



Source : Field survey 1996

Fig 4.4 show that about 21% of the sample said that the water sources are unsafe. This refer to the risk in both health and human life in terms of the quality and diseases. These water sources are unprotected and thus prone to pollution. Also the holes dug in the dry river beds are usually very deep and often collapse.

Sources with inadequate water take 20% and unreliable water sources account for 13%. This was associated with boreholes and shallow wells sources. 8% of the respondents cited long queues amount the problems associated with the water sources in the division. The respondents often had to rely on other sources of water which were even further away from their homesteads. This causes a lot of inconveniences to the households.

#### 4.7 Household Per Capita Water Consumption

The per capital consumption is a reflection of water supply in the area. The amount used by the individual varies with water availability among other factors like energy use, storage containers and mode of water delivery. The amount used in the study area has generally been near the lower line because of the scarcity.

**Table 4.3 : Household Per Capita Water consumption**

LITRES PER H/H PER DAY	FREQUENCY	PERCENT
40-50	3	4
60-80	42	56
100-110	21	28
120-200	9	12
<b>TOTAL</b>	<b>75</b>	<b>100</b>

Source :Field Survey 1996

From table 4.3, about 56% of the sampled households consume between 60-80 litres per day, 28% consume between 100-110 litres, 4% consume about 40 litres and only 12% used more than 120 litres per day.

Thus in an average household of seven members, about 60 litres of water is used per day for cooking, drinking, washing and cleaning.

Over 60% of the sample per capital consumption is less than 10 litres per day per head. About 25% consume 14-15 litres per day and only 12% consume over 15 litres per day per head. This is compared to the government of Kenya and WHO desired standards of 20-40 litres of safe water per capital per day per head. This is a very low figure considering an average of seven person per family. It corresponds to two, 20 litre jerry cans per day which is a normal load for a donkey when long distances are involved. This is an indication that a vast majority of the population in the district in general and division in particular does not have reasonable access to water.

Actually 83% of the respondents felt that the water used per day is not enough for all their household needs, personal hygiene and food preparation. 17% felt that the water was enough but these were small families with an average of four members. Consumption rates range from 5 -17 litres per head per day.

## 4.8 Household Expenditure on Water

Table 4.4 show the amount of money spent on water by households per week in the division.

**Table 4.4 : Weekly Water Expenditure**

Amount (KShs.)	Frequency	Percent
20-40	7	9
60-80	11	14
100-120	10	13
Above 130	4	6
None	43	58
Total	75	100

Source:Field Survey 1996

Direct payment for water is not common in the area. This could be attributed to the traditional belief that water is a gift from god and thus should be free. For operation and maintenance of the water systems like the borehole or the shallow wells, the residents for a long time have felt that the government or the organisation that have initiated the projects should have that responsibility. This has led to the breakdown of many of the water systems in the area. However this notion is gradually changing and the residents are willing to pay for the water systems.



The survey revealed that about 40% of the households pay direct fee for water service while the rest about 60% do not. Amount paid by the households range from Kshs. 20 to Kshs. 50 per week. Only 6% paid above Kshs 130 per week. The direct fee was paid for the water from the borehole.

The water charges per 20 litre jerry can is two Kenya Shillings and the livestock are charged 1 shilling per unit. Given the economic base of the area, these charges are too high and thus the residents prefer to use the river water where there are no charges. Also the people prefer to take their animals to the river due to the cost.

In addition, it was found that households in the area used the system and paid fees as long as the source was reliable, close to their homes and offered the same quality as their traditional sources. However people only pay seasonally and sporadically.

Moreover the residents do pay for water indirectly in a variety of ways. Methods of payment include harambee contributions during construction of the water projects as well as formal payments through group membership and contributions. The ability and willingness to pay is closely related to disposal incomes.

## **CHAPTER FIVE**

### **WOMEN'S PARTICIPATION IN RURAL WATER PROVISION IN KABATI DIVISION**

#### **5.0 Introduction**

Community participation especially by women is essential to the success of water provision in rural areas. This chapter is an analysis of participation in water projects in kabati. This includes ways through which women are informed about water projects, the nature and type of their contribution and the constraints that hinder women's contribution.

#### **5.1 Water Projects**

Three water projects were studied to examine the nature and adequacy of women's participation in rural water provision. These were Kabati Borehole project, Kiteeti Women Group and Kyeni kya Kitote Water projects.

##### **5.1.1. Kabati Borehole Project.**

The project is located near Kabati market centre in the division and is being undertaken in two phases. By the time of the survey part one was complete and part two was still under the way.

The water project started in 1990, although the borehole was drilled during colonial time but due to poor maintenance it had not been in operation for a long time. The rehabilitation programme was started by the residents of the Kauwi location with the financial assistance from DANIDA through the KIRDP. The borehole has a pumping capacity of 2336 cubic metres of water per day, which is sufficient to supply more than 4500 households and some livestock. Maximum storage capacity is 3240 cubic metres.

The concern was to supply water to the people for domestic and livestock needs and thus the present emphasis are on communal water points. It is hoped that by the end of second phase, individual water connections will be possible.

The cost of the water is KShs. 2 per 20 litres jerry can and KShs.1 for every livestock unit. The project has four water kiosks and communal watering points places about 5 kilometres apart.

A few families have household connection which are not metered. They pay KShs.300 per month as a standard charge. Commercial buildings in the Kabati market pay KShs.400 per month also as a standard charge. Residents meet the cost of individual water connections.

The project is managed by a elected committee all of whom are women. The Ministry of Land Reclamation, Regional and Water Development give the technical support while the Ministry of Culture and Social Services assist in group management.

### 5.1.2. Kyeni Kya Kitote water project

The initial objective of this water project was soil conservation and tree planting to prevent siltation of Kwa-Nzuki dam from siltation. They had a tree nursery at the dam site.

The group broadened its activities to include construction of sub-surface dams across seasonal rivers in the area in order to provide adequate water for domestic use and livestock.

Thus the group objectives then included,

- . To undertake joint soil conservation and tree planting exercise and,
- . To construct sub-surface and earth dams for domestic purposes and use by livestock.

The formation of the group was essentially a community based initiative and received external assistance in 1987 from ASAL development programme in form of materials and equipment for use in soil conservation. This enabled the group to rehabilitate three earth dams namely Kwa-Nzuki, Kwa-Mulyunga and Kaiveti.

The management committee at the initial stages of the project consisted of eight men and four women. However in order to attract donors the management committees was changed to include purely women although at the background men are the real managers.

The field survey revealed that the group manages three earth dams and two sub-surface dams. This has been possible through assistance from African Housing Fund, DANIDA and the CPK Dioceses of Kitui.

### **5.1.3. Kiteeti water Project**

This project is concerned with the construction of shallow well in the area equipped with hand pumps. The project has received financial and technical assistance from African Housing Fund, DANIDA, Catholic diocese of Kitui and Help age Kenya.

The project is organised and managed by the women. All major decisions are taken by their own organising committee elected by and representing the women enrolled in the project. However that highest decision making body is the general assembly the consists of all members. By 1996 this water project had constructed five shallow wells.

Apart from the Kabati borehole project the other two perform specific activities which are geared towards income generating and promotion of welfare within the community. Activities range from bee-keeping, goat rearing, poultry-keeping, commercial tree nurseries, posho mills and *Kiondo* (basket) weaving. The groups also charge membership fee of KShs 100, have a annual contribution of 150 and all the members are called upon to contribute labour to the project activities from time to time.

### **5.1.4 Structural Organisation**

There is minimum structural organisation of these water projects since they are voluntary organisation. However since their activities have been formalised through the ministry of culture and social service, every project has a chairlady, a sectary and a treasure. These mobilise members and organise them to work ensuring order and discipline.

## 5.2 Reason for Joining the Water Project

The Survey shows that participation in water supply activities is a goal oriented phenomena and therefore is based on the benefits attached to it. Thus the women have taken part in the water projects since they deliver direct and immediate benefits. These projects are very active links between individual family and community welfare.

In response to the question why they joined the projects, the respondents gave varying reasons but all could be summarised to accessibility to water. Table 5.1 gives a summary of respondents reasons for joining the water projects.

**Table 5.1 : Respondent's reason for joining water project**

Reason	Frequency	Percent
Water Tank	19	26
Access to Borehole	14	18
Solve water problems	11	15
Water for Animals	10	13
Mutual support	8	10
Part of development	9	12
Access in dry season	4	6
<b>Total</b>	<b>75</b>	<b>100</b>

**Source : Field Survey 1996**

About 26% aimed to get water tanks through their participation in project activities. The catholic and CPK dioceses of Kitui assist women who have participated in community water

projects to build household water tanks. This lured a great number of the women to join water projects.

Further 18% wanted to have access to the borehole water since it had been made clear during the chiefs barazas that those who do not participate in the rehabilitation of the borehole by being members and through either cash, material or labour will not have access to water.

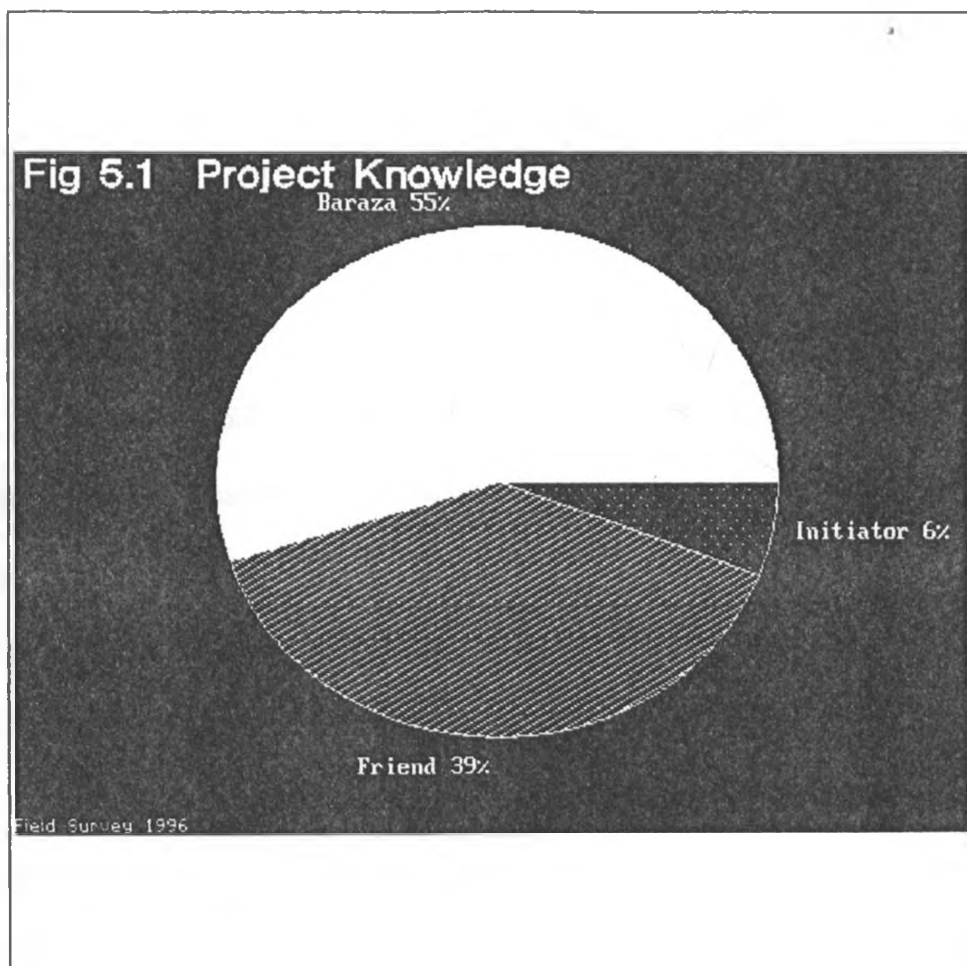
About 6% hoped to have access to water in dry seasons. These participated in the shallow well and those who had water tanks and hence experienced water problems only in dry seasons. About 13% joined the water project since they wanted to have access to water for their animals especially during the dry seasons when water is a scarce commodity.

About 15% joined the water projects because they hoped that through their participation, they could help solve water problems in the area. While about 10% joined the projects for mutual and material support and 12% joined simply because they wanted to be part of development in the area through water provision.

All the respondents generally believe that they can influence the quantity and quality of water supply in Kabati and thus they hope to ensure long term results through their participation.

### 5.3 Knowledge of the Project

The issue of how the participants came to know about the project is very significant as it determines the involvement of the local community in identifying with the project.



The respondent gave three sources of how they came to know about the project. The chiefs baraza was the major source since it is through such forums that development agendas and activities are explained to the people by the chief, government officers and local leaders.



This accounted for 55% of the sample and is an implication that the residents of Kabati division attend chief meetings fairly well.

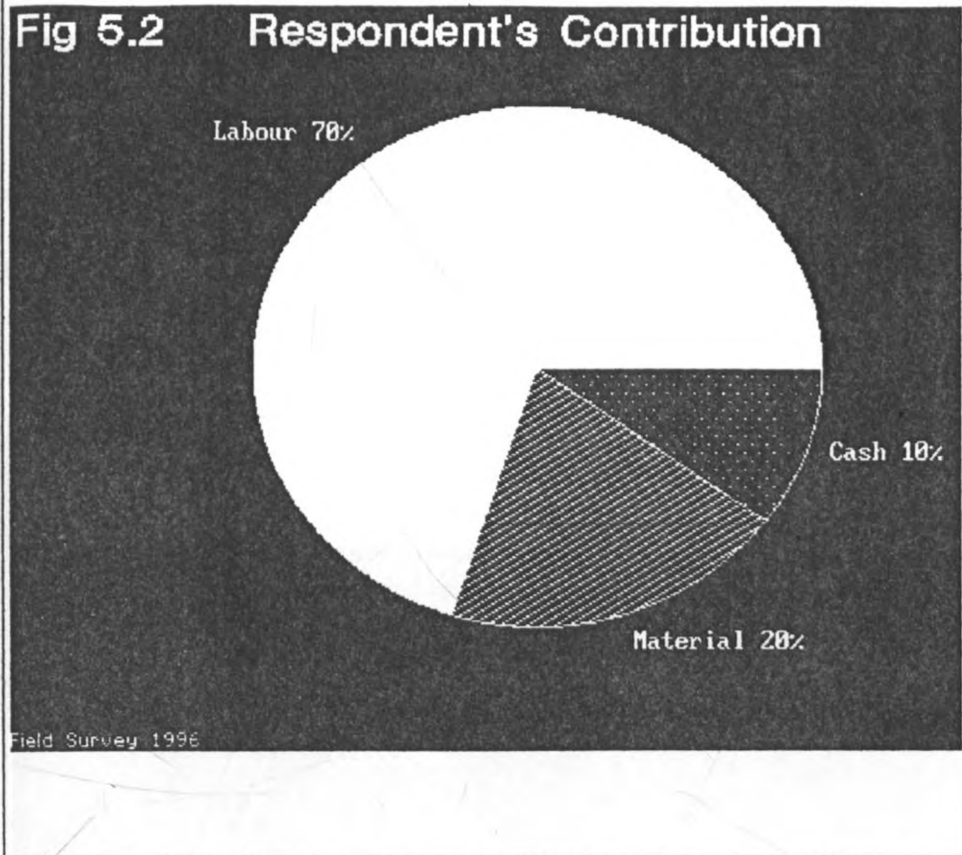
Other respondents, about 39% were informed about the projects by friends and neighbours who encouraged them to join the water projects while about 6% of the sample were among the project initiators as shown in figure 5.1.

#### **5.4 Participation**

The survey shows that the community participate through their contribution to the development, maintenance and operation of the water projects. The project member contributed through three main ways as shown by figure 5.2. Contribution through provision of free labour accounted for 70% of the sample size. This is commonly rendered in form of unskilled or manual labour. However this is neither equated with money nor is it quantifiable.

The contribution through material goods accounted for about 20% of the sample. The material good included cement, ballast, pumps or donation of land for construction of dams and sinking of shallow well.

**Fig 5.2 Respondent's Contribution**



Monetary contribution was the lowest and accounted for 10% of the sample. This was done mainly by the members whose main occupation was formal employment since they could not attend group activities on weekdays. The elderly women who are about 60 years and above do not give any of the above contribution but they act as care takers of the young children who come with their mothers to the project activities. This kind of contribution is not quantifiable but nevertheless can not be ignored.

The nature and extent of member's contribution either through labour, cash or material however depends to some extent on the disposable incomes of the households.

### 5.5 Respondents Active Role

The respondents are involved at various stages of the project development. This was traced from the initiation to the present day stage.

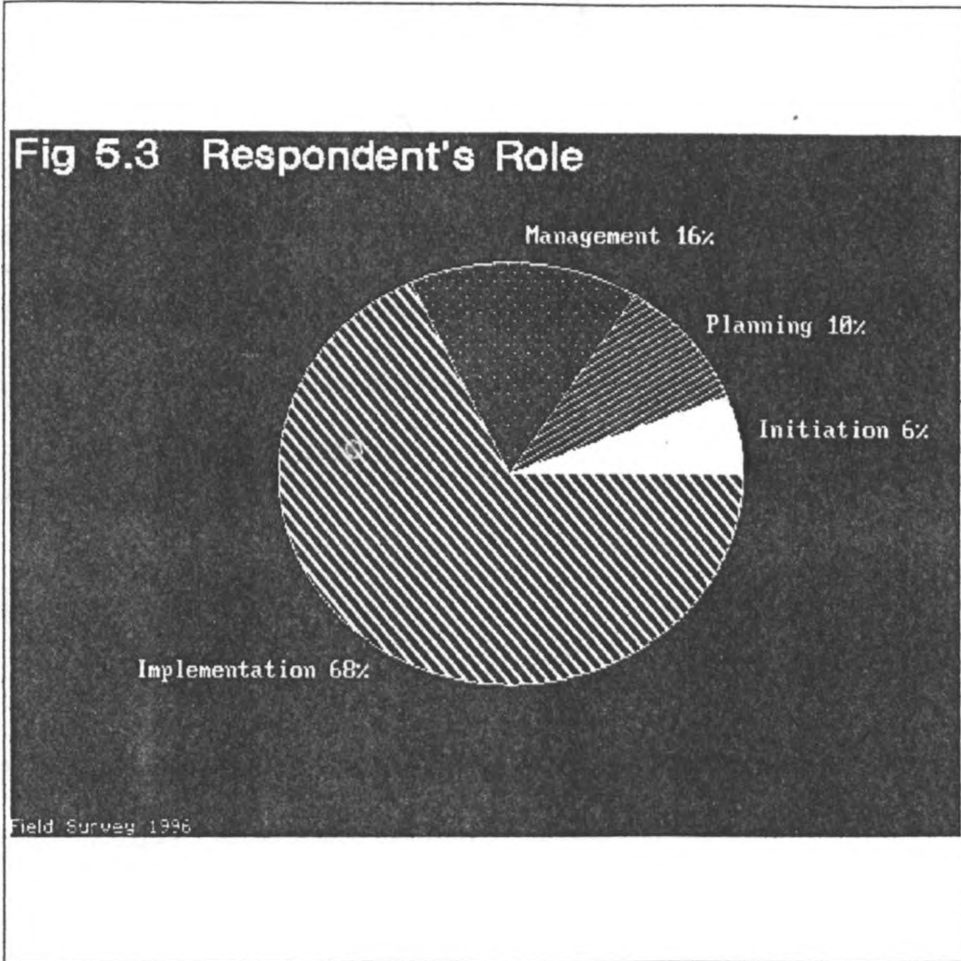


Figure 5.3 indicates that at the initiation only 6% of the sample were active participants. About 10% were active at the planning stage and about 16% at the management stage. The survey also shows that majority of the respondents became very active at the implementation stage which accounted for about 68% of the sample.

This implies that the local people especially the women were involved in the development of the project but their direct involvement is limited at the initiation and planning stages of the projects. This further suggests that few local people are consulted during the inception of the project, at the planning design, identification of the problem and selecting suitable alternatives. This also implies that women might have been involved because they produce free labour and are an 'eye catch' for the donors who fund women activities.

It was found that the government, the NGO and the donor rarely question themselves whether the nature of the project is suited for integration of women. However when difficulties and problems are encountered in the project development the problem is perceived to be with the community rather than the method of initiation.

## **5.6 Meetings**

The projects have activity meeting twice or once a week depending on the immediate needs. However, the field survey indicated that only 7% of the respondents attend the meeting twice a week, about 46% once a week and 47% once a month. This shows poor attendance of the project activities by the members.

Respondents belong to several community development activities and therefore they had many community activities to attend to. The survey shows that about 66% of the respondents actively participated in more than three community development projects.

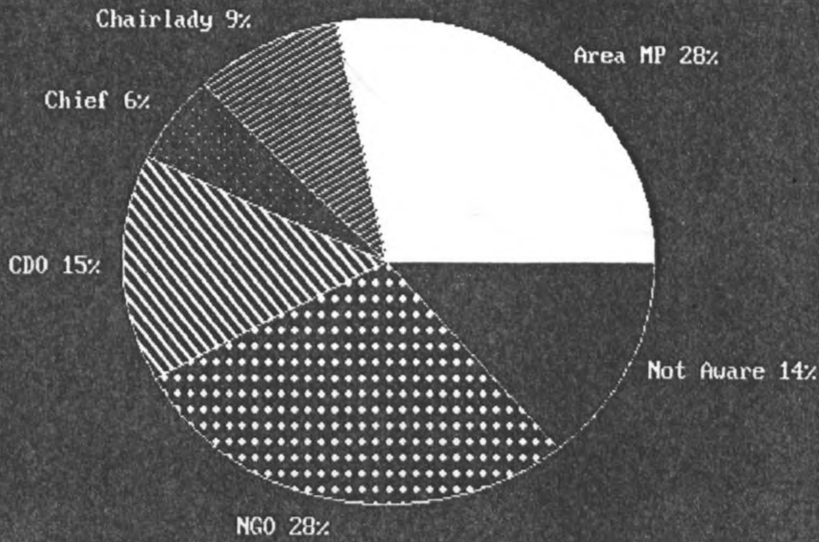
The meetings are usually too long taking an average of 3-4 hours. This is very demanding to the women considering that they have other roles to play as mothers, wives and farm managers.

### **5.7 Project Initiation**

Although the projects are community activities, they are associated with particular individuals and institution. For instance the borehole project is associated with the member of parliament and DANIDA. Generally it is assumed that a politician will want to be associated with a project to gain political influence and popularity. In Kenya, most politicians use projects as way of retaining their position in general elections since a politician is gauged from the electorates point of view by the number of projects that he\she had initiate or helped develop during the term in office.

From the survey 25% of the sample indicated that the projects were initiated by the provincial administration. It was established from the field that local administration played a significant role in mobilising the people especially through the chiefs baraza. Due to this the residents felt that the local administration officers such as the chief, community development officer and the chairladies of the women groups in the division actually started the projects.

**Fig 5.4 Project Initiator**



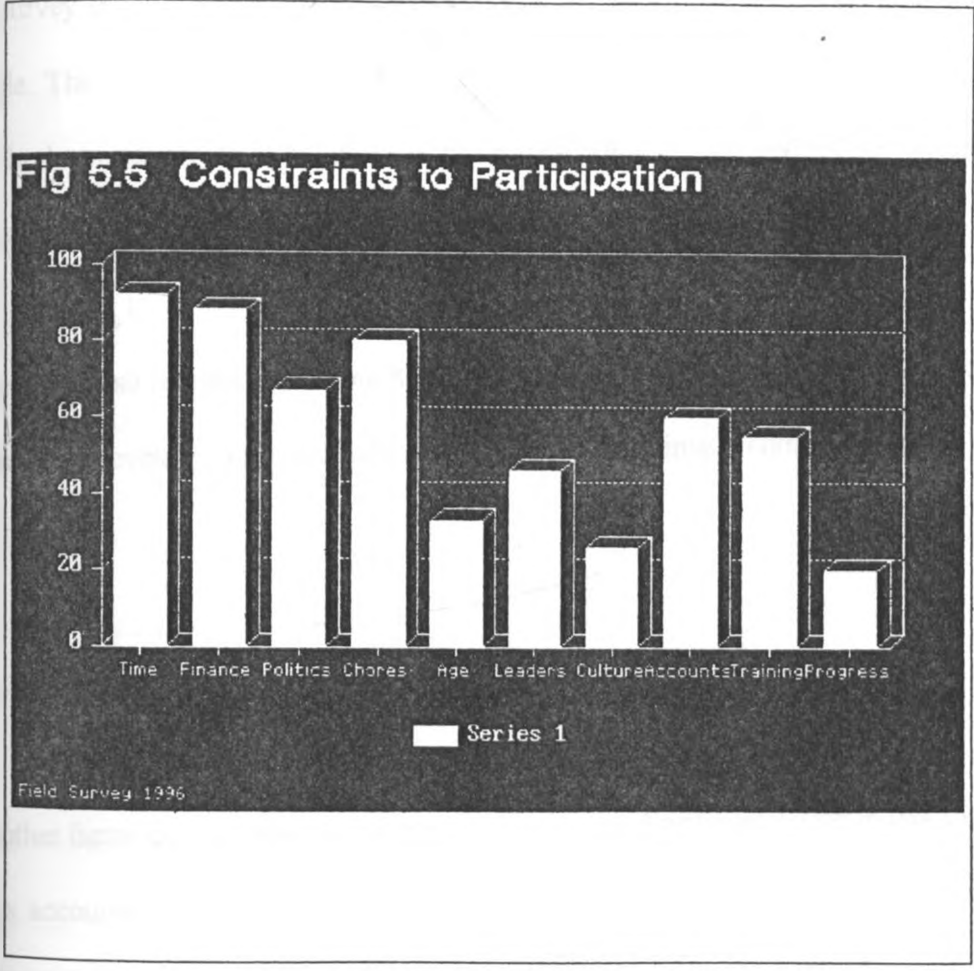
Field Survey 1996

Figure 5.4 indicates that about 14% of the respondents were not aware of how the project was started. These were mostly the members who joined the project at the implementation phase and therefore cannot tell how the project started.

These implies that the projects were not purely community initiatives and this can present a problem in the future especially after the financiers withdraw or when the current area member of parliament is out of office. If people are asked to contribute for maintenance and operation of the water systems, they might decline and consequently revert to their traditional sources.

### 5.8 Constrains to Participation

The field survey revealed that women participation to rural water provision was constrained by several factors. The respondents felt that the following problems, inhibited the development of water projects in Kabati division as shown by figure 5.5.



### **5.8.1 Time**

It is often said that the most scarce resource women have is time. Overworked by the multiple workload they carry, women opportunities for participating in rural water projects are severely constrained. Also their ability to take advantage of such opportunities is hindered.

The survey show that time was a common constraint factor and accounted for 92% from the sample. The respondent said that due to family commitment they lacked time to participate fully in the water project activities. This has forced some project members to drop out of the project or fail to attend project activities frequently.

The survey also revealed that about 80% of the respondents were members of more than three community development projects which also requires their time in community work.

### **5.8.2 Finances**

Another factor constraining women participation to rural water provision in this area is finance. This accounted for 88% of the sample. The cost of participation in the water projects is beyond the ability of majority of the women and their households to afford.



Typical of any other self-help group in the area, the survey shows that water projects also charge a membership admission fee which ranges between KSh.100 and 300. In addition to the membership fee, the members are also expected to make periodic contributions towards the project welfare especially for maintenance work, operation of the water systems and for security purposes (watch man).

This means that women who operate within low income levels at the family level are sometimes unable to raise the amount of money that they are expected to contribute towards the progress of the water projects.

Moreover economic and financial policies, priorities of financial institutions, rules and procedures commonly employed for acquisition of any form and amount of credit, put women at a significant disadvantage in acquiring credit for water development.

Money becomes a constraint especially when the members are expected to meet a certain target by the donors in order to get funding. It was found that women in lower income brackets tend to drop out when family income or economic base weakens particularly during drought and famine periods. During these periods, more attention is given on the search for food. Moreover food shortages in the area erode the women's ability to participate fully in water projects and consequently other development projects.

### 5.8.3 Politics

Politicization of women activities in rural water provision emerged as another factor constraining women's participation and account for 67% of the respondents interviewed. Although involvement of the politicians per se is not bad, it becomes detrimental if it has negative impact and this hinders project development.

Politics in this area has interfered with the morale for community participation by imposing leaders who have not been chosen by the project members. This was specifically cited by the members of the Kabati borehole project. Since its initiation in 1993 for the rehabilitation of the borehole, no election were held and the project has been operating under the management of committees who were selected under the guidance of the area member of parliament.

The politicisation overtime has led to the low community enthusiasm for the project development. This has made the majority of the project members to become passive participants especially in the realm of decision-making.

#### 5.8.4 Domestic Chores

Women's participation in water project activities are further constrained by the domestic chores which account for 80% of the sample. When schools are on session women, whose husbands work in urban areas and who have not employed house help are unable to attend project activities since they have to attend to the small children livestock and the farming.

Seasonal labour demands for agricultural activities affect women participation particularly during planting and harvesting seasons. During this periods women tend to drop out from collective activities and turn to their farms. Participation in group activities during this season is very low in the study area.

Other domestic chores that effect women participation include access to fuel wood and water. Traditionally fetching of water, fuel and wood is the domain of women, who collect, transport and use them. Therefore women cannot attend project activities frequently because they clash with the their other family responsibilities during the day.

### **5.8.5 Poor leadership**

Poor leadership is another factor constraining women participation in kabati. This accounts for 46% of the sample. This could be attributed to politicization of water projects and lack of training on group leadership and management. Due to poor leadership project activities are poorly coordinated and this affects women participation.

### **5.8.6 Age**

The participation of elderly women to water project activities is affected by poverty and poor health due to their age, accounting for 33%. Since they cannot make tangible contributions old women in the water projects are exempted from making any cash or material contributions. Their contribution is therefore not quantifiable. In addition unmarried women are not allowed by the tradition to be members of women groups.

### **5.8.7 Culture**

The Kamba tradition does not permit women to take up leadership roles in community projects, although this has been changing to some extent. However the local administration, the ministry of culture and social services and the donors insist that women groups should be headed exclusively by women. Thus some women with good leadership qualities refuse to

assume leadership roles since this can bring family disagreements or because their husbands have refused them to become leaders.

The survey revealed that husbands are reluctant to allow their wives to attend project activities because they felt that they are a waste of time and interfere with their wives other duties. Some even exaggerate the social effects these women have in the community. The control of water projects by women is seen as a means of controlling the community.

Due to cultural beliefs, which accounts for 26% of the respondents, the community including the women themselves have little confidence in women leaders. What is therefore happening on the ground is that the local administration and the donor know that the project leaders are women while the reality is that men who are members of the of the project are the real leaders.

### **5.8.8 Accountability**

The lack of accountability and transparency by project leaders also hinder women participation and account for 60% of the sample. The project member felt that leaders do not account for how the money contributed by members and donors has been used.

### 5.8.9 Training

Women have not been trained on the repair and maintenance of the water system in the area, accounting for 55% of the sample. During the field survey a hand pump for Kiteeti women project had broken down and had been sent to African Housing Fund Headquarters in Nairobi for repair, while this could be done in Kitui town.

In addition majority of these members are illiterate, 32% of them have no formal education, 14% have informal education while 42% have primary education. These women find that their participation is constraint not only by illiteracy but also by the little opinion attached to their ideas by other members. From the sample only 4% had secondary school education, 4% had technical training about 8% had college education mostly, primary teacher training as shown in the table 5.1 below.

**Table 5.1: Levels of Education of respondents**

Level of education	Frequency	Percent
No formal education	24	32
Informal	4	5
Primary	31	42
Secondary	7	9
Technical training	3	4
College	6	8
Total	75	100

Source: Field survey 1996

### **5.8.10 Slow Progress**

Women drop out from water projects because of the slow progress to achieve the expected goals. They lose patience due to the slow progress. This is associated with borehole projects which aimed to have piped water to the household by 1995. This accounted for 20% of the respondents sampled.

### **5.8.10 Other Factors**

Marital status also constrained women participation in water projects. About 80% of the sample were married and 18% were widows. The survey revealed that few single women participate in community water projects. Only 2% of the sample were single and these had children. This could be attributed to the traditional form of groups whereby only married women participated in community self-help activities.

## **5.9 Ways to Improve Participation**

When asked what could be done to improve participation the respondents gave several ways. About 92% felt that meetings should be held only during weekends and not twice a week when schools are on session, which was the routine of most of the development projects in the

area. They also felt that they could have more meeting during school holidays. Thus women could have time to attend group activities as children help in domestic chores and look after the animals.

About 80% of the respondents felt that project meetings should be made shorter, at least an average of two hours. These, they said could make members work faster and return to their domestic chores.

To solve the problem of poor leadership, about 67% of the respondents felt that they should be left on their own to elect their leaders without undue influence from either the provincial administration, the donors or politicians.

About 26% of the sample advocated for involvement of men in water project especially in leadership roles. They felt that these could ease the friction between husbands and wives and also solve the culture problems.

Training come out as a major way of improving women participation in water projects. About 65% of the sample felt that there was need for training of the community leaders in both leadership and management. There was also need for technical training on maintenance and repair of water systems to the project members.

The respondents felt that flexibility was essential in terms of members contribution. They felt that project members who could not make periodic cash contributions should be allowed to substitute that with manual work.

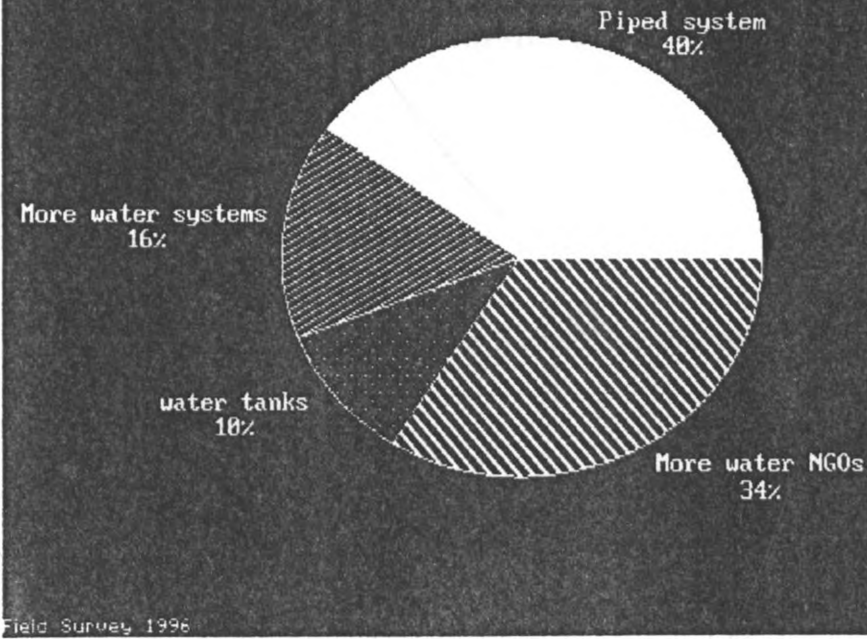


About 86% of the respondents felt that women should have access to credit facilities as groups and as individuals for water improvement.

### **5.10 Solutions to Water Supply**

In response to the question about what could be done to have a better water supply in the area, majority of (about 40%) the respondents stated that they would prefer to have a piped gravity flow water available to them in future. They seemed to feel that the government would give them piped water. Until then they were ready to take measures that would increase water accessibility and supply to households.

**Fig 5.6 Solutions to Water Problems**



About 34% felt that more NGOs and donors should invest in water improvement in kabati division. Also about 16% of the sample felt that more water systems especially the boreholes and dams should be developed while about 10% felt that construction of water tanks could solve the water problem on the area.

However the immediate concern of the respondents was to have a reliable and adequate quantities of water easily available through their participation in various water projects.

## CHAPTER SIX

### SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

#### 6.0 Introduction

This chapter comprises a summary of the findings, recommendations based on the study findings and a conclusion.

#### 6.1 Summary of Findings

The availability of water in both quantity and quality is essential for human, animal and plant life as well as for community development. The degree to which water is available largely determine the environment and ecological conditions that influence the pattern of human settlements and the economic activities.

Although Kabati division is in a semi arid environment it has a great potential for surface and subsurface water development. However the present state of water sector is as a result of mixture of technology and social factors. Studies show that surface sources constitute 70% of the total supply in the area and less than 2% of rainfall, a relatively low utilisation of available resources. Sub-surface water has a large potential but at present only 0.5% of this yield is used.

The government of Kenya since 1970 embraced the objective of providing all the country's inhabitants with safe water by the year 2000. The government policy is to provide water for rural areas such that households are not more than 2.4 kilometres away from water points in dry seasons. To do this the government is adapting an approach which gives priority to underserved population and emphasise community participation in development of water systems. It has thus realised that constructive development can be achieved only by more local involvement. While Kitui district has enthusiastically accepted the objective of provision of water to all, it is faced by both competing needs, lack of capital, equipment and technical resources.

The survey show that water is a constraint to development activities in Kabati division due to lack of perennial water flows and low rainfall. Prolonged droughts result in drying up of most water sources.

An average distance covered to water sources in Kabati was 4 kilometre greater than the targeted by the water policy. Both water sources and distance from households have an important impact on health and livestock. They thus serve as proxies for wealth and for agricultural potential for households. Safe drinking water is critical for preventing high incidence of diseases.

The survey analysis revealed that rivers, dams, open wells and unprotected springs which are sources of unsafe water accounted for 93% of all the water sources in Kabati division in dry

seasons. Since the dry season extends almost throughout the year, about eight months, it can be said that most households are exposed to potentially contaminated water daily.

The present situation in Kabati is that sizeable proportion of existing water systems no longer function properly since they were constructed 25-35 years ago. There is poor operation support and inadequate maintenance, mainly as a result of insufficient funds and lack of organisational capacity at the local level, so that it is difficult to operate maintain and replace equipment.

The survey revealed that water provision is a central factor around which households are organised. Household water is fetched by women often assisted by a children and house-helpers for those who can afford.

The scope of water problems in kabati division has led to women's involvement in water projects. The women participate through three main ways of contribution. These include labour which accounted for about 70% of sample, material 20%, and cash 10%. However the survey revealed that there are several challenges that face their participation.

1. The work burden of women increases when they participate in water projects as they are also expected to maintain their other responsibilities of child rearing, animal keeping and farm management. The women complaint that they often miss to attend project activities frequently due to demand on time and those who can afford often need to hire help to assist them in household chores.

2. Although women are often expected to take new responsibilities as pertains to water provision, they are usually not accorded recognised status or accompanying authority. They are still placed in a dependent position whereby they must report to a higher authority, usually men, they have to get permission from their spouses and have to turn over collected funds to community decision making bodies with no direct control over this funds. While men are usually paid for the work they do women do work on voluntary basis. Actually women agree to work without pay because of the stake they have in maintaining access to convenient water supply.
3. Although women are asked to participate in water projects, they are not encouraged to participate actively in community meetings. They are expected to take on technical roles such as maintenance and repairs especially of hand pumps yet they have not been given training on how to handle this.
4. Women cannot attend meetings because they clash with their other responsibilities during the day or their husbands are reluctant to allow their wives to attend project activities as they feel that they will interfere with their wives other duties.
5. Leadership and management of the projects is beset with problems, such as poor coordination, lack of transparency and accountability which also contribute to the slow progress of the projects activities.

These represents a summary of social, cultural, political and economic constraint which are faced by women when participating in the water sector in Kabati division of Kitui district. Moreover the community enthusiasm to work towards the provision for water in Kabati is very much evident. However project members lack technical and administrative skills for the management and operation of the water systems. This could be attributed to the low literacy levels among the project members.

## **6.2 Recommendations**

From the survey analysis several social, economical, political and technical factors constraint women participation in water provision in Kabati. For effective and efficient participation of women in water projects appropriate, structures and organisations must be established linking national plans and objectives, and NGO or donor support to the initiatives of the local community especially women in rural water provision. Therefore there is need to develop an holistic policy recommendations that will facilitate and encourage women participation in water provision. The following recommendations therefore have been proposed aimed at minimising the constraints that women face in participation. Some research priorities have also been identified.

### **6.2.1 Government Role**

Water policies should be strengthened with the aim of enabling the communities to play a crucial role in all decisions for the establishment, operation, maintenance and management of water supplies. This will ensure government development of the provision of services, users involvement in decision of water systems and modes of payments in line with the cost of production and ability to pay and users determination of the level of services that they require. Such policies should address issues of participation in terms of finance and technology. Participation in small scale water projects should be encouraged.

The government should encourage the use of local technology in water development and provide technical assistance in terms of supervision fro the construction of water systems to self-help groups.

The government should eliminate the gender gap in rural water provision by creating and supporting policies and programmes that ensure full women involvement through sufficient gender sensitive opportunities.

The government should use education and the local administration to empower women and enhance gender relationships in water provision.



Massive gender sensitisation programmes on the benefit of women participation should be embarked on targeting all cadres of educational and administrative personnel especially at the grass root. Community mobilisation programmes will be absolutely essential.

### **6.6.2 Non-governmental and Donor Organisation Role**

These should ensure the involvement of the local community at the various stages of water supply from initialising and planning, to construction financing and maintenance as this is of crucial importance to rural water provision. They should create a cooperate in which their expertise is well combined and interconnected with the local knowledge, capability and motivation.

NGOs and donor agencies should work together with the government and community groups to avoid wasteful and duplication of services and functions in terms of officers, vehicle and office space. Duplication has been noted in effort to serve the same people therefore diffusing the financial resource power that is so essential for implementing of development projects.

Emphasis should be placed on low systems available to every member of the community using self-help and voluntary labour whenever possible to reduce cost on investments required. The technology should be capable of small scale application, suitable for village use and local control.

### **6.2.3 Community Participation**

Community development groups should be mobilised to pool their resources financial, material and labour capacities towards alleviating their water problems. Harambee fund raising to supplement government, NGO and other donor agencies efforts in the provision of new water projects.

Women involvement in all stages of project cycle should be actively support by the community at large. They should be encouraged to seek active leadership positions in the water committees.

The selection of technology should be related to local social organisation or the organisation of the women water projects. The local level organisation concerned with water should work with the organisations at the local government level, the ministry concerned with water development and other agencies dealing with water and women issues, in terms of training, extension services, maintenance and operation of the water systems. Here women as the primary water users should play an important role and therefore should be trained in this aspects.

The community should choose a technology appropriate to them taking into consideration the existing natural conditions, economic and human factor. This should be geared towards the existing traditional construction method and using local materials.

#### **6.2.4 Research Priorities**

Reliable data on women participation in rural water provision is very essential in the design and development of water projects. However this is missing despite the role played by women in water sector. There is therefore urgent need to strengthen data collection units for planning ministries in Kenya. Universities and other research institutions capacity on local research should be enhanced. Gender sensitivity should be made an integral part of research training. The gaps in women participation in water sector in particular and in community development in general should be researched.

There is need for qualitative, more participatory kind of research on women participation and related issues.

#### **6.3 Conclusions**

One of the most critical problems facing societies today is the securing of adequate water supplies for the basis of human survival. The survey analysis from Kabati division revealed the problem of water in terms of unimproved water sources, long distances and time taken and the low per capita household water consumption.

The consequence of inadequate water supply in this area hit women most severely since they are the main carriers, managers and user of water. This situation has led to women participating in water provision with the aim of bringing water closer to the households and animals.

The survey further revealed that issues of participation of women in water supply has many aspects which constraint them. These include social, economic, technical to environmental all which are interconnected.

The solution to water problems in Kabati is to make water available to the people. This could be done with large reticulate (piped) system but whether this can be justified economically or practically is questionable. Many piped system have been installed but most of them are not functioning due to lack of funds, poor designs and poor maintenance. The Matuu pipeline which passed through the division to Kitui town operated for only five years. Masinga water pipeline is now being installed but its sustainability is bleak since the community is not involved. The involvement of women in small scale water project could solve the water problem in the division.

Since women are so heavily involved in many aspects of water supply, it is necessary to make their participation easier, more effective and productive. The action toward this goal should directed in enhancing community participation at all levels of water provision, providing training particularly in the area of equipment and group maintenance, expanding education

both formal and informal, choosing technologies in harmony with the needs of the women and linking planning activities related to water supply with overall planning process in the area.

Therefore women should acquire more decision making power on all levels and every developing policy, preparing and executing water programmes. Existing network of women and organisations at the local level should serve as partners in discussions with the authorities in this field. The government should provide an enabling environment under which women participation can occur for women's participation in water projects is very essential.

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**APPENDIX 1**

**UNIVERSITY OF NAIROBI**

**DEPARTMENT OF URBAN AND REGIONAL PLANNING**

**HOUSEHOLD QUESTIONNAIRE**

The information supplied here is purely for academic purpose and will be treated in strict confidence.

Name of Respondent (Optional) .....

Location .....

Sub-Location .....

Village .....

Name of interviewer .....

Date of survey .....

**HOUSEHOLD CHARACTERISTIC**

1.NO.	2. NAME	3.RLHH	4.SEX	5.AGE	6.M/STATU	7.EDU

### **3.RELATIONSHIP TO HOUSEHOLD**

1. Household head
2. Spouse
3. Son
4. Daughter
5. Father
6. Mother
7. Other relative (Specify)

### **4. SEX**

1. Male
2. Female

### **6. MARITAL STATUS**

1. Married
3. Widowed
4. Divorced
5. Separated

### **7. EDUCATIONAL STATUS**

1. No formal schooling
2. Single
3. Primary school
4. Secondary school

11. Family monthly expenditure

Education	Kshs. ....
Health	Kshs. ....
Food	Kshs. ....
Fuel	Kshs. ....
Transport	Kshs. ....

12. What is the size of your land?.....

13. State the acreage under farming .....

14. Crops grown.....Harvest per season.....

1. Maize.....
2. Beans.....
3. Peas.....
4. Other.....

15. Livestock kept

1. Cattle
2. Goat/Sheep
3. Donkey
4. Other (specify)

23. What is your main source of water during dry season

1. Private well
2. Public well
3. Dam
4. Streams/river
5. Borehole
6. Other (specify)

24. What are the main problems faced in these sources of water

1. Unsafe
2. Unreliable
3. Inadequate
4. Far
5. Other(specify)

25. Give distance to the source

1. 15 minute walk
2. 30 minutes walk
3. 1 hour walk
4. About 2 hours walk

26. Who fetches the water( give person number from the household chart)

27. What is the family's main mode of delivering water from the outlet.

1. Donkey
2. Ox cart
3. Wheelbarrow
4. Bicycle
5. Human back/head

28. How many litres of water do you use per day

29. Is this enough for all your household requirements.

1. Yes
2. No

30. How much in Kshs. Do you spent on water per week.

31. If your water source is piped state whether:

1. Individual connection
2. Communal
3. Other

32. How do the animals get their water supply.

1. Fetch water for them
2. Take them to the water source
3. From the household connection

33. What are the main any water problems you experienced

.....  
.....

34. How do you think the problem can be solved?

.....

**PARTICIPATION IN WATER PROJECT**

35. Are you involved in any water project?

- 1. Yes
- 2. No

b. If Yes, which project is it? .....

c. What were the reasons for joining?.....

.....

d. If Yes, what is your role?

- 1. Chairman
- 2. Secretary
- 3. Treasure
- 4. Executive commmittee Member
- 5. Member

\* If not, Explain.....

.....



36. How did you know about the project?

1. Friend
2. Advertisement
3. Baraza
4. Other specify

37. How have you contributed?

1. Labour
2. Materials
3. Paid membership
4. Other specify

38. What stage of the project did you play an active

1. Initiation
2. Planning
3. Implementation
4. Management

39. How often do you meet with the water committee

40. How long does the meetings take? .....

41. How have you benefitted from these project .....

.....