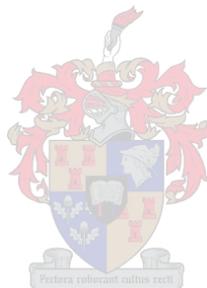


**ASSESSING COMMUNITY PARTICIPATION FOR
SUSTAINABLE DEVELOPMENT: THE GALANEFHI WATER
SUPPLY PROJECT**

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**Thesis Submitted in Partial Fulfilment of the Requirements for the Degree
of Master of Public Administration at the University of Stellenbosch**



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April, 2004

DECLARATION

I, the undersigned, hereby declare that the work contained in this thesis is my own original work and has not previously in its entirety or in part been submitted at any university for a degree.

Date APRIL 2004

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ABSTRACT

In the past, development projects were not successful, because development was guided by top-down strategy that excluded the main beneficiaries from the process of development. The creative initiative, local knowledge, and inputs of communities were not considered as a development resource. Hence, development programmes were not participatory, and could not solve social problems, rather they contributed to poverty and dependency. This condition gave rise to new thinking that unless communities participate in development efforts, no social transformation can be achieved. Moreover, the scarcity of resources in developing countries called for the mobilization of all stakeholders' resources in the cause of development action. As a result, community participation emerged as a new paradigm of development. Development has become a humanizing process; projects are people-driven; and communities are the subjects of development projects. Nevertheless, in order for community participation to meet the challenges of development, this has to be a multidimensional approach that integrates the building blocks of development.

Against this background, in the context of water supply, the experience of developing countries indicates that the effectiveness of water supply projects is improved when communities participate in all phases of water supply projects. Moreover, community owned and managed water supply projects are better constructed, cost effective, and successful than government subsidized projects. Nevertheless, the role of government in enabling and supporting is essential.

The study is an evaluation research, which aims to assess whether community participation is in place, and whether the delivery of water supply is enhanced as a result of community participation. The study area is in Galanefhi, a sub-region in Eritrea. At eleven villages in the sub-region, water supply projects that were constructed in the past twelve years are assessed to evaluate if community participation is in place and its effect on the water supply system. During the course of this study, interviews were conducted with 221 respondents of both sexes from the age of 28 years using open and closed-ended questionnaires. In addition, discussions were conducted with community representatives and government officials on issues of community participation and safe water delivery.

Findings of the study indicate that the level of community participation differs within the villages and from one phase of the project to another. There is more community participation in implementation and less in planning. Decision-making is dominated by the water

committees and local officials. The major missing ingredient is the level of capacity building. Communities' capacity to manage and operate the water supply system is limited. The institutional and administrative frameworks of the villages regarding water supply is weak. The regional and sub-region authorities' capacity that implements and oversees water supply projects is not strong. Communication between the grassroots and central authorities is not good. This is aggravated by natural conditions like climate and environment, and by the lack of skilled human resources, financial drawbacks, and lack of coordination. Nevertheless, overall assessment shows that water supply projects that enjoy more community participation are more successful and sustainable and more capable of meeting communities' expectations.

Therefore, sustainable clean and adequate water delivery can be achieved through community participation in collaboration with all stakeholders. The recommendations which are provided give some insights on how to implement community participation as a strategy on the ground.

OPSOMMING

In die verlede was ontwikkelingsprojekte dikwels onsuksesvol omdat ontwikkeling oorheers is deur die bo-na-onder (“top-down”) strategie wat die hoof voordeeltrekkers uitgesluit het uit die proses van ontwikkeling. Die skeppende inisiatief, plaaslike kennis en die insette van die gemeenskappe is nie as ‘n hulpbron beskou nie. Dus was die ontwikkelingsprogramme nie deelhebbend van aard nie en kon hulle nie sosiale probleme oplos nie. Dit het eerder bygedra tot armoede en afhanklikheid. Hierdie toestand het gelei tot ‘n nuwe denkrigting, naamlik dat, tensy gemeenskappe deelneem aan ontwikkelingspogings, geen sosiale transformasie sal plaasvind nie. Weens die skaarsheid van hulpbronne in ontwikkelende lande is die mobilisasie van al die deelhebbers se hulpbronne nodig vir ontwikkelingsaksie. Gevolglik het gemeenskapsdeelname te vore getree as die nuwe paradigma van ontwikkeling. Ontwikkeling is meer op die mens gerig; projekte word deur die mens gedryf; en gemeenskappe is die onderwerp van die ontwikkelingsprojekte. Nietemin, as gemeenskapsdeelname die uitdagings van ontwikkeling te bowe wil kom, moet daar ‘n multidimensionele benadering wees wat die boustene van ontwikkeling integreer.

Teen hierdie agtergrond, en in die konteks van watervoorsiening, het die ondervindings in ontwikkelende lande aangedui dat die effektiwiteit van watervoorsieningsprojekte verbeter as die gemeenskap deelneem aan al die fases van die projek. Ook is watervoorsieningsprojekte wat deur die gemeenskap besit en bestuur word, beter gebou, meer koste-effektief, en meer suksesvol as projekte wat deur die regering subsideer is. Nietemin is die rol van die regering onontbeerlik waar dit die projekte moontlik maak en ondersteun.

Hierdie studie is evaluasie-navorsing wat ten doel het om vas te stel tot watter mate gemeenskapsdeelname bestaan en of die voorsiening van water verbeter het as gevolg van die deelname. Die studiegebied is in Galanefhi, ‘n substeek van Eritrea. Daar is by elf dorpie in hierdie streek tydens die laaste twaalf jaar watervoorsieningspunte opgerig. Hierdie projekte is evalueer om vas te stel hoeveel gemeenskapsdeelname daar was en die effek daarvan op die watervoorsiening. Tydens die studie is onderhoude gevoer met 221 respondente, mans en vrouens, bo 28. Daar is gebruik gemaak van vraelyste. Ook is daar besprekings gevoer met verteenwoordigers van gemeenskappe en regeringsamptenare oor kwessies soos gemeenskapsdeelname en die voorsiening van veilige drinkwater.

Daar is gevind dat die vlak van deelname verskil van dorpie tot dorpie en van een fase van die projek tot die volgende. Daar is meer gemeenskapsdeelname in implementasie en minder in beplanning. Besluitneming word oorheers deur waterkomitees en plaaslike amptenare. Daar is

nie 'n hoë vlak van vermoë-bou nie. Die vermoë van die gemeenskap om die watervoorsieningsstelsel te bestuur is beperk en die administratiewe raamwerk van die dorpie betreffende watervoorsiening is swak. Die vermoë van die owerhede op streek- en substreekvlak, asook die kommunikasie tussen die sentrale owerhede en die gewone inwoners is nie na wense nie. Hierdie toestande word vererger deur die klimaat en die omgewingsfaktore, die gebrek aan geskoolde werkers, finansiële probleme en die gebrek aan koördinasie. Nietemin is daar in die algemeen vasgestel dat die watervoorsieningsprojekte waar daar meer gemeenskapsdeelname was, meer suksesvol is, en beter aan die gemeenskap se verwagtinge voldoen. Die waterpunte word ook langer in 'n goeie werkende toestand gehou.

Dus kan die voorsiening van genoeg skoon water bereik word deur die deelname van die gemeenskap en die samewerking van al diegene wat belang het by die projek. Aan die einde van die studie word daar aanbeveel hoe om gemeenskapsdeelname op grondvlak te implementeer.

ACKNOWLEDGEMENTS

Writing this thesis is both an adventurous and painful experience to me, because of time pressure. It was adventurous, because it enabled me to read in-depth a large amount of literature in a limited time and to reflect upon them to flesh my proposal. It was also a painful experience, because despite my discomfort, I was able to produce this study and contribute to the knowledge in my field. I am grateful to many individuals and institutions that deserve sincere thanks for their cooperation and encouragement.

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In memory of my young brother Mesfun Haile who passed away in the bitter war of liberation.

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ABBREVIATIONS

ECDF	Eritrean Community Development Fund
EPLF	Eritrean People's Liberation Front
GDP	Gross Domestic Product
IKS	Indigenous Knowledge Systems
IRD	Integrated Rural Development
MWP	Mutengene Water Project
NEMP-E	National Environmental Management Plan of Eritrea
NGO's	Non-Government Organizations
NSEO	National Statistics and Evaluation Office
PHED	Public Health Engineering Department
SLP	Social Learning Process
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Fund
USD	United States Dollar
VLOM	Village Level Operation and Maintenance
WCED	World Commission on Environment and Development
WRD-E	Water Resource Department of Eritrea

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CHAPTER ONE: GENERAL INTRODUCTION

1.1 Introduction

Because global challenges are continually changing, rethinking is required to cope with development. The provision of safe drinking water is a global development challenge that requires integrated and joint efforts by putting communities at the centre. As a result of past development failures, development thinkers have realized that unless communities are involved in development efforts, desired change will not be achieved. If development is to succeed and to be sustainable, the beneficiaries of development should initiate and participate in development efforts. Against this background, community participation has emerged as a multidimensional approach linking to and integrating with the building blocks of development. Community participation is a process, it takes time to grow and prosper. It also needs the enabling and supporting functions of the government. In the context of water supply, experience gained from successful projects globally show that the results and effectiveness of water supply projects are enhanced when communities participate in development efforts. Moreover, sustainability is achieved when communities participate in all phases of water supply projects, and are able and willing to manage and contribute to their operation and maintenance.

In the national context, community participation is embedded in the tradition and culture of Eritrean communities and was strengthened during the war of liberation against colonization. Due to successive colonization by Europeans and three decades of occupation by Ethiopia, Eritrea has become one of the least developed countries in the world. At present, its economy is at rehabilitation and recovery stage. To reconstruct the war torn country, to repatriate refugees, to rehabilitate hundreds of thousands of war displaced, and to eradicate backwardness and poverty, Eritrea after thirty years of devastating war, has to depend on its people. As a result, community participation in development is compulsory rather than indispensable.

Although there are different views regarding community participation, it is in itself a strategy for community development in Eritrea. Community participation is also the corner stone of self-reliance and sustainable development. During the liberation struggle, the country fought against all odds without any foreign assistance. Its motto was: “an agitated, organized and mobilized mass can create miracles.” This motto proved that community participation is a strategic planning option. The former war motto is now being applied in national reconstruction and development.

Based on the experience gained in the liberation struggle, the Eritrean People’s Liberation

Front (EPLF, 1994) at its third conference formulated six principles, which have been put forward to guide the transition process. The principles are: national unity, active community participation, people-centred development, social justice, self-reliance and strong links between the people and the State. To implement these principles effectively, Eritrea, under the Proclamation for the Establishment of Regional Administration, in 1996, was divided into six decentralized regional administrations (Article 4 No.86/1996 Proclamations of Regional Administration). To speed-up community development, a village decision-making council, the so-called "*Megabaaya*" was proposed.

In addition, the ratified National Constitution of Eritrea (Constituent Assembly, 1997: 6) consolidated the need for community participation. According to chapter II, Article 7, No. 1 of the Constitution, "*It is a fundamental principle of the State of Eritrea to guarantee its citizens broad and active participation in the political, social, economic, and cultural life of the country.*" In addition, No. 3 of the same article emphasized the need for policy intervention by stating that the establishment of institutions to encourage and develop community participation and initiatives is indispensable.

In the spirit of the above principles and strategies, Eritrea is undertaking various community development projects. In Eritrea, due to the legacy of the struggle, there is a strong emphasis on self-reliance and this can be seen in the government's insistence on national control of development projects (Rock, 1999: 131). Consistent with Rock's remarks, the Water Resource Department of Eritrea [WRD-E] (2000: i-v) states that community participation, self-reliance and empowerment gained from the long historical struggle against colonialism are building blocks for water supply intervention. WRD-E further argues that putting communities at the centre of the delivery strategy for water and sanitation encourages an approach that seeks to tap the values and local knowledge of the communities to overcome their own problems. Furthermore, the Ministry of Land, Water, and Environment (1998: 22-23) confirms that community participation and self-reliance, constitute the main pillars of the government's development policy, specifically the delivery of the water supply system. The concern of this study is to assess if this development strategy is in place by taking, as a case study, Galanefhi's water supply projects, which have been undertaken since independence. Galanefhi is one of the 57 sub-regions of Eritrea, which is found in the Central Region. Water development projects deliver a basic need to rural communities and are an essential part of community development.

This reality motivated the researcher to assess if community participation is in place. The researcher hopes that this study will lead to better understanding of the prevailing problems of

the provision of clean water to the rural population of Galanefhi. The study is necessary in that it attempts to identify the problem areas of public participation in water supply projects and provides workable recommendations as a solution. Although the fieldwork was confined to Galanefhi, the problems encountered are similar in other sub-regions. As a result, the experience gained in this sub-region could contribute to be the learning process for other sub-regions. It is also the opinion of the researcher that this limited research can be taken as a springboard for further in-depth studies by testing these ideas on a broader basis. The statement of the problem further clarifies the challenges of safe water delivery.

1.2 The statement of the problem

As Brynard and Hanekom (1997: 15) assert, a problem statement guides and focuses both the planning of the research, and the research itself. It demands from the researcher to think. It requires a precise description in as few words as possible, but at the same time transferring the maximum amount of information on the research topic. Regarding the problem statement of the study, it should be clear that solving the problem necessitates analytical thought.

From this perspective, the provision of safe drinking water is a global problem. According to the Global Water and Sanitation Report-2000 (as cited in Tripathi & Bharat, 2001), about 1.1 billion people across the world have no access to safe drinking water. Most of these people are in developing countries, and many people, most of them children, die every year from diseases associated with the lack of safe drinking water. This situation is aggravated by high population growth, natural calamities, financial and technical constraints, and the lack of community-based operation and maintenance, which lead to complete projects breaking down or functioning below capacity. These challenges have given rise to new thinking. To reverse these situations, actions that empower the beneficiary communities are required. These global challenges have the same implication for Eritrea as for any developing country.

Eritrea has its own peculiar climatic, environmental, and socioeconomic challenges, which make the provision of safe drinking water difficult. According to the World Bank (1994: 70-73), the water resources of Eritrea are poor; the amount of rainfall is limited, there is a high evaporation and transpiration rate, there are no lakes, and the rivers are not perennial except for the Tekeze. As a result, there is an inadequate amount of water for domestic and economic use. The challenge is to provide clean and adequate water in these circumstances.

Against this background, as the National Statistics Office of Eritrea (1996: 13) shows, per capita water use varies across the country but it can be as little as 3-5 litres per capita per day

in the highlands. This is far below the standard of 20 litres per capita per day in the highlands set up by WRD-E. Furthermore, as the National Statistics and Evaluation Office (NSEO) and ORC Macro (2003: 24) indicate, access to safe drinking water in Eritrea is poor. Since 1994, access to clean water has increased from 7 percent to 49 percent in rural areas as of 2002. This finding indicates that progress has been made since independence. Nevertheless, as the Government of the State of Eritrea and UNICEF (1996: 5) assert, of the water resources available, a substantial proportion are inoperative at any given time due to lack of community-based systems of operation and maintenance and the assistance of government and non-government institutions after project hand-over. Moreover, UNICEF (2002: 5) findings indicate that more than 80 percent of the deaths cases reported at health institutions in Eritrea are due to inadequate water supply both in quantity and quality and lack of proper water sanitation. Besides, water-borne and water-washed diseases contribute towards Eritrea's high infant and under-five mortality and morbidity rates. The challenge is, therefore, to provide clean and adequate water for domestic use in these complex situations. This problem could be overcome if there is community participation in the development of water supply projects. From these points of departure, the researcher poses the following questions:

- Why is community participation required? What are the motives behind it?
- How is community participation linked to and integrated with the building blocks of development?
- What are the types and levels of community participation?
- How can community participation in water supply projects be realized?
- What is the role of the government, the communities, and other development agents in these development projects?
- What experiences can be gained from developing countries regarding water supply?

From these questions as points of departure, a hypothesis for the study can be formulated.

1.3 Hypothesis

According to Bless and Higson-Smith (1995: 37), a hypothesis is a suggested, preliminary, yet specific answer to a problem, which has to be tested empirically before it can be accepted as a concrete answer and incorporated into a theory. A hypothesis is what one wants to know. It serves as a point of departure and as a directive for the planned research.

Against this background, the working hypothesis of this study is that sustainable clean and

adequate water delivery can be achieved through community participation, in collaboration with all stakeholders. Community participation that puts people at the centre of development and that provides room for their initiatives and empowerment, is the main aim.

1.3.1 Independent variable

In the hypothesis formulated, two variables are identified; the independent and dependent variables. According to Welman and Kruger (2001: 13-14), a variable is a characteristic or an attribute of the study object. An independent variable is the factor which the researcher selects and manipulates in order to determine its effect on the problem that is being investigated. Thus, community participation in collaboration with all stakeholders is the independent variable. It has an effect on sustainable clean and adequate water delivery and the researcher has observed and measured it.

1.3.2 Dependent variable

Welman and Kruger (2001: 14) state that the dependent variable is considered to be dependent because its value is assumed to depend on the values of the levels of the independent variable. In the hypothesis formulated, sustainable clean and adequate water is the dependent variable and it depends on the levels of community participation and on stakeholders. Therefore, there is a direct correlation between the provision of safe water and the level of community participation.

1.4 Research methodology

In order to address the objectives of the research topic, and to collect the relevant data and information regarding the water supply situation and community participation, the study is empirical and applied in nature. As Mouton (2001: 148-159) argues, it is empirical because it uses the existing data and documentary sources to answer the exploratory and descriptive questions. It is also applied because it is aimed at assessing whether interventions have been well conceptualized and properly implemented. Therefore, the study is an evaluation research, focusing on implementation evaluation. Implementation evaluation research aims to answer the question whether an intervention has been properly implemented, whether the target group has been adequately covered, and whether the intervention was implemented as designed. Furthermore, Mouton argues that evaluation research uses a combination of qualitative and statistical methods of analysis.

Against this background, the study has adopted both quantitative and qualitative methods. Quantitative and qualitative methods supplement and complement each other to interpret and

analyze data and to explain the results explicitly in order to have a holistic picture of the study topic. To approach the targeted households and to collect data, as Mouton (2001: 159) argues, it is common to use multiple methods of data collection in evaluation research and to utilize available modes of observation both structured (questionnaires, tests, scales) and less structured (focus group interviews, individual interviews, participatory observation) as well as to analyse documentary sources (annual reports, field records, participation records, etc.).

To materialize the research design, a thorough and extensive literature study on the interrelations and interdependencies of the “building blocks of development” (Meyer & Theron, 2000: 1-5) for community participation and the challenges of water supply was undertaken. Different sources such as library books, journals, as well as the internet and the Nexus Databases were used. Based on the literature studies, the project at hand was analyzed and interpreted in comparison with the practical research undertaken through participatory observation and interviews.

The following data collection methods were used for the study.

a) *Desk research*: Pertinent documents regarding water supply projects in general, and specific projects, which were undertaken since independence were reviewed and analyzed regarding their implementation, management, the participation of beneficiaries, and their social and economic impacts on the lives of the communities.

b) *Household interviews*: An open- and closed-ended questionnaire was prepared and translated to the mother language of the respondents, Tigrina. From the identified targeted villages, five enumerators were selected and hired for six days. In order to make the enumerators understand the questionnaires and the sample design so as to elicit consistent answers, the researcher trained them. As the assessment looks ten years back, participants were selected from people above 28 years of age.

According to a preliminary survey the researcher conducted during the first fieldwork, the population units of the households who have undertaken water supply projects are 2210. The researcher proposed to contact only 10 % (221) of these units. Hence, to construct a systematic sample the number of population units (N) was divided by the number of desired samples (n) as follows:

$$N/n$$

$$2210/221 = 10$$

To obtain the systematic sample, the researcher first drew an element randomly from the first 10 on the list. From these onwards the researcher selected every 10th element of the remaining

suggestions regarding organizational structure of the administration.

b) Due to the current staffing in the regional and sub-regional levels, some of the sub-regional staff who had participated in the water supply system from the beginning were not available for discussions and interviews.

c) Although the researcher has indicated desk research as a method of data collection, it was incomplete and fragmented, but substantiated by interviews and discussions. Furthermore, in Eritrea, much is spoken but little is written about community participation so that written references are not available.

d) Since many of the younger informants are in the national defence force, meeting people who participated in the early stages of the projects was difficult.

e) The fieldwork was conducted in a rainy season and at the time when farmers sow their crops. Thus, it created discomfort for the researcher as well as the interviewees resulting in too much time spent waiting for the interviewees. It was also inconvenient for the respondents to be called for meetings and interviews at such a time. However, there was no alternative because of the time limit.

1.6 Structure and sequence of the study

The study is structured into seven chapters. Chapter one deals with the general introduction, which includes the statement of the problem, hypothesis, research methodology, and the limitations of the study. Chapter two discusses the theoretical perspectives of community participation and water supply challenges focusing on the building blocks of development and water supply challenges in developing countries. Chapter three highlights the national context of water supply challenges and community participation. Chapter four concerns the local context of the study topic. Chapter five presents data results, interpretation and analysis supported by figures and tables. Chapter six integrates and synthesises the theoretical background with the data results, which is the real situation on the ground. Chapter seven notes the conclusion and recommendations drawn from discussions of previous chapters. The analytical mind-map in figure 1.1 below shows the main theme of the study.

of 2210 households.

c) Focus group interviews: Interviews and discussions that aim to evaluate community participation at various stages of the project cycle were conducted at two sessions of a meeting. At these meetings, the problems encountered and how they were solved, the accessibility of clean and adequate water, the sustainability of the projects, the management and capacity building issues, and the operation and maintenance questions were discussed with community representatives. These groups included: area administrators and deputy administrators, water committees, village elders, members of village councils, and representatives of women's associations. Participants were selected based on quota sampling. Their views, concerns, suggestions and their discussions in general were recorded by a tape-recorder.

d) Key informant interviews: To elicit opinions and the assessment of various groups who interact in water supply projects, and who are directly or indirectly involved in the management of the project, an informant interview was undertaken. These informants include: central and regional water supply officers, member of the regional assembly, the regional water department head, the regional operation and maintenance officer, the sub-region project officer, and the sub-region agriculture officer.

To collect the required data by the above methods of data collection, a comprehensive questionnaire was designed categorized into 'A' and 'B' (see annexure II). Questionnaire A is focused on the samples of the households to be reached. The purpose of questionnaire B is to serve as a bench-mark for focus groups and informant interviews and to collect data from pertinent documents that can supplement the other data and be compared with it. This questionnaire specifically targeted community representatives, village administrators, water supply committees, government authorities and development agents. The data was gathered during meeting discussions, personal interviews, and where appropriate by mail questionnaires.

1.5 Limitations of the study

The following problems were faced during the fieldwork that could be indicated as limitations imposed on the study. However, these limitations, in the opinion of the researcher, do not change the findings and the conclusion of the study.

a) During fieldwork, there was organizational restructuring at regional and sub-regional levels, but it was not finalized and approved. For this reason, the researcher refrained from

International Context

National Context

Local Context

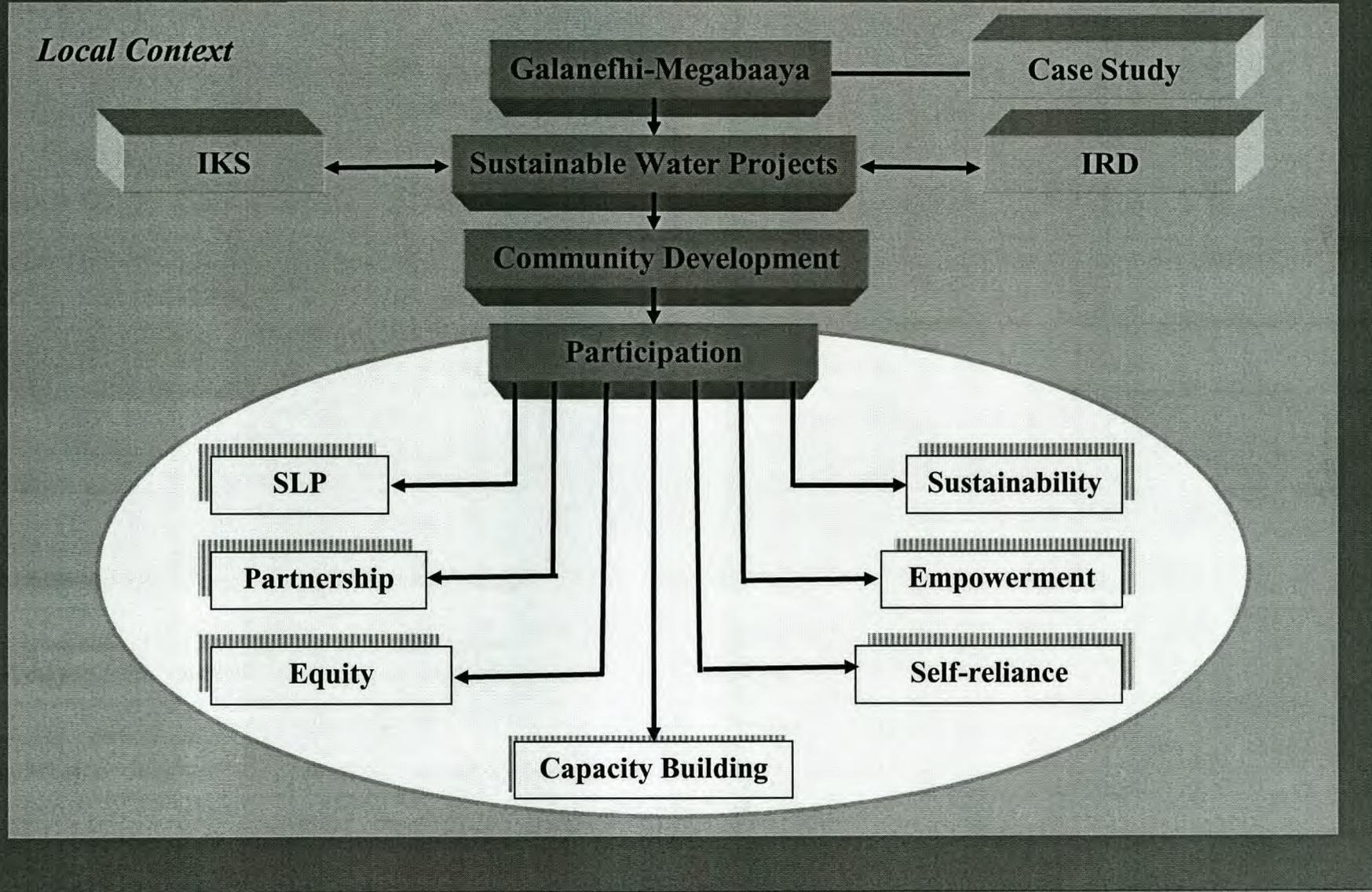


Figure 1.1 Analytical mind-map, which is applied in the study

CHAPTER TWO: THEORETICAL PERSPECTIVE OF COMMUNITY PARTICIPATION AND GLOBAL CHALLENGES OF WATER SUPPLY

2.1 Introduction

From the experience of past development failures, because they neglected the human factor, a new rethinking has emerged that advocates the involvement and active participation of communities in their development efforts. Because the global picture is complex and continually changing, no development action can be taken in isolation, if development is to succeed and be sustainable. This means that community participation is a coherent and credible strategy for development. Therefore, this chapter aims to review the theoretical background of community participation in its broadest sense as a strategy of development intervention in general, and water supply projects in particular. In the following chapters, it will serve as an instrument in comparing the real situation of water supply in the study area, so that the correlation of community participation and water supply delivery can be measured.

To exhaust the relevant theoretical issues of the study topic, the chapter is structured into ten sections excluding chapter introduction and summary. Section two conceptualizes the concepts that are interrelated with community participation. Section three highlights community participation as a new paradigm of development. Section four discusses the interactions and interdependence of the building block of development and shows community participation as a multidimensional strategy. Section five traces the origin and development, and the motives of community participation. Section six gives scholastic views, and categorizes the types and levels of community participation. Section seven discusses the role of governments, communities and development agents as stakeholders of development. Section eight illustrates development projects as the intervention in which community participation is measured and tested. Section nine notes the limitations to and advantages of community participation. Section ten and eleven survey water supply challenges in developing countries, associated with selected case studies. Finally, a chapter summary is given.

2.2 Conceptualization

The idea of community participation in development is not a new one. However, development thinkers define it differently. In order to have a holistic point of departure, the researcher would like to define the concepts that are interrelated with community participation.

2.2.1 Development

There is no consensus about the meaning of development. Different authors define it differently, (see Bryant & White, 1982: 14-20; Swanepoel, 1997b: 42-45; Stewart, 1997: 6) but they agree that development is a process of gradual change to improve well-being and to alleviate poverty. The following concepts encompass the working definition of the study topic. According to Esman (1991: 5), development:

“...connotes steady progress towards improvement in the human condition. It reduces and eventually eliminates poverty, ignorance, and disease, and expands the well-being and opportunity of all. It entails rapid change, but change alone is insufficient. It must be directed to specific ends. Development involves societal transformation- political, social and cultural as well as economic; it implies modernization – secularization, industrialization, and urbanization, but not necessarily westernization. It is multi-dimensional, with scholars and practitioners disagreeing, however, on relative emphasis, priority and timing.”

Furthermore, Burkey (1993: 39-49) describes development as more than the provision of social services and the introduction of technologies. Development is a complex and slow-moving process. It involves gradual changes in which people increase their awareness of their own capabilities and common interests. These changes must come from within and cannot be imposed from outside. Moreover, people use their knowledge to analyze their needs, decide on solutions, organize themselves for cooperative efforts and mobilize their own human, financial, and natural resources to improve, establish, and maintain their own social services and institutions. Ultimately, the goal of development is the growth and development of the individual and the measure of development is its effect on the individual.

2.2.2 Community development

According to Lundy (1999: 125-126) the word “community” is an ambiguous and elusive concept. It has no single and fixed meaning. A community is not a homogenous and harmonious entity. De Beer and Swanepoel (1998: 18) argue that there is no general agreement on the meaning of community. It is characterized by a closeness of people, shared needs and interests, and willingness to participate in “development.” The United Nations (as cited in De Beer & Swanepoel, 1998: 18) defined community as the lowest level of aggregation at which people organize for common effort and develop their local resources that promote their common interests, while community development as defined by the United Nations Department of Economic and Social Affairs (as cited in Groenewald, 1989: 257) is a

process by which the efforts of the communities are united with those of the government authorities to improve their economic, social, and cultural conditions. Therefore, those communities can be integrated into the life of the nation, and enabled to contribute fully to national progress. This complex process is made up of two essential components. The participation of communities in efforts to improve their level of living, and the provision of technical and other services by the government to encourage initiative, self-help and mutual understanding that makes the efforts more effective.

Groenewald (1989: 268) takes it further by stating that if development is said to be for people, the approach needs to be humanistic in nature. Community development as an approach to development emphasizes humanistic and people centred values. The principle of human worth, the right of self-actualization, democracy, participation and cooperation are values of community development. These values are regarded as valid and legitimate for all people, regardless of their locality, nationality, and ethnicity.

Despite the above noble causes, Swanepoel (1997a: 191) expresses his concern regarding community development as a strategy for development:

“Community development must be the form of development most abused over the past four decades. It was used to placate a dissatisfied people; to get development done in a cheap but futile way; to soften up the people before the government’s bulldozers moved in; to indoctrinate the people into blessing programmes that held very little benefit for them; and to Westernize people, especially women, to demonstrate that they too subscribed to the Westerner’s notion of the wholesome wife.”

With this point of view in mind, Swanepoel suggested that community development must find a home within the paradigms of community participation and sustainable development.

2.2.3 Community participation

According to Oakley et al. (1991: 17), community participation is a strategy that helps people to break the mentality of dependence, promotes self-awareness and confidence and causes people to examine problems and to think positively about solutions. It is concerned with human centred development and increases people’s sense of control over issues, which affect their lives, helps them to learn how to plan and implement, and prepares them for community participation at regional and national levels.

Following the same perspective, Burkey (1993: 56), the advocate of self-reliance, explains that:

“(Community) participation is an essential part of human growth, that is the development of self-confidence, pride, initiative, creativity, responsibility, and cooperation. Without such a development within the people themselves, all efforts to alleviate their poverty will be immensely more difficult, if not impossible. This process, whereby people learn to take charge of their own lives and solve their own problems, is the essence of development.”

The World Bank (1996: 3) defines participation as a process through which stakeholders influence and share control over development initiatives, decisions, and resources which affect them. Narayan (1995: 7) takes the World Bank definition further by stating that participation is a voluntary process by which communities influence or control the decisions that affect them. The essence of participation is exercising voice and choice.

In its broader perspective, Brown (2000: 173-175) defines community participation as a process by which communities influence the direction and execution of a project rather than merely being consulted and receiving a share of project benefits. Furthering his argument, Brown regards community participation as an instrument of empowerment. As a result, it has the ability to decide and steer one’s own future actions, and to be able to initiate actions to influence the processes and the outcomes of projects.

Meyer and Theron (2000: 1-5) argue that there is no universally accepted definition for community participation. Community participation is a social learning process linking the “building blocks” of development. It is both a means and an end in the process of development. Nevertheless, community participation should not be understood in isolation. Its meaning as a process must be understood against a holistic perspective of “development.” (The researcher has adopted the “building blocks” of development approach as it is demonstrated in the analytical mind-map and will be discussed under their respective headings). (see figure 1.1).

In the new millennium, no development effort can be considered unless it involves communities in the process of social change. It is also agreed that no desired change in people’s behaviour can be brought about or goals of any social development programme achieved if the beneficiaries remain alienated from the process of development. This truth has been demonstrated by most development programmes implemented during the last few decades. The principal goal of development is to strengthen the community and make the effort effective and sustainable by ensuring the opportunity for participation of the members of the communities from all walks of life. Therefore, to achieve success in social development programmes, especially in developing countries, community participation must be ensured

(Gupta, 1999).

From the definitions given, a working definition is derived, which states that community participation is a strategy that involves communities in the process of social change to escape from dependency and poverty. It is a means as well as an end in the process of development in which communities influence and control the issues that affect their lives. Community participation has also become a multidimensional approach, which is linked to, and integrated with, the building blocks of development to achieve sustainable development.

2.2.4 People-centred development

As Roodt (1996: 317) puts it, people-centred development is a reflection of participatory development that emphasizes the participation of the communities in the process of development. Their participation is regarded as the bottom-line for the successful implementation of any project. People-centred development relates to a world-wide movement, which is away from centralized state control, to regional and local democratization and the development of a civil society. Kotze and Kellerman (1997: 36) regard people-centred development as a move in development effort to people rather than to objectives and production, and to the improvement of their capacity to participate in development. People and their environment are crucial in people-centred development, but production objectives are not disregarded.

Korten (1984: 299-300) emphasizes the need and emergence of the new paradigm. According to him, the post-industrial era faced different conditions and presented new challenges to enhance human growth and well being, equity and sustainability, which are the central issues of people-centred development. To realize these challenges, development efforts that shape the post-industrial era must be guided by a new paradigm based on alternative ideas, values, social technique, and technology. The dominant idea of people-centred development is a balanced human ecology, its dominant resource of information and creative initiative, and its goal is human growth defined in terms of greater realization of human potential.

2.3 Community participation as a new paradigm of development

On the need for community participation as a strategy Njoh (2001: 248) points out that the worsening problems of resource scarcity in developing countries, dictate that governments can no longer depend on conventional means to address the basic needs of their population. Community participation has been advanced, and in fact tried, as a strategy that can be

potentially viable in complementing efforts to meet those needs.

Moreover, Oakley et al. (1991: 160) regard community participation as a fundamental dynamic of a development project, which is beginning to emerge in practice as a coherent and credible strategy. Community participation in development is only genuine when participation is centred on the people's activities and when it becomes an essential ingredient to the empowerment of local people. In literature and project documentation, Oakley and Marsden (1984: 13); Oakley et al. (1991: 159-165); Paul (1987: 3-4); Kotze and Kellerman (1997: 35-35) have identified the major principles of community participation as a strategy.

2.3.1 The primacy of the people:

Oakley and Marsden (1984: 13) observe that past development failures relate to the fact that the "human factor" had been neglected and communities were not involved in projects. These circumstances lead to further strategies that fill the gap by injecting more information and increasing the communities' knowledge base. Oakley et al. (1991: 161-162) further realize that development is essentially a humanizing process. It is based on people, their needs, their analysis of issues and decisions. Communities can gradually transform their environment with the help of, but not dominated by, external agents. Participatory development, therefore, demands that rural communities move from being objects to becoming subjects of development projects. Hence, programme activities should be based upon a 'bottom-up' approach. Only through this approach can the programme attain a meaningful and lasting success.

Kotze and Kellerman (1997: 36) confirm that people and their environment are primary concerns in a people-centred development effort. The creative initiative of people is regarded as a major development resource, and the mental and material welfare of people is seen as the ultimate objective of development. Attempts by the poor to address their own needs are therefore encouraged.

2.3.2 People's knowledge:

Oakley and Marsden (1984: 13-14) note that participation is seen as a strategy for the creation of opportunities to explore new, open-ended directions with those who were the objects of development. The knowledge of rural communities should be a component of development efforts. Participation in this sense is concerned with the production of knowledge, new directions and modes of organization.

In another perspective, Chambers (1997: 231-232) points out the primacy of the personal dimension of development. Personal beliefs, behaviour and attitudes are the crux of development. If systems are to change and transform, it will be through the interaction of personal activities and changes. The primacy of the personal recognizes the power of the personal choice, the occurrence of error, and the potential for doing better in development.

Treurnicht (1997b: 93-94) refers to people's knowledge as the indigenous knowledge system and highlights its importance for development efforts. The term "indigenous knowledge system" is more comprehensive and conveys the connotation of a system of knowledge. Culture occupies a pivotal position in development because it conveys important information on the maintenance and adaptation of social systems. However, culture as a resource for development does not receive the attention it deserves. It is dominated by cultural imperialism and is seen as inferior.

As Oakley et al. (1991: 163) argue, the principle of indigenous knowledge is struggling to influence project practice. Decades of scientifically conducted research and professional training will need to be fundamentally altered if the principle is to become firmly embedded in development practice. Kotze and Kellerman (1997: 35) strengthen this principle by stating that knowledge and insight that could be obtained from the communities are not implemented. The communities, who have learnt to survive with virtually nothing at their disposal, possess valuable knowledge. Nevertheless, the role and status of the technocrat and technocratic approaches contribute in devaluating indigenous knowledge and experience, and in sidetracking the role of communities' emotions and feelings in development. Therefore, the following components of indigenous knowledge deserve further discussion.

2.3.2.1 Characteristics of indigenous knowledge

Singh and Titi (1995: 147-148) state that if the idea of development is to have credibility, there is a need to legitimize an indigenous knowledge base to break the web entangling the conventional debate on development. Thus, there are several possibilities for using indigenous knowledge to empower communities, by utilizing their own local creativity and resources. Alternative strategies of local development must be developed using the basic principles of indigenous knowledge. The task of integrating and validating indigenous knowledge requires scholarly work and the knowledge base of human societies. The research for knowledge should go beyond the boundaries of the academic to local communities and to the public domain. This is one way to tap into the knowledge of communities.

2.3.2.2 Indigenous knowledge versus Westernization

Treurnicht (1997a: 83-84) expresses his concern that indigenous knowledge was disregarded by Western imperialism. According to him, development was equated with Western technologies, unchecked economic growth and the direct transfer of Western values to the Third World, with little regard for people, their culture and the environment. Intellectual impoverishment of local indigenous knowledge was often promoted during the colonial era. Western imperialism tried to destroy information that is important to sustain local systems and conserve the environment. Instead, indigenous knowledge systems were replaced by information systems that did not always relate to local conditions.

Semali and Kincheloe (1999: 3) argue that indigenous knowledge has been associated by the Western world as being primitive, wild and natural. Such representation showed little appreciation for the insight of the people. But for the millions of indigenous people in the Third World, indigenous knowledge is an everyday realization that rewards individuals. Indigenous knowledge reflects the dynamic way in which the residents of an area have come to understand themselves in relationship to their natural environment and how they organize the folk knowledge of flora and fauna, cultural beliefs, and history to enhance their lives. Scholars are attempting to bring indigenous knowledge to the academic world. They are linking it to educational reform, to be part of a larger socio-political struggle.

Furthermore, Treurnicht (1997b: 94) claims that the dominant Western development paradigm has failed to make a sustainable impact on the development problems of the world. The problem of development has been defined by Western science and logic; the remedies were prescribed within the same patterns of thinking. The transfer of Western technology to Third World countries created more problems because it made these countries more dependent on the industrialized countries. More questions are now being asked about approaches to and the implications of development aid.

Explicitly, Bosman and Marais (1998: 22) demonstrate that the real value of indigenous knowledge is to make communities aware of the need to challenge every facet of the concept of development. Hence, they call for the revaluation and restoration of indigenous knowledge and to give its rightful place at the local level and to demand respect from outsiders.

2.3.2.3 Indigenous knowledge in Africa

Singh and Titi (1995: 150) demonstrate that the indigenous knowledge base of African people has been little analyzed for their contributions to the national development process. The processes of national development have not fully tapped into commonsense knowledge

and ideas of local people about their everyday world, cultural heritage and identities. What is needed is a critical questioning of folk knowledge as a source of cultural, social and political empowerment of local people. In African indigenous knowledge, the ethnic and cultural diversity of African people must be acknowledged. In addition to this, some common elements in African indigenous knowledge systems are found in diverse forms among indigenous peoples in other parts of the world.

2.3.3 Integrated rural development

Integrated Rural Development (IRD) is a poverty-oriented strategy, which has adopted its features from community development. According to this strategy, different role-players in development should coordinate their efforts. Governments, non-government organizations, and the local communities should work hand in hand in order to maximize the impact of their efforts, and to avoid unnecessary duplication (Monaheng, 2000: 125-131). Monaheng explains that IRD focuses on the necessity for rural poverty to be dealt with in a holistic manner. Increasing agricultural production is not enough. It is necessary to look at all possible factors, which often make it difficult for the poor people to benefit from increased agricultural output. These include lack of access to land, inadequate education, health and transport facilities, which make it difficult for the poor to play a meaningful role in development. Therefore, the social and political factors, which affect economic production, must be tackled. Moreover, different role-players should work together to solve these problems. This in turn leads to effectiveness and efficiency.

2.3.4 Effectiveness and efficiency

Community participation enhances project effectiveness and efficiency. As Paul (1987: 3-4) states, effectiveness refers to the degree to which an objective is achieved. Hence, community participation tends to improve project effectiveness when the participation of communities contributes to better match project services with beneficiary needs and constraints. It provides inputs for project design so that appropriate services are devised and delivered. Furthermore, community participation improves project efficiency. It could be used to promote agreement, cooperation, and interaction among beneficiaries, and between them and the implementing agency. Thus, delays are reduced, a smoother flow of project services is achieved, and overall costs are minimized. This in turn may be used to facilitate a collective understanding and agreement on cost sharing and its enforcement, because beneficiaries are expected to contribute labour and money, and undertake to maintain the projects.

2.4 Interactions and interdependence of the building blocks of development

From the experience gained in past decades, community participation should be linked to, and integrated with, other development approaches to form a holistic “block of development” (see figure 1.1). It cannot live, grow and sustain in isolation. It must be multidimensional to solve the challenges of development and to become a credible strategy. The study attempts to survey the components of the holistic block so that they act as a tool for further analysis.

2.4.1 The social learning process

2.4.1.1 Definition, origin, and development

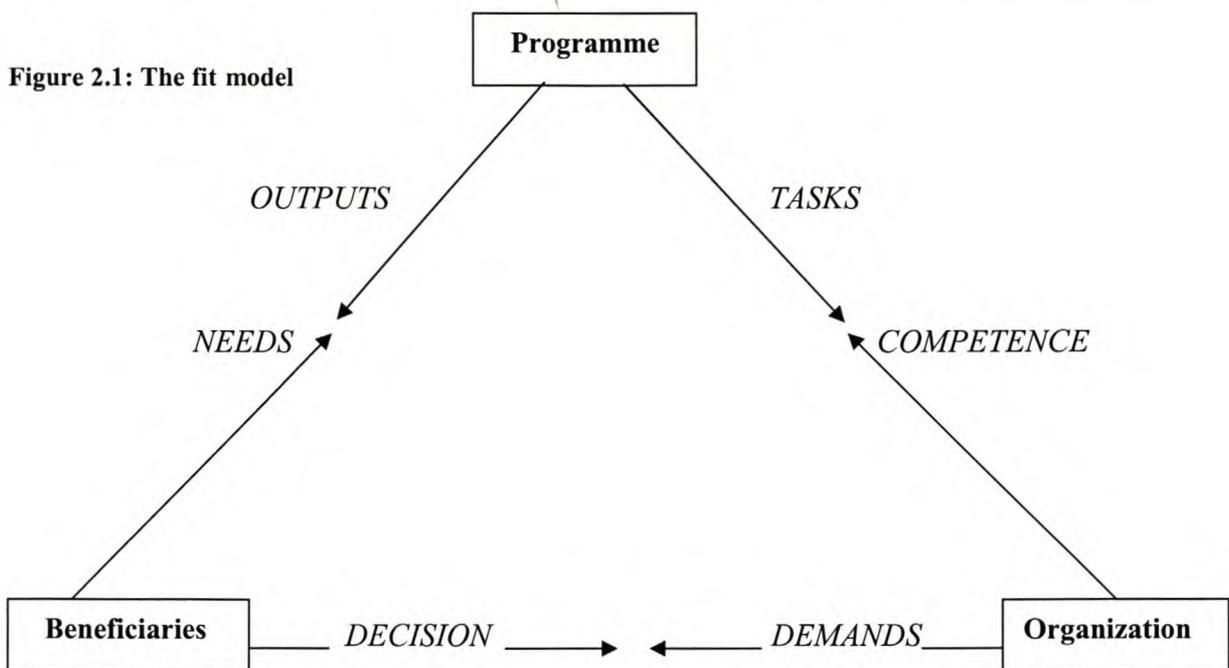
People learn to fulfil their needs, and to realize their objectives easily. In the 1920s, James Yen told construction workers to learn by doing. His instruction distributed the responsibility for learning between people and development organizations. All involved in development must learn. All are students of the situation and all learn from the realities of the situation (Swanepoel, 1997a: 9). Soedjatmoko (1986: 20) calls it, a collective process by which neighbourhoods, villages, communities, and the nation prepare not only to adjust to change but also to direct change to suit their own purposes. The approach has strong consequences for development. The most important is that established frameworks cannot limit learning.

Korten (as cited in Swanepoel, 1997a: 10) argues that development organizations should come into the community with a clean slate. Community workers have nothing to offer but their willingness to become involved in the peoples' efforts to break out of the deprivation trap. The bottom-up learning process evolved from the coming together of the community worker and the community. Therefore, a learning process is a bottom-up approach, avoiding the restrictions of a blueprint approach. It aims to meet the need for a flexible, sustained, experimental action based capacity building style of assistance.

2.4.1.2 The learning process approach to programme development

Centrally designed programmes are not responsive to the needs of the poor. The organizations that implement the programmes have no capacity to implement as designed. They cannot identify the actual needs of the poor and adapt the programmes accordingly. Social development does not lend itself to the conventional development programming methods, which call for experts to design programme blueprints to be passed to line agencies for implementation (Korten, D. C. 1983: 213). Instead, it requires a bottom-up learning process by which the programme design and the capacity to implement are developed simultaneously

to produce a three way fit between the beneficiaries, the programme, and the assisting organization (see figure 2.1, the fit model developed by Korten).



Source: Korten, D. C. (1983: 213)

As Korten D. C. (1983: 213-214) illustrates, between the beneficiaries and the programme, the critical fit is between beneficiary needs and the resources and services made available as programme outputs. Between beneficiaries and the assisting organization, a fit is needed between the means by which beneficiaries are able to communicate their own needs, and the processes by which the organization takes its own decision. Finally, between the programme and the organization there must be a fit between the programme's task requirements and the organization's distinctive competence. Overall programme effectiveness will be a function of the degree of fit present between these three elements.

2.4.1.3 The nature of social learning

According to Kotze and Kellerman (1997: 43-45), the learning process approach makes attitudinal and procedural demands on the development organization and its management. In the field of management, the learning process is related to the concept of the learning organization. It is the development organization that should adopt a learning attitude at the outset and should establish a culture of learning so that local people are included in the learning process. On the other hand, the learning process is an advanced version of the institutional building approach. It takes the bottom-up mode of decision-making and partnership action. The local communities can make a major contribution to the programme and design. Communities are the source of valuable knowledge and insight, which can serve

as a basis for innovation. Thus, joint planning reduces the risk of inappropriate methods imposed on local communities and ensures that the communities' resources are the foundation for development, whereas, blueprint designed development has proved to be incapable of bringing successful development.

Against this background, Kotze and Kellerman (1997: 48) suggest that a change of attitude should take place; a social learning process and programme of trial and error should become accepted. In addition, the technocratic and ethnocentric attitude of bureaucrats and planners should be checked. Furthermore, as Korten (1984: 188) concludes, the learning process approach recognizes that in working with rural communities, our knowledge of what is needed and our institutional capacity to do it are limited. There should be no call for endless research. In addition, there should not be a persistence of unsighted action based on improper statements of the problem and incompetent implementing organizations. The challenge is to integrate action taking, knowledge-creation, and institutional building into a coherent learning process.

2.4.2 Partnership

In the new millennium, approaches to the role of the state and citizens are evolving to encompass partnership for public services and development. The nature and scale of development problems, particularly in a globalized world, are impossible to address in isolation. Partnership is the latest approach to address the challenges of international development and public service delivery. Partnership is the desire to enhance the efficiency and effectiveness of development efforts. It can provide a means of developing strategic direction and coordination. Partnership contributes to effectiveness by allowing access to crucial resources. It can also reduce information and transaction costs through coordination and trust building. Finally, participation affords a scale and integration of services that is impossible for any actor operating alone (Brinkerhoff, J. M. 2000: 218-219). From these points of departure, Brinkerhoff defines partnership as:

“A dynamic relationship among diverse actors, based on mutually agreed objectives, pursued through a shared understanding of the most rational division of labour, based on respective comparative advantages of each partner. This results in mutual influence, with a careful balance between synergy and respective autonomy, which incorporates mutual respect, equal participation in decision-making, mutual accountability and transparency.”

Regardless of the initial justification for partnership approaches, significant multiplier effects can develop once a partnership becomes operational. The capacity of one actor is enhanced when the resources of other actors can be leveraged for wider impact. The high level of interaction among the actors, particularly between the government and civil society, creates a favourable climate for poverty reduction. Mutual influence can contribute to the effectiveness of partnership as a whole. Partnership produces a greater understanding of each actor's perspective, operations and contributions (Brinkerhoff, J. M. 2000: 219).

Goethert and Hamdi (1988: 24) regard partnership as the relationship among people of equal status and vertically between those who set policies. Partnership means involving with others, developing options, negotiating priorities and agreeing on directions. As Brown (2000: 174) states, a social systems approach leads to the establishment of partnership between a society's "soft" sub-systems and the management of the project, the "hard" sub-system of a project. The former determines the why, what, who and for whom of the project, and is concerned with social values and people's involvement manifested in community participation. The latter determines the how, what-with and when of the project and manifests in methodology and controls.

Properly structured and managed partnership can produce effective policy solutions and sustainable outcomes. It can promote more responsive, transparent, and accountable government. Partnership can facilitate increased community participation, empower local communities to take charge of their livelihoods, and develop their capacity to advocate for programmes and policies with public officials and politicians (Brinkerhoff, D. W. 2000: 212). Brinkerhoff argues that in many countries, governments view NGOs and civil society organizations with suspicion. Despite such difficulties, partnership is increasingly common around the world for service delivery, regional economic development and poverty alleviation among marginalized communities.

2.4.3 Equity

Fletcher and Duncan (1996: 11) argue that politically as well as individually, equity raises issues of access to the system and to the fair distribution and share of national resources. It cuts across all forms of governmental activities. The issue of equity in development is now recognized as a basis for local and regional stability. When coupled with economic development, stability within countries has international significance. Dodson (1996: 57) takes Fletcher's argument further. Communities demand equity of access to services and an equitable share of resources. Nevertheless, politicians and bureaucrats make the mistake of

believing that equity can be achieved by providing welfare programmes. However, from the communities' perspective, equity can be achieved through empowerment. Access to equity is fundamental for the participation of communities in the decision-making process.

Esman (1991: 6) refers to equity as the fair distribution of the fruits of economic development. In people-centred development, the issue of distribution of the fruits of development would arise. Thus, development should advance on a basis of equity. Furthermore, Bryant and White (1982: 16) demonstrate that even if an economy develops, if only a small segment of the population benefits from it, development has not occurred. Therefore, uneven attention to different groups will divide communities, undermine their capacity, and hinder participation.

2.4.4 Capacity building

According to Paul (1987: 3-18) capacity building is the effort that strengthens the skills and knowledge of the beneficiaries so that they can take responsibility for their projects. Capacity building contributes to the sustainability of a project beyond the disbursement period due to the enhanced level of beneficiary interest and competence in project management. Esman (1991: 6) regards capacity building as the cultivation of skills, institutions and incentives that enable communities to sustain improvements and to cope with new challenges.

In order for communities to participate in development activities, their capacities should be built. To strengthen this notion, Bagadion and Korten (1991: 73-75) have argued that addressing social issues often involves building new capacities among the people at the community level. However, many government agencies assigned to implement large projects have norms, procedures, policies, and attitudes that provide little support for building such capacities. When new capacities need to be developed, the need is not for a comprehensive plan, but rather for a process. The process must allow for trial and error on a small scale; continuous examination of the village level work to identify problem issues, and successful approaches; and adjustments in agency policy, procedures, and organizational structures to accommodate responses to the field level needs. The process itself must be shaped to develop both the individual and the organizational systems needed for eventually implementing the new approaches on a broader scale. In short, what is needed is the social learning process approach of capacity building.

According to De Beer (1997: 21-22) capacity building is based on the idea that people can lead their own development efforts. If you build the capacity of communities who used to be

the objectives and recipients of development, they can become masters of their own destiny and development. However, to build the capacities of the communities, some one has to do it. This in turn can lead communities to be dependent receivers. The government has, therefore, a primary responsibility to affect capacity building, but it should be an enabling function. NGOs, voluntary organizations, community based organizations and the private sector have responsibilities to build the capacity of communities. De Beer further suggested that every institution involved with communities has an obligation to facilitate capacity building as a social learning process.

From the above discussions, Monaheng (2000: 134) concludes that the process of capacity building has three main components. Firstly, it involves the acquisition of knowledge and skills required to produce the goods and services which satisfy communities' needs. In community development, the communities are empowered by strengthening their capacity to engage in development through educational and skill building programmes. Secondly, capacity building pertains to the necessity to make productive resources available to the underprivileged. Thirdly, capacity building includes the establishment of effective and efficient administration and institutional structure. It also entails the improvement of coordination and communication between different actors in development. These steps help to strengthen the institutional capacity for sustaining development.

Finally, Swanepoel (1997a: 193) suggests that community participation must become a process through which the capacity of the communities is built so that they can take responsibility to undertake their own development efforts. Therefore, in the process of development, the prime concern must be the development of communities' capacity so that they can take responsibility for any development that may concern them.

2.4.5 Self-reliance

Community participation is the base of self-reliance. Oakley et al. (1991:17) refer to self-reliance as a positive effect on rural communities in participating in development projects. It helps to break the mentality of dependence, promotes self-awareness and confidence and people participate to solve their own problems. As Burkey (1993: 50) puts it, it is doing things for oneself, maintaining one's own self-confidence and making independent decisions. Self-reliance is based on social relationships. Like-minded individuals come together and voluntarily pool their efforts and resources in small groups. Decisions and actions taken at all levels are based on self-confidence and determination.

Dotse (1997:18) argues that in order to strengthen self-reliance as the fundamental principle

in working with the rural poor, it is necessary to develop structures and organizations that can help the poor become self-reliant. Such organizations are from the communities themselves, managed by them and structured in such a way as to avoid external dependence.

Although there is a controversy among development thinkers about external aid, developing countries need it in order to escape from the trap of poverty. It should, however, be given with caution. Burkey (1993: 50), the advocator of self-reliant development, states that self-reliance is a question of attitudes rather than money and materials. Too much money and materials from external sources can prevent the emergence of self-reliance. Injections of large amount of funds as gifts or credit will destroy the self-reliant participatory process. This process is contrary to the philosophy of 'giving things to people' or 'doing things for people', which creates greater dependency. The golden rule 'do not do anything for the people that they can do for themselves' should be followed (Burkey, 1993: 208-211). Instead, people must gain access to mobilize their own human and material resources. Assistance from the outside should only be what the people cannot yet manage themselves.

Furthermore, as Coetzee (2001: 125-126) asserts, real participation takes place when people are consciously involved in development. Participation and self-reliance imply and emphasize the necessity to involve the beneficiaries of development. Participation here implies a breaking of the monopoly of knowledge. Self-reliant, endogenous development can be attained when beneficiaries of development are also its contributors. The ultimate of development is well-being. As Chambers (1997: 14) demonstrated, the basics of well-being are livelihood, security, equity, and sustainability.

2.4.6 Empowerment

As Paul (1987: 3) notes, participation in its broadest sense, is an instrument of empowerment. According to his view, development should lead to an equitable sharing of power and to a higher level of a community's political awareness and strength. Any development activity is then a means of empowering communities so that they are able to initiate actions on their own and thus influence the processes and outcomes of development. Singh and Titi (1995: 6) state that the concept of empowerment has been at the centre of a reconceptualization of development efforts. It is a paradigm shift, and the strategy of development for poverty alleviation, particularly in rural areas. According to the Human Development Report of UNDP (as cited in Singh & Titi, 1995: 6), development must be woven around the community, not the community around development, and it should empower individuals and groups rather than disempower them. This rethinking has been brought about by the fact that,

despite decades of development assistance, the number of communities who are in poverty continues to increase.

From this perspective, De Beer and Swanepoel (1998: 23-26) regard empowerment as a process in which beneficiaries control development and be the main actors and decision-makers of their development efforts. Empowerment is then a learning process and as such a problem-solving approach. It is collective actions in which a group of communities sharing mutual interest and concern act together. It is an action at grass-roots level, achieved primarily through community-based groups. Empowerment creates self-awareness that addresses abstract development needs. Awareness itself is one of the greatest strengths a community can enjoy and awareness is the first principle of human orientation. When a community sees itself as an active doing organism able to change its environment, that community has freed itself from the deprivation trap. Empowerment also releases people from the poverty trap through transformation. Finally, empowerment addresses both concrete and abstract human needs.

Chambers (1997: 27) warns that whether empowerment is good or not depends on who are empowered, and how they use their new power. If those who gain power are outsiders or the local elite that dominate and exploit the poor and the disadvantaged, then the poor may be worse off. The challenge is, therefore, to identify the poor to empower them and to achieve equity. Furthering his discourse, Chambers suggested that equity could be served by empowering the poor. Thus, good change can be more sustainable when it is locally owned.

Botchway (2001: 135-156) has critically analyzed empowerment. According to him, though participation in development projects could become the basis of empowerment, it could also be a very limited objective, if development strategies and policies are seen as ends in themselves rather than as a means to an end. If the institutional and administrative structures are unfeasible, community participation and empowerment can provide the state with a legitimate opportunity to shrink and dump its responsibilities onto the communities. Therefore, to understand participation as a basis of empowerment and sustainability, it should not be viewed narrowly. Participation should be seen as part of the process by which the dominated social groups seek their own freedom from exploitation by powerful classes. Empowerment is more than opening up access to decision-making. The community affected should have the capacity and the right to act and influence the development process. Against this background, Botchway suggests that the socioeconomic environment of the communities needs structural and institutional transformation to address the issues of poverty.

Gopal (2002: 9-10) questions the institutional requirements which are feasible to implement empowerment. According to him, the term empowerment has different meanings in different

socio-cultural and political contexts. Empowerment has intrinsic and instrumental value. It is relevant at the individual and collective level, and can be economic, social, or political. Empowerment refers to the expansion of freedom of choice and action. For poor communities, that freedom is curtailed by their voiceless and powerlessness in relation to the state and markets. Since powerlessness is embedded in the nature of institutional relations, Gopal adopts an institutional definition of empowerment in the context that, “Empowerment is the expansion of assets and capabilities of poor communities to participate in, negotiate with, influence, control, and hold accountable to the institutions that affect their lives”.

2.4.7 Sustainability

There is a continuous interaction between communities and the environment. Communities, in their quest for development, are slowly destroying their natural environment. Community participation, therefore, promotes the protection of the natural environment as a principle. As Oakley et al. (1991: 18) argue, experience shows that externally motivated development projects frequently fail to sustain once the initial level of project inputs are withdrawn. Participation is seen as a cure which can ensure that local communities maintain the project dynamic. Sustainability, therefore, refers to continuity and sees participation as a fundamental drive for sustainable development. As Burkey (1993: xvii) adds, sustainable rural development will only be achieved through the efforts of rural communities working for their benefit. Governments and agencies can assist this process but communities can do it themselves.

According to Treurnicht (1997a: 83-88; 2000: 61-63), the first phase of the debate on sustainable development was characterized by a lack of direction and substance. Nevertheless, there is a general belief that our current life style cannot be sustained if we do not take the limitations of the natural environment into account. As Treurnich further discusses, nowadays the literature on sustainable development is entering into a second phase towards more refinement. There is a broader interpretation of the concept of sustainable development. Sustainable development means to sustain the economy as well as social and ecological systems. Culture occupies an important place in this interpretation. Sustainable development also means room is left for different cultures and knowledge systems to co- evolve in a reciprocal relationship. According to the second interpretation, development is approached from an ecological angle. It should in the first place be ecologically sustainable and the other issues should be subject to this. Today, sustainable development is becoming the new umbrella for development thought.

The well known definition of sustainable development of the World Commission on Environment and Development (WCED) (as cited in Hoff, 1998: 6) reads, "Sustainable development is that which meets the needs of the present without compromising the ability of future generations to meet their own needs." However, as Norgaard (1994: 117) argues, this definition is not clear on how it should be achieved and it leaves room for the present generations to live far beyond their needs as long as the needs of future generations can be addressed.

In its broadest sense, Munslow (2001: 498-499) tries to show that sustainable development is about improving the human resource management of the natural resource base in order to maximize human welfare and maintain the environment now and in the future. From this notion, two concerns arise. Firstly, existing development approaches have left many people poor. The benefits of development are unevenly distributed. Secondly, until recently, the environment has been treated as a free good. Nobody counted the cost to the environment in development activities. Most people are using the environment as though there is no tomorrow. However, suddenly tomorrow becomes today. Humanity shares a common resource base, but that which is used by one group may frequently have a very negative effect on other groups.

The World Development Report (2003: 1) warns that ensuring sustainable development requires attention not just to economic growth but also to environmental and social issues. Unless the transformation of society and the management of the environment are addressed integrally, growth itself will be jeopardized over the long-term. Environmental and social issues, if not addressed, accumulate overtime and have irreparable consequences.

2.5 The origin, development and motives of community participation

The idea of community participation is not a new one. It has existed since the Greek civilization. Nevertheless, it was in the 1950s that it appeared in the development debate. In the 1970s it took root and shifted the idea of the modernization approach towards a systematic search for alternatives. From the experience of the past years, associated with failures, it has emerged as a new strategy of development linking the building blocks of development. The study tries to narrate the origins and development of community participation and traces the motive behind this strategy.

2.5.1 The origin and development of community participation

As Botchway (2001: 136) narrates, historically, community participation appeared in development discourse around the 1950s. Social workers who were frustrated by the failure of earlier approaches to development, which advocated a “top-down” strategy of development, used it. They realized that the failure of most development projects was due to the top-down strategy of development that disregarded the main “beneficiaries” of development. This situation promoted development field workers and activists to reach a consensus that whenever beneficiaries are locally involved and actively participate in their own development efforts, much will be accomplished.

The recent development of community participation, as Oakley et al. (1991: vii-viii) state, was in the mid-1970’s which saw the start of a fundamental shift from the domination of the modernization paradigm of development thinking and intervention towards a systematic search for alternatives. For the past thirty years, development thinkers have sought and experimented with alternative solutions to poverty that is endemic in much of the Third World. The literature, which has accompanied this search, reflects the emergence of community participation as a new force in development thinking. Initially the governments of most developing countries did not accept the idea of community participation. Today, however, it has become one of the most dominant people-centred development paradigms.

Kotze and Kellerman (1997: 37) have the same view as Oakley et al. According to them, it was in the late 1960’s and early 1970’s that it was realized that, unless the community contributed to development efforts, no meaningful progress could be expected. Community participation received a boost with the appearance of the basic needs approach. However, it is not a new comer to the development scene. Community participation is commonly seen as a necessary condition for sustained development.

2.5.2 Motives of community participation

Four key limitations of centralized service delivery approaches that benefit rural and urban poor, have contributed to the recent interest in community participation. Korten, F. F. (1983: 181-1983) has noted the following:

a) *Limited reach:* It is not possible for government funded and supervised programmes to reach into every village. The government is neither able to provide the number of staff and facilities required nor to ensure their effective supervision.

b) *Lack of sustained local level action:* Development projects have produced new facilities

without adequate provision for their operation and maintenance. By involving the community in planning and construction, it would be possible to develop both the skills and the commitment required for more efficient operation and maintenance.

c) *Limited adaptability to local circumstances:* Services are designed by central planners who have little personal familiarity with the actual needs of the beneficiaries. Consequently, there is often a poor fit between the needs of a given community and the nature of services offered, resulting in underutilization and consequently a waste of resources.

d) *Creation of dependency:* Government programmes seek to improve the community's lot, not through interventions intended to strengthen their own capacity for "self-help" action, but through doing for communities, what they previously did for themselves. As a result, the government is making the decisions and providing the resources. Consequently, the communities' former self-sufficiency turns to dependence.

Furthermore, McFarlane (2001) has discussed three different points of view why community participation is needed.

- Firstly, participatory processes are valuable because they contribute to the utilitarian goals of better and more efficient local government. Local governments use community participation projects, not because of a commitment to any intrinsic benefit to communities, but for their value to local government administration. Participation can be a useful tool for introducing a project to a proposed community and gauging the support for or opposition to it.
- Secondly, democratic arguments for participation are based on the concept that all people are equal in their decision-making and should have the right to participate in decision-making on matters that concern them. Community participation often serves as a learning process that educates communities with the skills needed to sustain development. This can be an education in how to negotiate a political process and creates a sense of political awareness. Through the process of negotiation and compromise, participation can foster beneficial psychological attitudes by making a person aware of human interdependence.
- Thirdly, community participation justifies the participation of communities in political and economic empowerment. These arguments hypothesize that without power to make decisions, participation is a meaningless exercise. These experiences make it clear that participation is meaningful only to the extent that the participant has the power to affect the outcome of the development process. These arguments entail that community participation inevitably leads to a power shift.

2.6 Views, types and levels of community participation

Against its historical development as a new strategy of development; different scholars and development practitioners view community participation, and categorize its types and levels differently. To suit the study topic, the researcher has presented the following views, types and levels of community participation.

2.6.1 The liberal and radical views

Swanepoel (1997a: 4-5) distinguishes the liberal and radical views of community participation. The liberal view sees participation as something given to the poor by the government or development agents for the alleviation of poverty. It sees community participation as good if it is organized in an orderly way. It emphasizes two points. Firstly, through community participation a solid, local knowledge base is asked for development. The deprived and poverty-stricken communities possess something outsiders do not know. Secondly, people who do not participate in their own development have no affinity for development efforts and its results. The problem of sustaining development and maintaining facilities instituted by development is resolved if the affected people participate, knowing that they have a stake in the efforts and the results. The radical view has a wide-range approach to development. Firstly, it sees community participation as a way of ensuring equity. Often the poorest of the poor do not get their fair share of the fruits of development. Secondly, it sees community participation as a democratic right. Every adult, whatever his/her social status, has a right to decision-making.

2.6.2 Types of community participation

Midgley (1986b: 39-44) has identified four ideal modes of state response to community participation.

2.6.2.1 The anti-participatory mode

This mode of response holds that the state is not interested in the poor and that it supports neither community participation nor social development. Instead, the state acts on behalf of the ruling class, furthering their interests, the accumulation of wealth and the concentration of power.

2.6.2.2 The manipulative mode

Typical of this position may be a strategy where the state seeks to gain control over grassroots movements and to manipulate them for its own needs. The state supports community participation but does so for hidden motives. Both elitist and corporatist theory influence this view of the state's response to community participation, which emphasizes the capacity of the state to undermine and co-opt autonomous movements and to preserve its own power.

2.6.2.3 The incremental mode

This mode of response may reflect the socialist attitude, which directs policy measures towards the strengthening of the state and the promotion of central planning. Therefore, community development will suffer and local activities will not be supported effectively.

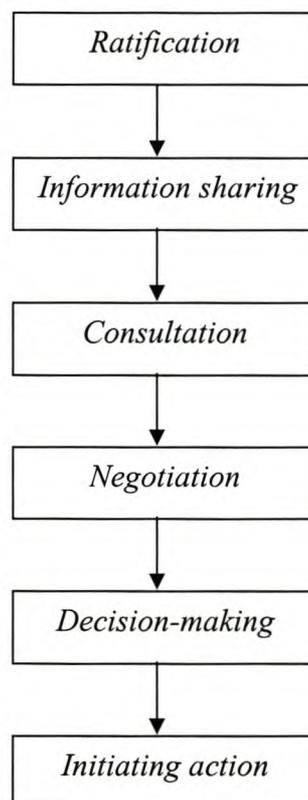
2.6.2.4 The participatory mode

In this mode, a real devolution of power is involved. The state fully approves of community participation and creates mechanisms for the effective participation of local communities in all aspects of development. It is obvious that the chances for authentic participation in community development will be optimal under the conditions of a participatory response mode by the state (Midgley, 1986b: 42-43). Nevertheless, Midgley warns that these are ideal responses, which may not fit practical reality.

2.6.3 Levels of community participation

As Narayan (1995: 7) states, participation is a multi-dimensional and dynamic process. It varies and changes during the project cycle and over time. Although different authors have proposed different levels of community participation, the study adopts Paul's (1987: 4-5) and Cloete and Meyer's (2000: 105) levels of community participation to suit the study topic.

Figure: 2.2: Levels of community participation



- *Ratification*: Ratification is the approval of decisions and actions after they have been taken. It is merely legitimizing the decisions and actions taken by others. Ratification is a

weak form of participation; it can only demonstrate support rather than influence the decisions or actions (Cloete & Meyer, 2000: 105).

- *Information sharing:* Project designers and managers may share information with beneficiaries in order to facilitate action. Though it reflects a low level of intensity, it can have a positive impact on project outcomes (Paul, 1987: 4).
- *Consultation:* The level of beneficiaries' participation rises not only when they are informed, but also when they are consulted on key issues in a project cycle. Hence, beneficiaries have an opportunity to interact and provide feedback to the project agency. Their feedback could be taken into account in the design and implementation stages (Paul, 1987: 4). Cloete and Meyer (2000: 105) point out that consultation refers to using beneficiaries as a sounding board and eliciting opinions, suggestions and advice about an issue before or after a decision is taken. It is weak and ineffective if the decision-maker is not committed to accept the views of the communities.
- *Negotiation:* Negotiation is a direct involvement by parties in discussions to take joint decisions through mutual agreement. It does not guarantee an agreement but it gives an opportunity to be part of a decision by trying to persuade a partner, bargain for a compromise, or threaten with force if one's view are not accepted (Cloete & Meyer, 2000: 105).
- *Decision-making:* Decision-making implies a much greater degree of control or influence on projects by beneficiaries than consultation and information sharing. Thus, beneficiaries have a decision-making role in matters of project design and implementation (Paul, 1987: 5).
- *Initiating action:* When beneficiaries are able to take the initiative in terms of decisions pertaining to a project, the intensity of community participation may be said to have reached its peak. Therefore, projects should be designed to encourage beneficiaries to initiate action (Paul, 1987: 5).

2.7 The role of governments, communities, and development agents

There are many arguments regarding the role of a government and NGO. However, in the fight against poverty and social transformation their roles remain indispensable. Nevertheless, the roles should be enabling and supportive. Government and NGO roles should create a space for the communities' need. Communities must define their needs, and shape and determine the direction of their own development. The study overviews the role of each role-

player, and there needs to be a partnership among these role-players, incorporating the development blocks of development, if community participation is to survive and grow as a coherent and credible strategy.

2.7.1 The role of the government

Participatory development has not been free of state manipulation. On the other hand, there is little evidence to show that a reliance on NGO's, result in the emergence of genuine forms of participation. As a result, participatory development has experienced difficulties. As such, there are limitations to participation that need to be recognized and accommodated (Midgley, 1986c: 157-158). Midgley further argues that:

“If the critical problems of mass poverty and deprivation in the Third World are to be dealt with, concerted action by the state will be needed. Local people do not have the resources to solve these problems through their own efforts alone. Participation is highly desirable but the poor cannot survive on rhetoric and idealism.”

Against this background, Midgley (1986c: 159) calls for a more realistic and appropriate concept of participation that seeks to enhance state and community involvement in development based on their closer relationship and partnership. This cannot be achieved through a simple formula for success but through a long-term on-going dialectical experience of bargaining, trade off and exchange.

Botchway (2001: 148) argues that most advocates of community participation understandably reject state involvement in the promotion of community participation. State involvement perpetuates the old top-down approach to social development, thus stifling initiative and self-reliance. This view is popular, and is currently being reinforced by structural adjustment policies, which advocate complete state withdrawal from development. However, this position ignores the fact that the state is today a major provider of social development services. The state also has the power to shape and determine the nature of community participation activities in many developing countries.

From this perspective, Swanepoel (1997b: 56-57) confirms that successful development needs a firm government commitment. This commitment must be long-term so that development can grow and prosper. Without national commitment reflected in a national policy, there is no basis for development. Moreover, without administrative support, national commitment is mere rhetoric. The attitude in the bureaucracy must be one favouring development and the whole structure should be geared towards development. Since development programmes are

technically and organizationally complex, their success depends on national policy and administrative support. Therefore, the government is the most important role-player in development.

2.7.2 The role of communities

Local people are the main actors in the development of their communities. They are going to be directly affected by the process and therefore they must be in the forefront of shaping and determining the direction of their own development agenda (Monaheng, 2000: 129). Governments can support community development by providing financial assistance, technical advice, and training to enable the people to carry out their development projects. NGOs also give support; they organize communities by acting as catalysts to influence the government policy towards community development. However, Monaheng (2000: 127) argues that the people themselves must define their needs, and not the government or any other development agency. Nevertheless, due to lack of access to information about outside factors which affect them, local communities may not be able to define their needs.

Furthermore, Hagg (1996: 10-11) claims that when community structures are made dependent on government action for their development efforts, they usually wait and lobby for the relevant departments to implement planning. Thus, without proper interaction among the role-players, the development process may be delayed or come to a halt.

2.7.3 International development agents

Several writers have argued that NGOs provide effective opportunities for community participation and are more likely to promote authentic forms of participation than the state. These organizations are dynamic, flexible, socially concerned and have commitments to humanitarian ideals. They are not inhibited by bureaucratic rules and regulations; rather they identify more closely with ordinary people and are more sensitive to local needs. Despite these noble causes, they have limitations and drawbacks, which may mitigate the emergence of authentic community participation (Midgley, 1986c: 154-155). Furthering his discourse, Midgley enumerates the drawbacks of these organizations. There is evidence to show that NGO's are prone to ossification and are controlled by dominant personalities of this kind. As a result, excessive reliance on these organizations impedes the realization of community participation ideals. Another problem with these organizations is that they often reveal an unacceptable degree of superiority in their determination to persuade local people to accept

their opinions. These arguments suggest that it is questionable whether non-government organizations are any more able to promote authentic participation than the state. Furthermore, Cernea (1988: 7) argues that the essence of the NGO approach is not to induce development financially but to mobilize people into organized structures of voluntary group action for self-reliance and self-development. NGOs mobilize voluntarism, amplify the social energy and help people to achieve self-development. NGO's emphasis is on organizing communities to reach their common objectives. In this way NGO's are "putting people first." They organize people to make better use of their own local productive resources, to create new resources and services, to promote equality and alleviate poverty, to influence government actions, and to establish new institutional frameworks that will sustain people-centred development. Cernea (1988: 18-19) has also listed the limitations of NGO's. NGO supported activities are too small and localized to have regional and national impact. Many NGO projects are not designed in such a way as to sustain themselves with little or no outside aid to beneficiaries in the future. Furthermore, they are often implemented individually, relatively unconnected with other NGO programmes, which in turn hinders the establishment of countrywide programmes.

Taking all these loopholes into account, Burkey (1993: 74-75) observes that a self-reliant participatory development process requires an external catalyst to facilitate the start of the process and to support the growth of the process in its early phases. The provision, training and support of external change agents are roles that should be natural for development agencies. In short, NGO's can be defined as autonomous, privately set-up, non-profit making institutions that support, manage or facilitate development action (Liebenberg, 2000: 109). Liebenberg further suggests that they could play an important role in the government delivery systems. Nevertheless, the government should not abandon its development role, rather it is important to complement and assist each other in the process of development.

2.8 Project definition, principles and project processes

The study at hand is regarding development projects. Development projects are the interventions that address the plight of the poor. It is through projects that the level of community participation is measured and tested. In order to follow a holistic outlook, the study conceptualizes the term "project" and discusses the project process that demands community participation in all its phases.

2.8.1 Project definition

According to Cusworth and Franks (1993: 3-4) a project is the investment of capital in a time-bounded intervention to create productive assets. The chief characteristic of a project is that it involves capital investment over a limited period. A project creates, over that period, assets, systems, and institutions which continue in operation and yield a flow of benefits after the completion of the project. Kellerman (1997: 49) describes a development project as a visual outcome of development plans and strategies, the testing ground for development theories and approaches that addresses the plight of the poor. Turner (as cited in Burke, 1999: 2) defines a project as an effort in which human, material and financial resources are organized, to undertake a unique scope of work, of given specification, within constraints of cost and time, to deliver beneficial change. Kerzner (2001: 4-5) takes Turner's definition further by stating that a project is a series of activities and tasks that has a specific objective, a start and finish, a budget, and brings about change using resources. It has to be multi-functional.

2.8.2 Project principles

The inclusion of development principles is necessary in projects in order to ensure their sustainability after project implementation. Kellerman (1997: 51) has identified the following principles for a project:

- Projects should be identified by the community and be demand-driven
- The costs of a project should not exceed its benefits
- Projects should be owned and managed by the beneficiaries
- Appropriate technologies that fit with the capacity of the beneficiaries should be employed
- Beneficiaries should sustain and maintain projects
- Projects should be financially affordable to people and environmentally sustainable.

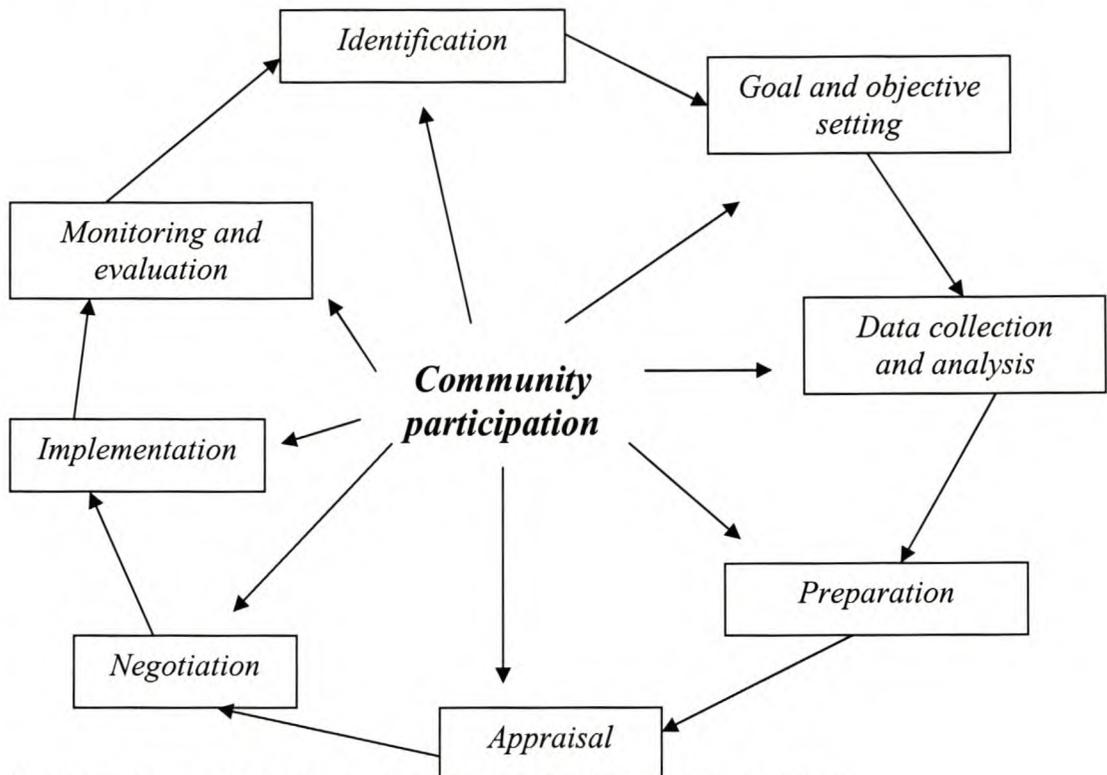
Thus, community-driven projects have become the key to development support worldwide. This in turn leads communities to become the champions of their development projects.

2.8.3 Project process

According to Conyers and Hills (1990: 73), project planning is regarded as a cyclical process of sequential stages. Different authors identify different stages. The researcher has adopted eight stages of the planning process by interpreting and incorporating Conyers and Hills

(1990: 74-77); Cusworth and Franks (1993: 5-7) and Kellerman (1997: 54-60). The figure below illustrates the various stages:

Figure: 2.3: Project cycle



Source: Adopted from, Kellerman (1997: 54); Conyers and Hills (1990:74); Cusworth and Franks (1993: 6).

2.8.3.1 Identification

Kellerman (1997: 54) asserts that communities, based on information from development agents, formulate an initial application for development support. It is at this stage that community participation and empowerment take root. The communities, through interactive processes of consultation are assisted to assess their needs. Their socio-economic conditions, available resources, and their capacity that could be mobilized by the intended project are identified. Moreover, Cusworth and Franks (1993: 5) argue that identification is a stage at which a project is defined as an idea worthy of investigation and study. This may come as a result of the discovery of a resource, which could be exploited, or a need to be satisfied.

2.8.3.2 Goal and objective setting

According to Theron and Barnard (1997: 49), goals and objectives are expressions of the priorities of planning, and their formulations represent the first phase in the cycle of the planning process. Cusworth and Franks (1993: 77) note that goals and objectives change in the medium to long-term. This continuous cyclical approach to planning should encourage the development of a learning process.

2.8.3.3 Data collection and analysis

According to Theron and Barnard (1997: 49), the success of the planning process relies on data collection and analysis. It demands extensive financial resources, trained human resources, and access to facilities. Burkey (1993: 178) warns that there is a challenge, which the project design team faces in understanding the complex nature of collecting and assessing relevant data. The planning process therefore, must evolve from an understanding of the poor as participatory researchers and local experts concerning their own situation and possibilities to improve their condition, that is their IKS. Korten (1983: 210) states that the fact that the rural poor continue to survive under unfavourable circumstances is a testimony to the fact that they possess technical and social knowledge relevant to their condition. Therefore, the best solution to any village level problem is the contribution of knowledge of both the technician, project manager and the villager. This means that there is a need for a planning partnership and mutual learning process.

2.8.3.4 Preparation

Based on the data collected and the information analyzed, a project proposal is prepared. As Cusworth and Franks (1993: 6) point out, the preparation stage involves the definition of alternatives for the project, followed by the selection and planning of optimum alternatives. Kellerman (1997: 54-55) refers to preparation as a technical and institutional requirement. Technical preparation comprises the physical design of the project. Institutional design concerns how it will function, who will participate, and how it will be organized, managed and maintained. At this stage, wide ranging community participation in decision-making is needed to ensure the commitment of the community and project sustainability.

2.8.3.5 Appraisal

Cusworth and Franks (1993: 6-7) state that appraisal is a process in which all the aspects of a project are reviewed in order to decide whether to proceed or to terminate the project. The technical, financial, economic, social, environmental, organizational, and political impacts are appraised and a decision is made on whether it is feasible to implement the project (see Kellerman, 1997: 55). Theron and Barnard (1997: 50) highlight the importance of appraisal. According to them, the objective of appraisal is to gather information in order to assist decision-makers and beneficiaries in choosing a specific action.

2.8.3.6 Negotiation

Kellerman (1997: 55) points out that a legal contract is drawn up between the funder and the recipients. This agreement contains information on the nature and extent of the funded project. It stipulates how funds should be applied and describes the roles and responsibilities of all role-players. Its signing introduces the implementation stage.

2.8.3.7 Implementation

Conyers and Hills (1990: 154-155) regard implementation as a process of translating policy goals and objectives into visible results. Kellerman (1997: 55-56) refers to it as the stage when a range of role-players take on particular roles to ensure the successful delivery of a project. As a result, the prepared and agreed upon project becomes a reality. It is a testing ground for democratic and transparent principles upheld by community representatives. It requires careful coordination of activities and responsibilities between role-players. Representatives of communities play a critical role in supervision, organization of tasks and responsibilities, management and control over the project's progress. Development funders facilitate in carrying out the responsibility of and assisting project beneficiaries in the managing of the project, providing input for capacity building and ensuring communication between project committees and other role-players.

2.8.3.8 Monitoring and evaluation

According to Theron and Barnard (1997: 52-53), monitoring and evaluation are aimed at ensuring that the given goals and objectives of the plan, are as designed. Monitoring is the continuous process of ensuring that the implementation plan is proceeding smoothly while evaluation refers to a more specific process which closely examines a project, at a certain stage. Bryant and White (1982: 145) show that monitoring involves the collection of information about the project while it is in progress. It gives continual feedback about which way implementation is being conducted. If necessary, the process can be immediately changed and adjusted.

2.9 Limitations and advantages of community participation

Although community participation is a coherent and credible strategy for development, it has limitations that hamper the flow of development. The challenge for development professionals and practitioners is to recognize and accommodate these limitations.

Fortunately, community participation has its own advantages. These advantages should be nurtured and strengthened to outweigh its weaknesses to allow community participation to be meaningful and to achieve its mission. Against this background, the study highlights the arguments against the limitations and makes concluding remarks.

2.9.1 Limitations of community participation

The notion of community participation is ideological in that it reflects beliefs derived from social and political theories about how societies should be organized. Central to its rationale is a reaction against centralization, bureaucratization, rigidity, and the remoteness of the state. The ideology of participation is sustained by the belief that the power of the state has extended too far, diminishing the freedoms of ordinary people and their right to control their own affairs (Midgley, 1986a: 4). From this point of departure, Midgley argues that the proponents of community participation have made a powerful and emotional appeal. They have advocated that participation facilitates social service delivery by lowering costs and smoothing implementation. This in turn, helps local people to contribute positively to national development. Nevertheless, the lofty sentiments of the advocates of community participation characterized by heroic and millennial images and the weaknesses, inconsistencies, and difficulties of the set of beliefs are criticized by social scientists.

Midgley (1986b: 35) points out that the proponents' approaches are based on practical experience and ideological orientation rather than rigorous research, theoretical insight and conceptual clarity. The question is, therefore, one of conceptual and theoretical poverty rather than a serious analysis of community life and its complex characteristics and dynamics. Midgley (1986c: 158) argues that the limitations of participation need to be recognized and accommodated. The idealistic, rhetoric concept of "authentic participation" needs to be tempered with realistic assessment of the possible. Furthermore, steps should be taken to deal with the paternalism and superior attitudes contained in community participation theory.

Cernea (1992: 1-4) identifies the differences between idealistic and rhetoric authentic participation, and the reality in the implementation of community participation. These limitations are directly related to the lack of a clear social methodology. Cernea notes that, "No matter how intense or loud, the advocacy for people's participation in development programmes remain empty rhetoric, if it is not translated into a 'how to' social methodology for making popular participation real." Furthermore, Cernea argues that participatory approaches are hampered by a lack of adequate methods and processes for organizing participation. Introducing the concept of social methodology, which involves communities in

bottom-up participation, may shed additional light on the subject. New approaches to designing and administering public programmes require well thought-through sequences of steps for eliciting the desired forms of convergent actions by individuals and groups. Participatory structures and methods cannot be blueprinted for all programmes. Therefore, Cernea suggests that generating such methodologies must become an integral part of organizing the participatory process itself.

Meyer and Theron (2000: 1) point out the weaknesses of the approaches for community participation. According to them:

“Current approaches to community participation often tend to be ad-hoc, incremental, unstructured, and uncoordinated and above all, smack of window dressing. Community participation, unfortunately, has also become a ‘buzz word’, the trendy and political correct concept or principle to incorporate in policy documents. This is often done without a perception regarding content and meaning, creating misunderstanding and wrong expectations among both officials and the community.”

Emmett (2000: 516) concludes that development is a process of collective action that involves cooperation between diverse actors in the pursuit of their objectives. The negotiation of these objectives is an integral part of the process of collective action. However, in order to achieve the objectives of development, we shall have to go beyond the narrow limitations of approaches that are based merely on practice and methods.

In another perspective, Botes and Van Rensburg (2000: 41-52) argue that a number of studies reveal that there are problems that hinder the promotion of participatory development. Such obstacles range from institutional to socio-cultural, technological, and logistical and are spread over an endless spectrum. These obstacles will be discussed under section 2.11.1, incorporated with a water supply case study. Furthermore, Botes and Van Rensburg (2000: 55) highlight the obstacles that may impede community participation. Involving people in development efforts is expensive. Community participation paralyzes decision-making; holds development investments hostage; consumes time; creates endlessly delay and circularizes decision-making. It has to deal with a constantly changing cadre of decision-makers that have a lack of mandate. The challenge for those involved in community participation is to recognize the limitations and minimize them.

2.9.2 Advantages of community participation

It has been stated that community participation has limitations. It also has advantages. Smith (1998: 199-202) has identified the following advantages of community participation:

- *Contribution:* Community participation leads to the provision of labour, materials and cash to a predetermined project by communities. Such activities are economically efficient if they engage under-utilized labour and skills. They can release untapped resources of different kinds. By mobilizing under-utilized resources the basic needs of the communities are fulfilled and the political and economic gap between the rich and the poor narrows. The mobilization of community resources is a step towards the empowerment of communities. Investments and loan schemes based on group savings are more likely to lead to success than dependence on external funding. Community funding also leads to authentic participation such as involvement in the management of facilities.
- *Enlistment:* The enlistment of communities as community workers on a voluntary basis is referred to as community participation. Such volunteers may act as catalysts for other community development efforts. Volunteers are often women who are supposed to have free time for voluntary work. Although such enlisted community workers may have no say in the policies to be implemented, they may mould implementation to community needs.
- *Cooperation:* Without cooperation in the sense of community participation development projects cannot sustain. The cooperation of communities, including changes in social and economic behaviour, may be essential for project effectiveness. Cooperation in projects by the adaptation of well established modes of social and economic behaviour alerts communities to alternatives that are less risky and threatening.
- *Consultation:* If communities are able to provide feedback to project agencies, then the design, implementation and outcomes of projects can improve. Consultation can bring new values and perceptions to bear on the design and evaluation of projects, which consequently increases success, strengthens responsiveness, and produces policies that are more appropriate. Information can facilitate the collective and individual action of communities and can have a positive effect on the success of projects. It can also be a source of power by raising the consciousness of communities and providing specific insights into the planning of the development process.

Despite the limitations that were discussed in the previous section, community participation is a viable strategy of development. The provision of water supply is one of the major development sectors that is addressed through this strategy. Water supply challenges affect

the basic human need. Experience shows that results and effectiveness of water supply are enhanced when communities participate in their own water supply projects. The next section, surveys water supply challenges in developing countries.

2.10 Survey of water supply challenges in developing countries

Despite the attention given and the large investments by international organizations in the water supply sector, the problem is still acute. The International Water and Sanitation Decade had intended to achieve 100 percent coverage by the end of the 1990s. The decade has passed, but the challenges are persisting. A lot has been done, but progress could not keep up with the rapidly growing population and recurrent drought in many parts of the globe. These problems are aggravated by financial, institutional, technical, and skilled human resources constraints, and increased the challenge of the provision of safe water supply. In the new millennium, the Global Water Supply and Sanitation Report has set a new target to supply safe water to half of those requiring it during the next 15 years, and to provide full coverage after 25 years. The task is enormous and new thinking is required. The study tries to touch on the water supply challenges and describes ways to address the issue.

2.10.1 Background

Narayan (1993: v) tries to demonstrate that development is undergoing a reflective transformation in response to the new realities in the developing world. New windows of opportunity are opening for improving the lives of the poor. After decades of concerted effort and experience, a holistic vision is emerging. Within the water and sanitation sector, the problem is acute. Improving access requires action that empowers the poor, especially the women. Hard-won experience shows that results and effectiveness are enhanced when the poor communities have the opportunity to participate directly in their own development.

Nevertheless, water is perceived by the poor communities as a social right, to be provided free by the government, rather than as a scarce resource which must be managed locally in order to ensure its effective use (Khan, 1996). This perception has grown out of the fact that the present rural water supply systems are designed and executed by the government and imposed on end-users. Demand preferences of the communities are not taken into account. Rural water supply programmes, until now, have been adopting a supply-driven approach. Experience has shown that this approach has led to the failure of a large number of water supply systems due to poor operation and maintenance.

Against this background, as UNICEF (1997: 13) shows, each day approximately 40,000 children die from malnutrition and disease, in part due to the lack of clean water and inadequate sanitation. This situation is not acceptable in a world where the fundamental right of access to clean water and adequate sanitation has been recognized in a number of legally binding treaties and in the declarations of governments.

2.10.2 Persistent challenges

The world has entered the 21st century with enormous challenges. Safe drinking water for all! According to the Global Water Supply and Sanitation Assessment Report-2000, (as cited in Tripathi & Bharat, 2001) about 1.1 billion people across the world are still without access to safe drinking water facilities. An additional 3 billion people are expected to join this group within the coming two generations. Most of these people live in Asia, Africa and Latin America. Nearly 3.4 million people in the world, most of them children, die every year from diseases associated with lack of safe drinking water, inadequate sanitation and poor hygiene. To aggravate this situation, the population is growing rapidly, particularly in the water scarce areas, thus increasing the pressure. The effect of natural calamities on the availability of safe drinking water has also worsened the problem in certain areas. Thus water is increasingly becoming a scarce resource in many parts of the world.

As Arlosoroff et al. (1987: 1) observe, accelerated progress is hampered by financial and technical resource constraints faced by many developing countries. This problem is aggravated by the growing number of completed projects which are broken down and abandoned, or functioning below capacity. Attempts to increase the pace of providing improved community water supplies have often been frustrated because the technology used has proved impossible to sustain in village conditions. Against this reality, Narayan (1993: v) calls for the need of tapping into the initiative and creativity of the poor, and of enabling them to express their own hopes for themselves and their communities. This is a challenge, which requires new ways of thinking and acting on the part of development professionals. Evidence around the globe is demonstrating the validity of improving communities at all levels of development efforts. There is also a pressing need for materials that provide guidance to both policy-makers and professionals on how to facilitate community participation.

2.10.3 Problems encountered

Adequate water supply is one of the basic needs of life, but it is often lacking in developing countries. The rate of construction of improved water supply systems has been slower than

the target of complete coverage set by the International Drinking Water Supply and Sanitation Decade. Many of the projects which have already been completed are not in a satisfactory operating condition. Handpump system failures can be blamed solely on the pump. Other major causes are: inadequate provisions for maintenance, poor management, supervision, monitoring and evaluation, poor well design or construction, allowing sand to enter and damage pumping elements and the corrosive effects of groundwater which is more extensive than had previously been suspected. A sound investment strategy in this sector calls for low-cost and maintainable solutions to achieve wide-scale coverage of the rural and urban communities in developing countries (Arlosoroff, et al., 1987: v). As Arlosoroff et al. note, there is a scarcity of handpump models, which can be described as a village level operation and maintenance (VLOM) and which are suitable for lifting water from depths of more than 25 metres. The heavy weight of the down-hole components makes extraction from deep wells difficult. Another problem is that handpumps deliver less water when pumping from greater depths. When pumps are heavily used, they suffer rapidly from wear and tear. This problem is aggravated by the tendency for deep wells to serve more people per well to spread the higher costs of the well and pump over a large number of users.

UNICEF (1997: 21) states that a clean environment and adequate safe water are essential prerequisites for children to develop and grow in good health. In order to ensure a child's right to clean surroundings and adequate safe water, it is necessary to protect and improve the environment at each level. Mismanagement of natural resources leads to environmental degradation, manifested by declining ground water tables, contamination of aquifers, floods, droughts and falling crop yields. Such environmental decline has an adverse impact on the children living in these surroundings, so that their health is impaired and their growth retarded.

Furthermore, many African countries show little sustainable progress after years of external support mainly because of inadequate resources for operation and maintenance of facilities and insufficient health education of users. As a result, many investment projects have failed to reach their essential objective of community health improvement and sustainability. The problem has been aggravated by the effects of prolonged drought in Southern Africa and the Saharan zone, which brought the greatest crisis of the century for water resources in the region, calling "All hands to the pump" (Workshop Report in support of Africa 2000 Initiative, 1994: 4)

Arlosoroff, et al. (1987: iv) note that in Africa, the majority of the rural and urban population lack safe water and proper sanitation. Many community water supply systems built with

foreign aid lie abandoned because they cannot be maintained. Scarcity of capital resources, shortages of skilled people, and poorly developed organizational structures hinder progress. Changes of approach are vital if future programmes are to result in sustainable and replicable projects. The experience gained and the data collected have justified handpump selection. Global analyses of needs and resources suggest that wells equipped with handpumps will be an appropriate choice for the majority of low-income communities.

In spite of these challenges, the Workshop Report in support of Africa 2000 Initiative (1994: 2) observes that on the rural side, governments and external support agencies are increasingly realizing that a significant percentage of all rural water supply facilities are non-operational at any one time. Moreover, the management of water supply and sanitation services and their operation and maintenance are key concerns, which strongly influence the standards of living and health of the population concerned. Poor operation and maintenance has been identified as one of the causes of this situation.

Against this background, the Workshop Report in support of Africa 2000 Initiative (1994: 31) notes that in the past excessive emphasis was placed on governments to provide water and sanitation services for communities and on external agencies to fund the projects. There is a growing consensus that a new partnership must be developed between the providers of services and the users. Communities must be involved in the management of the development process by participating in planning, implementation, financing and operation of water supply and sanitation services. At the same time, government authorities must guide communities in the choosing and supporting of systems which are both acceptable and sustainable. Finally, external organizations need to coordinate their efforts and gear them to meet the priorities for water supply and sanitation.

2.10.4 Suggested solutions and prospects of addressing the issue

The 20th century approach to meeting the immediate needs of water supply has passed. The emerging problems suggest that the water problem must be looked at holistically. It is not only a question of extraction of water for drinking purposes but managing it in such a manner as to implement a policy of giving primacy to drinking water. In this regard, it is increasingly seen that ecological protection and bio-diversity are closely bound up with freshwater management. The institutional and legal framework has not yet been defined to cope with the issues that will arise as a result of the competition for water resources (UNICEF, 1997:9).

Khan (1996) demonstrates that substantial investment has been made in the sector. Infrastructure and systems are built up. It is, therefore, essential to make them functional to

achieve sustainability. There is general recognition that a transformation from a target based, supply-driven approach, which pays little attention to the actual preferences of the end users, to a demand-based approach where users get the service they want and are willing to pay for is urgently required. Implementation of a participatory demand driven approach will ensure that the communities obtain the level of service they desire and can afford to pay. In addition, full cost recovery of operations and maintenance and replacement costs will ensure the financial viability and sustainability of the projects.

To strengthen the argument, Arlosoroff, et al. (1987: V) assert that among the most promising low-cost options are systems based on groundwater and handpumps. A handpump is usually the most affordable and hygienic means of lifting the groundwater to the surface. The modern handpump can be maintained by the communities served and manufactured in the developing countries. In the dry regions of the world, handpumps can also be used for livestock watering and micro-irrigation. To make a lasting impact on the urgent needs, community water supply strategies must be based on sustainable and replicable programmes, and must take account of the pace at which resource constraints can be overcome. Furthermore, Arlosoroff et al. (1987: 1-3) suggest that successful community water supply programmes involve technological and institutional support elements. If this is the case, each community can recognize the benefits of the improved supply, affords at least the costs of operating and maintaining it, and has the skills, spare parts, materials and tools available to sustain it. This integrated approach to community water supply planning involves a number of key issues. Maintenance should be a community responsibility. Also, the pump design has to be suitable for repair by a trained caretaker with basic tools. Spare parts should be affordable and readily available to the community. The community demands that pump maintenance responsibilities should be delegated to village committees, and that pumps should be selected with such maintenance in mind. The highest potential for sustainability is achieved when the community is involved in all phases of the project. If the project is to continue to operate satisfactorily, people have to recognize the need for the improved service, be able and willing to pay for the maintenance costs, and be willing to manage its maintenance.

Arlosoroff, et al., (1987: 9) observe that manufactures are responding well by modifying their products and introducing new models, and there are now many more pumps on the market which are durable and which allow for substantial involvement of villagers in pump maintenance. It is now possible to design a handpump-based water supply, which can be sustainable in reliable operation without intervention by a central authority. UNICEF (1997: 31-32) believes that the ultimate success and sustainability of any water supply programme

will depend on the meaningful participation of women at all stages of planning and implementation. Empowering women in water supply projects could make a significant difference to the demand.

Stern (1989: 1-2) claims that the use of technology for meeting the water needs in the Third World is concerned with improving the existing facilities. Technology may increase the yield of a source, brings water nearer to dwelling places, removes the health hazards of polluted water and leads to better use of a source for watering animals and irrigating crops. Many of those involved in development believe that it is only a matter of time before technology will be able to satisfy the water needs of the people in the Third World. Against these achievements, the Global Water Supply and Sanitation Assessment Report–2000 (as cited in Tripathi & Bharat, 2001) has set the target to halve the proportion of communities without access to water supply by 2015 and to provide access to water supply for all by the year 2025. The challenge is enormous and calls for global joint efforts to face it.

2.11 Selected case studies

To flesh the literature review discussed with practical realities, the researcher would like to present the following four case studies of developing countries that illustrate community participation in water supply projects.

2.11.1 The Mutengene water project (MWP)

Njoh (2001: 231-241) has critically analyzed the barriers to community participation which were identified by Botes and Van Rensburg (2000: 42-51) in terms of MWP. The researcher has condensed and adopted his arguments. Mutengene is a small town in Tiko sub-division in Cameroon. It is located west of Cameroon's economic capital, Douala. The town's population is heterogeneous, composed of thirteen different tribal groups. Non-indigenous groups dominate the native group, the Bakweri. The non-indigenous are called strangers. These groups were initially excluded from project decision-making which was one of the problems that threatened project success.

Mutengene's economy is based on agriculture. At the initiation of the project, the population was less than 3000; at completion it stood at 7500; presently it is estimated to be 15000-20000. The residents conceived the project in 1959. Prior to that time, they were dependent on a remote, inadequate and polluted source of water. Until 1960, no steps were taken to accede to their request. In 1962, an undisclosed amount of money was raised from the residents for a feasibility study. However, the fund was mismanaged, and the study was not conducted. Soon

after, the problem of water was aggravated and dominated the agenda of village council meetings. In 1967, the water supply plan was officially approved and a committee of local elders was formed.

The committee was tasked to locate a viable water source and identified a spring five-kilometres from the town. The spring's location was ideal as its higher altitude permitted water to flow under the natural force of gravity and reduced costly mechanical pumps. Thereafter, the committee informed the Division Officer of Tiko and on his advice, a formal letter of application was written through the Department of Community Development to the Ministry of Agriculture. As required by the government, the residents confirmed that they were responsible for 15 percent of the cash amount and 100 percent of manual labour input.

The project was completed in 1978, but there were two problems: Firstly, there were irreconcilable differences between the native population and the strangers. Secondly, there were conflicts within the project committee that resulted in the dissolution of the 1967 project committee and the creation of a new one in 1971. After the completion of the project in 1980, volunteer members responsible for maintaining and ensuring the effective and efficient safe utilization of the water system constituted a post-project committee.

In spite of these efforts, there were barriers that needed to be addressed if the project is to succeed. Botes and Van Rensburg (2000: 42-51) have identified the following barriers to community participation. Njoh (2001: 239-246) analyzes and incorporates them with the barriers confronted in MWP.

a) Paternalistic role of authorities: Development experts believe that they know best and therefore their prime function is to transfer knowledge to communities whom they consider “know less”. This tendency leads to the experts and bureaucrats dominating the decision-making process. In the case of MWP, the Division Officer of Tiko was very active in local politics. As a result, he sided with the native population and excluded the strangers from project decision-making. This led the strangers to withhold their financial and in-kind contributions until the matter was resolved.

b) Prescriptive role of the state: Governments often use participation as a means of legitimizing the political system and as a form of social control. When MWP was completed, the state transferred the responsibility for managing and maintaining the water project to the government owned Water Company. This meant that the community would be obliged to pay very high water rates to the company. As a result, the community opposed the decision and challenged that they are willing and able to take responsibility for maintaining and managing the system.

c) *Embellishment of success*: Success related to development initiatives are quantified, documented and communicated to a greater extent than failures. Hence, failures are not considered as a learning process. Project documents of MWP were replete with success and few details of failure. The document hardly contained any information regarding the excessive delays, no word about the anticipated problems, and no mention that the actual cost exceeded the estimated cost.

d) *Selective participation*: Many community organizations are not democratically elected. The involvement of local leaders represents the voice of a group of self-appointed people. They may not reflect the views of the broader community. In MWP, there were no women and teenagers in the project committee that were responsible for making crucial decisions. An attempt to solve the problem resulted in the inclusion of only one woman but no teenager in the post-project committee.

e) *Hard issue bias*: In many community development initiatives the so-called “hard-issues” are perceived as being more important for the successful implementation than the “soft-issues” Hence, issues that enhance community participation and empowerment are regarded as secondary. In MWP, the authorities were quick to ask for financial and labour input, but reluctant to enlist the participation of residents, especially women. This demonstrates the tendency to assign less importance to ‘soft issues’ in the development planning process.

f) *Inter-group conflicts*: Development introduces marginalized communities to limited scarce resources and opportunities. The residents of MWP are heterogeneous, and inter-group conflicts may result from differences in culture, language or socioeconomic status. In this case, there were internal conflicts between the natives and the strangers. Traces of these cleavages were seen among the project committee, which led to its dissolution in 1970.

g) *Disinterest of the community*: The major impediment to community participation is the allegation that members of the community are not interested in becoming involved. A lack of willingness to participate may result from past experiences of involvement where expectations were unfulfilled. In MWP, there was a lack of interest towards the end of the project, because the authorities were constantly demanding a cash contribution from the local communities.

To this list Njoh (2001: 245-246) has added the following two, as manifested in MWP:

h) *Population size*: The size of a community is an important factor in community participation. Large communities are more likely to sustain the cost of a water supply project than smaller ones. In the case of MWP, the size of the population was very small during

identification, but gradually increased during completion which had an impact on the development process.

i) Belief systems: Belief systems of the community can inhibit or enhance community participation. For example, some religions set certain days aside for observance as holidays. In MWP, the Catholic Clergy objected to work on Sundays despite the fact that this was the only day on which local residents were available for volunteer work.

From this case it can be deduced that unless the barriers to community participation are recognized and addressed, efforts are likely to fail.

2.11.2 The West Bengal Pilot Project

In India, as Tripathi and Bharat, (2001) demonstrate, the West Bengal Pilot Project was launched. This project was in response to the community demands for safe drinking water in an Arsenic affected area. In 1998, a number of village youth clubs in West Bengal requested a local NGO to assist them in solving the problem of potable drinking water in their villages. A project proposal was prepared and was funded by the Central Government. The aim of the project was to supply safe drinking water to 115 hamlets in five districts of the state. However, the presence of arsenic in the groundwater of 26 hamlets caused the project to look closely at the problem of providing arsenic-free water. During the project preparation, communities indicated that they were willing to contribute to the cost of the project and were prepared to operate and maintain the future infrastructure themselves.

Households that participated in the project contributed 30 percent of construction costs and 100 percent of operation and maintenance costs. Community mobilization campaigns and general training programmes were held to enable villagers, village water and sanitation committees and youth clubs to participate in the project actively. Village water and sanitation committees were responsible for overall construction and installation of handpumps. This project has demonstrated that:

- Communities are willing to pay for safe drinking water
- Effective supply chains need to be developed for sustainable solutions
- Projects need a good communication strategy; and
- Inter-village exposure visits are effective.

2.11.3 The Ollavana Gram Panchayat project

Another unique experience from India (Tripathi & Bharat, 2001) was the Ollavana Gram

Panchayat project in Kozhikode district of the southernmost state, Kerala. In spite of the efforts of the government to solve their acute water problems, the people of Ollavana decided to intervene and experiment in constructing a rural water supply project with their own resources. The project worked on simple principles. They formed a co-operative society, which charges membership fees depending upon the cost of the project. The project consisted of an intake well, an overhead tank and a distribution system with household connections. Expertise, material and labour were obtained locally. The full capital cost, operational and maintenance costs were borne by the villagers.

The local community understood the water supply technology and showed that local initiatives can and do succeed. This experiment has also revealed that community managed projects are better constructed and better managed and more cost effective than the heavily subsidized projects run by the state. Such examples of community participation in the rural drinking water supply sector are rapidly increasing. These experiences are being replicated throughout India with constructive efforts of the government, the people, their political representatives, NGO's, the media and the private sector.

2.11.4 The Punjab water project

Pinfold and Sawar (1998) write that in Punjab, Pakistan the Public Health Engineering Department (PHED) has a mandate to provide water supply and sanitation systems to rural communities. PHED has traditionally concentrated on reticulated water supplies and drainage while Local Government and the Rural Development Department generally cover small-scale, discreet supplies. A typical PHED village water supply scheme involves gravity feed or pumping stations supplying water to large settlement tanks within the village. A pumping station at a site provides water pressure directly to the piped supply, which usually serves in-house or compound connections. For water treatment there is usually a contact chamber where specified quantities of bleach are sometimes added. Drainage schemes carry the sewerage effluent to rudimentary treatment works, which then drain, directly into the village pond. In some cases, there is a pumping station to re-use wastewater on the land.

After the completion of the projects, PHED is responsible for the repairs, maintenance and operation as well as collecting tariffs from users. The tariff rate, set by government, was not enough to cover operation costs. PHED could only manage to collect funds from about 30 per cent of the actual users. Thus, PHED is not a suitable organisation to effectively deal with defaulters. There was no community participation in and community ownership of the projects. Consequently, projects were not well looked after. In some cases many homes

already had their own private water supplies and they did not want PHED projects. Limited PHED resources meant that many schemes broke down completely, and most of them were in a state of disrepair and not functioning to full capacity. Therefore, from the above cases, it can be learned that sustainable water supply projects depend on the participation of the communities. Hence, water supply delivery and community participation have direct correlation. As a result, the quality and quantity of water supply delivery is enhanced when there is community participation.

2.12 Chapter summary

From past development experience, it can be seen that unless communities are involved in development efforts, no desired change can be achieved. The nature and scale of development challenges are impossible to address in isolation. The problems of resource scarcity in developing countries call for the mobilization of all stakeholders' resources. Hence, the main beneficiaries of development should engage in the development process if development is to succeed and to be sustainable. Participatory development demands that the rural communities move from being objects to subjects of development. If communities are to be involved, their creative initiative, which was disregarded in the past, should be a primary development resource. Their knowledge and insights should become a component of development efforts. Development should become a humanizing process. Therefore, community participation has emerged as a viable strategy to meet these needs. It is a coherent and credible strategy, which is central to communities' activities and an essential ingredient to empower communities.

Against this background, community participation has become a multidimensional approach integrating the building blocks of development. Social learning is an element of this block, which is a bottom-up approach that enhances community participation. It evolves from the coming together of the communities and community workers. In a bottom-up learning process, the programme design and the capacity to implement are developed to produce a three fit between the beneficiaries, the programme and assisting organizations. In this sense, partnership produces understanding and trust between role-players, and strengthens contribution and coordination. Nevertheless, communities' capacity should be built. Their knowledge, skills, and institutions should cope with new challenges. Therefore, communities can become the masters of their own destiny and development.

Effective administrative and institutional structures lay the ground for self-reliant participatory development. Self-reliance breaks down the mentality of dependence, promotes self-awareness and self-confidence when making decisions. Without power to make decisions, community participation is a meaningless exercise. Community participation is the instrument

of empowerment, which initiates action and creates self-awareness. Hence, community participation and empowerment are fundamental principles to sustainable development. This can be achieved through the efforts of the communities working for their own benefit. Furthermore, the transformation of the society and the management of the environment should be integrated if development is to be sustainable.

Scholars view community participation differently. The liberals see it as something given to the poor by the government, whilst the radicals see it as a means of ensuring equity and democratic right. The recent interest in community participation has grown out of the limitations of the centralized service delivery approach. Furthermore, the types of community participation are categorized from anti-participatory and manipulative to incremental and participatory modes. Different authors have described different levels, from the weakest ratification, to the strongest initiating action.

Most advocates of community participation reject state involvement. This view ignores the state as a major provider of social services. However, the role of the government and development agents is crucial. Successful development needs government commitment reflected in national policy. However, communities must be in the forefront of shaping the direction of development. The role of the government and development agents should be an enabling and supportive one in the process of development projects. Development projects are the interventions, which are the visual outcome of development plans and strategies; and the testing ground for development theories and approaches. If projects are to succeed and to be sustainable, they must be owned and managed by the community and be demand-driven.

Although community participation serves as a platform for cooperation, contribution, and consultation with the communities, it has its own limitations and obstacles. Community participation often lacks clear social methodology and follows inadequate methods for organizing communities. There are also problems that hamper the promotion of community participation, ranging from institutional to socio-cultural and technological. The challenge is to recognize these limitations and obstacles and accommodate them.

Against the theoretical background, community participation is a viable strategy for water supply challenges. The provision of water is one of the major development sectors that fulfil the communities' basic needs. Experience shows that the results and effectiveness of water supply projects are enhanced when communities participate. Sustainability is achieved when communities are involved in all phases of the water supply projects, and are able and willing to manage and contribute to their operation and maintenance. Water supply cases show that community owned and managed projects are better constructed, cost effective, and successful than government subsidized projects. This calls for a new partnership between the providers

of service and the user communities.

In spite of all efforts, a large number of people in the Third World are without access to safe drinking water. The challenge is increasing with high population growth, and the effect of natural calamities. The problem is further aggravated by financial and technical problems, a lack of skilled workers, poor management, and poorly developed administrative and institutional structures. These problems are manifested when completed projects break down or function below capacity. Demand preferences of communities are not taken into account. These facts have led to the call for the transformation of water supply projects from a target-based supply-driven approach, which pays little attention to beneficiaries' needs to a demand-driven approach, where the communities get the service they want and are willing to pay for. Eritrea is one of the developing countries affected by the lack of a safe water supply. The next chapter discusses water supply challenges and community participation in a national context.

CHAPTER THREE: WATER SUPPLY CHALLENGES AND COMMUNITY PARTICIPATION IN ERITREA

3.1 Introduction

The colonial legacy has left Eritrea one of the poorest and least developed countries in the world. Due to this reality, social conditions are unaddressed. The social and economic infrastructures are damaged and left unimproved for years. Social provision was neglected and undermined. Besides this, natural conditions have been aggravated by deforestation, uncontrolled and wasteful water use, and thirty years of war against Ethiopia. Furthermore, recurrent droughts have stressed wells, and other water sources have diminished and dried up resulting in a shortage of safe and adequate water delivery. As a result, the provision of water is extremely poor.

In 1994, only 7 percent of rural communities had access to clean water. However, efforts have been made during the past ten years; and access to safe clean water for rural communities has risen to 49 percent. Nevertheless, there is much left to be improved. To achieve the objectives and to materialize the strategy, community participation is a necessary condition. Therefore, in order to understand the problem of the study, the researcher has surveyed Eritrea's historical, climatic, environmental and socioeconomic conditions and attempts to address water supply challenges and the need for community participation in dealing with the issue.

3.2 Survey of Eritrea's socioeconomic condition

Eritrea is a new country, which emerged as a sovereign state in 1991. The war for liberation damaged the socioeconomic infrastructure of the country and many opportunities were lost. As a result, the country is one of the poorest countries in the world with GDP of about USD 200. Eritrea is also arid and semi-arid and is not endowed with rich water sources. Environmental degradation and variability in the climate are the major factors to poor social indicators, specifically the provision of safe water. Therefore, the challenge is climatic, environmental, and socioeconomic. This section attempts to survey them separately.

3.2.1 Historical background

Because of its strategic position on the Red Sea, many invaders and colonizers have invaded Eritrea. From the middle of the sixteenth century to the second half of the nineteenth century, the Ottoman Turks controlled the northern and coastal areas of Eritrea. In 1872, the Egyptians drove out the Turks from their last stronghold, at Massawa and their conquest was over. With the opening of the Suez Canal in 1869, the European colonizers became interested in the Red

Sea and the Horn of Africa. In 1885, Italy, established a foothold at Assab, and extended its control until it declared Eritrea its first African colony in 1890. However, in 1941, the Allied Forces defeated Italy and Britain took over the administration of Eritrea. In 1952, after 10 years of British colonial rule, the United Nations, against the will of the Eritrean people, federated Eritrea with Ethiopia. A decade later, Ethiopia formally ended the federal arrangement and annexed Eritrea as one of its provinces. This led to the Eritrean struggle for self-determination that lasted for thirty years resulting in a destructive war, which cost lives and wasted resources (NSEO & ORC Macro, 2003: 1). (see also annexure I, the map of Eritrea).

In 1991 Eritrea emerged as a sovereign state after three decades of bitter struggle against Ethiopia. Following an internationally supervised national referendum, Eritrea proclaimed its independence in May 1993. There was a 98.5 percent turnout for the internationally supervised referendum during which 99.8 percent of the population voted in favour of independence. WRD-E (2000: 19). Rock (1999: 130-132) confirms that the UN sponsored referendum was considered free and fair by international and regional observers. However, the colonial legacy impact on the development efforts of the country.

3.2.2 Geographical location

Eritrea is situated in the Horn of Africa and lies north of the equator between latitudes 12° 22'N and 18° 02'N (NSEO & ORC Macro, 2003: 1). Eritrea covers an area of 124,320 km². Despite being a relatively small country, it is divided into three major geographical and climatic regions: the Central Highlands, the Western lowlands, and the Eastern lowlands running parallel to the Red Sea (Ministry of Land, Water, and Environment, 1998: 1-2). The geographical location has an impact on the climatic conditions, which in turn affect the holding capacity of the surface and ground water, resulting in water delivery challenges.

3.2.3 Climate

Eritrea is an arid and semi-arid country. It is part of Sahelian Africa, and it has been the victim of recurrent and devastating droughts. The majority of the population depend on ground water as a main source of water. Rainfall in Eritrea is torrential; it is high in intensity and short in duration. It is unpredictable and occurs sporadically. Due to the rugged nature of the highlands, thin soil formations, and deforested terrain, the rain leads to flash floods. Thus, soil-water infiltration is very low (National Environmental Management Plan of Eritrea

[NEMP-E], 1996: 40).

Eritrea is made up of rugged mountains, plateaus and hot dry lowlands (Lutheran World Federation, 2000: 1-2). The altitude ranges from sea level to over 3000 metres. Nearly 85 percent of the area is below 1500 metres. Altitude is the major determining factor of temperature. The climate ranges from hot arid, adjacent to the Red Sea, to temperate sub-humid in the isolated micro-catchments in the eastern escarpment of the highlands. About 72 percent of the country is classified as very hot, with mean temperatures exceeding 24° C, while not more than 14 percent is classified as mild or cool with annual temperatures below 21° C. The total annual rainfall varies from year to year but the average is less than 200 mm at the northern borders with Sudan, and more than 700 mm at the southern borders with Ethiopia. Only a small area on the eastern escarpment receives more than 900 mm annually. Due to these facts, Eritrea is not endowed with natural water. The rainy season is from June to September, the heaviest precipitation occurring in July and August. There is a high variability in both the amount and distribution of the rainfall over much of the country. Potential evaporation and transpiration range from 2000 mm in the eastern and western lowlands to 1300 mm in the central highlands. Due to these factors, surface and ground water are unreliable. Hence, Eritrea needs intensive conservation mechanisms and water harvesting systems. This approach could slow the flow of running water. As a result, surface and ground water could be augmented. To achieve this approach, there is a need to call upon the participation of the communities.

3.2.4 Environmental condition

Due to colonization and 30 years of war, Eritrea has inherited a degraded natural environment. Currently, the natural forests have been reduced from an estimated 30 percent of the total land area to a little more than 2 percent. This was due to the logging for timber, firewood, charcoal and poles, and clearing for agricultural land, uncontrolled grazing, worsening climate and extensive soil erosion (Ministry of Land, Water, and Environment 1998: 3). Large-scale environmental degradation and variability in the climate are the major contributing factors to poor social indicators in Eritrea. According to Booth (1986); Leeds (1992) (as cited in Government of the State of Eritrea & UNICEF, 1996: 6), vegetation cover in the country declined from about 30 percent of the land area in the 1850s to about one percent in 1992 due to inappropriate colonial farming practices, war, and increasing population pressures. The most devastating effect of this phenomenon has been soil erosion with more than 50 percent of the land surface being affected. Furthermore, loss of vegetation

cover has aggravated adverse climatic conditions leading to below-average rainfall for 20 consecutive years. The overall impact has been diminished agricultural productivity, reduced livestock herds and large population displacements during periods of stress such as the mid-1980s. Consequently, considerable attention has been devoted to reforestation and rehabilitation since independence to enhance the water holding capacity of the surface as well as ground water.

3.2.5 Social condition

According to NSEO and ORC Macro (2003: 2-3), no population census has ever been carried out in Eritrea. As a result, there is no reliable estimate of the population currently residing in Eritrea or living abroad. Based on population count, the Ministry of Local Government estimate the total population of Eritrea to be about 3.2 million as of 2001. Because there is no reliable information about population size, the population growth rate is not known. Most of the population is rural with about 80 percent living in the countryside. The urban population is characterized by rapid growth, due to returning refugees from abroad and high rural-urban migration.

In Eritrea, the status of women and girls is a critical factor. They are exposed to heavy workloads, and are responsible for the rearing of children, reproductive and productive roles, processing and preparation of food for household members, water fetching and collection of fuel-wood. As fuel-wood and water become scarce, women and girls have to walk long distances, thus spending more time on household tasks and compromising child care and feeding opportunities for infants and young children (Government of the State of Eritrea & UNICEF, 1996: 6). Thus, the construction of water supply projects near communities' dwellings can contribute to alleviating the burden of women.

3.2.6 Economic situation

According to UNDP (as cited in NSEO & ORC Macro, 2003: 2), agriculture and pastoralism are the main sources of livelihood for about 80 percent of Eritrea's population. Agriculture depends on rain, with less than 10 percent of the arable land currently irrigated. Consequently, productivity is low and the agricultural sector accounts for only one-fifth of the gross domestic product. Eritrea is one of the poorest countries in the world, with GDP per capita of about USD 200, below the average USD 270 for less developed countries. To improve this situation, the government has defined its vision, and mapped out a strategy to catch-up after

four decades of lost opportunity and lost growth (Government of the State of Eritrea & UNICEF, 1996: 3). Accordingly, the national development objective is to create a modern technologically advanced and internationally competitive economy. Eritrea's vision of sustainable development is moulded by the experience gained from decades of armed struggle (NEMP-E 1996: 1). Furthermore, NEMP-E notes that Eritrea bases its vision of sustainable development on the fundamental prerequisites of peace. Without peace, there can be no development. The Eritrean vision of sustainable development is premised on equal opportunity. Equal opportunity is deeply ingrained in the Eritrean national culture. To achieve this vision, the nation and its vanguard the EPLF regard rebuilding the country as a priority. To materialize this vision, the Government of the State of Eritrea's Macro-Economic Policy Document (1994: 12-13) shows that Eritrea's Micro-economic framework is a broad-based strategy, which encompasses aspects of rehabilitation, reconstruction, and development. Human resources development, education and health, infrastructural development, and environmental restoration and protection are the main components of the strategy. Furthermore, the country has adopted a market-oriented economy, has promoted privatization, and sees export expansion as the engine of growth.

As the Government of the State of Eritrea and UNICEF (1996: 7) confirm, at present, the economy is at a rehabilitation and recovery stage. Agriculture and industry each account for about 20 percent of GDP with services representing the remaining 60 percent. Agriculture is rain-fed and focused on food production using outdated technologies. With serious environmental constraints, it contributes to low productivity. It is observed that although agriculture accounts for about 20 percent of GDP, it provides a livelihood for approximately 80 percent of the population.

In short, the war for liberation destroyed Eritrea's infrastructure and devastated its economy and the environment. After liberation, these conditions compelled Eritrea to reconstruct its social, economic and physical infrastructure. In an effort to place the economy on the path of sustainable development, the government had targeted the period 1998-2000 to complete the transitional phase of rehabilitation and reconstruction. In May 1998, under the pretext of border dispute, Ethiopia again declared war on Eritrea. As the study of University Asmara (as cited in NSEO & ORC Macro, 2003: 2) shows, the war destroyed public and private industrial plants and infrastructure among them the water supply system. The war hampered progress and led to lost opportunities. The growth in GNP, which had reached about 7 percent over the period 1994-1997, fell to about 3 percent in 1999 due to the border conflict. Moreover, Eritrea's productive work force, out of its small population, is still tied down in national

defence. Therefore, the economic condition should improve to address the basic needs of the communities, especially the challenges of the provision of safe and adequate water delivery.

3.3 Water supply challenges in Eritrea

There is an overall shortage of water resources in Eritrea. Natural conditions like climate, drought, topography, hydrology, and geology have been aggravated by the human actions of deforestation, uncontrolled and wasteful water use, water pollution, and the thirty years protracted war against Ethiopia. These have led to major problems in coping with the demand from communities and the agricultural and industrial sectors. Water conservation and efficient use are important, but efficient water usage has not been realized. Wastage control and water saving technologies have not yet been introduced (World Bank, 1994: 174). This coupled with recurrent drought, caused wells and other water sources to dry up, resulting in a shortage of safe water delivery.

3.3.1 Background to the problem

According to the Ministry of Land, Water, and Environment (1998: 3), most of the water and sanitation facilities in Eritrea date back to the Italian period. They were concentrated in urban areas and designed to serve colonial administrations. Despite the growing population, few improvements were made to water and sanitation facilities during the British and Ethiopian occupations. Moreover, misuse and neglect caused irreparable damage to the water supply system. Currently access to the safe drinking water is very low. However, as NSEO and ORC Macro (2003: 24) findings show, since 1994, access to clean water has increased from 7 percent to 49 percent in the rural areas; and from 44 percent to 90 percent in urban areas as of 2002. These findings indicate that progress has been made since independence.

3.3.2 Adequacy of water

At present little is known about Eritrea's water resource potential. According to the World Bank (1994: 71), hydrological data are insufficient to assess the water resource potential. However, preliminary estimates based on rainfall relationships indicate that the potential for using surface water from river basins is limited, due to the fact that only one river, the Tekeze, is perennial. Diversion structures would be required to make use of seasonal water, but high sediment loads would soon make such structures inoperable. Investigation of ground water potential has not been carried out. Since Eritrea is situated on a basalt complex, there is no

chance to get ground water to support irrigated agriculture. Nevertheless, there is good potential for irrigation from shallow aquifers along river basins.

The findings of NSEO and ORC Macro (2003: 24) show that the accessibility to water is reflected by the time required to get to the water source. At least 50 percent of urban households have water available in the dwelling, and 69 percent are within 15 minutes of a water source. In contrast, only 8 percent of rural households are within 15 minutes of a water source, and more than half spend at least an hour to reach water. As the findings further indicate, 57 percent of the households do not have to wait at the water source, excluding the time to go and come back from the water source. Nevertheless, 11 percent of the households in urban areas and 24 percent households in rural areas wait at least an hour at the water source (see table 3.1).

Table 3.1: Normal waiting period at water source

Description	Total urban	Asmara	Other Towns	Rural	Total
None	72.50%	81.1	65.2	47.9	57.4
<5 min.	0.4	0.6	0.3	0	0.2
5-14 min.	3.7	2.7	4.7	4.2	4
15-29	5.4	3.1	7.5	7.8	6.9
30-44 min.	6.3	4.1	8.1	15.4	11.9
45-59	0.6	0.4	0.7	0.7	0.7
60+ min.	11.1	8.1	13.6	23.8	18.9
Total	100	100	100	100	100

Source: NSEO and ORC Macro (2003: 24)

According to the Government of the State of Eritrea and UNICEF (1996: 5), the coverage of safe water supply in Eritrea is low by global and African standards, particularly in rural areas. What is worse, of the water sources available, a substantial proportion are inoperative at any given time largely due to lack of community-based systems of operation and maintenance and back-up assistance from service institutions. Furthermore, the United Nations (2002: 23) assessment carried out in August 2002 indicates that due to the decreased rainfall, shallow water sources, hand-dug and temporary traditionally dug wells in riverbeds, and surface dams for urban settlements are drying up. In many parts of the country, there are serious water shortages, and it is feared that the present drought will deplete the ground water resources in many parts of the country. In addition to the current drought, the general water supply and environmental sanitation situation in Eritrea has the following characteristics:

- Communities have to fetch water from long distances, placing a heavy burden on women.
- In some areas, expensive and difficult tanker truck water transportation is the only option.
- In many areas, the communities are forced to use water from unprotected sources.
- Rural communities depend on livestock, which require considerable quantities of water.

- Limited use of latrines, poor water supply and handling at household level and poor personal and domestic hygiene contribute to diarrhoea, especially among children.

3.3.3 Accessibility of safe water

Access to safe water supply is low in Eritrea. Piped sewerage exists in Asmara, and in a small number of other cities. The quality of water has been affected by excessive runoff and domestic waste. The World Bank (1994: 187) report shows that excessive run-off removes high levels of valuable topsoil, and leads to problems of siltation and sedimentation. Furthermore, water flow can be high in peak flood periods causing spate irrigation schemes to be washed away, and reducing the life of the storage dams. In some areas of the country, a high level of salinity makes water undrinkable and causes problems for irrigation. In urban areas, water quality is often contaminated because of poor sanitation and drainage systems. In some other areas, industrial pollution has resulted in contamination by toxic wastes. This has resulted from the lack of enforcement of regulations and the lack of an incentive framework for preventing and monitoring contamination of water resources.

In rural areas, there is difficulty in accessing drinking water for human consumption and for watering livestock, which in turn undermines productivity and health. Contamination of water contributes to high mortality rates among children. According to the annual report of the WRD-E (2000: 8), lack of hygiene at the water point, during the transportation of water, and in the home has become the leading cause of death and disease, resulting in shorter life spans and lowered productivity of the rural population.

NSEO and ORC Macro (2003: 24) show that a safe source of drinking water is important because fatal diseases including typhoid, cholera, and dysentery are prevalent where water sources are unprotected. Sources of water considered to be safe are piped water, water drawn from protected wells, and water delivered by tanker trucks. Piped water is accessible in urban areas and 18 percent of the population in rural areas use tapped water. About 26 percent of households in Asmara and other towns depend on tanker trucks to deliver water. More than half of households in rural areas have access to public wells (protected and unprotected) and 17 percent use spring water. Overall, 49 percent of rural households have access to clean water (see table 3.2).

Table 3.2: Source of drinking water

Source	Total Urban	Asmara	Other Towns	Rural	Total
Piped to residents	41.90%	56.90%	29%	0.10%	16.30%
Public tap	25.1	15.1	33.8	18.1.	20.8
Unprotected well in dwelling	0.1	0	0.2	0.6	0.4
Unprotected public well	2.1	0	3.9	24.7	15.9
Protected well in dwelling	0.3	0	0.5	0.4	0.4
Protected public well	4.2	0.2	7.6	26.3	17.8
Spring	0.3	0	0.6	17.2	10.7
River, stream	0.2	0	0.3	4.8	3
Pond, lake	0.1	0	0.1	1.4	0.9
Dam	0.1	0	0.2	2.3	1.5
Tanker truck	25.5	27.7	23.6	3.8	12.2
Total	100	100	100	100	100

Source: NSEO and ORC Macro (2003: 24)

According to UNICEF (2002: 5), the neglect of water supply installations and a lack of maintenance have further aggravated the water supply situation. More than 80 percent of the cases reported at health institutions in Eritrea are caused by inadequate water supply both in quantity and in quality and the lack of proper sanitation. Most children under-five suffer from water and sanitation related diseases in the country especially in the rural areas. In 2000, diseases like diarrhoea, ear infections, skin infections and scabies and eye infections accounted for 37.55 percent of the out-patient morbidity in the children under-five in the country. According to the NSEO and ORC Macro (2003: 24), access to adequate sanitation facilities is an important determinant of health conditions. About 74 percent of households in Eritrea, and 96 percent of households in rural areas have no toilet facilities. Almost 50 percent of the households in other towns and 27 percent of those in Asmara also do not have any toilet facilities. Since 1995, access to flush toilets in Eritrea has increased from 12 percent to 17 percent, mainly because of better toilet facilities in other towns (see table 3.3).

Table 3.3: Sanitation facilities

Description	Total Urban	Asmara	Other towns	Rural	Total
Own flush toilet	23.00%	32.20%	15.10%	0.40%	9.10%
shared flush toilet	18.8	29.6	9.5	0.3	7.5
Ventilated pit latrine	3.2	2.7	3.6	1.5	2.2
No facility, bush, field	39.4	27	50.1	96.4	74.3
Traditional pit toilet	15.6	8.4	21.7	1.3	6.8
Others	0	0	0.1	0	0
Total	100	100	100	100	100

Source: NSEO and ORC Macro (2003: 25).

Water borne and water-washed diseases contribute to Eritrea's high infant and under-five mortality and morbidity rates (WRD-E, 2000: 7). Lack of water sanitation at the water point, during transportation of water and in the home is the leading cause of under-five mortality

and morbidity in Eritrea. Hence, it contributes to the high levels of illness, shortened life spans, and lowered productivity of the rural communities.

3.3.4 Usage of water

Given the current scarcity of water resource, it is important to emphasise the efficiency of water usage. However, efficiency in water usage has not been realized and wastage control and water saving technologies have not been introduced. According to Misgina (as cited in WRD-E report, 2000: 21) three-quarters of water consumed in Eritrea is used for irrigation. Nevertheless, irrigation system's efficiency is poor. Improved efficiency needs to be achieved through the adoption of alternative technologies to surface water, example drip irrigation. This is not yet practiced in Eritrea. Increasing tariffs in urban areas and where appropriate in rural areas, can encourage people to improve their water usage efficiency. However, communities consider water as a natural gift and do not pay for the usage of water.

The water systems in urban areas are old and obsolete, installed during the Italian colonization and functioning without significant repair and maintenance. Due to this, as the World Bank (1994: 186) shows, water losses due to leakage and improper management are high at an estimated rate of about 40 percent of supply in the urban areas. This was reported in 1994. The Warsay-Yekaalo Development Campaign has made progress recently. Moreover, water losses in industries are significant. In Eritrea, the industries are old and obsolete and consume a lot of water. In the leather and textile (medium) industries alone, 600-700 M³ of water is used and thrown away in an 8-hour working day (NEMP-E, 1996: 56). This water could be used again through recycling, but recycling is not practiced yet.

Furthermore, in Eritrea, except for the water related articles in the transitional civil law, and some local traditional customs, no written law exists in the country that enforces effective and efficient usage. Besides, there are no water quality standards for drinking, industry, and the treatment of plant waste matter. No regulations regarding pricing and allocation priorities exist, although the recent Land Proclamation assigned responsibility for regulating water use to the Ministry of Land, Water, and Environment. In rural areas, water is taken as a gift from God, and except for some cases no payment is made for water services. Past failure to recognize the economic value of water has led to a wasteful and environmentally damaging use of the resource. This situation must be corrected in order to achieve equitable apportionment, adequate pollution control standards, necessary conservation measures, and an integrated comprehensive approach. There is an urgent need for laws to enforce efficient

usage, and water should be recognized as an economic resource, no matter what it is used for (NEMP-E, 1996: 44-46).

3.3.5 Consequences of the water challenge

The causes of the problems are discussed above. These problems have a major impact on human, animal, agricultural and industrial needs. However, the nature of the problems is different in rural and urban areas. In rural areas, the bulk of the water collection burden falls on women and girls. Drinking water must be fetched by donkeys or camels or on the backs of women and girls from a source often far away. The difficulty in fetching drinking water for human consumption and livestock undermines productivity and health, whereas contamination leads to high morbidity rates. Lack of water is a major constraint on agricultural productivity; crop production is vulnerable to drought and in the absence of supplementary irrigation low yields result. In times of drought, lack of access to water reserves wipes out a large number of animals (World Bank, 1994: 186).

The World Bank (1994: 186) report shows that in urban areas, most of the urban population suffer from chronic water shortages during the dry season. Lack of water constrains the activities of industries and businesses, and threatens crucial future expansion. According to the National Statistics Office (1996: 13), per capita water use varies dramatically across location and culture. It can be as little as 3-5 litres per capita per day in the highlands. Using the WRD- E's definition of an "adequate" per capita intake of 20 litres per capita per day an estimated of 70 percent of the rural population are consuming below the minimum requirement. This is far below the World Health Organization's standard of 20 litres per day.

Regarding water sanitation the WRD-E Report (2000: 22) shows that since water resources are limited with surface-water being strictly seasonal and limited in its distribution, the majority of rural communities rely on ground water to meet their needs. They rely on hand-dug, open wells, which are subject to contamination. Of all hand-dug wells, 11.7 percent have a slap cover and pump installed on them. The remainder are uncovered and they are the main cause for contamination. Less than 5 percent of all water points are equipped with boreholes and pumps, with the majority fitted with handpumps.

Shortage of pipe borne water forces communities to use water directly taken from the rivers, ponds, pools and open dug wells. This situation gives rise to a high incidence of water borne or related diseases. Household access to sanitation facilities is also inadequate. In the absence of latrines, defecation in the open becomes the norm. However, the existing facilities

are reportedly cleaned, odourless, and well maintained. The effects of prolonged war, which caused devastating damage to the infrastructure, coupled with decades of socioeconomic neglect by successive colonial administrations and recurring droughts have resulted in hardship for Eritrean children and women. While reliable databases are still in the process of being developed, it is possible to state that the situation of children and women in Eritrea is characterized by high mortality and morbidity rates (Government of the State of Eritrea & UNICEF, 1996: 5).

3.3.6 Suggested actions

Negassi, Tengnas, Bein and Gebru (2000: 1-7) argue that the removal of the top soil for hundreds of years has resulted in soil erosion, decline of soil fertility, land degradation and the reduction of agricultural productivity in the highlands of Eritrea. After independence, soil conservation activities have been carried out on degraded catchments by mobilizing local communities. Terraces have been constructed on uncultivated land, shrubs have been planted to conserve soil and water, and to produce fuel wood and construction poles. On cultivated land, bench terraces, soil bands, and stone bands have been constructed. Check dams have been constructed along waterways to reduce salinity and runoff, and in the lower part of the watershed, gullies have been treated. Based on their experience, Negassi et al. state that it is necessary to work with local people to ensure the success of attempts to address issues of water conservation and land degradation, which are considered local knowledge.

Water security is indispensable for Eritrea. Without a secure water resource, the development efforts of the country will be hampered. However, Eritrea lacks an integrated and coordinated approach to using the water resource effectively. The basic issue is how to acquire water security and then to make optimal and sustainable use of the resource (NEPM-E, 1996: 46). NEPM-E has further suggested that water management has to shift from a supply-oriented to a demand-oriented approach. Water should be taken as a strategic resource and be managed wisely. Actions that address the issue need to be oriented around water harvest facilities and public awareness campaigns. The following measures need consideration:

- The only solution to the existing problem is to implement water conservation programmes with catchment treatment and the labour intensive construction of small flow retarding structures.
- There is a need for a well-coordinated public awareness campaign and legislation governing water resources.

- Continuous research and study are needed, and to do this, requires proper human resources development in the water sector.
- For optimal and rational use of water resources, a strong and effective institutional restructuring is needed. A coordinated approach in dealing with the administration of water resources is urgently required.
- To materialize these actions, the conscious involvement of communities is indispensable. This involvement should create the right conditions and policies to achieve and promote sustainable water use.

Furthermore, NEMP-E (1996: 2) recommends that water conservation should become part of the approach to sustainable living of all citizens. Where possible water should be collected from rooftops, or harvested into domestic impoundments. Roof water collection should be made a requirement in the building code and regulations of the country. Communities should take responsibility to protect the source of drinking water from contamination and to maintain any structure or equipment installed for the community water supply. Adequate and competitive levels of services cannot be developed in a deteriorating environment. All these activities call for community participation to occupy a central place in the water supply intervention.

3.4 Community participation in the provision of water supply in Eritrea

Although there are different views regarding community participation, it is in itself a strategy for community development in Eritrea. It is also central to the provision of safe water as a strategy that empowers communities to take initiatives in matters that affect their lives. This section attempts to discuss the need for community participation in water supply projects.

3.4.1 Background

In Eritrea, community participation is important in managing communal affairs. Social affairs such as marriage, ceremonies, funerals, and disputes are managed within the community. Traditionally, council elders, hereditary chiefs, and committees of elders were used to coordinate communal work such as ploughing, harvesting, clearing tracks, constructing, and terracing. Despite the long historical presence of community work in Eritrea, currently, community work differs from what it was before in type, duration, intensity, and regarding who takes the responsibility. Firstly, the new water committee differs from the traditional men only committee because it has at least one woman. Secondly, the new community-based water supply requires community-elected members who are accountable and adequately trained to

enable them to carry out their functions and exercise their tasks in the management of projects and decision-making processes (Eritrean Community Development Fund [ECDF], 2001a: 79).

3.4.2 The need for community participation in water supply

During the liberation struggle, the EPLF implemented its policies and programmes by building grassroots participatory structures. The communities and the front's network of mass organizations and civilian departments allowed for an effective participatory operation and enabled them to gather information on the actual needs of communities in different areas (Rock, 1999: 129-131). Rock explains that due to the legacy of the struggle, there is a strong emphasis on self-reliance, which is shown by the government's insistence on national control of development projects, and by its emphasis on investment and its reluctance to accept loans. Community participation, self-reliance, and empowerment gained from the long historical struggle against colonialism are building blocks for water supply intervention. At this juncture of the economy and the society, Eritrea should rely upon a commitment to decentralization, which puts communities, sub-regions and regions at the forefront of development, and taps the inner resources and organizational strengths of rural communities (WRD-E, 2000: i-v). Furthering its discourse, WRD-E argues that putting the communities at the centre of the delivery strategy for water and sanitation encourages an approach that seeks to tap and understand the values and local knowledge of the communities to overcome problems that affect their lives. Thus, communities must own the improved water points. Such ownership and management should be incorporated into the social system.

Moreover, the final report of the Ministry of Land, Water, and Environment (1998: 22-23) states that community participation and self-reliance constitute the main pillars of the government's development policy. The water supply authority conducts the operation and maintenance of water supply systems such as the operation of pumps, repair and replacement of facilities, and the collection of water bills. But community participation in managing the system such as cleaning the facilities, arranging the water fetching, proposing improvement plans and requesting new water supply facilities, is quite important. Hence, community participation is a multi-faceted approach and may involve the following principles:

- Communities must own and manage water points and sanitation facilities.
- Hardware and software components of the water supply and sanitation facilities should be given equal attention.
- Hygienic and sanitation interventions should be linked with water supply infrastructure.

- Various interest groups, especially women and young men should be involved.
- Activities should be focused on building self-reliance, self-confidence, and technical and managerial skills.
- Sensitization and awareness building programmes should be conducted by employing a community agent and organizer during and after the execution of a project.

The United Nations (2002: 23) confirms that Water, and Environmental Sanitation projects will ensure communities' participation in the project, including the necessary studies to determine the technology used. All technologies should be assessed, based not only on capital costs, but also on the long-term running cost. To ensure that the investments are sustainable, the establishment of community management systems, as well as hygiene and sanitation promotion is required. This will be undertaken in a participatory manner by empowering the households to develop replicating mechanisms.

WRD-E (2000: 57) argues that observations of community-based rural water supply programmes indicate that communities are committed and willing to contribute in cash and in kind to implement the programmes. Eritrea has recognized that cash and in kind contributions play an important role in enhancing ownership of facilities. Unfortunately, the principle of community contribution is sometimes not supported. Centrally designed payment systems are often thrust upon communities who do not have the local systems, training or services available to support handling the money. As a result, committee members are accused of misusing money. Money is not spent on what was originally intended; there is no reliable source of revenue, and the government is obliged to spend public resources to fix broken-down systems and expand services.

Furthermore, from the experience gained in implementing water supply projects, ECDF (2001a: 14) has learned that community participation is embedded in the tradition and culture of Eritrean ethnic groups. In these projects, community participation in project identification and community contribution appear to be good. However, in areas of awareness, implementation, decision-making, and women participation there is much room for improvement. This could be due to the low level of sensitisation, and inadequate communication with the communities by concerned officials and project officers at the grassroots level. As a result, the ECDF Report calls for training community cadres at all levels of local administrations so that they in turn act as real community development agents and social animators.

3.4.3 Administrative frameworks

At the time of independence, Eritrea inherited centralized but weak administrative machinery characterized by a shortage of a skilled work force, the absence of well-functioning processes and procedures and a lack of resources for basic operational tasks. Some of the key measures adopted since 1991 to address these issues include the initiation of a process of decentralization, on going restructuring of public sector management, strengthening of economic and financial management, significant investment in staff training and limited recruitment of personnel (Government of the State of Eritrea & UNICEF, 1996: 7).

As the NSEO and ORC Macro (2003: 2) certify, the government's development efforts are not only concentrated on rebuilding and rehabilitating war damaged and destroyed economic and social infrastructures, but also on formulating economic and social development strategies and policies. Among these was the Macro-policy of 1994, which mapped out short, medium, and long-term reconstruction and development programmes. In the Macro-policy, human capital formation through education and health was identified as the main strategy for long-term national development. Eritrea's Macro-policy advocated adequate and sustainable growth and social development to reduce poverty and create a basis for all Eritrea's citizens to provide them with a better quality of life.

To facilitate these principles effectively, Eritrea, under the new Proclamation for the Establishment of Regional Administration, was restructured into six decentralized regional administrations in 1996, which have 57 sub-regions and 2685 village or area administrations (Article 4 No.86/1996 Proclamations of Regional Administration). To speed-up community development, a village decision-making council, the so-called 'Megabaaya,' was proposed. WRD-E (2000: 2) further states that the government through its 1996 proclamation on regional administration has made its commitment clear by decentralizing planning and implementation. Although much remains to be done to strengthen the ability of the regions to carry out their functions, decentralization creates an opportunity for the water and sanitation sectors to meet outreach objectives. Furthermore, there is a need to strengthen the ability of the private sector to deliver relevant services. In conjunction with this, the ability of the nation and the regions to oversee private sector service delivery should be strengthened. Financing is critical to the sustainability of the rural water supply and sanitation sectors. It is also needed to support the viability of community management institutions and water supply and sanitation expansion in the long-run.

3.4.4 Institutional responsibilities

As ECDF (1997: 4-8) notes, the four key actors involved in the development of the water supply sector are; the central government, regional administration, the village/area administration, and the communities.

a) *The Central government:* Central government bodies formulate policies, prepare regulations, directives, standards, integrated plans, and development budget and oversee their implications. They conduct research and studies and collect and analyze data, and provide technical assistance to regional administrations. They also provide training and seek external funding for regional development programmes. The central bodies that are involved with the water supply sector are:

- The Ministry of Land, Water, and Environment through the WRD-E which takes the lead in refining policies and strategies for the development of the water supply.
- The Ministry of Local Government through ECDF which assists communities in planning, designing and constructing new or improved water supply schemes and coordinates and facilitates regional water development schemes.

b) *Regional Administration:* The Regional Administration executes administrative, developmental and social programmes in its geographic areas. It prepares the regional development plan and the budget, and implements them when approved by the central government. It prepares and reallocates regional recurrent budgets, and undertakes research and studies including the collection of data. Water projects are planned, implemented, monitored and evaluated through a Regional Department of Infrastructure.

c) *Village/Area Administration:* At the village level, the Baito is replaced by a Megabaaya, which is made up of all residents who are 18 years and older. A village administrator, who heads the Megabaaya, supported by an executive director and various committees, heads the administration. The Megabaaya meets to discuss programmes, approves those which require its participation, assesses performance reports presented by the administrator, and elects committee members.

d) *The communities:* Communities assume legal ownership of the completed projects and are responsible for its operation and maintenance and for the cost of keeping the system functioning. Each village should have a water committee which reports to the village administrator. It is intended that the committee should have at least three members. The most common size is five members, which corresponds to the Ministry of Local Government's directive. There is nothing to limit the number of members, and depending on the complexity

of the scheme and the wishes of the community, the membership may be greater.

3.4.5 Strategies for water supply and sanitation

The management of water as an economic resource and the integration of sectoral water plans and programmes within the framework of national economic and social planning are indispensable. The success of Eritrea's macro-policy depends on the availability and rational use of water. Therefore, water sector policies and issues need to be integrated with other sectoral policies (NEMP-E, 1996: 41). To address the water and sanitation challenges and to achieve the desired objectives, strategies that guide the implementation process are needed. Against this background, the Government of the State of Eritrea and UNICEF (1996: 132-146) have designed the following programme strategies:

a) *Promote an enabling framework:* It is necessary to promote and assist in the development of an enabling framework conducive to the expansion of community based water supply and sanitation services in rural Eritrea. Success in the field of water and environmental sanitation depends on the existence of a clear and conducive set of policies, regulations and rules, and strong institutions capable of providing direction, planning, and carrying out projects, monitoring and evaluating their outcomes, and ensuring adherence to regulatory frameworks. In addition with this, attention should be given to the reduction of disparities and the increased involvement of women.

b) *Strengthen the capacity of institutions:* Strong institutions which can sustain projects and effectively implement interventions are needed so that they can extend the coverage and improve the quality of basic services. The focus will be on the regional level. However, central institutions, such as the WRD-E and the Sanitation Unit of the Ministry of Health will be assisted through systems development, targeted training, experience and exchange with other developing countries, technical assistance in project implementation, and the provision of equipment, and other logistical support.

c) *Recognize the importance of hygiene and environmental sanitation:* Experience suggests that a sanitary means of excreta disposal and personal hygiene practices have a greater impact on the reduction of diseases such as diarrhoea than the availability of water. This implication is significant for Eritrea where coverage is low and knowledge, attitudes, and practices favour disease transmission rather than containment. Making water supply a priority has resulted in the neglect of sanitation. Therefore, considerable attention will be targeted on awareness raising, the adaptation and development of appropriate technology and capacity building.

d) Expansion of water points and improvement of their operational performance: The number of water points and their performance will be increased so that water will become more accessible in rural areas. The existence of water points equipped with manual or motorized pumps does not guarantee availability of water. Problems may arise such as the unavailability of spare parts, lack of trained mechanics, and discrepancies between the cost of repairs and the ability and willingness of communities. Therefore, in order to secure the permanent functioning of the water supply system, appropriate interventions will be taken.

e) Use appropriate technologies: Technologies that are suited to the hydro-geological conditions of Eritrea will be used. This will minimize costs of construction and maintenance. The use of locally available skills and materials maximize the involvement of women in village level operation and maintenance. Attention will be given to the need for standardization of water systems used in the country to promote ease of operation and maintenance. Ultimately, the emergence of local manufacturing capacity will be encouraged.

f) Emphasize community participation as a key element in the programme: The sustainability of water and environmental sanitation interventions whether as a sharing of costs, managerial responsibilities or the realization of potential benefits, is contingent on the thrust of community participation. Women will be empowered by promoting their involvement in different aspects of service delivery at the local level. This will encompass the development of collaborative relationships between community level institutions and the WRD-E, as well as Ministry of Health.

g) Promote behavioural change: Behavioural change conducive to better hygiene and environmental sanitation are needed as an integral element of the extension of water supply. Experience gained during the International Water and Sanitation Decade indicates that the provision of physical facilities such as handpumps alone does not guarantee health and socioeconomic benefits. The key factors in achieving the desired transformation are the behavioural adaptations and correct use of facilities by inculcating desired habits and attitudes to achieve standards of hygiene at the individual, household, and community level.

h) Undertake operations research: To provide information and insights into factors affecting programme performance research is needed. This will have implications for technology choice, and development. This in turn will contribute to the knowledge base on sanitation, water supply and hygiene, in Eritrea.

i) Emphasize the importance of water protection, conservation and rational utilization: Effective and preventive usage and conservation of water increase the longevity and efficiency of handpumps, ensure reasonable water quality, and reduce wastage of valuable

resources. Therefore, there is a need to work with local communities, discuss relevant problems, and identify appropriate measures to form a participatory approach.

3.5 Chapter summary

Eritrea is a new country which emerged as a sovereign state in 1991. Because of the colonial legacy, it is a poor country in which social conditions, especially the provision of water, were not addressed. The war of liberation destroyed Eritrea's infrastructure and devastated its economy and the environment. At present, the economy is at a rehabilitation and recovery stage. Unfortunately Eritrea was again involved in a devastating war as a result of a border dispute with Ethiopia. This again resulted in the destruction of public and private industrial plants and infrastructure, among them the water supply facilities. To improve this situation, the government has defined its vision and mapped out a broad-based strategy. In addition to the historical and socioeconomic situation, Eritrea is an arid and semi-arid country not endowed with rich water resources. Rainfall varies from less than 200 mm to more than 900 mm annually. Furthermore, environmental degradation and variability in the climate are the major factors of poor social indicators. Thus, there is an overall shortage of water resources in Eritrea. The water resource is poor and the amount of rainfall is limited. There is high evaporation and transpiration. There are no lakes, and the rivers except one are not perennial. Furthermore, the natural conditions have been aggravated by human actions of deforestation, uncontrolled and wasteful water use, water pollution, and the thirty years of protracted war against Ethiopia. Water conservation and efficient use are important, but efficient water usage has not been realized. Wastage control and water saving technologies have not yet been introduced. These coupled with recurrent drought, cause wells and other water resources to dry up, resulting in a shortage of safe water delivery. Thus, the surface and the underground water resource are not enough to support national demands. Therefore there is inadequate water for domestic and economic use. The challenge is to provide adequate and clean water in these conditions.

Against this background, the supply of safe water is low, particularly in rural areas. The supply permits a consumption of only 3-5 litres of water per capita per day in the highlands. This is far below the standard of 20 litres per capita per day set up by WRD-E. However, the access to water has improved since 1994 from 7 percent to 49 percent in rural areas and from 44 to 90 percent in urban areas as of 2002. These figures indicate that substantial progress has been made. However, reports indicate that a large proportion of water points are inoperative due to the lack of community-based systems of operation and maintenance and back-up assistance of service institutions. In addition, there is lack of enforcement of regulatory and

incentive frameworks. Furthermore, water born and water washed diseases contribute towards high infant and under-five mortality and morbidity rates.

Policies and strategies that involve communities in implementation have been formulated. Community participation is a strategy for development in Eritrea. Community participation and self-reliance are the main pillars of government policy, and they are the building blocks for water supply intervention. To put into practice these principles, Eritrea is committed to decentralization of implementation and planning. Although much remains to be done to strengthen regional and local institutions to carry out their functions, decentralization provides an opportunity for the water and sanitation sector to meet outreach objectives. In line with this, water supply strategies have been mapped out. These strategies emphasize : the promotion of an enabling environment, strengthening the capacity of the institutions, the use of suitable technologies, expansion of water points and improved operational performance, promotion of behavioural changes, water conservation and rational utilization, and, above all, community participation which is regarded as a key element in programme implementation.

There are factors that hinder smooth implementation. In Eritrea, as in other developing countries, there are institutional problems, a lack of skilled human resource, financial drawbacks, and a lack of coordination. In the researcher's opinion, the commitment of the government regarding community participation is positive, and the programme strategies are pragmatic. The problem is how to implement the strategies given the scarce resources. The next chapter addresses the local context and attempts to demonstrate the challenges posed by water supply and community participation at grassroots, focusing on rural water supply.

CHAPTER FOUR: COMMUNITY PARTICIPATION AND WATER CHALLENGES IN GALANEFHI

4.1 Introduction

Galanefhi is one of the seven sub-regions of the Central Administrative Region, of which three are rural. The Central Administrative Region is one of the six Regions of Eritrea situated in the Central Highlands comprising Asmara, the capital city, and its environs. Thus, Galanefhi is a rural sub-region in the periphery of Asmara and faces the problems of basic services, especially water delivery, like any other sub-region. As water is a basic need of the communities, the people of Galanefhi, at village and sub-region level, show their willingness to solve safe water challenges by contributing cash, labour, and materials. There are not adequate written references regarding Galanefhi to substantiate the study. As a result, participatory observation and the experience of the researcher, as well as the feedback obtained from questionnaires and focus group and informant interviews have been used to obtain information.

4.2. Geographical location

Galanefhi stretches about 29 kilometres east, south east, and south west of Asmara. It is a typical highland sub-region, and has the climate of the highland of Eritrea, a mild climate with a mean annual temperature of about 16° C. Its raining season is from June to the beginning of September, the heaviest rain falling in July and August, with an annual rainfall of about 550 mm.

Because of its proximity to the administrative and commercial city Asmara, it has a good opportunity to undertake development projects. Firstly, communities can communicate their needs and demands to the concerned authorities easily. Secondly, it is easy to transport agricultural products and commodities to and from the villages to the capital. Transportation cost is low in comparison with other remote regions and goods reach project sites quickly. Thirdly, contractors situated in Asmara can perform their activities of supervision and easily acquire construction materials and spare-parts for any project from Asmara on time. Also the inhabitants can sell their products at a reasonable price and have ample access to markets. Therefore, the inhabitants can undertake development projects easily.

4.3 Socioeconomic condition of Galanefhi

The total population of Galanefhi, according to the 2003 regional population count is 49220, of which 51 percent are females (Statistics Office of Central Region, 2003). Compared to the 1998 count, 35316, the current population count of the sub-region shows high growth mainly

because of the influence of the capital. The main occupation of the communities is agriculture, which is small-scale or uses traditional technology on small and fragmented land plots that make it difficult to practise mechanized farming. This farm size is aggravated by the Land Proclamation Act (1994, No.58/94) by which every Eritrean, whether male or female, from the age of 18 and above, has the right to farm land in his/her place of birth. In the spirit of this proclamation, land was redistributed to the households of Galanefhi in 2001. Gender-wise, it was a significant achievement for females that had no right to land before.

Nevertheless, small land holdings, outdated techniques of farming accompanied by recurrent drought keep agricultural productivity low. As it is close to Asmara, many villagers supplement their income by working in construction industries as builders or doing other manual labour activities. In some villages, which have micro-dams and streams, vegetation farming is practised. However, this is constrained by the shortage of water and by the communities' incapacity to undertake irrigation schemes.

4.4 Water supply challenges

According to a survey conducted by the Ministry of Land, Water, and Environment (2000: 1-4) in the Central Region, the main source of water in Galanefhi is ground water, which is tapped by boreholes and hand-dug wells. Handpumps, motor pumps and buckets with ropes are chiefly used for lifting water. As the respondents indicate, some villages use springs, dams, and ponds in the dry season when ground water sources are dried up. In some instances, the communities and livestock use the same source of water. Most dominantly, wells are used for drinking and washing purposes while springs, dams and ponds are used for watering livestock and irrigating farmlands.

From the questionnaire and focus group interviews conducted, the researcher has learned that five villages in Galanefhi sub-region use public taps, piped from the Dam of Mainefhi to these villages. Mainefhi Dam is the main source of water for Asmara. Two other villages will follow suit in the near future. In addition to this, some villages use water-vending trucks especially during the dry season when ground water is stressed or dried up. However, this system of delivery is too expensive for rural people to afford.

The study of the Ministry of Land, Water, and Environment (2000: 3) further shows, in 2000, there were 68 sources in Galanefhi. Of these sources, 21 are boreholes, 24 hand-dug wells, 5 public taps, 14 micro-dams, and 5 springs. Out of these water sources, 3 boreholes, 2 hand-dug wells, and one public tap were inoperative at the time of the ministry study due to

technical failures. Water in these villages is transported by donkey and on the back of women and girls. The distance from the water points to the villages and the time the villagers spend travelling and waiting to fetch water have impacted on the health and time of women and girls. Hence, construction of water points near dwellings implies alleviating the social and economic burden the women are facing. As a result, the main beneficiaries of water supply projects are women.

According to Yosief (2003), there are many types of handpumps in the Central Region. In Galanefhi alone there are seven types of handpumps. The most commonly used are: Afrider, Kasrdia, and Indian Mark II. There are different sources of funding, which has resulted in the usage of different types of handpumps. Because of this, it is difficult to get spare-parts for different types of handpumps. Practical experience shows that the Afrider type of handpump functions efficiently. In some villages the handpumps are over used; in other instance there is inappropriate usage; and in the dry season the water level of the wells decreases resulting in handpumps operating over their capacity. These cumulative effects lead to continuous breakage of the handpumps. As the villagers are not trained to operate and maintain their handpumps, it takes time for the central authority to do so. In the mean time, it is observed that villages are obliged to use unclean water from streams and dams together with animals. Therefore, there is a need to call for further assessment of the types of handpumps that are effective, and that have easily available spare-parts, which later could lead to accurate standardization.

According to the study of the Ministry of Land, Water, and Environment (2000: 7-8), the standard capacity of a handpump is to serve 250-400 people. However, in Galanefhi, a handpump serves more than 500 people. It works non-stop for a number of hours. Skilled handpump caretakers are absent as many of those trained before are in the National Service. In addition, sometimes abuse and inappropriate use by beneficiaries result in continuous handpump breakage. Although many of the villages use handpumps and hand-dug wells with proper aprons, there is often poor sanitation and poor protection from animal excretion. By making the communities aware through education, the sanitation of these water sources could be improved and at same time the hazards caused by unsanitary conditions could be minimized. Guarding and fencing the water points are also important factors in preventing contamination.

Preliminary investigation conducted by Ministry of Land, Water, and Environment (2000: 8) based on customer questioning about the daily water usage per person, reveals that in Galanefhi the average person consumes 11.4 litres of water per day. This is 43 percent less

than the required amount of water per person per day compared with the standard of 20 litres per day as set up by WRD-E.

4.5 Community participation

To reverse the prevailing water supply situation, community participation in all phases of the system is necessary. Thus, water projects have to emanate from the felt needs of the communities. Again, in order for communities to develop a feeling of ownership, they are supposed to contribute 10% to the project. Their involvement is not confined to a monetary resources contribution; they are also required to participate in goal setting and decision-making. In addition to these, beneficiaries are expected to maintain and efficiently use water supply facilities to meet their objectives. Against this background, the communities of Galanefhi participate in all phases of the project from identification to evaluation. Nevertheless their participation is limited, and it is more in implementation and identification. The participation of the communities lies in their voluntary contributions to water supply projects in labour, cash, and material. In the construction of micro-dams, not just merely for food and cash but also to be the owners of the project, communities participate in the form of food-for-work and food-for-cash.

Nevertheless, water supply projects are initiated by the communities and emanate more from their felt needs than any other development projects. Because water supply projects are directly related to the life and health of the communities, they are implemented based on their demands and involvement. However, to strengthen the communities' initiatives, there is a need for an administrative organization at all levels that allows communities to play their role. It is observed that there is not coordinated and integrated work and defined channels of communication. As a result, there is a lack of quick response to the communities' needs and demands. On the other hand, there are some obstacles to community participation. If the water supply system is to be constructed in another village, there is resistance and disagreement, resulting in the communities not accepting it. This phenomenon undermines community participation and has an effect on the process. As Yemane (2003) confirms, this phenomenon is solved through understanding and discussing the matter at meetings. Furthermore, Yemane argues that some community members prefer to use previous water sources, which are not clean and are uncovered rather than paying the water tariff, and use the new water points. This may result from their unwillingness to pay for the water they use. From this incident, it can be concluded that awareness-building is necessary to make communities participate in projects that affect their lives.

4.6 Management of water supply in Galanefhi

Galanefhi is structured into 15 Village/Area Administrations. In every Village/Area Administration, there are an administrator and deputy administrator elected democratically by village members. There was a new election at village level at the end of 2002. The researcher also observed new restructuring and staffing in progress at regional and sub-regional level, during field-work. But this was not finalized and approved. To speed up development efforts and to realize full participation, there is a village decision-making body, the so-called village council (Megabaaya). This council is composed of all male and female adults over 18 living in the community. The Village/Area Administrator and his subordinate, the deputy administrator, head the village council. To help the administrator, the local community forms a series of committees. One of these committees is the water committee. Thus, the Megabaaya at grassroots level identifies the felt needs of the communities, prioritizes according to the pressing needs of the communities and communicates those issues beyond the capacity of the community to the sub-region administration and through it to the regional administration. The Regional Administration in turn intervenes and helps the communities to solve their problems. The Regional Administration recognizes the priority needs of the community, and seeing the magnitude of the problem, tries to find enough funds to solve the water supply problems.

The guidelines of the WRD-E (1994: 1) instruct every village to form a water committee. According to the guidelines, communities of every village must form a water committee that facilitates, coordinates, and communicates with government officials and other organizations. This water committee must be formed from the inhabitants of the village, and must be composed of males and females.

From the interviews and the discussions undertaken with representatives of communities, many of the villages who own boreholes and public taps have community water committees. The Megabaaya elects these committees and their number is determined in accordance with the number of the communities, and the number of water sources. The number of members in a committee varies from 3-10 members of which at least one is a woman. Because they are not paid they are not motivated and there is lack of cooperation with the Village Administration. Besides, water committee are not present in all the villages.

As the study conducted by the Ministry of Land, Water, and Environment (2000: 5) shows, there is inefficient administration of water supplies and poor sanitation. In some villages, livestock excretion such as donkey dung is observed in water sources which the community uses for drinking water. Poor management of the water supply is one of the problems which

should be addressed. Therefore, the next chapter will assess the overall water supply situation and the participation of the communities in the field, based on questionnaires and focus group interviews and the materials available regarding this sector. The study analyzed eleven sample villages, which have undertaken water supply projects since independence.

4.7 Chapter summary

Galaneffi is a rural sub-region in the periphery of Asmara. Its inhabitants depend on rain-fed agriculture, and the main source of water is ground water. There are people that use unclean water from dams, springs and ponds together with animals. Additionally, some people use vender trucks, but this is expensive for rural people. Seven villages have the opportunity to draw piped water from the dam of Mayneffi. Thus, this sub-region is far better off than the other rural sub-regions of Central Region. Water is transported by donkeys and on the backs of women. Hence, the construction of new water supply near dwellings, reduces the burden of women, and saves time that could have been lost in fetching water.

In Galaneffi, handpumps are chiefly used for lifting water. They are over used, inappropriately managed, and operate over capacity leading to continuous breakage. As there is a lack of spare-parts and an absence of caretakers, they take time to be maintained by the central authorities. In the meantime, communities are observed returning to their previous unclean water sources. Furthermore, studies reveal that in Galaneffi the average person consumes 11.4 litres of water per day, which is 43 percent less than the standard.

To reverse the situation, the communities participate in water supply projects with the government and other development agents. Their participation consists of their voluntary contribution in cash, labour and material. There is lack of coordination and integrated work and undefined channels of communication leading to unresponsiveness to the communities' needs. In order to strengthen community participation, there is a need for responsive administrative organization at all levels. The Proclamation of Regional Administration empowers communities at local level to decide on matters that affect their lives. However, there are limitations in implementing this principle and it has been observed that the majority of the decisions are taken by water committees rather than the Megabaaya. The next chapter further discusses the issue by taking into account respondents' concerns and perceptions regarding the sector.

CHAPTER FIVE: DATA RESULTS, INTERPRETATION AND ANALYSIS

5.1 Introduction

In the previous chapters, water supply challenges and community participation in their international, national and local contexts have been discussed. Community participation as a strategy in dealing with the issues is highlighted. This chapter goes further into the real situation on the ground. It is on this ground that development interventions are tested and measured. The ground certifies the reality; shows the real challenges of the issue, and explores the concerns of the communities. It shows how community participation is practised, and proves the correlation between the delivery of safe water and community participation. Thereafter, data results will be interpreted and analyzed accompanied by relevant tables and graphs. Hence, the aim of this chapter is to observe and measure the effect of community participation on sustainable clean and adequate water delivery.

5.2 Data results and interpretation

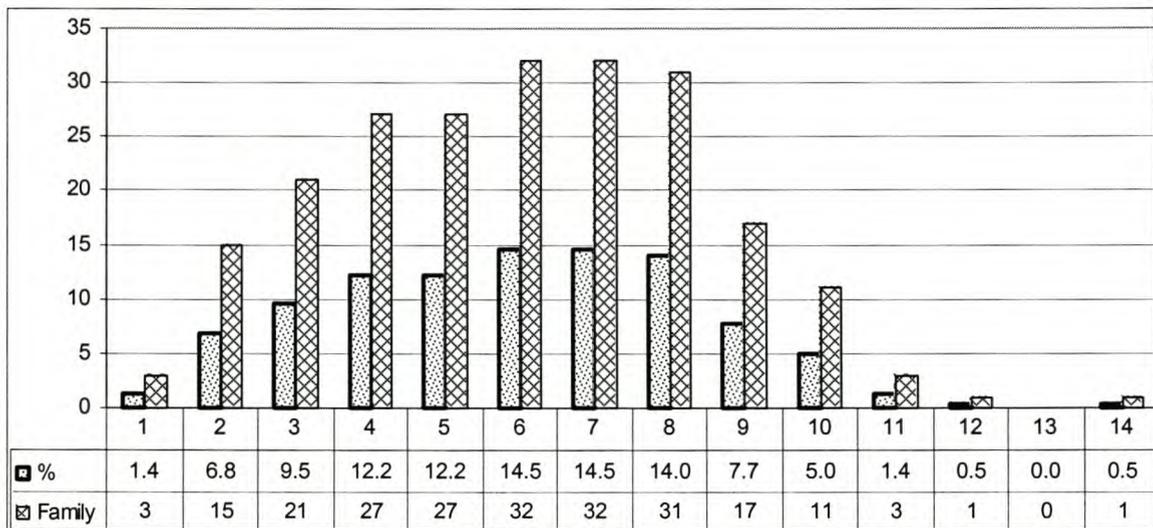
The data was gathered through open and closed ended questionnaires, and supplemented and enriched by participatory observation and focus group and informant interviews. It is also supported by documentary sources. To ease the flow, and to combine the relevant ideas regarding water supply and community participation, the questionnaire is structured into six sub-sections. Sub-section one deals with area identification, which acquaints the reader with the places where water supply projects have been undertaken. Sub-section two shows respondents' background. Sub-section three discusses the sources of water supply in the targeted villages. Sub-section four attempts to illustrate the water supply management in the targeted villages. Sub-section five describes water supply sanitation in the targeted villages. Finally, sub-section six explains community participation in water supply projects.

Furthermore, the study attempts to interpret and analyze the data as numbered in the questionnaire. Numbers, which were split for convenience in the questionnaire are combined together to give a broad picture of the question (see annexure II). At the targeted villages, eight water supply wells (borehole, hand-dug, and public tap) and three micro-dams were constructed in the past twelve years.

5.2.1 Area identification

- 1) The study is focused on one sub-region of the Central Administrative Region of Eritrea.
- 2) The study area is in Galanefhi Administrative Sub-region.
- 3) The study was conducted in seven Area Administrations namely Ademneger, Daeroqualos, Embeyto, Hmbrti, Laguien, Lamza, and Salaedoro that have undertaken water supply projects since the independence of Eritrea.
- 4) Eleven villages were identified, which constructed water supplies after independence. These villages are: Adiahderom, Ademzemat, Adibaquakay, Adihamushte, Adirasi, Embeyto, Hmbrti, Kodadu, Laguien, Lamza, and Msguage. These targeted villages have a total population of 18220, which is 37 percent of the total population of the sub-region.
- 5) The household number of the targeted villages is 2480, of which 2210 household heads are 28 years of age and over. Since water is a basic human need, its deficiency affects each household number. But the magnitude of aggravation is greater in large household size families. To accommodate these concerns, household sizes from one to fourteen are taken. As the size of the households increases, the demand for clean and adequate water also increases. The data results show that the average household size of the respondents is six (see figure 5.1)

Figure 5.1: Household size and family members in percentages



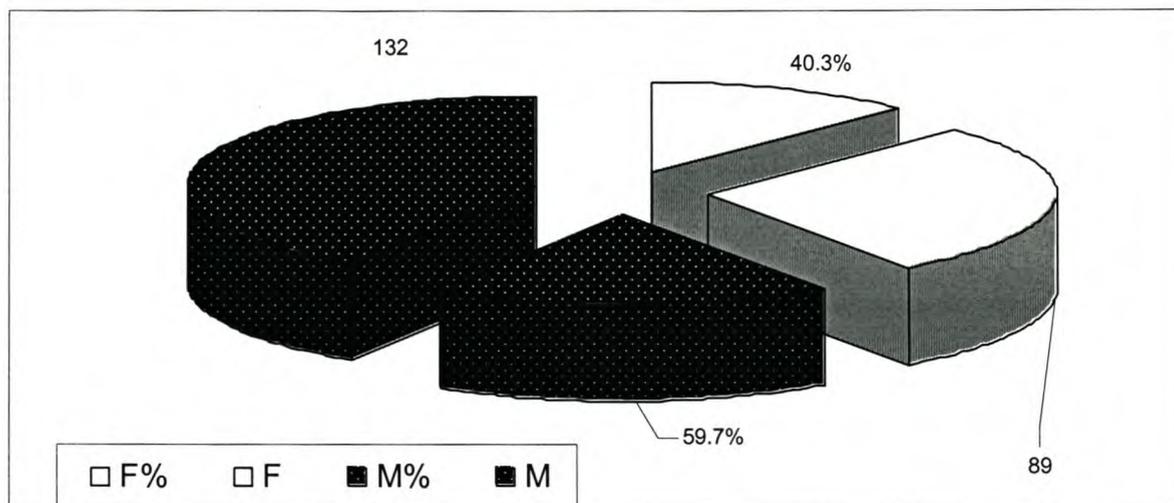
Source: Data results (July, 2003)

5.2.2 Respondents' background

- 6) As figure 5.2 depicts, 59.7 percent of the respondents are males and 40.3 are females. An attempt was made to increase the number of females interviewed, as they are the group most affected. Unfortunately, they were occupied with household tasks. Males were more available to complete the comprehensive (1 hour) questionnaire on behalf of a household. Furthermore,

the researcher has found it appropriate to increase the number of males because males are more involved in the process of water supply construction.

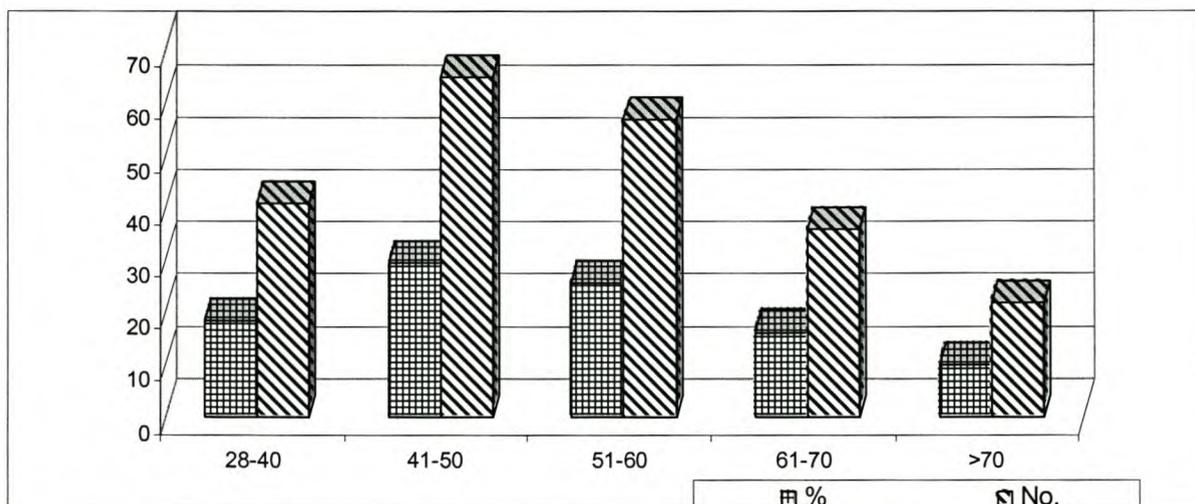
Figure 5.2: Gender of respondents in number and percentage



Source: Data results (July, 2003)

7) As the assessment is on water supply projects after independence, which is twelve years ago, it is desirable to reach respondents who are 28 years old and above. From this age and above, respondents could look back and reflect on the prior situation in comparison to the current condition. Hence, the majority of the respondents are between the ages 41-50, followed by 51-60. Figure 5.3 shows the age brackets in percentage.

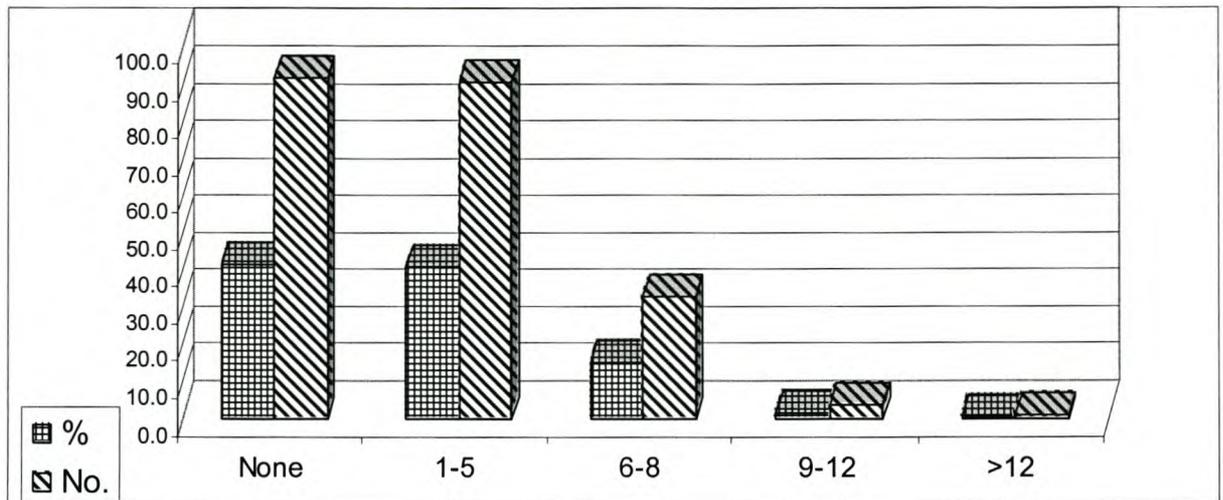
Figure 5.3: Age of respondents in percentage



Source: Data Results (July, 2003)

8) Figure 5.4, the educational status of respondents, shows that 41.6 percent of the respondents have no formal education, and 41.2 percent passed grade five and below. Only 0.5 percent passed grade twelve. Hence, the illiteracy rate is high. It is the opinion of the researcher that this is not an impediment to promoting community participation and water hygiene and sanitation campaigns.

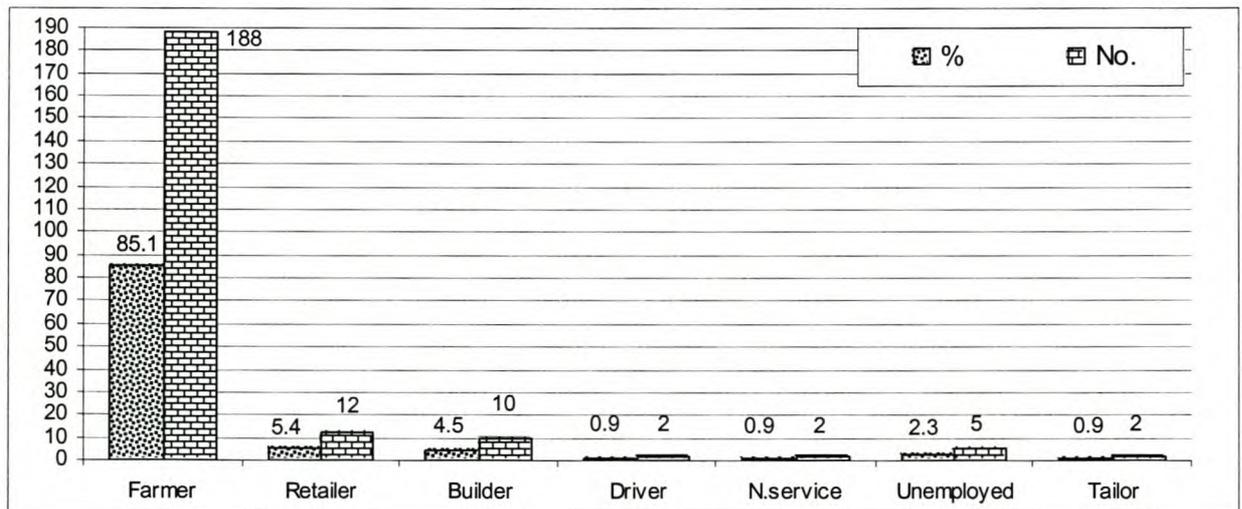
Figure 5.4: Educational status of respondents in percentage



Source: Data results (July, 2003)

9) The main occupation of the targeted villages is farming (85 percent); 2.3 percent are unemployed. The other occupations which form 12.7 percent are farming related activities that facilitate the villages' social life. Figure 5.5 shows the occupational status of respondents in number and percentage.

Figure 5.5: Occupational status of respondents in number and percentage



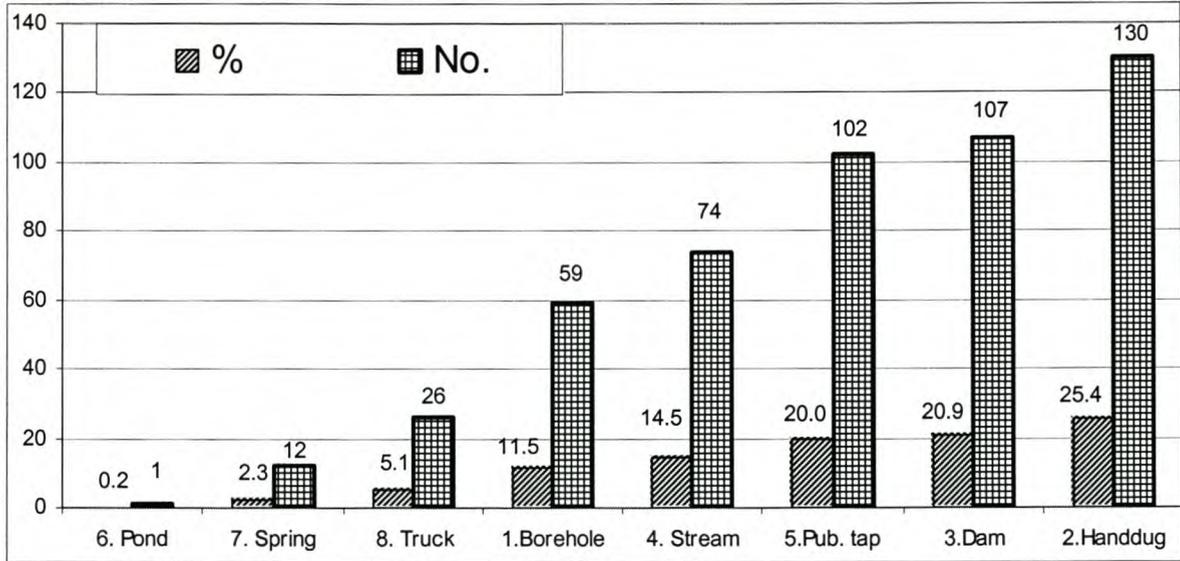
Source: Data result (July, 2003)

5.2.3. Source of water supply

10) Figure 5.6 shows that 25.4 percent of the respondents use hand-dug wells. Only 36.6 percent of the respondents use safe water from boreholes, public taps, and vender trucks. Unclean sources of water like dams, streams, and ponds are used by 37.9 percent of the respondents. Despite the efforts made to construct water supply projects the problem still exists in many communities. Furthermore, data results show that one household uses more

than one source of water, especially during the dry season when wells are stressed and when handpumps are broken. In the meantime, communities are obliged to use unclean water from dams, streams, springs and ponds.

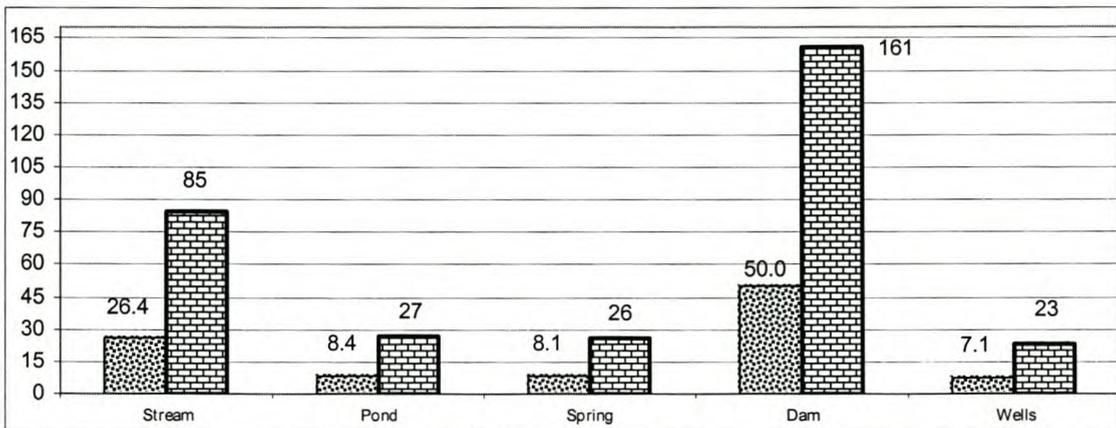
Figure 5.6: Source of water for human beings in number and percentage



Source: Data results (July, 2003)

11) As figure 5.7 indicates, 50 percent of the livestock use dam water. Only 7.1 use wells designed for human beings. Most of the water sources for humans and animals are the same. Both humans and animals use streams, dams, ponds, and springs that should be addressed if the health and safety of the communities is to be protected.

Figure 5.7: Source of water for animals in number and percentage



Source: Data results (July, 2003)

12-13) Half of the respondents indicated that there is not enough water for personal and domestic use throughout the year. In the dry season, water from uncovered sources is dirty and inadequate. As a result, communities are compelled to travel further to fetch water for themselves and their animals from neighbouring villages. In villages where they have dams, streams, and ponds humans use these water sources together with animals. In other villages,

communities buy from vender trucks, but the system is very expensive (see table 5.1 below).

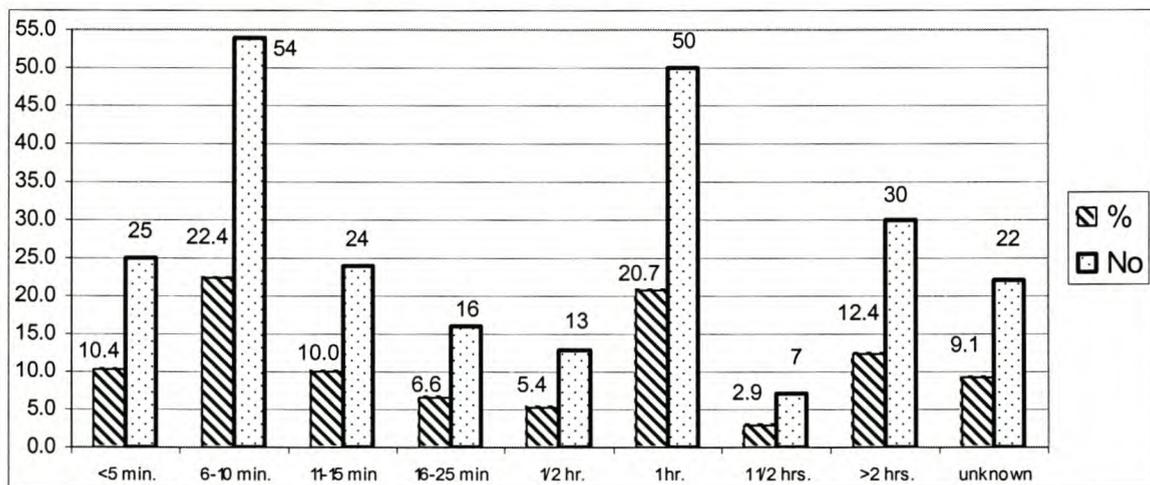
Table 5.1: Availability of enough water throughout the year

Description	Total	%
Yes	111	50.2
No	110	49.8
Total	221	100

Source: Data results (July, 2003)

14-15) Figure 5.8 shows that the proximity of the new water supply to dwellings differs from village to village, and it has a significant effect on the lives of the communities. As the responses indicate, before the construction of the new water supply, the average time taken to reach a water source was 79 minutes. After the construction of the new water supply, the average time spent by the respondents in travelling to water sources has dropped to 42 minutes. Thus, average time spent travelling has been reduced by 47 percent. However, as Shordt (as cited in National Statistics Office, 1996: 18) notes, unless collection time is reduced to under 30 minutes, health is not likely to improve because water quantities will not increase sufficiently to change health behaviour. Hence, much effort is needed to reduce it below this status. Nevertheless, compared with the previous situation, there is ample time left for the vulnerable group, women, which they can use on other social and domestic activities.

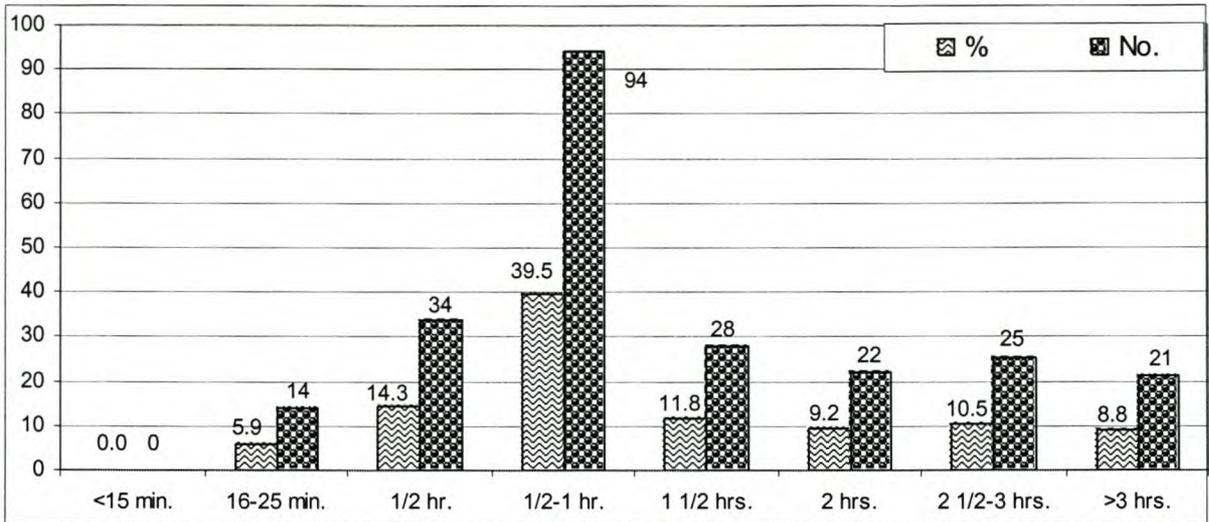
Figure 5.8: Travel time to new water sources in number and percentage



Source: Data results (July, 2003)

Previously, 40.3 percent of the respondents travelled for more than 89 minutes to reach a water source. After the construction of the new water supply, only 24.4 percent of the respondents travel for more than 89 minutes to reach a water source. From this perspective, it can be deduced that the new water supply projects have made a significant impact on the lives of the communities.

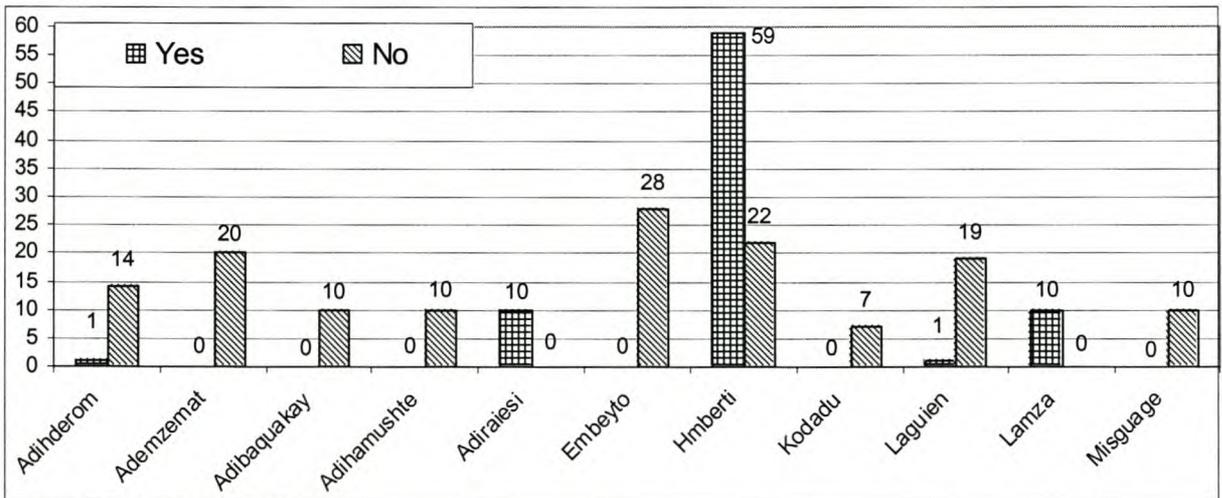
Figure 5.9: Travel time to previous water source in number and percentage



Source: Data results (July, 2003)

16-17) Data results in figure 5.10 below show that eight villages, which represent 63.4 percent of the respondents, are not satisfied with the outcome of the new water supply projects. Though the reasons differ from village to village, the following reasons for dissatisfaction are noted:

Figure 5.10: Satisfaction of respondents with the new water source in number



Source: Data results (July, 2003)

- Communities are not getting adequate and clean water as expected.
- Repairing and maintenance take time and communities return to their previous source.
- When handpumps are broken, communities are compelled to fetch unclean water.
- There is a long queue, and an increased waiting time at the water source, if there is one source only for a village.
- Some water sources are not convenient. The old and disabled find it difficult to fetch

water.

- The water is salty and unpleasant to drink or wash with it.

18) The impact of the new water supply projects differs from village to village and there are individual perceptions and preferences. For most of the respondents, the new water supply projects are close to their dwellings, and water is easy to fetch. They are covered and protected and water is more easily lifted by handpumps or motor pumps than previously. The new water supply is clean and adequate. The notable impact of the new projects is the increase in the households' water consumption to reach the standard set up by WRD-E. An increase in water consumption implies there is adequate water for drinking, cooking, washing, and cleaning, which in turn leads to improved health conditions. Hence, it has a positive impact on their lives. Nevertheless, at Hmbrti the water is salty, and it is not pleasant to drink or wash in and the respondents regard it as dangerous for their health. In their opinion, the impact of the new water supply is not as expected.

19). Astor (1988: 18); Narayan (1993: 43) argue that in most cultures women play a greater role than men in managing the domestic water supply and environmental sanitation. They are responsible for supplying their families with drinking water. Hence, they directly benefit from the impact of water supply and sanitation projects. Lessening the work involved can contribute to improving their socioeconomic situation. In the targeted villages, previously, water was transported from the water sources to the households by donkeys and on the backs of women and girls. Currently, as the new water source is close to their dwellings, women save time, and more time and energy can be utilized in other productive activities. Hence, it has a positive impact on the health, economy, and social aspects of women. Despite this positive impact, some respondents argue that the proximity of water sources has its own undesired impacts. When the water resource was remote, water was mostly transported by donkeys. When the water source is close to dwellings, women and children carry it in buckets and jerrycans (20 litres). This creates discomfort for women and children. As a result, they call for the introduction of techniques that could ease the burden of women and children in carrying water to the household.

5.2.4. Water supply management

20-23) Narayan (1993: 55) argues that while individuals can introduce change, sustaining the efforts and results of participatory projects require changes in the structure and function of strong, relatively autonomous community organizations. Accordingly, as table 5.2 indicates,

86.4 percent of the villages have water committees. The water committees are elected by the Megabaaya. Their period of service differs from village to village. The majority of the respondents (81.7 percent) indicate that water committees serve for unfixed periods. The rest (18.3 percent), serve from 1-5 years. Since most members of the water committees serve without any payment for unlimited time periods, they are often negligent and misunderstandings occur with the village administration. The tasks of the water committees, among others, are the following:

- They facilitate project implementation.
- After project hand-over, the water committees take the responsibility for the water supply system and manage it.
- The water committees oversee the delivery of service from the water supply projects.
- During the breakage of water supply facilities, the committees take responsibility for repair and maintenance.
- The water committees recruit workers to run the water supply system and to oversee water supply facilities.
- The water committees control income generated from water tariff.
- The water committees call a meeting in a specific time, and evaluate the water supply and sanitation situation, and how service is being delivered.
- They report to the Megabaaya quarterly and annually.

Table 5.2: Presence of water committee

Description	Total	%	Time	Frequency	%
Yes	191	86.4	not fixed	156	81.7
No	30	13.6	1-2 years	11	5.8
			3-4 years	13	6.8
			5 years	11	5.7
Total	221	100		191	100

Source: Data results (July, 2003)

24-25) Although water is considered as a natural gift by rural communities, 53.4 percent of the respondents indicate that communities pay for the water they use. But the tariff rate differs from village to village and from the type of the water system. As table 5.3 shows, 62.7 percent pay 2.5 Nakfa (13.5 Nakfa = 1 USD) per barrel and 8.5 percent pay 6 Nakfa per barrel from vender trucks, which is too expensive for rural communities. This shows that it is impossible for the rural communities to get an adequate amount of water and to use and consume it by paying 6 Nakfa per barrel. It is observed that some respondents pay a water tariff and additionally buy water from vender trucks. As a result, the total number and

frequency does not match.

26) As Narayan (1993: 63) notes, “If demand-driven approaches for water supply projects are to be adopted, users need to demonstrate their commitment in voluntary contribution of personal or communal resources.” Nevertheless, at the villages, due to the level of poverty, communities’ abilities to raise adequate funds are limited. Hence, the government takes over all major repairs and maintenance works, while the minor repairs and maintenance are left to the communities. Therefore, operation and maintenance of the water system is done in two ways. In the case of a major breakage, above the ability of the communities, the Central Administration is responsible. But minor operation and maintenance are done by the communities. For this purpose, communities are obliged to pay a minimum tariff that can be utilized for the operation and maintenance of the water system. The income generated from water tariffs are used by the community for managing the water supply and for repair and maintenance, which is the guarantee for the sustainability of the project.

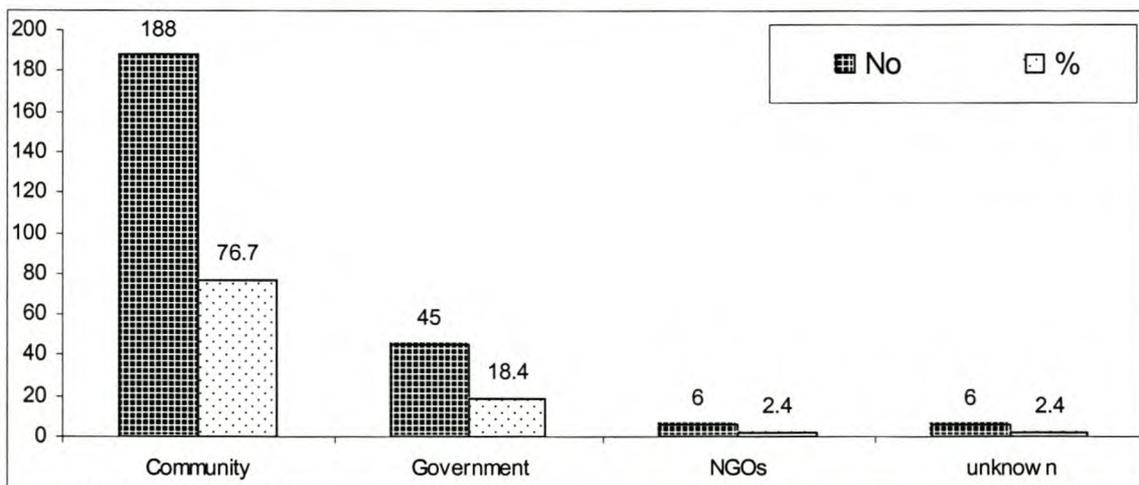
Table 5.3: Payment for water usage

Description	Total	%	In Nakfa	Frequency	%
Yes	118	53.4	2.5/barrel	81	62.7
No	103	46.6	6/barrel	11	8.5
			.5-1/month	9	7
			5-7.5/month	10	7.8
			15 + monthly	18	14
Total	221	100		129	100

Source: Data results (July, 2003)

27) As figure 5.11 below shows, most of the communities know who is responsible for repair and maintenance. 76.7 percent indicate that the community is responsible for repair and maintenance. Government authorities are responsible in cases where it is beyond the ability of

Figure 5.11: Responsibility for repairs and maintenance



Source: Data results (July, 2003)

the communities. In line with this, NGO’s involvement in repair and maintenance is only 2.4

percent, which shows that they have little responsibility after project hand-over. Moreover, 2.4 percent of the respondents do not know who is responsible for repair and maintenance.

28-29) The guidelines of the WRD-E (1994: 4) illustrate that considering the real socioeconomic condition of the rural communities; communities are not expected to finance high investment costs that demand technical skills and management. For this reason, the government has to cover the investment capital for the present. However, the communities have to contribute according to their abilities and willingness in the construction and expansion of water supply projects. In harmony with this spirit, communities have to contribute in cash, labour and materials that they can afford. Furthermore, the administration should mobilize money from those who have the ability and willingness to contribute money voluntarily for their water system. In the spirit of these guidelines, data results show that 52.5 percent of the respondents contribute to the construction of water supply projects. However, communities in villages where the water supply is sponsored by ECDF, are obliged to contribute 10 percent of the project costs in cash, labour or material. The labour and the material costs are not shown (see table 5.4, Contribution for water supply below).

Table 5.4: Contribution to the construction of water supply

Description	Total	%	In Nakfa	Frequency	%
Yes	116	52.5	10% of construction cost	30	35.3
No	105	47.5	15-May	13	15.3
			50	5	5.9
			100	2	2.4
			150	10	11.7
			200	10	11.7
			250	5	5.9
			300	10	11.8
Total	221	100		85	100

Source: Data results (2003, 2003)

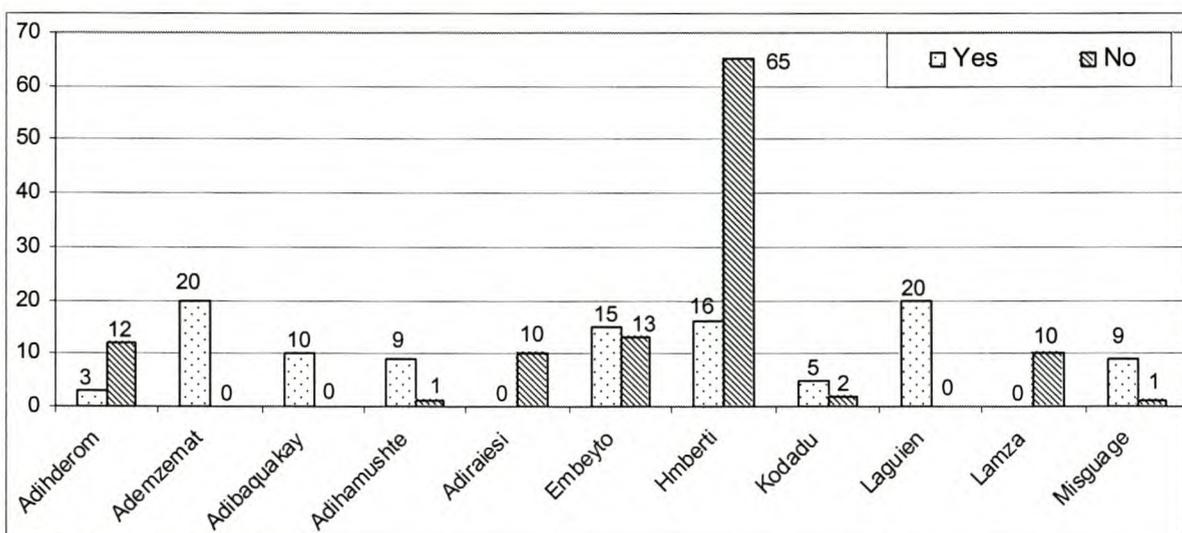
30) Women contribute their share in labour, cash, and material. Besides this, to make sure of their participation in the management of the water supply at least one of the water committee members is a woman. They participate during project implementation, and after project hand-over, and they serve as guardians of public taps and water points.

31-32) Cusworth and Franks (1993: 11-13) categorize project failure at two levels. Firstly, there is the failure to implement the project effectively, on time, within budgets, and according to the plan. Secondly, the facilities created fail to achieve the effects intended. Project managers will be concerned to avoid both failures. Nevertheless, the responsibility for failure to achieve the effects intended lies more with the planners and designers rather than the managers. The experience of the targeted villages reflects this situation. In three villages namely Ademzemat, Adibaquakay, and Mmsguage hand digging and borehole drilling failed to

achieve their objectives. They were tried twice and thrice in different places but water was not available. Thereafter, for Adibaquakay and Mmsguage, piped water was drawn from Maynefhi Dam, taking advantage of the two villages' proximity to the dam. The problem of Ademzemat still persists as the village is remote from Maynefhi Dam.

From the communities' perspective, the three micro-dams constructed in the past twelve years have failed to achieve their objective and to meet communities' expectations. The micro-dam which was constructed at Kodadu in 1995 was not successful. The water stream which was supposed to be diverted into the micro-dam was not diverted. Thus, the dam could not provide water for the communities and animals. In addition, the village's water well, which was in the place where the dam is located was also rendered useless. As a result, the communities were left without a well or a dam. They insistently ask the government to repair and maintain the dam. They expressed their concern that they have lost their land to a project which cannot provide adequate water. Besides this, another micro-dam that was constructed in 1997 for two villages, Laguiene and Adihamushte, was not successful. It has a spillage problem because it was a concrete construction that results in the absorption of the water of the micro-dam in three or four months. Furthermore, the micro-dam which was constructed at Embeyto in 1993 was not successful. In the discussions and questionnaire responses the representatives of Embeyto confirm that their micro-dam was started but not finished though ten years have passed since the beginning of its construction.

Figure 5.12 Failure of water projects



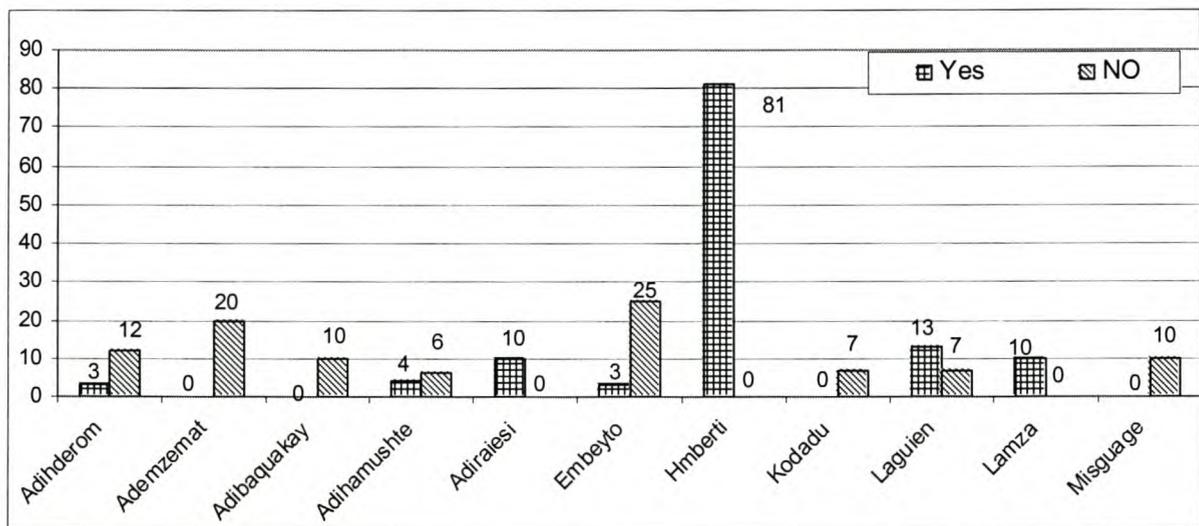
Source: Data results (July, 2003)

Hence, they demand that their ten-year-long micro-dam should be completed by the government to provide its expected service. Although the Agricultural Officer of the sub-region partially refuted their concerns, from the communities' perspective and the researcher's observation the three micro-dams are not functioning as they were expected to.

33-34) Nationally, as is shown in chapter three (see 3.3.4); there are no laws and regulations regarding water. However, at village level, there are internal laws, rules and regulations that regulate water usage and its management. But these differ from village to village and the type of water supply. Rules and regulations are used to enforce the following:

- Distribution of water and control mechanisms
- Setting up water tariffs
- Keeping water and the water environment clean
- Protecting water wells
- Setting up time schedules for fetching water

Figure 5.13: Presence of internal laws and regulations



Source: Data results (July, 2003)

35-36) Brinkerhoff (1991: 157-159) notes that one way of achieving a fit between the tasks to be done and the people to do them is to provide training to end users. Both technical and management training have been used by donor agencies and developing countries as a means of solving immediate problems for project implementation and thereafter. Unfortunately, as table 5.5 below shows, only 2.3 percent of the respondents, specifically of Hmberti, received training regarding how to manage, operate and maintain water supply projects. This was given by ECDF. The remaining 97.7 percent of the respondents did not get any training.

Table 5.5: Training regarding water supply systems

Description	Total	%
Yes	5	2.3
No	216	97.7
Total	221	100

Source: Data results (July, 2003)

Project sustainability is directly correlated with capacity building of the communities. The impacts of community projects are best assessed by the capacity of the communities to sustain them. Thus it is one of the missing links in reaching sustainability of water supply projects. This indicates that the main problem of the sector is lack of capacity to operate, maintain and manage a water supply system.

5.2.5 Sanitation of water supply

37-39) Table 5.6 below shows that 63 percent of the respondents perceive that the water supply system is protected and 58.8 percent perceive that it is safe. This data is a little above the 50 percent average access to safe water in rural communities in Eritrea. But the survey is limited to the targeted villages that have undertaken water supply projects after independence.

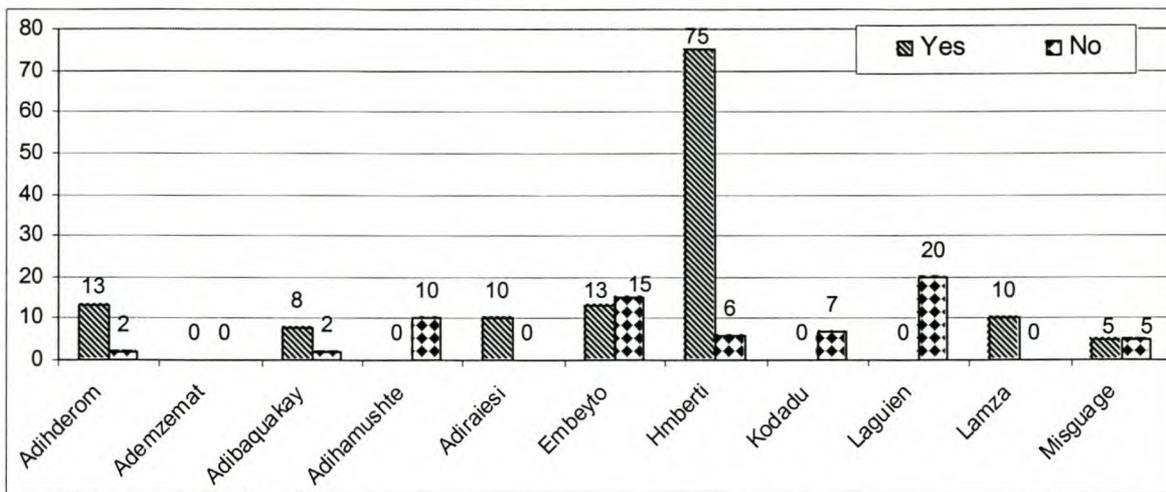
Table 5.6 Sanitation of water supply sources

Villages	Protected		Unprotected		Safe		Unsafe	
	No.	%	No.	%	No.	%	No.	%
Adiahderom	13	86.7	8	53.0	6	40.0	8	53.0
Adihamushte	10	100.0	0	0.0	10	100.0	0	0.0
Adirasi	10	100.0	0	0.0	10	100.0	0	0.0
Embeyto	8	28.6	25	89.3	4	14.3	26	92.9
Hmbrti	81	100.0	34	42.0	81	100.0	0	0.0
Kodadu	0	0.0	7	100.0	0	0.0	7	100.0
Laguiene	0	0.0	20	0.0	0	0.0	20	100.0
Lamza	10	100.0	0	0.0	10	100.0	0	0.0
Ademzemat	0	0.0	20	100.0	0	0.0	20	100.0
Adibaquakay	0	0.0	10	100.0	0	100.0	10	100.0
Msguage	9	90.0	1	10.0	9	90.0	1	10.0
Total	141		125		130		92	
Percent	63		56.6		58.8		41.2	

Source: Data results (July, 2003)

Previously, communities were using water from unprotected wells and dams which were unsafe and inadequate. With the construction of the new water system, communities have begun to drink clean and adequate water from covered water sources. In addition to this, the new water systems are near community dwellings. Water is close by and easy to fetch. This creates good opportunities for communities to use water for washing and general cleanliness that in turn leads to improved personal hygiene and sanitation (see also question 18).

Figure 5.14: Improvement of personal hygiene and sanitation



Source: Data results (July, 2003)

40-41) Access to adequate sanitation facilities is an important determinant of health conditions. Regarding pit latrines, 11.7 percent of the respondents use pit latrines for excretal disposal. But out of the eleven villages surveyed, it is only at Hmberti that there is a private pit latrine. This cannot be taken as an indicator of conditions in the other villages of the sub-region. The remainder 86.3 percent has no access to sanitary human excretal disposal facilities (see table 5.7). Because of the traditional practices, and the inability of the communities to possess pit latrines, open defecation is practised. As a result, there is lack of adequate sanitation and open ground may become the breeding ground for water borne and water washed diseases.

Table 5.7: Use of pit latrines

Description	Total	%
Yes	26	11.7
No	195	86.3
Total	221	100

Source: Data results (July, 2003)

5.2.6 Community participation in water supply projects

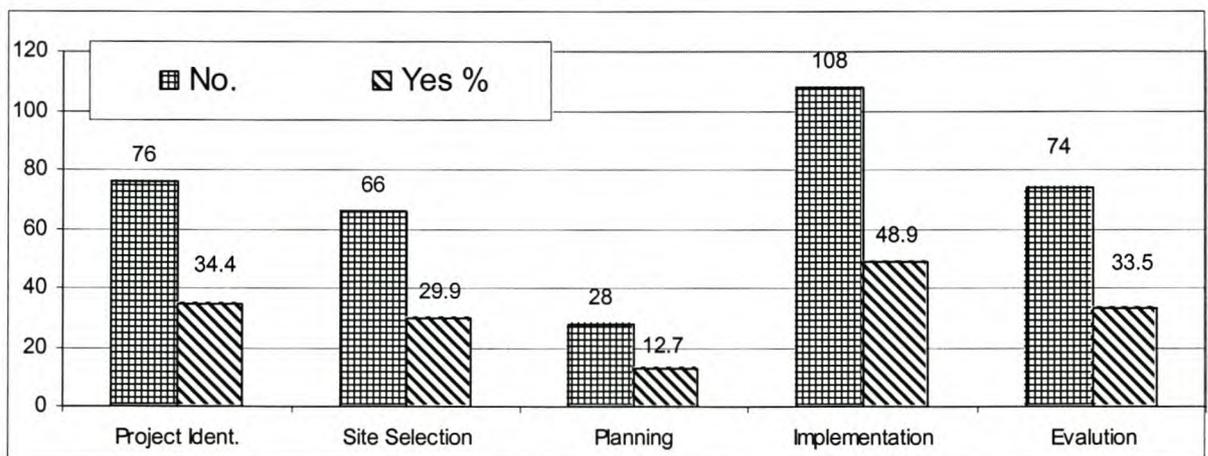
Astor (1988: 13) argues that in the context of water supply, community participation is an active integration of the target group into all phases of a water supply project, from the initial collection of data, and analysis of needs until the implemented facilities become part of the every day life of the target group. Thus, this principle should be kept in mind if water supply challenges are to be tackled.

42) The request for water supply comes from the communities. At a village meeting, the Megabaaya discusses the problems of the village, identifies the pressing needs of the communities, and communicates them to the administration for intervention. Therefore,

communities know about the project through village meetings. When the project is approved and funds secured, the villagers are informed through their sub-region administration that the water supply project is going to be constructed in their villages.

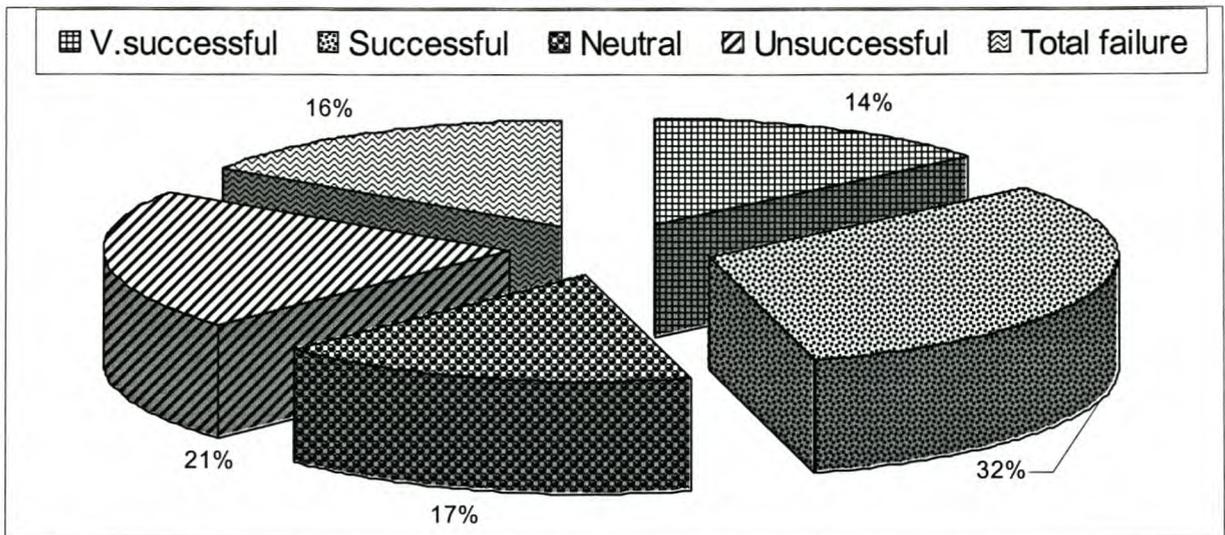
43-47) Figure 5.15 shows that there is community participation in all phases of the project. However, the levels of community participation vary from village to village, and there is increased involvement during project implementation and identification, which is 48.9 percent and 34.4 percent respectively. Although the communities participate in all levels of the project, the researcher, through participant observation and from the discussions and interviews with key informants and focus group discussions, has learned that community committees of the projects and local officials were major decision-makers.

Figure 5.15: Community participation in water supply projects in percentage



Source: Data results

48) Of the water supply projects that were constructed in the past twelve years, the respondents rated 46 percent as very successful and successful, whereas, 37 percent are failures and unsuccessful when considering the objectives and expectations of the communities (see question 31-32). Cusworth and Franks (1993: 12) argue that project environmental factors contribute to project failures. These environmental factors are the set of people, things and institutions, which surround the project and that interact with it. Furthermore, Cusworth and Franks state that the common reasons for the failure of a project are lack of political commitment, lack of strong leadership and management, cultural misfit of the project's objectives and activities within the environment and lack of local knowledge and understanding leading to rejection of the project by the intended beneficiaries.

Figure 5.16: Respondents' rating regarding the new water supply projects

Source: Data results (July, 2003)

49) Most of the communities, as beneficiaries, understand their role and participate by contributing labour, material and cash. The communities feel that the water supply projects belong to them and try to keep the water source and its environment safe and clean. But they lack the capacities, follow-up and control mechanisms to carry out repairs and maintenance. Hence, the government should not withdraw until the communities are capacitated to operate and manage, and the water facilities have become part of their life. As Narayan (1993: 27) asserts, human capacity development increases problem-solving abilities, creates confidence and competence, and improves managerial and technical skills, which are central in the achievement of sustainability. Therefore, capacity building is essential for long-term sustainability.

50) According to the interviews conducted with government authorities, in any water supply project, from its inception to its evaluation, the Ministry of Local Government, the Regional Administration, the funder organization and the water committees of the community, work together and oversee that the project is undertaken as designed. Nevertheless, after project hand-over, it is left to the communities to look after the water source. Most of the communities know that the project is theirs and intend to keep it clean and to operate it safely. They also know they have to do the necessary operation and maintenance. But their capacity is limited. They cannot operate and maintain it themselves. Their demands for repair and maintenance to the central authorities do not elicit a quick response. The respondents expressed their concern that the administration is not responsive to their demands. Stakeholders were actively involved during implementation, but withdrew from the operation and maintenance of the project. Due to this, communities are obliged to return to their previous water sources. Against this background, Rondinelli (1993: 187) argues that effective

development administration is unlikely to emerge from conventional principles, which emphasize comprehensive, detailed, and control oriented planning and management. In an uncertain and complex world, planning must be participatory and a social learning process, and administration must be adaptive. Therefore, it demands administrators who can respond creatively to the needs of intended beneficiaries and quickly to changes in conditions that affect the success of development projects.

51) Astor (1988: 18) argues that in the context of water supply, awareness-building is a process of motivating the target groups to participate in the water projects by making direct personal contacts with them. This leads the target groups to be able to express their opinions and wishes regarding water supply projects and encourages their participation in all project phases. In the target villages, there are community members who are not aware of their role. They have little knowledge regarding their role in the management and operating of water supply projects. Some of them expect the government to repair and maintain and to take care of the source. Furthermore, 2.4 percent of the respondents do not know who is responsible for what in the water supply projects. This implies that they are unaware of the water supply projects. Therefore, there is a need for awareness-building (Burkey, 1993: 73), which is the process of discussion, reflection, questioning and analysis with the communities so that they will become aware of their world and how it works.

52) Building the capacities of the communities' to improve their technical and managerial abilities is desirable. Brinkerhoff and Ingle (1989: 501) argue that building capacity means not only helping an organization to develop and maintain a set of goods and services that respond best to client needs and desires but also helping it to create systems to effectively manage the various activities. In the targeted villages, a significant number of community members are unaware of their role in managing the water system. As a result, the respondents insisted on getting training in order to manage their water system. Furthermore, there is a need for a social learning process to make them aware of their role and to keep the water source and its environment clean. The central government should respond to the communities' demands regarding the water supply system within a reasonable time. The water supply projects should not be left merely to the communities unless they are capacitated to operate and maintain it. Since the government withdraws after implementation, communities are not able to operate and maintain their water supply projects. As the experience of ECDF (2001b: 1) confirms, at first it was intended that communities should bear the full recurrent costs of their water supply projects. However, after the completion of the water supply projects, a capacity building need assessment was conducted, and the

conclusion was that communities by themselves, could not operate, maintain and manage the water supply systems without additional support at the initial stage. Therefore, ECDF intended to hire a transitional management team to bridge the management gap between handed-over water supply projects to communities and communities' capacity to operate and manage them. The approach of ECDF should be replicated and adopted for a transitional period by other organizations if water supply projects are to be sustainable and to achieve their objectives.

5.3 Chapter summary

The field work was conducted in Galanefhi at eleven villages, which have undertaken water supply projects since independence. These villages constitute 37 percent of the total population of Galanefhi. The respondents were selected through systematic sampling from household heads who are 28 years of age and over. Most of the respondents (85 percent) are farmers, of which 60 percent are males. Educationally, 41.6 percent are illiterate and 41.2 percent have only passed grade five or below.

Data obtained shows that 50 percent of the respondents have safe water sources, and 37 percent use unclean and unsafe water sources from dams, springs and ponds, mostly together with animals. Half of the respondents indicate that there is not adequate and clean water throughout the year. Moreover, 63.4 percent expressed their concern that they are not satisfied with the new water supply. Environmental sanitation is related to water supply and they should be addressed together. Because of traditional practices and the inability of communities to possess pit latrines, 86.3 percent of the respondents have no access to sanitation facilities. When a handpump breaks, it takes time to repair and maintain and communities return to unsafe water sources remote from their dwellings. Some of the water sources are salty, and others' tariff is too expensive for the communities to pay for and they are compelled to fetch water from unclean sources. Despite these limitations, the new water supplies are closer to dwellings, and the water is easy to lift and fetch. With the construction of the new water sources, the average travelling time to fetch water has been reduced by 37 percent. The new water supplies are covered and protected and have increased the consumption of households resulting in improved personal hygiene and sanitation. The burden of women has been reduced and they have more time to spend on other activities.

In order for water supply projects to be sustainable and achieve their objectives, there needs to be community involvement and effective management. To fulfil this requirement, 86.4 percent of the villages have water supply committees, composed of males and females and

elected by the Megabaaya. But the water committees serve for an unlimited time without payment. Hence, they are not motivated to perform their duties effectively. In spite of this, the committees facilitate implementation, oversee water delivery, recruit workers, control income from tariffs, and take responsibility for operation and maintenance. To perform these activities, there are laws and regulations at village level by which the distribution and usage of water is enforced. Although water is regarded as a natural gift by many people and communities are constrained by their level of poverty, they contribute in cash, labour and material to the newly constructed projects and pay tariffs for the water they use. The responses show that more than 50 percent have made contributions and pay water tariffs. Hence, payment creates a sense of ownership and belongingness and ensures the sustainability of projects. However, because of the level of their poverty, communities are not expected to cover investment costs and major operations and maintenance. For this reason the government is obliged to finance investment costs and major operations and maintenance. Communities are left with minor operations and maintenance and for this purpose they pay a tariff which in turn is used for the maintenance and management of the water source. In the process of project implementation, 3 wells and 3 micro-dams failed to achieve the communities' expectations. Further studies to investigate the technical aspects of these projects are needed.

Data results indicate that 97.7 percent of the respondents do not get any training. Without training on how to operate and maintain water supply facilities, it is impossible to sustain the water supply projects. Hence, the government should not withdraw immediately after project hand-over unless the communities are capacitated to operate and maintain the water system and the water facilities. Furthermore, central authorities should respond at a reasonable time to the communities' concerns and demands. Nevertheless, repairing and maintenance by the central authority is not enough, communities should be trained to operate and maintain as well as to manage their water sources so that they can become self-reliant. It is observed that water supply is initiated from the felt needs of the communities. As a result, communities participate in all phases of the project with more involvement in the implementation and identification stages of the project. But the level of participation differs from village to village, and major decisions are taken by the water committees and lower officials. It is observed that the communities' local knowledge is not taken as a major component in the development of water supply projects. Most of the respondents know their responsibilities but others still expect the government to construct and maintain their water system. Therefore, there is a need for awareness-building and communities should get information regarding their role in the management and operation of the water supply system. Overall assessment shows that water

supply projects that enjoy more community participation are more successful and satisfy the communities' expectations. Hence, successful and sustainable water supply projects have direct correlation with community participation.

The next chapter will discuss the findings of the data results and analysis and synthesize it with the theoretical backgrounds discussed in the previous chapters. From the integration and synthesis of practical applications and literature studies a conclusion and recommendations will be drawn.

CHAPTER SIX: FINDINGS AND SYNTHESIS

6.1 Introduction

In chapter five, the study dealt with data results, which were gathered and interpreted from individual respondents, focus groups and informant discussions, and participatory observation. These data results are associated with documentary information; they are interpreted and analyzed to assess the situation regarding water supply provision and the participation of eleven targeted villages. This chapter attempts to assess community participation as a strategy of intervention by integrating field situations, that is the analyzed and interpreted data, with the literature studies conducted in the previous chapters.

In the hypothesis of the study, it is stipulated that sustainable clean and adequate delivery of water can be achieved through community participation, in collaboration with all stakeholders. Therefore, the findings of the study will trace the effect of community participation on water supply delivery. Community participation in this study implies, in its broadest meaning, encompassing the building blocks of development (see figure 1.1). In this chapter a synthesis is made, and the challenges of water supply projects and community participation are assessed against the literature discussed. From this synthesis, a conclusion and recommendations are drawn in chapter seven.

The challenges of water supply and the levels of community participation, differ amongst the villages. There is no uniformity in implementation. In chapter five, their combined effects are analyzed. In this chapter, the study attempts to assess individual villages. In certain villages Ademzemat, Adibaquakay, and Msguage the water supply projects were not successful and they are not in operation (see sub-section 5.2.4 question 31-32). Hence, in some discussions they will be left out.

6.2 Community participation

Community participation is a process by which communities influence and share control over the direction and execution of a development project (World Bank, 1996: 3; Brown, 2000: 173). In table 6.1, it is shown that the level of community participation differs from village to village and from one phase of the project to the other. The highest level of community participation took place at Hmbrti, in which 50 percent of the respondents participated in all phases of the project. From the respondents' concerns, and from focus group discussions, it was made clear that their participation was limited to consultation. This is consistent with Uphoff's (1991: 469-471) remarks regarding water supply projects in developing countries that community participation is only partial and limited to the need identification and

subsequent implementation. It is not based on the critical ingredients of community participation, namely planning and decision-making. Hence, the authentic participation of communities in planning and decision-making is limited.

The communities of Hmbrti could not influence the direction and execution of the water supply. Consultation is weak and ineffective if the decision-makers are not committed to accept the views of the community (Cloete & Meyer, 2000: 105). The same happened at Hmbrti. The communities were consulted about the new water supply, but their feedback and concerns were not accepted. In spite of their continuous request to get a piped water supply for the town from Maynefhi Dam, which is a reliable source, a ground water hole was drilled. This was contrary to their expressed need. The ground water is salty to drink and uncomfortable to wash in. It is also inadequate for the growing town. Thus, despite their participation in all the phases of the project, they could not decide the issue that determines the fate of the community.

At Embeyto, 46 percent of the respondents participated in all phases of the project. Compared with the other villages, the level of community participation is high. However, the communities of Embeyto are severely affected by water supply shortage despite the drilling of two borehole wells in 1997. With the installation of the two boreholes, the community of Embeyto hoped that their problem was solved. However, because of managerial problems after project hand-over, their problem is still persisting and even aggravating with the increase of population and with the recurrent droughts.

The fate of Adiahderom is the same as that of Embeyto. As the data results show, 39 percent of the respondents of the village participated in all phases of the project. Nevertheless, the borehole well of Adiahderom, which is fitted with a handpump does not yield enough water for the population of the village. According to the Ministry of Land, Water, and Environment (2000: 7), one handpump can serve 250-400 people, but at Adiahderom, it serves about 980 people. The communities of the village spend long hours queuing to fetch water from one borehole well for the whole village. Thus, despite their fair involvement, they have not a secure source of water. Many of the respondents expressed their concern that though they no longer use an unclean source of water together with animals, there are still problems to be addressed.

The other villages, which show below 20 percent level of community participation (see table 6.1 below), except Lamza, are those whose water supply projects were not successful at the outset of project implementation. Despite continuous attempts of hand digging and drilling, and the construction of micro-dams, they were not as successful as expected. This is

consistent with Bagadion and Korten's (1991: 73) argument that the experiences of development projects world wide indicate that social and institutional issues are not adequately addressed. Although technical and economic factors receive a great deal of attention, the people-related issues are frequently ignored. Furthermore, Uphoff (1991: 474) confirms that the common failure of many project designs is the underestimation of the technical knowledge of local people. Social factors were not taken into consideration in the design process as a component of development resources. However, in the targeted villages, further investigation associated with technical requirements is needed to come up with concrete conclusions (see also question 31-32).

Lamza is a village which exhibited a low level of community participation. The responses show that only 8 percent of its respondents participated in their water supply construction. Nevertheless, Lamza is the most successful village that has constructed a hand-dug well after liberation. The hand-dug well is covered, and a motor pump lifts water to two reservoirs in the village for distribution. All the respondents of the village and their representatives are satisfied with the status of their water supply. The project construction was successful; they have no problem worth mentioning. What is left for them to do is to extend the water system to each household in its dwelling. This is because of effective water supply management after project hand-over.

From the above discussions, it can be deduced that community participation takes many forms. It is influenced by many complex and dynamic environmental factors in the development process. As Chambers (1991: 515) explicitly states:

“Experiences also show that where people are consulted, where they participate freely, where their needs and priorities are given primacy in project identification, design, implementation, and monitoring, then the economic and social performance are better and development is more sustainable. Nevertheless, there are other environmental and managerial factors that influence how well or how badly a project does.”

Thus, there is no single solution to any development problem. As a result, community participation is not a panacea for all development problems. Moreover, it cannot live in isolation. If development is to sustain, community participation should be linked to, and integrated with, the building blocks of development (see the working definition of the study in sub-section 2.2.3).

Table 6.1: Levels of community participation in the water supply projects

Village	Identification		Site selection		Planning		Implementation		Evaluation		Total				Rank
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	%	No	%	
Adiahderom	5	10	6	9	5	10	7	8	6	9	29	39	46	61	3
Adihamushte	5	5	0	10	0	10	8	2	0	10	13	26	37	74	5
Adirasi	0	10	0	10	0	10	10	0	0	10	10	20	40	80	6
Embeyto	14	14	9	19	14	14	13	15	14	14	64	46	76	54	2
Hmbrti	47	34	41	40	6	75	69	12	41	40	204	50	201	50	1
Kodadu	2	5	2	5	2	5	2	5	2	5	10	29	25	71	4
Laguene	0	20	0	20	0	20	6	14	0	20	6	6	94	94	10
Lamza	1	9	1	9	1	9	0	10	1	9	4	8	46	92	8
Ademzemat	0	20	6	14	0	20	1	19	0	20	7	7	93	93	9
Adibaquakay	0	10	0	10	0	10	0	10	0	10	0	0	50	100	11
Msguage	2	8	1	9	0	10	2	8	0	10	5	10	45	90	7
Total	76	145	66	155	28	193	118	103	64	157	352		753		
Percent	34	66	30	70	13	87	49	51	34	67		32		68	
Rank	2		4		5		1		3						

Source: Data results (July, 2003)

6.3 The social learning process

The learning process is a bottom-up approach that avoids the restriction of a blueprint approach to meet the need for a flexible, sustained, and experimental style of assistance. It relates to bottom-up decision-making and partnership action. The local communities can make a major contribution to the programme design. Furthermore, communities are the sources of valuable knowledge and insights, which can serve as a basis for innovation (see section 2.4.1). Moreover, as Korten (1983: 209) argues:

“The people must have some voice in making the final choices that will bear most directly on their lives and the planning system must be designed to be responsive to their voices, not only because their involvement is essential to gaining their commitment, but also because they have relevant information which may be unavailable to planners.”

Though this was written twenty years ago, many planners lack this idea and projects fail to fulfil their objectives. Hence, past development experiences show that the failure of most development projects is due to top-down strategy of development that disregards the main beneficiaries of development. Kotze and Kellerman (1997: 40-42) further demonstrate that in the Third World, the government is often the only source of expertise and finance for development. Communities are dependent on the government for investment inputs and services. These circumstances lead to strong top-down decision-making, which is highly centralized and which requires coordination at the central level.

The above theoretical background has proved to be true in the case of Eritrea. Although there are no quantified arguments that explain the social learning process, it is manifested in the planning process of the project cycle. As table 6.1 shows, the level of community participation in planning is low, only 13 percent. Joint planning could reduce the risk of inappropriate methods being imposed on communities. In six targeted villages, there was no participation of respondents at all in the planning process. Hence, social learning as manifested in decision-making is the main bottleneck of the targeted villages. Moreover, as Korten, D. C. (1983: 213) asserts, centrally designed projects are not responsive to the needs of the communities.

The guidelines of the WRD-E (1994: 5) show that because of the level of poverty in the communities, local communities are not expected to finance high investment costs and major operation and maintenance costs. The government covers the investment and major operation and maintenance costs. In these circumstances where the government leads projects, it is challenging to promote bottom-up decision-making, which enhances community participation. This experience is demonstrated more clearly in the construction of the three micro-dams, where communities' participation was limited to food-for-work and cash-for-work programmes. Their labour was paid for in food and cash. If contribution in any form is less, their involvement in planning is also assumed to be less. Villages that have the highest level of community participation demonstrate this.

The community of Hmbrti knew that the sites for the new water sources were salty and were not adequate for the growing town. Against their will, underground water was drilled. In one site the drilling failed, in another site the water is salty and inadequate. In this instance, the local knowledge of the communities was disregarded and was not taken as an essential resource for development. As Edwards (1989: 124) notes, "Knowledge is power, and the control of knowledge is the control of power. Power is a central component of development, and without it, there is little that the communities can do to change their circumstances." Therefore, the best solution to the village level problem is the contribution of knowledge of both the expert and the communities if the project is to succeed. The assumption that experts know best and they alone know about development problems should be avoided from the mind set of both the experts and the communities. Bottom-up decision-making should be regarded as a complement of top-down decision-making. Therefore, there is a need to call for development agents to keep the balance between top-down and bottom-up decision-making if development effort is to succeed. What Brinkerhoff and Ingle (1989: 489-490) call structured flexibility, which is a middle ground for the blueprint and process approaches of

planning should be adopted. Structured flexibility recognizes that communities by acting upon their values and interests, seek to construct their world. In the structured flexibility approach, key actors understand their involvement; field staff feel more commitment because they developed the implementation plan; and policy-makers increase their support for achieving their objectives.

6.4 Partnership

In this complex and increasingly changing world, it is impossible for governments, especially in Third World countries, to provide the basic social services alone. The nature and the scale of development challenges, require the cooperation of the governments, development agents and the communities so that rural communities can engage in real change. Hence, there is a call for partnership as a dynamic relationship among stakeholders based on mutual agreement and understanding with equal participation in decision-making and rational division of labour. Partnership of these stakeholders is essential to the empowerment of the wider community. However, partnership cannot be strengthened if one partner dominates the decision-making process. It should involve all stakeholders to develop options and to negotiate priorities to meet agreed upon objectives. Partnership should be established between the communities and the government, and the government should help the communities to help themselves (Goethert & Hamdi, 1988: 24; Brinkerhoff, J. M., 2000: 218; Brinkerhoff, D. W., 2000-212).

In the context of the targeted villages, there was joint engagement to coordinate project activities from the inception of water supply project to its evaluation, among government organizations, funders, and the water committees. Nevertheless, as discussed in section 6.3, top-down decision-making does not enhance equal participation in decision-making. Hence, increasing the level of community participation in the management of water supply projects can develop and strengthen partnership. Therefore, the government should create an enabling environment to help the communities. Eventually, the communities will determine the success and sustainability of the projects.

6.5 Equity

Equity is the access to the system and the service, and the fair distribution of the fruits of development. In the Eritrean context, the Eritrean vision of sustainable development is based on equal access to social services. Equal opportunity is deeply ingrained in the national culture (NEMP-E, 1996: 1). Furthermore, the ratified National Constitution of Eritrea

(Constituent Assembly, 1997: 18) in Chapter III, Article 21, No. 1 states that every citizen shall have the right to equal access to publicly funded social services. The state shall endeavour, to secure and to make available the fruits of social service to all citizens particularly those who are disadvantaged.

In the spirit of the above discussions, the new water supply in the targeted villages is accessible to all community members without any discrimination based on status, gender or ethnicity. Since in every village there are poor people who cannot afford to pay the water tariff, the community contributes money to help them pay their water tariff. Hence, water is accessible fairly to all members of the targeted villages.

6.6 Capacity building

Capacity building is the cultivation of knowledge, skills, institutions, and incentives so that communities can take responsibility in managing their projects. Capacity building contributes to the sustainability of projects and helps communities to cope with new challenges and to become masters of their own destiny and development (Paul, 1987: 3-18; Esman, 1991: 6). To assess the state of capacity building in the targeted villages, the study takes as indicators the presence of water committees, the effect of internal water laws and rules and regulations, and the frequency of training conducted at the villages.

Although the guidelines of the WRD-E (1994: 1) instruct every village to form a water committee, water committees are not evenly formed in the villages. Table 6.2 shows that at eight villages there are water committees who manage and facilitate water supply activities, and communicate with the government. Embeyto and Adiahderom, which have borehole wells fitted with handpumps have no effective water committees. In three out of eight villages, there are internal water laws and regulations that enforce effective usage of water delivery. In four other villages there are no internal laws and regulations. In the other five villages, the degree of presence of laws and regulations differ. Nevertheless, training was given only for one village, Hmbrti.

From these indicators, it can be deduced that the state of capacity building differs from village to village. Administrative frameworks at grassroots are too weak to undertake development projects. This implies that government policies and strategies cannot be implemented as designed. Of the targeted villages, Lamza's hand-dug well and Adirasi's public tap are successful. These two villages both have water committees and internal laws. The public tap can be operated easily and in the case of the hand-dug well water is lifted by motor pump

operated by a hired mechanic. Hence, the water delivery is successful. On the other hand, Hmbrti satisfies all the indicators for capacity building. It has trained water committees and caretakers, and internal laws and regulations. But the new water sites were decided on against the will of the community and they did not accept them. Short term indicators show that the community is not satisfied with the new water quality and quantity, the water is not pleasant to drink and to wash in. This means that those who can afford are using the expensive vender truck, and those who cannot afford are still fetching water from previous unclean and remote water sources. These factors are threatening the success of the project despite the establishment of water management frameworks.

In the villages Ademzemat, Adibaquakay, and Mmsguage water drilling failed several times. For Ademzemat, no alternative has been found, but for Adibaquakay and Mmsguage, new piped water is being drawn from Maynefhi Dam. Effective water management is not expected in these villages. At Kodadu the new micro-dam failed, and their hand-dug well was buried in the dam. They have no water source to manage. In Laguiene and Adiamushte the dam water was absorbed by the ground and their micro-dam was operable for 3-4 months. Hence, their water management is not effective. However, Adiahderom and Embeyto have borehole wells fitted with handpumps. The following discussion shows the magnitude of their problems.

As table 6.2 shows, in both villages, there is low level of capacity building in the three indicators adopted for assessment. After project hand-over in 1993 and 1997 respectively, the communities did not have the opportunity to acquire skills and knowledge for the operation and maintenance of the handpumps and over all management of the water supply system. When handpumps break there are no caretakers that repair and maintain them and no responsible water committees that oversee the water supply delivery. With the increase of the population, the handpumps are operating non-stop, and they are overused. This leads to continuous breakage. As there are no handpump caretakers in the villages, the villages are obliged to ask the central authorities through the sub-region administration to do the maintenance. This process takes time and in the meantime the villages return to previous unclean, inadequate, and remote water sources. During the study period, Embeyto's handpumps at the two borehole wells were broken. As many of the respondents of Embeyto remarked in the questionnaire, and their representatives confirmed in the focus group discussion, they are tired of asking for repair and maintenance.

From the above discussions, it can be deduced that the main bottleneck in the water supply system is lack of capacity building. The institutional capacity of villages is not strengthened to manage water delivery as a scarce resource. Hence, there is weak water supply

management. Nevertheless, it differs from village to village and there is not a simple formula to follow. There is a need to integrate all activities to provide efficient service and to sustain the constructed projects. The conclusion is that the delivery of water is entirely dependent on the participation of the communities. Therefore, unless communities are capacitated, water supply projects cannot sustain.

Table 6.2: Capacity building indicators

Village	Water committee				Training				Laws and regulations			
	Yes	No	Yes %	Rank	Yes	No	Yes %	Rank	Yes	No	Yes %	Rank
Adiahderom	6	9	40	10	0	15	0		3	12	20	6
Adihamushte	10	0	100	1	0	10	0		4	6	40	5
Adirasi	10	0	100	1	0	10	0		10	0	100	1
Embeyto	13	15	46.4	9	0	28	0		3	25	10.7	7
Hmbrti	81	0	100	1	5	76	6.2	1	81	0	100	1
Kodadu	1	6	14.3	11	0	7	0		0	7	0	8
Laguiene	20	0	100	1	0	20	0		13	7	65	4
Lamza	10	0	100	1	0	10	0		10	0	100	1
Ademzemat	20	0	100	1	0	20	0		0	20	0	8
Adibaquakay	10	0	100	1	0	10	0		0	10	0	8
Msguage	10	0	100	1	0	10	0		0	10	0	8
Total	191	30			5	216	2.3		124	97		
Percent	86.4	13.6			2.3	97.7			56.1	43.9		

Source: Data results (July, 2003)

From the same perspective, Monyai (2003: 7-22) argues that educating and training communities to value their water and sanitation facilities would instil in them the importance of looking after their infrastructure and developing a sense of ownership. This ensures proper operation and maintenance of the water system and its facilities. Furthermore, Monyai notes that training should be seen as an integral component of capacity building. Community capacity building and training should be undertaken as part of any water supply project to ensure that the ownership of the project lies at the community level.

6.7 Self-reliance

In order to strengthen, self-reliant participatory development in rural communities, institutions and structures should be developed so that communities can be capacitated. To avoid dependence, the government should not do anything for the people that they can do for themselves. Communities must feel and believe that their own efforts are the driving force of development. Communities need to develop their capacities and gain access to mobilize their own resources and initiatives. Self-reliance is a question of attitude rather than money and materials. Moreover, development activities should focus on building self-reliance, self-confidence, and technical and managerial skills (Oakley, et al., 1991: 17; Burkey, 1993:

50/211; Dotse, 1997: 18). Besides, Burkey (1993: xii) emphasizes that self-reliant participatory development is the only foundation for true development. It is a practical field-level methodology, and it is the result of trial and error. Nevertheless, it is a slow and difficult process.

In the cases of the targeted villages, the institutional and administrative capacity of the villages except Hemberti, Lamza, and Adirasi is weak as discussed in section 6.6; the contribution of most of the villages in the construction of water supply, and the tariffs set up thereafter, is too small to finance maintenance and operation costs. In addition, the capacity of the villages to manage and repair and maintain the water supply system is limited. Most of the investment costs and major operation and maintenance costs are covered by the government. As discussed in section 6.3, decisions are top-down. Therefore, these situations are not favourable to lay a firm foundation for a self-reliant water supply delivery system. As Narayan (1993: 43) argues, self-reliance cannot be achieved without human development. Individuals must have self-confidence and competence to undertake the tasks expected of them.

Although community participation and self-reliance are the main pillars of the Eritrean development policy, and are acknowledged in the charter of EPLF, the national constitution and the strategy of water supply programmes, there are problems of implementation on the ground (WRD-E, 2000: i-v). This is due to a lack of capacity and coordination at grassroots and sub-regional level that implement projects, and a lack of a skilled workforce at the regional level that oversees and follows up the implementation of water supply projects. In conjunction with this, there is lack of sensitization and awareness-building programmes and inadequate communication between the community-based organizations and the concerned individuals. There is a need to call for the training of community cadres, which in turn will act as catalysts and community agents and social animators. Communities can develop self-confidence, and self-awareness to break the mentality of dependence and to be masters of their own destiny.

6.8 Empowerment

Community participation is an instrument of empowerment. Empowerment is a learning process and as such a problem-solving approach. It creates self-awareness that addresses abstract development needs. Hence, any development activity is a means of empowering communities to initiate action on their own and influence the processes of development. Moreover, empowerment is more than opening-up access to decision-making. Structural and

institutional transformation need to be undertaken to address the delivery of water supply (Paul, 1987: 3; De Beer & Swanepoel, 1998: 23-26; Botchway, 2001: 135-136).

There is a lack of quantifiable arguments in the case of the targeted villages to assess the level of the communities' empowerment. However, from the basis that empowerment relates to access to decision-making and the transformation into feasible institutional and administrative structures, the targeted villages need time and effort to strengthen their capacities. Empowerment is a process; it cannot happen overnight; it needs time to grow and prosper and eventually to sustain.

Even though empowerment is one of the building blocks for water supply intervention in Eritrea, it does not have a firm foundation in most of the targeted villages. At Lamza the water committee responsible for the management of the system is well established. It is composed of ten members of whom five are women. There is a division of labour among the members and they manage the water supply effectively. Each household contributes from 15-30 Nakfa monthly for management and operation of the water system. At Hmbrti, there is a well established water committee but since they dominate the decision-making process their influence on the water system is not significant. Overall, much room is left for improvement, especially regarding women who are the vulnerable group in the system. All this is closely tied with capacity building, and the transformation of administrative and institutional structures. Hence, the role of the government and development agents, as stated in section 2.7, is desirable if projects are to be sustainable. Furthermore, as Chambers (1997: 219-224) remarks, empowerment can be weak and short lived unless it is embodied in institution-building. Institutions should become learning organizations to flatten and soften hierarchy, to develop a culture of participatory management and to adopt and promote procedures, norms and rewards, which encourage open-ended community participation at all levels.

6.9 Sustainability

Sustainability refers to continuity, taking the limitations of the natural environment into account, and sees community participation as a fundamental drive for sustainable development. Sustainable development could be achieved through the efforts of the communities working for their benefit. Sustainable development pays attention to economic growth and environmental and social issues. Hence, the transformation of the society and the management of the environment should be integrated and assessed if development is to be sustainable (Oakley, 1991: 18; Burkey, 1993: xviii; World Development Report, 2003: 1). Moreover, in the context of the provision of water supply, sustainability is achieved when

communities are involved in all phases of the project. If the project is to be sustainable, communities have to recognize the need for improved service, and be able and willing to manage and pay for the operation and maintenance costs (see sub-section 2.10.4).

To assess the state of sustainability of the water supply projects in the targeted villages, the above theoretical discussions should be seen holistically. That is, the villages should be involved financially as well as physically and influence the decision-making process and the execution of their water supply projects. The targeted villages should be capacitated to develop their managerial and technical skills so as to manage and operate their water supply system. Although conditions differ from village to village, these requirements are not well established due to a shortage of skilled workers, poor organizational structures, and the scarcity of capital resources. Hence, a few of the water sources are inoperative at any given time due to lack of community based operation and maintenance systems, and immediate assistance from government institutions. At the time of the field work, two borehole wells of Embeyto that serve about 1650 inhabitants and over 1000 students were inoperative. As a result, the village returns to previous remote and unclean sources of water. Therefore, to sustain the water supply projects there is a need to integrate the building blocks of development to address the provision of water supply. Long-term sustainability depends on the commitment and participation of the communities in partnership with the government and other development agents.

6.10 Chapter summary

As the targeted villages indicate, the level of community participation differs from village to village and from one phase of project cycle to another. It is influenced by several complex and dynamic factors in the development process. This implies that implementation is not an easy process and needs the close interaction of the stakeholders. Data results show that there was more participation in implementation, and less in planning. Hence, communities cannot influence the direction and execution of their water supply projects. Their participation is limited to consultation, and they are dominated by the water committees and local officials. As a result, there is no single solution to any development effort, and community participation is not a panacea for all development problems. In order for development projects to succeed and be sustainable, community participation should be linked to, and integrated with, the building blocks of development.

Past development experiences show that the failures of most development projects were due to a top-down strategy of development that disregarded the needs and local knowledge of

beneficiaries. This theoretical background is also manifested in the targeted villages. Since the government is the only source of expertise and finance for development, communities are dependent on the government for investment inputs and services, which leads to top-down decision-making. Top-down decision-making cannot enhance community participation. Hence, there is a need for a social learning process, which is a bottom-up approach of development that avoids a blueprint approach. Bottom-up decision making should be regarded as a complement of top-down decision-making if development is to succeed and be sustainable. To materialize this approach both the communities and government officials should contribute their knowledge and insights to the development of water supply projects.

To put into practice the above principles, there is a need for joint efforts of the government, development agents and communities that lead to partnership, based on mutual agreement and equal participation in decision-making. In order for partnership to be meaningful, the level of community participation should be increased and the government should create an enabling environment. Thereafter, the communities could be the masters of their development projects, and they will determine the success and sustainability of the water supply projects.

However, if partnership is to be strengthened, and the water supply projects are to be successful and sustainable, community capacity building should be given special attention. The capacity of the communities to manage and operate water supply projects after project hand-over is very limited. Institutional and administrative frameworks of the villages are weak. The sub-regional and regional capacity is not strong enough to implement and oversee the implementation and functioning of water supply projects. Moreover, communication between the grassroots and the authorities is not responsive. If water supply projects are to succeed and be sustainable, communities and the government officials that implement projects should be capacitated. Self-reliance can be realized only when communities are capacitated to manage and operate their water supply system. These in turn call for the capacity building of the communities, and the transformation of administrative structures. The provision of safe water is entirely dependent on the participation of the communities. Therefore, community participation as a multidimensional approach, which links to, and integrates with the building blocks of development, is a necessary condition. To practise this application on the ground, it is necessary to train community cadres and government officials, which act as catalysts and community agents and social animators. Eventually, long-term sustainability depends on the commitment and conscious participation of the communities, in partnership with all stakeholders.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS

7.1 Theoretical background

Because of today's increasingly changing and complex global challenges, rethinking is required to cope with the new challenges of development. Past development experiences, which disregarded the creative initiative, the local knowledge and insights of communities could not solve the social problems. Development was guided by top-down strategy that ignored the main beneficiaries from the process of development. The communities, who are the owners of development, were considered as objects and recipients of development action. In spite of the advances of development thought, development efforts could not lead communities out of poverty and dependence. These conditions gave rise to new thinking. Development thinkers reached a consensus that unless communities are involved in the development efforts, no desired change can be achieved. Therefore, if development is to succeed and to be sustainable, the beneficiaries of development should initiate and participate in the development process.

Against this background, the emergence of community participation as a strategy of development intervention is a move forward that puts "people first" in the process of development. It is a multidimensional approach, which is a means and an end in the process of development in which communities influence and control the issues that determine their lives. However, in order for communities to be involved in the development efforts, they should be aware of their potential and their capacities should be built. Their skills, knowledge, and institutions should be strengthened to cope with new challenges. Communities should identify their felt needs and initiate action; they should be the main actors and decision-makers on their own development efforts to determine their future so that they can take responsibility to manage their projects and to become masters of their own destiny and development. This leads to self-reliance and self-awareness and independent decisions that avoid the mentality of dependence. However, to capacitate and to make the communities aware of their potential, the commitment of the government as an enabler and supporter is essential. Development agents' roles to mobilize communities, to influence the government action, and to create new resources bases and services are also important. In short, as it is hypothesized, development can succeed and be sustainable through community participation in collaboration with all stakeholders. Community participation is a process. It cannot happen overnight. It takes time to make the communities aware and to build their capacities.

7.2 Conclusion

The provision of a safe water supply is a global development challenge that affects communities' basic needs. Experience shows that results and effectiveness of water supply projects are enhanced when communities participate in the development efforts. Sustainability is achieved when communities are involved in all phases of the water supply projects, and are able and willing to manage and contribute to its operation and maintenance. Water supply cases in developing countries show that community owned and managed projects are better constructed, cost effective, and successful than government subsidized projects. Hence, community participation is a viable strategy that addresses the global water supply challenges.

To materialize this strategy, demand that preferences of communities should be taken into account. Water supply projects should be transformed from a target-based supply-driven approach, which pays little attention to beneficiaries needs, to a demand-driven approach, where the communities get the service they want and are willing to pay for. This global context has also the same implication for Eritrea as a developing country.

Eritrea has its own peculiar climatic, environmental and socioeconomic challenges, which hamper the provision of safe water. It is an arid and semi-arid country, which is not endowed with rich water resources. Rainfall is torrential; and is high in intensity over a short duration. The amount of rainfall is limited and there is high evaporation and transpiration. There are no lakes and the rivers, except one are not perennial. It is part of Sahelian Africa, and it has been a victim of recurrent and devastating droughts. These natural conditions have been aggravated by human actions of deforestation, uncontrolled and wasteful water use, water pollution, and the thirty years of protracted war. Water conservation and efficient use are important, but efficient water usage has not been realized. Wastage control and water saving technologies have not yet been introduced. There are no written laws and regulations nationally that enforce effective usage and water supply standards. The economic value of water has not been recognized. This coupled with recurrent drought, has caused wells and other water resources to dry up resulting in a shortage of safe water delivery.

The conditions are aggravated by socioeconomic factors. Because of its colonial legacy, Eritrea is a poor country with a GDP of about USD 200. First the war of liberation, and later the border war against Ethiopia, destroyed Eritrea's infrastructure including the water supply system and its facilities. Hence, the economy is at the rehabilitation and recovery stage. The coverage of water supply in rural areas is low. The available water consumption in the highlands is 3-5 litres of water per capita per day, which is far below the standard of 20 litres set up by the WRD-E. Nevertheless, access to water has improved since 1994 from 7 percent to 49 percent in the rural areas and from 44 to 90 percent in urban areas as of 2002. A

significant proportion of water sources are inoperative due to a lack of community-based operation and maintenance and the assistance of government and non-government institutions after project hand-over. The challenge is, therefore, to provide an adequate and clean amount of water in these complex situations.

To improve this situation, Eritrea has defined its mission and mapped out a broad-based strategy. Policies and strategies that involve communities in the water supply projects are in place. Community participation, self-reliance, and empowerment are the building blocks for water supply intervention. Through the proclamation of Regional Administration, the government has made it clear that it is committed to decentralization of planning and implementation that afford opportunity to local communities. However, smooth implementation, as in other developing countries, is hindered by institutional problems, lack of skilled human resource, financial drawbacks, and lack of coordination.

Against this background, the study has attempted to assess community participation as a strategy intervention and its effect in water supply projects by confining itself to a specific area in Galanefhi sub-region. Field-work findings indicate that the level of community participation differs from village to village and from one phase of the project to another. There is more community participation in implementation and less in planning, 49 percent to 13 percent respectively. Hence, communities cannot influence the direction and execution of their water supply projects as decision-making is dominated by water committees and local officials. The government is the main source of expertise and finance for development. Communities are dependent on the government for investment inputs, major operation and maintenance and other services. This in turn leads to a top-down strategy of development that disregards the needs and local knowledge of beneficiaries. The findings further indicate that the major missing ingredient in the water supply projects is the level of capacity building of communities and government officials that implement water supply projects. Communities' capacity to manage and to operate water supply projects after project hand-over is limited. Institutional and administrative frameworks of the villages regarding water supply is weak. The sub-regional and regional capacity that implements and oversees the implementation and operation of the water system is poor. The communication channels between the village level and government institutions regarding water supply is not clear and it is not responsive. This situation is not favourable to lay a firm foundation for a self-reliant water supply delivery system. Moreover, a strong partnership cannot be established among the stakeholders in these circumstances.

Despite the efforts made to provide safe water, study findings show that 63.4 percent are not satisfied with the new water supply system. However, overall assessment indicates that water

supply projects that have more community participation are more successful and sustainable and meet communities' expectations. This proves that successful and sustainable water supply projects have direct correlation with community participation. Furthermore, it affirms the hypothesis that sustainable, clean and adequate water delivery can be achieved through community participation, in collaboration with all stakeholders. Therefore, to materialize the stated hypothesis, the study recommends as follows:

7.3 Recommendations

- a) It is generally agreed in principle that a water supply system should be owned and managed by the communities. However, community-based management as well as operation and maintenance cannot be achieved unless communities are capacitated. As the findings of the study certify, capacity building is the main missing ingredient in the water supply projects. Therefore, there is an urgent call for training and capacity building efforts to be undertaken as part of the programme to ensure the ownership of the projects and to lay a firm ground for self-reliance. Furthermore, institutional capacity at the village level and sub-region level should be strengthened to implement projects and to create effective and efficient administrative frameworks for good governance.
- b) Uphoff (1991: 499) states that, "A strategy of community participation without an organizational base is dubious." Therefore, there is a need for clear organizational structure regarding rural water supply systems that allow smooth communication flow within the higher and lower institutional structures. This in turn improves quick response to the communities' demands, and contributes to harmonizing the partnership among the government, the communities and other development agents. Furthermore, there is a need for the concerned departments to work together closely integrating their activities in challenging the problems for a sustainable water supply projects.
- c) Climatic and environmental conditions of Eritrea have a significant impact on the delivery of water supply. Recurrent droughts are stressing underground and surface water sources. Therefore, Eritrea needs to undertake intensive and integrated conservation measures based on the participation of the communities. Efforts have been made since independence, and in the Warsay-Yekaalo Development Campaign initiative are being taken under the motto "conserve every drop of water." However, these initiatives should be strengthened by community based conservation measures and supplemented by awareness-building programmes so that each individual will regard conservation of water as a culture. These measures could improve efficient usage and augment the surface and the ground water. Furthermore, the introduction of alternative technologies that help water usage efficiency like drip irrigation, systems of

recycling used water, and new technologies that purify sea water for domestic use should be encouraged.

d) One of the main problems of handpump fitted boreholes is the continuous breakage of handpumps. Therefore, there is a need for studies and research to be conducted to evaluate appropriate mechanisms and to introduce community friendly and appropriate technologies.

e) Nationally, there are no laws and regulations that enforce effective water usage and distribution and that set up standards. Hence, the study recommends the issuing of laws and regulations that enforce policy measures and that recognize the economic value of water.

f) Out of the 8 water wells and 3 micro-dams constructed in the targeted villages, 3 wells failed their objectives after repeated attempts at digging and drilling. The service of the 3 micro-dams is also limited and they do not meet the communities' expectations for domestic and agricultural usage. Therefore, there is a need for in-depth studies and research before expensive drilling is done. This will require hydrological expertise that can interpret and analyze the findings. Furthermore, this study recommends the participation of the beneficiaries in the planning and designing of the water supply projects. Study findings show that this is the weakest link in the water supply projects.

g) The provision of safe water is a global challenge. Global challenges demand joint efforts to reverse the situation. Therefore, as the national resources to solve water supply problems are limited, there is a need for international organizations to assist in human resources development and in the provision of water supply system facilities that will fulfil the needs of the communities.

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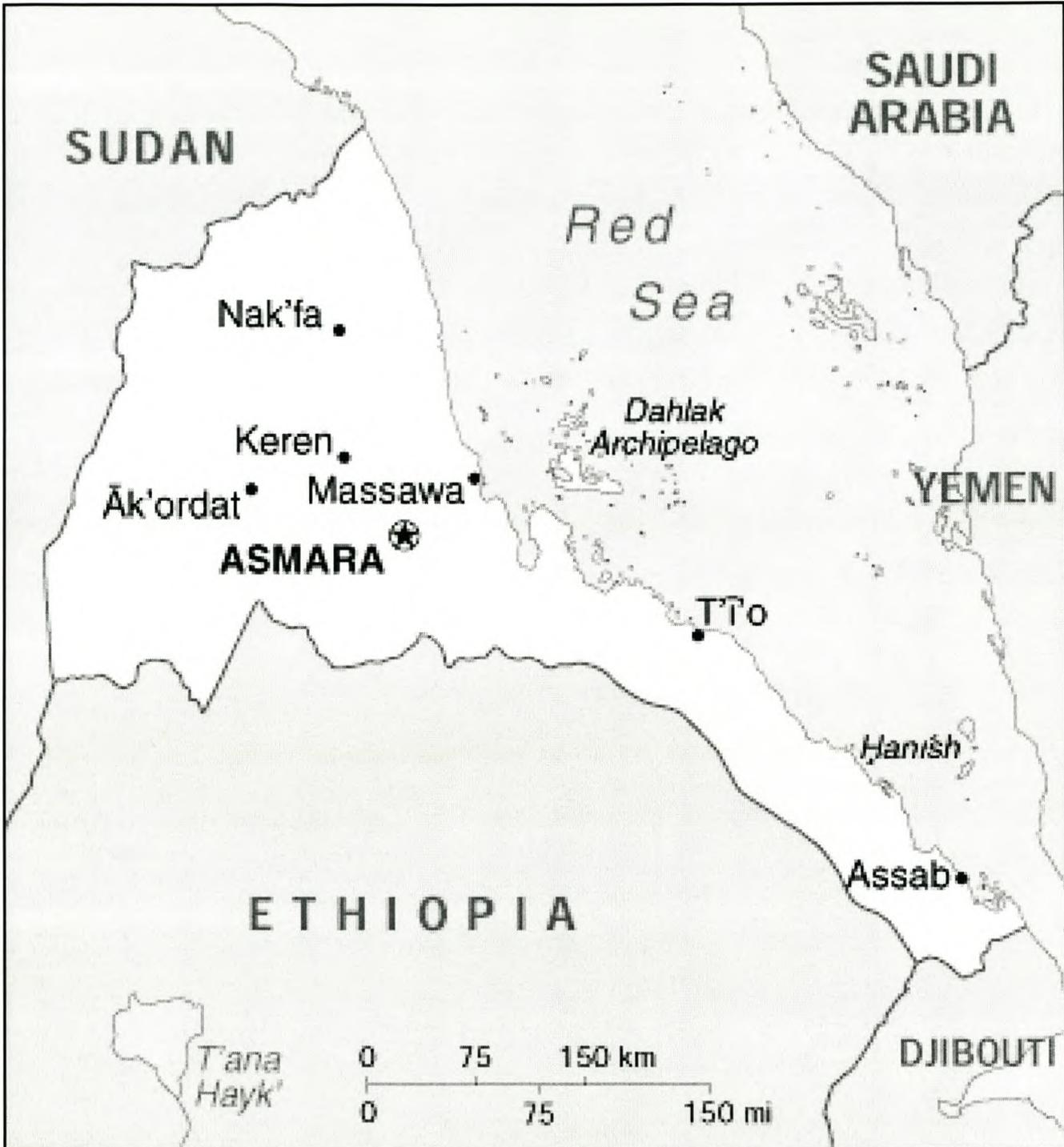
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ANNEXURE I
MAP OF ERITREA



Source: Central Intelligence Agency (2000)

**ANNEXURE II
QUESTIONNAIRE**

A. Household Questionnaire:

Note: Fill the blank or circle the code of the appropriate choice or choices

I. Area identification

1. Region _____
2. Sub-region _____
3. Area Administration _____
4. Village _____
5. Household No. _____

II. Respondent's Background:

6. Sex of respondent: 1. Male 2. Female
7. Age in complete years _____
8. The highest grade you completed _____
9. What is your occupation? _____

III. Source of water supply

10. What is the main source of water in your village?

- 1) Borehole well
- 2) Hand-dug well
- 3) Dam
- 4) Stream
- 5) Public tap
- e) Others (specify) _____.

11. Where do you get water for your animals?

- 1) Stream
- 2) Pond

3) Spring

4) Dam

5) Well

6) Other (specify) _____ .

12. Is there enough water for personal and domestic use throughout the year?

1) Yes → 14 2) No □

13. If no, where do you get water?

14. How long does it take you to get water from the new source?

1) 5 min. or less

5) ½ hr.

2) 6 to 10 min.

6) 1 hr.

3) 11 to 15min.

7) 1 ½ hr.

4) 16 to 25 min

8) more than 2 hr.

15. How long did it take you to get water before the construction of this new source?

1) Less than 15min

5) 1½ hr.

2) 16 to 25 min.

6) 2 hr.

3) ½ hr.

7) 2 ½ to 3 hr.

4) ½ -1 hr.

8) More than 3 hr.

16. Are you satisfied with the water supply project?

1) Yes → 18

2) No

17. If no, why are you dissatisfied?

18. What is the impact of the new water supply project on your life?

19. Specifically what is the impact of the new water supply on women?

IV. Water supply management

20. Is there a community water committee in your village?

1) Yes 2) No → 24

21. Who elected them? _____

22. If they were elected, how long does the water committee stay in service?

23. What is the role of the water committee?

_____.

24. Is there any payment for water usage?

1) Yes 2) No → 26

25. How much do you pay monthly in Nakfa?

_____.

26. How do you repair and maintain the water supply projects?

27. Who is responsible for repairs and maintenance?

1) The community

2) The government

3) NGOs

4) Others (specify) _____

28. Do you contribute money to the construction of water supply projects?

1) Yes 2) No → 30

29. How much do you contribute? _____

30. What is specifically the role of women in the management of water supply projects?

31. Is there any water supply project that has failed in your village? 1) Yes 2) No → 33

32. Explain why? _____

33. Are there any internal laws or rules and regulations regarding the usage of water in your village?

1) Yes) No → 35

34. What are the internal laws or rules and regulations?

35. Did you ever receive any training regarding water supply techniques?

1) Yes 2) No → 37

36. Who gave the training? _____ .

V. Sanitation of water supply

37. Is the water source:

1) Protected

2) Unprotected

3) Safe

4) Unsafe

5) Others (specify) _____

38. Has personal hygiene and sanitation improved with the construction of the new water supply?

1) Yes 2) No → 40

39. How did it improve, compared to the previous one?

_____ .

40. Do you make use of pit latrines in your village?

1) Yes → 42 2) No

41. What do you use? _____

_____ .

VI. Community participation in water supply projects

42. How were you informed that a water supply project was going to be constructed in your village?

_____ .

Have you ever participated in any of the following activities of water supply?

- 43. Project identification 1) Yes 2) No
- 44. Site selection 1) Yes 2) No
- 45. Planning 1) Yes 2) No
- 46. Implementation 1) Yes 2) No
- 47. Evaluation 1) Yes 2) No

48. How do you rate the construction of water supply projects in your village?

- 1) Very successful
- 2) Successful
- 3) Neutral
- 4) Unsuccessful
- 5) Total failure

49. How do you understand your role as a beneficiary in the construction and maintenance of water supply projects? _____

50. What is the role of the government and other development agents in the construction and maintenance of water supply projects in your village?

51. How do you evaluate community participation in the water supply projects?

52. Suggest any aspect not covered by this questionnaire regarding participation in water supply projects? _____

Name of interviewer _____

Date of interview _____

16. Your all over view of public participation in the water supply projects?

17. I need the following data to be filled in by your office.

Villages	POP	H.H	L.S	S.O.W	P	U.P	D.O.I	Installed by		
								GVT.	NGOs	COM.

Note:

POP= Population

S.O.W = Source of water

D.O.I = Date of installation

H.H = Households

P = Protected

GVT. = Government

L.S = Live stock

U.P = Unprotected

COM. = Community

NGOs = Non-government organizations

II. Personal and written interview

1. The total population of the sub-region in sex, age, education, and occupation.
2. The total population of the villages which undertook water supply projects since the independence of the country in sex, age, education, and occupation.
3. What is the role of the community water committee? Do they perform their activities properly? How is it structured?
4. How are water supply projects managed?
5. Specifically, how do you react to breakdowns in the water supply?
6. Are the water supply projects constructed sufficient for the villages? If not, what other measures should be taken?

7. Are there rules and regulations that enforce proper usage of water?
 - a) Yes
 - b) No
 - If your answer is Yes, mention them in detail?
8. If your answer to question No 7 is No, how do you address water usage conflicts?
9. What is the impact of the construction of water supply projects in the villages on health, time, economy, and the social condition of the people?
10. How do you evaluate the participation of the public in development in general and in water supply projects in particular?
11. What is the role of the government, development agents, and the community in project identification, planning, implementation and evaluation?
12. Do you experience any obstacles in facilitating community participation?
 - a) Yes
 - b) No
 - If Yes, what are the obstacles and how do you deal with them?
- 13) What strengths and weaknesses could be traced to the participation of people in these water supply projects?
14. What measures do you take to improve the capacity of the community in water supply projects?
15. How can community water supply projects be sustained? And what measures do you take to perform this process?