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ADDIS ABABA UNIVERSITY

Challenges for Sustainability of Water Supply services in Rural Area:

The Case of Alaba Special woreda, SNNPR, Ethiopia.

A Thesis Submitted to collage of Development Studies in partial Fulfillment of the Requirement for the Degree of Masters of Arts in Environment and Development

By

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Title

Challenges for the Sustainablty of Water Supply Services in Rural Area. The case of Alaba Special Woreda SNNPR, Ethiopia

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DEVELOPMENT STUDIES

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DEDICATION

I dedicate this manuscript to my late beloved Father, Mugoro Gadiso

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Acronyms and Abbreviations

BOFED: Bureau of Finance and Economy Development

WSS: Water Supply and Sanitation

CBO: Community Based Organization

DWS: Drinking Water Supply

EIA: Environmental Impact Assessment

RWSS: Rural Water Supply and Sanitation

NGO: Non-Governmental Organization

FGD: Focus Group Discussion

PCD: People Centered Development

PRSP: Poverty Reduction Strategic Plan

RRA: Rapid Rural Appraisal

SNNPR: Southern, Nation, Nationality and People Reign

UNDP: United Nation Development Program

WaSHCos: Water, Sanitation and Hygiene Committees

WatSanCos: Water and Sanitation Committees

WECD: World Commission on Environmental and Development

WHO: World Health Organization

WRDB: Water Resource Development Bureau

WWRDO: Woreda Water Resource Development Office

GWP: Global Water Partnerships

EMPOWERS: Euro-Mediterranean Participatory Water Resource Scenarios

IRC: International Water and Sanitation Center

UNDP: United Nations Development Project

UNICEF: United Nations Children's Fund

WRC: Water Resources Commission

WRDA: Water Resources Development Authority

WSSA: Water Supply and Sewerage Authority.

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Abstract

Community managed rural water supply scheme is considered as one of the options for achieving sustainability of water supply services. International communities and donors are steering this concept. Recently, water schemes in rural areas are constructed either by the governmental or non-governmental organizations. However, frequency of non-functionality increases from year to year and the users didn't get minimum standards service. The focus of this study is, therefore, to identify major challenges on the sustainability of water supply services in rural area.

This study was conducted on water supply service for the communities where the schemes were functional and others scheme users when their scheme were not functional. Data was collected from water users, water management committees and Woreda water office through focus group discussions and interviews. A structured questionnaire was administered to 297 households heads. The data analyzed descriptively for qualitative; and using mean, average, standard deviation and percentage for quantitative.

The result of the study revealed that the users from others neighbor functional schemes were relatively found to travel longer distance, take longer time to fetch water and low frequency in fetching water and low water consumption as compared with functional once. But the service level for both users were below (10 l/c/day for others functional neighboring scheme and 11.11l/c/day for functional) UPA recommended value (15l/c/day) in water consumption and higher in traveling distance and time due to limited improved schemes with number of woreda population and area coverage, and absences of others source options. The result also shown that non-functionality of the schemes were mainly due to problems related with water and sanitation committees intuitional set up and financial management system on one hand and low stake holders participation in all phases of project on the other in most schemes.

Therefore, this study recommended that, increasing service provision through expansion of the existing schemes, building capacity of water and sanitation committee and Woreda Water Office for appropriate management of the schemes and further strengthening the participation of stakeholders.

CHAPTER ONE

1. INTRODUCTION

1.1 Background

Ethiopia is among the poorest countries in the world, ranking 170 out of 177 according to the UN Human Development Index (HDI, 2005). The country is also the second most populated country in Africa with 78 million people in 2006. High level of poverty prevalence, poor access for education, health, water supply and sanitation are the characteristics of the country for the last many decades. One sixth of all Africans that need access to water live in Ethiopia (UN, 2004). Higher incidence of water and excreta –related diseases in the country are result from un-satisfactory water supplies and poor waste disposal system. Diarrhoeal disease takes the life of 1.8 million people each year; most of them are children under five (UNICEF, 2004). In addition to this, numbers of children are unable to attained school and women are also forced to travel a long distance to collect water from rivers and lakes or other sources

Sustainability water service is defined as that water continues to be available for the period for which it was designed in the same quantity and at the same quality as it was designed (www.thewaterpage.com).

Sustainable improvement in water and sanitation conditions is essential for the poor to reduce income losses due to mach time spent in collecting water, which otherwise to be used to increase income earning potential through increase in productivity. Besides, reduce the cost of health

services especially for water related diseases such as diarrhea, increase income from cattle that depend on water, and increase the quality of life of the poor trough positive impacts on maternal and child health, improvements in education enrollment and attendance through better school sanitation, reduce home duties for water collection or caring for siblings, especially for girls, and reduced drudgery and time on collection of water, especially for women (M0WR,2002 :3).

The quality of potable water and the threat of waterborne diseases such as cholera and typhoid are critical public health issues in many developing countries (ADB, 2002). It is undeniable that one of the most important factors that lead to such problems is the un sustainability of community managed rural water supply schemes. Governments, NGOs and Donor agencies are striving to scale-up the water supply and sanitation coverage in developing countries while the non-functionality rate of those developed water supply schemes is also increasing on the other side of the scene (Brikké, and Bredero, 2003) in most developing countries an estimated 30-60% of the existing rural water supply schemes are inoperative at any given time) this brings a serious impact on the health and welfare of people.

In Ethiopia there is no indication of any separately identifiable entity in the legal sense with responsibility for water and sanitation activities till 1971. The management system of water supply in towns and rural areas started after the establishment of the Addis Ababa Water and Sewerage Authority (AAWSA) in 1971.Supplying drinking water and taking care of sanitation was a municipal area function to be carried out as a departmental function along with other municipal functions. In other words, direct management was the mode (MoWR, 2003:5)

Many countries have today embarked in a decentralization process in order to reach greater efficiency, effectiveness and sustainability of public services, and Ethiopia is one of them. Decentralization is based on the assumption that local level institutions can better respond to the needs of the population, and, therefore, adapt strategies and policies which are relevant to the local context (MoWR, 2006). The central level institutions are therefore changing their role from provider of services to one of coordination and facilitation, and new stakeholders such as local authorities, NGOs, the private sector and communities have come into the picture.

The Ethiopian government (subsequently the Regional governments) has adopted its National Water Resources Management Policy in 1999.The overall goal of the Policy is to enhance and promote "efficient, equitable and optimum utilization of water resources" for sustainable socio-economic development. It recognizes water as an economic good and encompasses water supply and sanitation (RWSS), irrigation and hydropower sub-sectors. One of its main objectives for the WSS sub-sector is to ensure that every Ethiopian citizen has access to water of acceptable quality to satisfy the basic human needs (MoWR, 2001)

The rural water supply and sanitation program implementation arrangements reflect the policy objectives of decentralization to lowest possible level, involvement of all stakeholders in the process, integration of sanitation with improvements to water supply and recognizing water as an economic as well as social good. Accordingly, the primary responsibility for implementation of rural water supply and sanitation improvements will rest with woredas and communities. The Regional water Bureau is also providing technical support as needed. The Rural

water supply and Sanitation program (RWSS) component is getting support from various sources and various stakeholders are directly and indirectly involved with different roles and responsibilities (MoWR, 2004)

Southern Nations, Nationalities and Peoples Region (SNNPR) is located in the southern part of the country with an area of 113,539 sq.kms and its potential sources are from surface and ground and the existing clean water sources in the region is mainly from ground (hand dug well, springs, shallow well and borehole). In the region, there are 1304 hand dug wells, 1,678 shallow wells, 421 deep wells, 2,686 spring developments with distribution points and 255 springs with network distributes that are constructed by the Regional Government and variouse NGOs in the past years and they are assumed to benefit about 6,953,649 people or its coverage were 48% (BOFED, 2006 P). In 2005, from the total 6007 water schemes built in the region about 22% were not functional (BoWRD, 2005).

The specific study area (Alaba special woreda), the main potential source for the water used by the community is the ground water (BoWRD, 2007). In the Woreda, there are 26 motorized boreholes with distribution system and two springs assumed to use by the rural communities in the woreda. And these schemes are targeted to benefit 152,836 people or supply 38% of the Woreda population. Four of the motorized schemes serve the urban population, while the rest 22 motorized schemes and two springs serve the rural population. Out of 22 motorized schemes in the rural area 4(four) were not functional (AG consultant, 2006: 234). (BoWRD, 2007: 5) identified that the main potential sources in the area is from ground water that range from123ms to 360ms depth on average.

1.2 Statement of the Problem

The water supply and sanitation coverage in Ethiopia is one of the lowest of the developing countries and including sub-Saharan Africa. At present, the national safe water supply and sanitation coverage has reached 42.2 % (41% rural and 78 % urban) and 30 % (21 % rural and 80 % urban) respectively. On the other hand, it is reported that 33% of the rural water services in Ethiopia are estimated to be non-functional at any time due to lack of funds for operation and maintenance, inadequate community mobilization and commitment, and lack of spare parts (MoWR, 2007).

The study area, SNNPRS, the overall water supply and sanitation coverage is 48% (45% rural and 60% urban) and 22%, respectively (BoWRD, 2006; 2002). In the region, there are around 1304 hand dug wells, 1678 shallow wells, 421 deep wells, 2686 spring developments with distribution points and 255 springs with network distributions that are constructed by the regional government and several NGOs in the past years (BoWRD, 2006). On the other hand, it is indicated that a large number of (22-24%) of the schemes in the region are non-functional at any given time (BoWRD, 2006) implying a negative impact on water supply and sanitation coverage and the attainment of the UAP (Ibid).

The main problems related to the sustainability of water supply service in the region in general include: The schemes planned and constructed without the knowledge and consent of the communities; schemes are not handed over formally to the communities; absence of transparency regarding roles and responsibilities of water committees; unnecessary interference from administrative bodies of Peasant Associations; lack of

clearly defined guidelines on how to manage the schemes; unrealistic tariffs being used for several years; unremunerated water committee members; absence of financial institutions to deposit money lack of capacity to cover operation & maintenance costs; and unfair distribution of water schemes (MoWR,2003)

The 1999 water management policy clearly stated that urban water utilities are expected to operate on full cost recovery basis, while the rural schemes should at least cover their operating expenses. But, in most rural areas, there is no standardized way of payment for use of water. Whenever there is shortage of water in that area, water is sold at high price by water vendors. In some rural areas where tariff has been applied, water committees decide the tariffs by themselves (MoWR, 2003).

Out of 26 schemes in the study area, 4 were non-functional in rural area (AG consultant 2006:234). On the other hand, the woreda inventory report of 2007 indicated that out of the total 26 water schemes, 10 were non-functional and from different water supply study report indicated that users spent long time in searching water in the area. The scenario implies that water schemes are not being managed in a sustainable manner; communities not get proper services in the area, which requires specific studies to bring sustainable solutions to the problems.

However, a few studies have been made on the sustainability related issues. But a look into these research works revealed that there seems to be a failure in the studies to make a direct analysis of case study on the challenges for sustainability of water supply services in rural area from the point of specific area (Alaba special woreda, SNNPR). To illustrate this, the limited researches on suitability issues were:" Management

aspects for rural water supply sustainability in Ethiopia (Getachew A. 2002) and "An Assessment of community management of Rural Water supply and Sanitation schemes in Northern Gonder" (Alemu A. 2005). But the stated research works in the specific area has not directly addressed the concern of the proposed study, "Challenges for Sustainability of Water Supply services in Rural Areas".

Therefore, this study is focused on the level of service provision and main factors contributing towards un sustainability of water schemes in Alaba special woreda, SNNPR on those schemes constructed by government and/or non-government organizations and later handed over to communities. To this end, the overall process of the research had been guided by the basic question: -"What are the major challenges for the sustainability of water supply services in rural area."

1.3 Objective of the Study

The main objective of this study is to assess the utilization of water supply schemes.

The specific objectives of the study are to: -

1. Assess the service provision and operation of exiting water supply schemes in the study area.
2. Examine institutional setup of WATSAN Cos in the study area.
3. Assess financial management system for operation and maintenance.
4. Assess method of stakeholders' participation in each phase of the project.

1.4 Research Questions

The study will address the following questions

1. What is a nature and supply of service?
2. What is the institutional setup of WATSAN Cos in the study area?
3. How is financial system managed for operation and maintenance?
4. How the stakeholders participate in each phases of the project?

Table 1. Indicators used for research questions

It. No	Research questions	Indicators used
1	What is a nature and supply of the service?	• Distance of the schemes from the users' dwelling • Water volume per household used,(Per head per day) • Time spent to fetch water, • How soon systems are maintained after failure (reliability) • How soon systems fail after construction • Water quality (health impact)
2	What is the institutional setup of WATSAN Cos in the study area?	• WATSAN Cos selection, composition, incentives, duration and term, • WATSAN Cos capacity to manage the systems (skills and trainings) • Problems of monitoring and reporting system to users (transparency) Enforcement of agreement between WATSAN Cos and woreda water desk
3	How is managed the financial system for scheme operation and maintenance?	• Revenue against expense of WATSAN Cos, • How is water tariff setting – taking account of vulnerable groups, • Timely auditing, • Sourcing of fund for major and minor maintenance cost, • Saving of WATSAN Cos for expansion and saving for depreciation
4	How the stakeholder participates in each phases of the project?	• On different project stages by users • Back stopping support to the WATSAN Cos; • On technical issues, financial support and supply of materials

1.5. Significance of the Study

The findings of this research will help to know the policy makers' issues related to sustainability of water supply scheme and serve as bases for development agents in this area such as NGOs, GOs; and other stake-holders. It will also serve as a springboard to other researchers who will be interested to conduct further study in the area. Furthermore, the results of this study can also contribute in building knowledge base for academic and research community.

1.6. Scope and Limitation of the Study

Sustainability of water schemes includes a number of aspects such as technical, financial, environmental, social, and institutional. However, this research is limited in dealing with rules and rule enforcement on involved actors in relation to the objectives mentioned in this study. The scope of the study is specific to Alaba wereda and focused on rural community managed water supply schemes.

1.7. Organization of the Thesis

The thesis is organized in such a way that, Chapter 2 provides overview on the literature on approach to rural community management, concept of sustainability aspects, benefits of rural water supply, the major sustainability impacting factors and the conceptual frame work how to sustain the water point in the rural area. Chapter 3 provides background information on the study area and description on sampling method, data collection and analysis. Chapter 4 presents results and discussion. The last chapter, chapter 5, presents conclusion and recommendations.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Benefits of Accessed Rural Water Supply and Sanitation

Water is the essential resource for life. It is also a scarce resource both in quantity and quality, and when available it is often of poor quality depending on location. Lack of potable water and basic sanitation services remains one of the world's most urgent health issues. It is estimated that 1.1 billion people in developing countries do not have access to safe drinking water and 2.6 billion people lack access to basic sanitation (UNDP, 2006; SIDA, 2004; UNICEF and WHO, 2005.

Lack of clean water and basic sanitation is responsible for about 1.6 million preventable child deaths each year and millions more children suffer from water borne diseases such as typhoid, worms and diarrhoea (UN, 2005; UNICEF and WHO, 2005; UNICEF, 2005). It is also observed that inadequate water supply, insufficient sanitation and unsafe hygiene cause and reinforce poverty and deepen the disparity between rich and poor (Nicol, 2000; SIDA, 2004). It is the rural and urban poor communities who are mostly impacted by inadequate water supply and sanitation services both socially and economically and thus leads them into a vicious cycle of poverty. To unlock this poverty cycle in order to achieve socio-economic development for the vulnerable group in the society, various factors have to be taken into consideration by all stakeholders involved in water supplies and sanitation provision in rural areas. Sustainable water supply and basic sanitation services under community management system might change the existing situation (IRC, 2003).

Water supply and basic sanitation services have important contribution to achieving Millennium Development Goals (MDGs) due to the fact that water is crucial for almost all Development Goals (DGs). There is no doubt that water supply and sanitation services have an impact to other DGs such as poverty, hunger, education and child mortality to mention few. For the case of poverty, it is obvious that household livelihood security rests on the health of its members. Illness caused by drinking unsafe water and inadequate sanitation causes a health cost that claim a large share of poor household income, which could have been used for other productive purposes. In terms of child mortality, improved sanitation, safe drinking water sources and availability of enough quantities of domestic water for washing reduce infant and child morbidity and mortality (UN, 2005). By realizing the importance of water and basic sanitation services and the links to the MDGs, it is therefore necessary to have an understanding of the situation in rural areas in Africa where the majority of poor people make their living.

Based on the study cite by Teshome (2007) conducted by Water Aid time spent in collecting water reduced from an average of six (6) to eight (8) hours to five (5) to twenty (12) minutes in Ethiopia. These affect the household activity; specially women and children participation in the household. Indirectly, therefore water provision increases opportunities for improving household income and nutritional level through assisting in the diversification of livelihood activities.

The social and economic benefits are aimed at improving access to, and increasing the quantity and productivity of available water/Davis 1993:20/. The health benefits, on the other hand, concentrate on the combination of issues, such as improving water quality changing hygiene

behavior and improve sanitation condition/Briscoe, 1988:37/. One of the social conditions that could primarily be improved by the provision of water supplies is a reduction in the effort and time required to collect water. Safe physical access to water sources is an important consideration in this regard, thus, improving physical access to a physically dangerous source can be a major benefit in itself.

Carefully planned access, however, ensures physical safety in the collection of water. In addition it may also have an advantage of increasing water quality. Reducing carrying distances is also another related factor that has its own effect in the social and physical life of user Communities. It helps to shorten women's walking house, i.e., help to reduce the drudgery of fetching water from distant sources/www. Africarecovery.org/

Carrying the heavy load of water, either on the head or back, from far distant locations or sources because various health hazards, water collectors in rural areas and in small towns use clay pots, jerry cans, plastic buckets, drums, and gourds, to bring water for their domestic consumptions. They suffer deformities, headaches and exhaustions due to heavy weight of carrying water. For low-income women, the working day is excessively long. In many African countries, including Ethiopia the collection and carrying of water and fuel wood over considerable distances can result in women having only few hours sleep a night in the dry season /www. africa recovery. Org /

Improving availability of safe water may have economic benefits as well, increasing the quantity of safe water, and bringing it closer to the point of use, can help to undertake productive activities such as income

generating ones/www.Iboro.ac.uk/. The quantity of water people use is partly related to how much it is conveniently available: If water sources are at a long distance from village it can significantly restrict the amount of water it is possible to carry home. It does not, however, follow that easy access to a water point meant people use more water. According to the definition of minimum requirement water for the rural by the World Bank (2004) is each people should get 40 litter/capita/day. But in Ethiopian case 20 litter/capita/day is the minimum requirement per day per person.

2.2. Approach to Community Management

Community management (CM) of RWS is now in its second decade as leading paradigm for water supply development and management. CM approaches did not appear spontaneously, nor do they exist in vacuum. They emerged from a history of trial and error in the rural water supply sector and are linked to, and affected by, developments in many other sectors particularly those related to more general rural development. The rural water supply and sanitation sector itself gradually emerged in the two decades prior to the1980s International Drinking Water Supply and Sanitation Decade (IDWSSD) (Lockwood, 2004:5-6).

The needs for the community managing the system come to the world wide through the changing of the environment (MoWR, 2003). In the past water was considered as a social good and was totally under the management of the Government, who was responsible for the investment, operation, recovery of maintenance / replacement costs and management of the whole water supply process. But due to the growth of water demand and the consequent shortage, the high costs involved in the development of water systems and the increased need to sustain the

operation and management of water supply systems, the idea of supplying water free came to be questioned. Today, water is still considered a social good in the sense that access to safe water is a basic right, but it is also recognized as an economic good, in the sense that its service has to be paid for, just like any other public service.

The change occurring in the water sector worldwide is the change from a supply-driven to a demand driven approach. The supply-driven approach is based on a pre-selection of the intervention area, with technology selection and management criteria based on policies or replication of successful experiences, with little or no involvement of local stakeholders. This approach can have an impact on the sustainability of projects, particularly in terms of the feeling of ownership, local acceptance and responsibility as well as the function and use of water supply systems and the willingness to pay. In the case of a demand-driven projects (bottom-up approach) local stakeholders, identify the problems and needs. The advantages are that the motivation to participate in the planning, implementation and O&M phases will be high, and that community-based management will be better accepted and implemented. The demand-driven approach is applying in Ethiopia to sustain the schemes (Ibid).

During the 1960s and 1970s, international and national efforts focused largely on increasing coverage through so-called "supply-driven" approaches. These assumed that governments knew what was needed and could provide the maintenance and management capacity required (Nicol, 2000:9). In most cases, the only solutions international donors had to offer were complex and only affordable to an elite minority, leaving a large majority of people without services of any kind: "*The vast majority*

of those without water and sanitation services were poor, and the countries in which they lived were frequently water short and had little to spend on public infrastructure" (Black 1998:4). During the IDWSSD the concepts of community participation and the promotion of appropriate technologies became established as part of efforts to meet the optimistic targets of "water for all". Although the IDWSSD failed to meet these targets, the concept of community participation was extended to include operation and maintenance and, most importantly, cost sharing of water supply systems. This idea marked an important step towards basing the provision of services on *demand*, rather than the conventional supply-driven model, and complemented efforts to create ownership of services on the part of communities (Nicol, 2000:10).

Many writers have commended the concept of community participation and management of water supply and sanitation services as the most effective way of achieving sustainability. During the 1980s and 1990s, a variety of different actors, signed up to community management concepts with very different agendas: According to (Carter et al, 1999:12) the governments saw community involvement as a way of reducing demands on over stretched resources and making up for lack of capacity. As one-commentator states: *"government's inability to build and maintain water supply infrastructure has been (one of) the major factors leading to the promotion of community participation*". The others as identified by (Lockwood 2004:6) were, the donors saw a opportunity to stretch development budgets and expand implementation of water supply and sanitation facilities, and to bypass the problems posed by inefficient and often corrupt governments; the non-governmental organizations became the voice of the community and happily seized an opportunity to increase their role, becoming in many countries a parallel provider of services

and, in that respect, a kind of parallel government; and the multilateral lending institutions such as the World Bank saw CM as an ideal vehicle for their messages about reduced government involvement, and increased private sector and civil society roles. Many writers especially on issues related to community participation have used the term community. Many defined it differently but still they retain the common meaning. For the purpose of this paper the term community as defined by Doe and Khan (2004) is used. They defined *"Community as a group of people with common interests who are capable of taking collective decision and action for their common good"*. This means that it is the people who can bring changes to the problems they are facing provided they have a common interest and commitment. For the case of water problems in rural areas it is up to the communities within the village to come up with collective strategies on how to solve the problem. The vehicle through which the collective action is exercised for the common good is known as community management. This is all about control through which communities have ability to make strategic decisions about how a water system is designed, implemented and managed. It also includes selection of service levels, setting of tariffs and employing someone to look after operation and maintenance (O&M); in short these are known as governance functions. However, for effective community management purposes it is recommended that governance and provision functions should be separated. The provision function such as operation, maintenance, construction and planning of water service may be provided by community or exercised by private or public sectors from out side the community and governance functions may be executed by water committees (Doe and Morritarty, 2004;IRC; 2003)

2.3. General concept of Sustainability

The World Commission on Environment and Development (Bruntland, WECD, 1987) defines sustainability as "development that meets the needs of the present generation without compromising the ability of the future generation to meet their own needs". In context of DWS schemes, sustainability refers to the ability to maintain efforts and derived benefits both at community and agency level even after the assistance (managerial, financial and technical) is withdrawn. Furthermore, sustainability of drinking water supply depends on various factors:

- Continued delivery of services
- Regular maintenance of the physical infrastructure through the participation of users.

Also according to Naryan (1993) the rural water supply is defined that the capacity to maintain services and benefits both at the community and institution levels without detrimental effects even after "special assistance" (financial, technical, managerial) has been phased out. In a simple word it's continuing to operate after support has been stopped.

2.3.1 Phases of Sustainability

There are two important and critical phases of sustainability: the initiation phase and on going phase (www.thewaterpage.com.). The initiation phase is the establishment of the service, from the recognition that services needed, through the articulation of a demand, the planning of the service, the design and construction of the physical infrastructures, the establishment of the institutional framework, and the initial commissioning. The ongoing (continuation) phase is the rest of the services life including operating the services to the satisfaction of the

consumers, collecting revenue, maintenance of the infrastructure, administration, and all of the other day-to-day activities. It is a much more difficult phase to succeed in than the initiation phase, because service provision is essentially a process of human organization and the use of technology to the benefit of society as a result of which it is to be expected that things will go wrong a great deal of effort has been invested in getting the initiation phase of service provision right. By comparison very little thought has been given to the continuation phase. If proper attention were given to the continuation phase, it would not be necessary to build into the initiation phase all the requirements for the service to continue to function for the rest of its design life without any support.

2.4. Bringing the Sustainability of Community Managed Water Supply

To ensure effective community management of rural water projects for achieving sustainability, both internal and external factors must be taken into consideration because they have important contribution to the success and failures of the water projects. Internal factors like lack of community cohesion, lack of management skills, unrepresentative water communities, technical issues, strong traditions, misplaced priorities and financial problems must be given priority under community management model (Schonten and Morriarty, 2004).

On the other hand, external factors such as non-existence or weak supply chain, lack of standardized technologies, poor design and construction faults, interference with politicians and environmental issues have big impact on the sustainability of the system and therefore need proper handling (Schonten and Morriarty, 2004; URT, 2002a;

Harvey and Reed, 2004). It was reported by Duyne (1998), that an attempt to enhance participation in the water sector in Bangladesh failed due to exogenous organizational models, which were mechanically applied to different context. He said that understanding of the indigenous water management and organizational practices is very important to be taken into consideration when implementing project activities.

Vandana Shiva argues that, "more than any other resource, water needs to remain a common good and requires community management" (Shiva, 2002). The Dublin principles adopted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro 1992, Agenda 21 and the World Summit on Sustainable Development (WSSD) in South Africa in 2002 both put more emphasis on community participation in management of water resources (Solanes and Gonzalez-Villarreal, 1999; Doe and Khan, 2004). It is becoming evident that community management of water supply and sanitation services under a well established institutional set-up could contribute to sustainability of services for enhancing community development. However the community should be the key stakeholder in water supply and sanitation services in their respective villages. Back-up from the local government and other development partners such as NGOs and private sectors are essential for proper functions of the community managed water projects.

2.5. Factors Impacting Sustainability of Water Supply Services

Especially in the rural area, there are several factors that affecting the sustainability of water supply scheme. However, the following points are inclusive of the definition of water supply services sustainability. A water supply service is sustainable if:

- It is functioning and being used;
- It is able to deliver an appropriate level of benefits in terms of quality, quantity, convenience, continuity and, health to all, including the poorest women and men;
- It continues to function over a prolonged period of time (which goes beyond the life span of the original equipment);
- Its management is institutionalized;
- The management of the service involves the community (or the community itself manages the system); adopts a perspective that is sensitive to gender issues; establishes partnerships with local authorities; and involves the private sector as required;
- Its operation, maintenance, rehabilitation, replacement and administrative costs are covered at local level through user fees, or through alternative sustainable financial mechanisms;
- It can be operated and maintained at local level with limited but feasible external support;
- Its operation, maintenance, administrative and replacement costs are covered at the local level; and
- It does not affect the environment negatively (Brikké, 2002)

Hence, the sustainability of a water supply scheme and its service delivery has multifaceted dimension. It has social, technical, financial, institutional and environmental issues to address (Brikké, and Bredero, 2003). To sustain water supply schemes the involvement of the community is the form of full participation, control-over the scheme operation and maintenance and overall management, strategic decision-making, ownership and cost sharing for O&M and construction activities is indispensable (Lockwood H, 2004). However, such community management has to be backed by external agents (Government or NGO)

support/assistance for over a long term on technical issues for O&M, training, monitoring and information collection and coordination and facilitation aspects (Lockwood, 2004; Brikké, and Bredero, 2003).

Sustainability issues are also associated with the ability to give a backstopping support for the new community indefinitely; to bring legal accountability to financial management by auditing water committees and to facilitate disagreements and resolve conflicts (Schouten and Moriarty, 2003:). Moreover, several actors have to be involved to sustain community managed water supply schemes at different levels and degree of participation. This include the community in which the service is being delivered, Government water offices, NGOs working in the water sector and the private service providers for construction and maintenance activities and supply of spare-parts (IRC, 1993). Hence, sustainable water supply schemes brings about vital health benefits by sustaining accessible water supplies in sufficient quantity and quality by reducing the time and effort used up on water collection; by allowing enhanced sanitation facilities to be provided; and by providing income-generating activities. (Moriarty and Butter worth, 2003). As cited by Elias (2006:8) motivation, maintenance, cost recovery and continuous support for the community is as the building elements for sustainability of water and sanitation services (Carter and Howsam, 1999)

2.5.1. Stakeholder Participation

As cite by Desalegn R. (1999:) in broad terms, stakeholders are defined as individuals, organisations, public sector agencies and donors that are concerned with water resources and have an interest in their development (Le Moigne *et al.* 1994). The definition can be broad or narrow depending on the kind of water development schemes under consideration. The larger the water projects in question, the higher the number. The available evidence suggests, for example, that bore-holes, hand pumps or other water systems constructed by NGOs are more likely to be sustained if they are managed by communities (Solomon Gebre 1994) of stakeholders involved. User participation has been found to be a significant factor in the sustainability of rural water supply schemes.

According to Desalegn R. (1999:27-28) in most of the rural areas of Ethiopia women are the primary water carriers and users. Women spend many hours each day fetching water. Often the sources of their water are unprotected springs, or polluted streams or ponds. By virtue of their household functions they use more of this polluted water than the rest of the household, and therefore they are most vulnerable to water-borne diseases. Thus the development of safe water supply is of particular benefit to women. Access to safe water within easy reach of the household means women can save time, labour and effort, which they can employ in more productive agricultural and income generating activities. Safe water will also mean they and their children will be protected from many water related diseases.

According to /Ausguide, 2003; WB, 1981; WB 1984/ the critical factor that promotes sustainability is the role of stakeholders. Stakeholders can broadly be viewed as those concerned with the project and those who stand to get benefits. Hence, sustainability cannot be achieved without their involvement and support. Beneficiaries, both men and women, should have the opportunity to influence the direction and detail of design an implementation. Allocating adequate time and resources for participatory analysis and responding to demand-led approaches are important ways to improve participation.

Systems constructed by NGO are more likely to be sustained, if they were managed by communities (Solomon Gebre, 1994). In the UNICEF assisted rural water supply schemes, beneficiaries strongly felt that communities should be involved in the management and maintenance of the technologies in use (Alula et al. 1986). Community management was also identified as one of the two key factors in the success of rural water supply schemes by WRC, the other being technology choice (WRC 1993). Without community participation, rural water facilities will not be sustainable, and it would be unrealistic to expect government agency to manage and maintain such facilities scattered throughout the rural areas.

Donor-led and top-down projects, generally fail to bring sustainable benefits because they do not lead to stakeholder ownership and commitment.

Effective participation can be achieved if:

- Ideas for projects are demand-led;
- Design phase is given adequate time and other resources;
- Specific activates and resources are identified and incorporated in design to implement participatory strategies;
- Identify who/which groups are expected to participate and who will benefit;
- Clearly defining what type and level of participation is to be achieved, and
- Ensure that key team members are appropriately skilled in participatory approaches /Kalbermaten, 1980:11 Ausguide, 2003:48/.

Community Participation

Community participation proposed at a Rapid Rural Appraisal (RRA) workshop is that "the collective effort by the people concerned to put their efforts and other resources together to attain objectives they set for themselves" Community participation can also be defined as a process of people's involvement to achieve societal goals through self-reliant efforts. Unity, shared visions and understanding each other are most essential for social mobilization and sustainable development. People's participation will be enhanced when their felt needs and choices match with the activities. Awareness and sense of livelihood is another influencing factor of participation. Awareness can be enhanced due to access of formal and informal information. Moreover access with media and communication is also equally important (Desalegn R, 1999:).

The community management sustainable community level interventions are characterized by significant community investment of labour, other in kind services, and user fees in design, construction, maintenance and operation of facilities (URT, 2002a; UN, 2005).

As (Schouten and Moriarty, 2003) defining community management as *"community management is...* about communities making strategic decisions: what level of service they want, how they want to pay for it, where they want it. The community may also be involved in day-to-day operation and maintenance, in collecting money from users and in buying spare parts, but they do not have to be. They may choose to hire a professional to do this for them. Community management is about power and control". Many different methods are used during project implementation to strengthen the capacity of communities to manage their own systems. They include:

- Use of participatory approaches in planning, decision-making and construction;
- Involvement of all community members, both men and women;
- Establishment of new management structures, or strengthening of existing ones;
- A continuous process of training and skills transfer throughout the project cycle. (Lockwood H. 2004:)

Lockwood (2004:) identify that there are two sets of factors that can lead to problems for community-managed RWS such as: limitations within the community; community dynamics, political or social conflict, failure to generate sufficient tariff revenue, lack of preventative maintenance, lack of cohesion and lack of capacity (technical, managerial, financial etc) and constraints external to the community; poor designs, poor

implementation, political interference in planning and resource allocation, lack of spare parts supply, lack of supportive policies and legislation and, very importantly, the lack of long term support to help communities through major repairs, conflicts and other problems with extension and upgrading. Community participation in project activities is considered as very important because it builds a sense of ownership and commitment among the local people (IRC, 2003:). Participation can take many forms-user may be involved in planning, management or contributing even money, labor and ideas.

In the participation of the users, the key factor that should be considered for the sustainability of the water scheme is giving the accountability to the users to manage it. Accountability is one of the key capacities, which empower attempts to build in order to create a "road map" for community change. Accountability is a twofold concept in which people come to acknowledge their responsibilities towards those around them while at the same time becoming aware of their right to hold other people to account for *their* responsibilities. This in essence is crucial to *empowerment* of a population (Eng. Fidaa Haddad, 2007:4).

Private sector participation

Private sector participation is a topical issue in the water sector generally and there is certainly the potential for private companies and individuals to be involved in a range of functions in the rural sector, such as: contracting and provision of materials, design services and skilled personnel during the construction phases of project implementation, either with government, donors or directly with communities; the provision of specific technical tasks and consumable materials for long-

term O&M support, such as chlorine, water quality testing, pump parts and repair services; transport and other logistical support services such as borehole drilling; the provision of credit or loans for system repair, expansion or upgrading.(Lockwood H. 2004:)

2.5.2. The Water Governance System

Water governance is the set of systems that control decision-making with regard to water resource development and management. Hence, water governance is much more about the way in which decisions are made (i.e. how, by whom, and under what conditions decisions are made) than the decisions themselves (Moench et al., 2003). There are different types of governance approaches. But for this particular context, it is taken the definition of (Moench el al.;2003) it refers essentially to the manner in which power and authority are exercised and distributed in society, how decisions are made and to what extent citizens can participate in decision-making processes.

As such, it relates to the broader social system of governing, as opposed to the narrower perspective of government as the main decision-making political entity. Governance of water is perceived in its broadest sense as comprising all social, political and economic organizations and institutions, and their relationships, insofar as these are related to water development and management (Eng. Fidaa Haddad, 2007). Governance is concerned with how institutions rule and how regulations affect political action and the prospect of solving given societal problems, such as efficient and equitable allocation of water resources. The rules may be formal (codified and legally adopted) or informal (traditionally, locally agreed and non-codified). Sound and effective water governance systems are crucial to pursuing various sustainable water development and management goals.

Dealing with water scarcity, competition for water and pollution, the water manager has to find a way to fulfill the needs and reduce the impacts. The best way to do so is through IWRM. Integrated water resource management (IWRM) is a process aims for the sustainable use, management and development of water, land and related resources (GWP 2000).

Effective water governance requires changes in attitudes and behavior among individuals, institutions, professionals, decision makers– in short, among all involved. Participation by the public or stakeholders is an important tool in implementing such changes as it facilitates more informed decision-making and eases conflict resolution. It can also guarantee that voices of relatively powerless groups, such as women and vulnerable people, are heard. Participation offers people the opportunity to meet their responsibilities, as well as the opportunity to claim their rights (Eng. Fidaa Haddad, 2007:4)

2.5.3. Operation and Maintenance /0&M/ System

O and M is a stage following the planning and construction stages (Part of the Continuation Phase). It becomes a prominent issue when the community is trying to utilize and manage water supply schemes. Most of the problems at O and M do have a link with defects back to previous stages. They are the major administrative problems challenging the objective of providing safe water supplies to rural inhabitants in most developing countries. In rural areas water supplies to rural inhabitants in most developed, it is common to see water points with lots of technical failures such as breakages of faucets, valves, collection chambers, and

pipelines, failures of animal troughs, washing stands, and so on. Schemes with such defaults are either not functioning or leaking, and are susceptible for contamination /Colin, 1999:3/ Watson committees are mostly not in a position to carry out their, responsibilities. They are not collecting users' water point attendants are not paid; schemes are not protected from the rich of children or animals due to lack of fences. They face financial shortage, lack of adequate supply of spares, insufficient technical skills, and equipment for maintenance and/or repair among caretakers, lack of knowledge about system operation and management, poor awareness about disinfections and preventive maintenance and so on. In general, absence of institutional integration and committees, and support organizations worsens the situation of water points as manifested by the absence of maintenance. The problem of O and M is worse in countries where the rural population is illiterate and supplied with no infrastructure /Franklin, 1983:144/.

2.5.4. Partner Government and Donor Policies

Partner Government Policies can have significant impacts on the sustainability of project benefits. Projects are implemented in a wider policy environment. A policy framework that is compatible with and supportive of project objectives is a key factor in promoting sustainability. Hence, the policy framework /policy factors/ needs to be carefully analyzed at the planning stage /Barot, 1995:45/.

Projects, which fit with partner government policies, have much better prospects for sustainability, as they are more likely to have high-level political and institutional support both during and after implementation /Ausguide, 2003:7)

Donor policies also have a bearing on the continuation of project benefits because, they influence how contracts are prepared, how long shall be the duration of funding and what should be funded. Donor policies have a direct bearing on the planning horizon. The usual three to five years planning horizon for development programs and projects is often in adequate in terms of promoting sustainable benefits, particularly when: behavioral and institutional changes are included in the objectives, multiple local agencies are involved, the project is intended to cover a wide geographical areas and so on. Although open ended commitments are not appropriate, phasing implementation over a longer period is a right strategy, which may support sustainable benefits/ Barot, 1995:48; Roth, 1985:9 /.

2.5.5. Management and Organization

Projects, which integrate with, and build on local management structures, have better prospects to benefits than those, which establish new or parallel structures. The capacity of local agencies to manage or absorb new structures, systems, ideas and funds is often not adequately assessed and over-optimistic assumptions can be made. Enabling management structure requires an adequate institutional analysis during the project design phase and this in turn requires specific knowledge, skill and field time /Ausguide, 2003:48/. Project designs must take adequate account of the capacity of local administrative systems to support staff and service delivery:

2.5.6. Financial System

In some sectors and circumstances, financial sustainability of projects is unlikely in the medium term. If a project does not deliver clear and equitable financial or economic benefits, which are apparent to the stakeholders, it is most unlikely to be sustained after donor funding terminates. For instance, health service beneficiaries will not pay for government health services, if the service is poor or their expectations on benefits are extremely limited. Better financial analysis is often required, especially in the formulation of economic sector projects like water supply (Alemu A.2005:39) .Counterpart contributions either in cash or in kind, like counterpart staff, office and so on, from partner government or communities are seen as a sign of commitment to project objectives. Hence, project designers and mangers should adequately analyze the planning budgeting and financial management systems within which partner agencies are working.

Donors have traditionally been reluctant to cover recurrent costs, which are generally be taken as the responsibility of the partner government or other stakeholders, and seen as a sign of their commitment to the program /project/ objectives. Approaches to manage recurrent cost financing, therefore, requires:

- An appropriate level of direct financing of these costs over an extended period of time using a down ward sliding scale of contribution;
- Incorporating specific maintenance contracts or agreements with in the scope of the project;

- Putting recurrent cost financing and asset maintenance issues higher on the agenda of both project and policy level consultative meetings, and
- Donor's collaboration within a sector/UNDP/WB, 1998:6/.

In Relation with this, projects should not be designed to be equipped with excessive types of equipment that are beyond the financial capacity of the stakeholders to operate and maintain. User-pays, as a principle, are a critical issue in the financial aspect of projects. If people are willing to pay for a good or service, then they want it. User pays approaches also generate revenue that can be used to continue the service. Demonstrated demand is a strong indicator of sustainability for both economic and social sector projects. User pays approaches can be used to continue services, even in poor communities and may be the only sustainable solution to service delivery /Ausguide, 2003:/.

2.5.7. Awareness Training and Material Supply

The provision of appropriate information and /or training for identified target groups is often a key strategy for achieving sustainable benefits. To improve the prospects for sustainability, training should be started at the right time, be conducted throughout the project period and allowed for repetition. Effective training should not only educate but also motivate participants; trainers must be selected on merit, include both men and women, and be of direct relevance to their work. Trainees must also be given the opportunity to apply newly acquired skills on completion. In country training, such as on-the-job training, mentoring and short course competency based training, etc are more likely to

support sustainable benefits than overseas courses or long term academic training for a few /Ausguide, 2003:50/.

Generating an understanding of, and support for, project objectives among a wide group of stakeholders should be a component of any sustainability strategy. Awareness creation, as an activity component should be considered early in the design phase. During implementation, it can include the use of many types of different media and group events such as workshops, seminars personal contacts /lobbying/, community meetings and the use of electronic media for instance /Radio, TV, and web-Sites/ can all play a role in mobilizing political, administrative and community support. Establishing formal institutional linkages with counterpart office and with donors can also form part of an effective sustainability strategy /UNDP/WB, 1998:5/.

Providing training, skills transfer, logistics and equipment), is a key element of any scaling up effort to the different stakeholders (Lockwood H., 2004) found that for the scaling-up of community management the structures of community and water committee must acquire the necessary skills and capacities to participate in demand-responsive projects, to articulate their needs, to make decisions and, to be able to operate and maintain their systems in the long term, and also they should have knowledge of areas such as hygiene behaviors, communication, conflict resolution and environmental protection; local government in many cases may have the mandate to provide support for planning; construction and maintenance of RWS services, but will often lack the capacity (financial, managerial, technical) and often will not be aware of best-practice approaches such as participatory techniques and

demand-respond approach; private sector service providers are important actors in long-term O&M efforts, especially small local enterprises or individual community-based artisans.

Communities can not do all these activities by themselves; they need support to enhance their performance functions. Communities need to be empowered on how to manage the water projects in terms of governance and provision functions such as availability and supply of spare parts and maintenance. Management skills on how to handle group dynamics, institutional arrangements and monitoring and evaluation of the systems are the important element for success and sustainability of community managed water supply and sanitation services (Schonten and Morriarty, 2004; IRC, 2003). It is however noted that successful community management of water supply services needs on-going support and guidance even if communities are well trained and organized to operate the system (Harvey and Reed, 2004; Lockwood, 2001). Local governments, NGOs and private sectors are the important organs to ensure institutional support for the sustainability of water supply and sanitation services under CM approach.

2.5.8. Consideration of Technology Option

To promote sustainability, the technology to be adopted and transferred must be selected on the basis of its appropriateness in terms of technical, as well as gender and socio-cultural acceptability and so on criteria /Kalbermaten, 1980:23/.

The quality of any asset will have a direct bearing on economic life of water point technologies. The longer it lasts, the more sustainable the

against the context of the particular country or district in question and the capacity of the institutions and CM structures to manage and maintain the technology over the long-term.

2.5.9. Consideration of the Social Aspects

Development interventions can fail to deliver sustainable benefits due to inadequate attention to the social aspects of target population, such as gender or women's participation, cultural values and preferences, traditional decision-making and governance systems. To introduce new and appropriate technologies, there must be an understanding of the indigenous decision making systems, gender based division of labor, and cultural preferences. For instance, the design of rural water and sanitation systems must take into account the established traditional attitudes to managing human waste and the roles of men and women in collecting and using water /Ausguide, 2003:50 Barot, 1995:45; Reynolds, 1992:8/. Development objectives in some interventions, such as water and sanitation, forest conservation and so on, aim primarily to achieve behavioral change. Such changes require a long period of time /Ausguide, 2003:50/. The issue of gender is another social factor that has a direct bearing on sustainability. A greater participation by women in identification, design, construction and decision-making at every stage of the project is a key part of sustainability strategies. Their participation in all parts of the activity cycle is essential for the promotion of sense of ownership and the resultant continuation of benefits.

A prime condition for a successful village water supply or sanitation project is that the people feel a need for the project and give it a high priority on the list of activities and services they will support in their

village. Needs and priorities of men and women are often not the same. Male and female motivation and resources to sustain improved water supply and sanitation facilities may also differ. In addition, such needs and priorities may vary with the economic status of the family's concerned, family composition (e.g. number of females, female heads of Household, and with religious and socio-ethnic affiliation of the family (Chachage et al., 1990: Wegelin, 1991:7; Wijk, 1985:). As a result, economic demand for the proposed facilities and willingness to contribute to them can vary considerably. The demand for an improved drinking water supply and better environmental sanitation is usually higher among women than among men, as shown by women's higher willingness to contribute when this aspect is investigated separately for both groups (Dian Desa, 1990:; Laubjerg, 1994:; McGarry and Elmendorf, 1979:; Mukherjee, 1990:; Singh et al., 1991:; Sundararaman, 1986).

Where male heads of households make the decisions, special information is often needed to convince them that a nearer water supply or better sanitation is not a luxury, which 'makes women and children idle', but an improvement which benefits the whole household in various ways. Moreover, a special strategy is needed in those situations to inform the women as well, since otherwise they tend not to be aware of the project and thus cannot informally approach their husbands about participating in it (Wijk, 1985:).

2.5.10. Environment Aspects

Environmentally sustainable development is the agenda of most present day development actors. It is defined as development that meets the present generation, with out compromising the ability of future generation to meet to it is strengthened if environmental issues are considered at all stages of the activity cycle /Ausguide. 2003:51/.

To ensure environmentally sustainable development, proposed development projects should encompass and show the results of Environmental Impact Assessment /EIA/. EIA is a tool for strengthening the environmental sustainability of projects. It provides a framework for identifying, assessing and subsequently managing the environmental issues, which should be initiated in the pre-feasibility phase, so that it leads to the consideration of alternative design options, and mainstreaming of environmental management measures into designs. It is more effective if it involves communities in identifying and managing environmental risks, and when cultural and social impacts are assessed along side with ecological issues /Serageldin, 1994:34/.

2.6. Conceptual Framework

People Centered Development /PCD/ as cited by (Alemu A. 2005:5), consider the people both as the means or instrument to bring development and as the object of development in enjoying its fruits. Among its diverse features, PCD focuses on optimal use of human resources in taping trained skills as well as indigenous insights, experiences and knowledge, conservation of environmental and natural resources, spread of ownership of productive assets, support for vulnerable groups, the need to integrate development initiatives; and adaptive and responsive administrative management /Gant, 1987:1-7/. PCD underscores the importance of bottom up approaches of participation in decision making as a means to bring empowerment and equity. Community participation in development enhances receptivity of the people for change; enable targets to get information and knowledge, advantages of cost and efficiency, timely completion of projects and development of sense of ownership and sustainability /Gant, 1987:7:28/. Sustainability of rural water supply and sanitation refers to the provision of safe and adequate services at reasonable cost on long-term basis.

Problems in project design and appraisal create loopholes for the emergence of problems that can be a threat to sustaining services. Giving proper attention to software aspects of the project at the planning stage enables the presences of strong community organization that can take over project management from government or other actors like NGOs. The presence of capacitated water committees ensure sustainable operation and management of schemes by playing an intermediary role vertically with government institutions and user communities, and

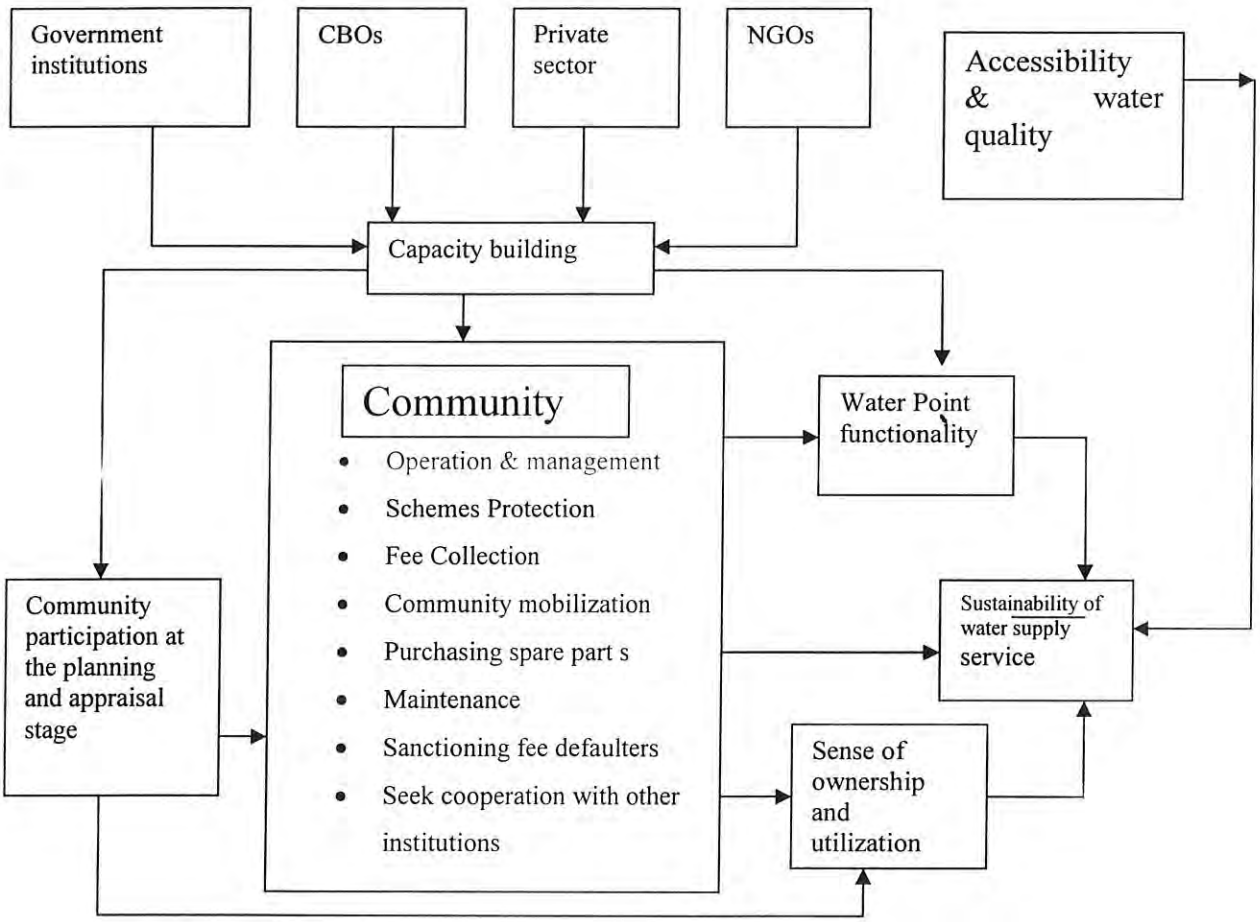
horizontally with locally available institutions and/or community based organizations /CBO's/, such as micro finance institutions, non-governmental organizations (NGOs), private enterprises, Iddirs and so on /www.ilri.arg.htm/.

Sustained water point functionality is the concept that is dependent on active community mobilization and involvement. Its absence or inadequacy may even lead to un-utilization of the developed schemes. To the worst, it may lead to asset breakage, unwillingness to pay users' fees, absence of participation in operation, maintenance and protection of schemes /www.iboro.ac.ukl. Breakage and misappropriation of assets leads to leakage and loss of pure water, which requires strong community organization that is responsible to carryout physical monitoring and protection and preventive maintenance on sustainable basis.

Capacity building, both during project implementation and especially after projects are handed over to the user communities, is vital in alleviating managerial and technical capacity limits that will hinder watsan committees from adequately managing RWSSs /www.ilri.org/.

The role of women in domestic water management is proved vital, despite the gender equality and equity problems, which are deep-rooted given the long established culture. Their involvement in all aspects of RWSSs is believed to ensure sustainability. In addition to women, attention should also be given to other vulnerable groups, such as the poor, the disabled and the like, to have stakes and enjoy equal access to water points /www. dams. org. /. Communities Capacitated on how to operate and managed, fee collection, and maintenance through back stopping the

Figure 1 Conceptual frameworks



Adopted from Alemu A . 2005

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 Overview of the Study Area

The southern Nation, Nationalities and people regional government (SNNPRG) is one of the nine regional states in Ethiopia. The region has 13 Zones and 8 special woredas, 126 woredas 3,659 rural kebeles and 156 urban kebeles (BoFED, 2006)

The study area, Alaba woreda is one of the 8 (Eight) special woredas of the southern nations, nationalities and people regional state. It is found at the distance of 85 Kms from the Regional capital town Hawassa, and 308Kms from the federal city, Addis Ababa via Addis Ababa Shashemene Arba Minch main rood (BoWRD, 2007).

It is located approximately between 7^0 19-7^0 40 latitude N and 38^0 05' - 38^0 05' longitude E with an elevation ranging between 1700 meters above sea level (m.a.s.l.) in the southern part of the woreda to 2200 m.a.s.l. in the Rekame-Bubisa hills having total area of 973.76 square kilometer (CSA, 2006) and the agro-climate of the area consist of 86 percent woinadega (or Tepid to cool sub humid – high land) and 14 percent mainly kola. The mean annual rainfall ranges between 759 mm and 1241 mm, monthly mean maximum temperature ranges between 24.9^0c and 29.9^0c and the monthly mean minimum temperature is between 6.7^0c and 13.8^0c. (BoWRDB, 2007)

The total population of the woreda is 216,434 of which the female to male population number ratio is almost equal. From the total population about 12.2 percent is residing in urban and the majority 87.8 percent is dwelling in rural parts and most of the village communities live in a scattered way with the average 4.6 member per household (BoFED, 2006:34).

The area as in many rural communities of the country, the lives of the inhabitant of the kebeles in the woreda are solely dependent on farming crops, which in turn depend on the seasonal rainwater. The main cash crop is "Berbere" which is produced in most parts of Alaba Woreda, which is popular for its quality and is heavily supplied to the markets of most major towns in Ethiopia including the capital Addis Ababa (FDRERA, 2007)

The majority of the population in the Woreda is followers of Muslim religion. According to the 1994 population census result, 94% of the Woreda population is Muslim and the rest 6% belong to the Christian religion of various denominations with few traditional believers and the major ethnic groups in the Woreda are Alaba and Silti with 53% and 33% of the total population respectively. The rest are from Kembata, Amhara, Hadiya, Welayita, and Oromo ethnic group with few others. The main languages spoken in the Woreda are Alabigna by the Alaba ethnic group and Siltigna by the Silti community. The other ethnic group speak two languages their mother tongue and either Alabigna or Siltigna (FDRERA, 2007)

rural kebeles only 24 kebeles have potable water source from bore holes and 2 kebeles from roof water harvesting. More than 20 percent of water schemes do not render the necessary service to the community due to management and maintenance problems and the capacity of roof water harvesting reservoirs are not enough to supply water through out the year (BoWRDB, 2004).

3.2. Data and Method of Data Collection

3.2.1. Type and source of data

Quantitative and qualitative data were collected from primary and secondary sources. Primary data were collected from four (4) sampled water supply schemes having sixteen (16) water points that are located in four kebeles through users household head survyed, the Focus Group Discussion (FGD), Key Informant Interview (KII) and the resource mappings/observations (Water point and WATSANCOs).

Secondary data relevant to the research work was collected from woreda water, agricultural, health and council offices. The information includes the detailed data with regard to existing water supply system, and the budget allocated to the water office and the management system and relevant issues in this sub sector were also browsed from Internet for the literature.

3.2.2. Sampling and method of data collection

A combination of probability and non-probability sampling techniques were employed in the selection of the specific study area and respondents in the household survey, FGD, KII.

Area and schemes selection

The study area (Alaba special woreda) in SNNPR is located in the lowland area where a problem of shortage of water sources is critical. The woreda is selected for this study due to the fact that, water shortage is critical which can only be getting through drilling. To run such schemes in a sustainable way is a challenge in most cases where this research attempting to identify the major ones. In order not to limit the representation of the information and make conclusions based on unilaterally obtained data and with regard to selection of schemes sampling unit the probability sampling technique was employed (stratified sampling). In this sampling method the users were dividing in to two groups or stratified in to two groups namely, the users were functional (18) schemes and users from other neihoubering schemes where their scheme were not functional (4). For the study 20 % (4) schemes from the total (22) were selected as a sample size and from the total sample size two schemes from each strata were taken using non-proportionate method as a sample size and from the total users from neihoubering scheme (Lower Lenda and first Ansha) and from the total functional schemes (First Choroco and Debeso) were drown.

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ers from the WATSAN COs.
aken from woreda Taxes
e selected as a sample size
7) formula (Annex 5). It has
y utilizing improved water
bering improved schemes).
ıdy to collect primary data
nunity water management,
WATSAN COs, technology
ıent, their perception and
lered, frequency of scheme
n. The data also collected
household characteristics
, water service level to the
er, and the participation of

ousehold level survey was
conducting the interview,
lertaken and accordingly
ators were recruited based
sing Alabigna language,
to similar work. Training
he interview schedule and
ducting the interview.

affected by eye, stomach ache and skin diseases. The causes may be using water from unprotected alternative sources for all domestic purposes including drinking by some users.

Table 11. Effects from the utilization of unprotected source

Effect	Water supply Scheme Users from			
	Functional		Others neighbor functional	
	N	%	N	%
Stomach ache	5	3.57	9	5.7
Eye disease	23	16.43	12	7.64
Skin disease	62	55.71	8	5.13
Stomach ace, eye & skin	34	24.29	128	81.53
Total	140	100	157	100

Source: own, survey, 2008

4.3. Service Level

4.3.1. Distance of HHs from the Main source

Out of the sampled households, more than 75% users from others neighbor kebele scheme traveling above 5kms for searching water. About 60% from the functional scheme users traveling on average more than 3.5Kms (Table 12). This distance is above Universal Accesses Plan (UAP) programme recommended that the average distance to fetch 1.5 Kms with in the time interval of 30 minutes (UAP, 2007). During the field observation it was observed that the location of the water points that serves the users were not placed in a reasonable distance to serve the majority of the users except for Lower Lenda, where the water points are relatively in a reasonable distance (see Map of water scheme and water point location Finger 2). As shown in figure 3 the water points are constructed with in a short distance (i.e., not more than 200 meters) and concentrated with in one village. This also confirmed during FGD with

member	N	%	N	%
Women	26	18.57	34	21.65
Husband	5	3.57	4	2.55
Girls	8	5.71	5	3.18
Boys	7	5	4	2.55
Women & Girls	82	58.57	94	59.87
Women, Girls & Boys	12	8.58	16	10.2

Source: Own survey, 2008

4.3.3. Water consumption per Household/per Head

57.3% and 40.8% users from others neighbor functional scheme said that the frequency of fetching water once per two days and once per day respectively. From the functional scheme 57.1% said that the frequency of fetching water was once per day (Table 17). As indicated in figure 4 that frequency of fetching water decreased as the distance of the source increased from their houses. The quantity of water people use is partly related to how much it is conveniently available: If water sources are at a long distance from village it can significantly restrict the amount of water it is possible to carry home /www.Iboro.ac.uk/.

Table 17. Frequency of fetching water from the main sources

Frequency of Fetching	Water supply Scheme Users from			
	Functional		Others neighbor functional	
	N	%	N	%
Once per two days	7	5	90	57.3
Once per day	80	57.1	64	40.8
Twice per day	40	28.6	2	1.3
> Two times per day	13	9.3	1	0.6

Source: Own survey, 2008

days				
Once per day	80	57.1	64	40.8
Twice per day	40	28.6	2	1.3
> Two times per day	13	9.3	1	0.6

Source: Own survey, 2008

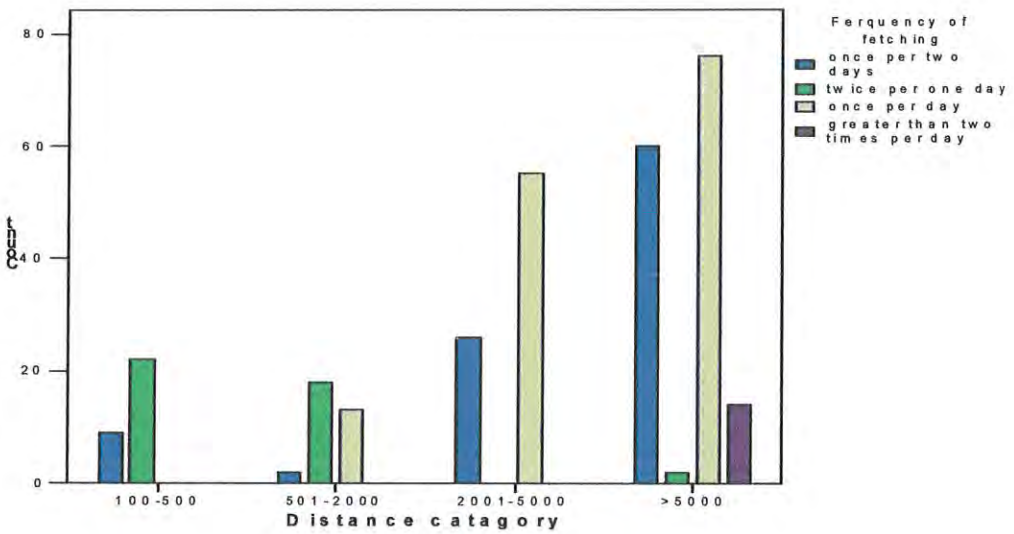

Figure 4. Frequency of fetching with distance category

In table 6 shown that average household in the area is 4.9. The average quantity of water used from protected source per household per day was about 54 liters, indicating that on average 11.11 liters of water is used per person per day from functional schemes and more than 80% of users from Others neighbor functional schemes using less than 10 liters per person per day (Table 18). The quantity of water people used is partly related to how much it is conveniently available/www.iboro.ac.uk/. The result shown that per capita consumption of water much lower than (WHO, 2006) found for the rural area, which is less 20 litter per person

standard value, this is due to inadequate number of schemes in the study area and high non-functionality rate of existing schemes and designed water point's locations (i.e. concentrated at one community for most schemes in the area).

Table 18. Water consumption per head

Per head/day water consumption	Water supply Scheme Users from			
	Functional		Others neighbor functional	
	N	%	N	%
< 8 Litters	18	12.86	80	50.96
9-10 Litters	62	44.29	60	38.22
11-12 Litters	38	27.14	10	6.37
> 13 Litters	22	15.71	7	4.45

Source: Own survey, 2008

About 60 % of the respondents from the functional and others neighbor functional schemes users said that the main transport used by the community were back of animals (Table 19). Different studies found that depending on the household's income, the condition of the scheme accessibility, area culture and natural condition of the area the means of transportation were different (MoWR, 2003). In field assessment it had been observed that donkeys were used to transport water and 20/25 litters of Jeri can as water container. In rural areas and the small towns use clay pots, Jeri can, plastic buckets, drums, and gourds, to bring water for their domestic purposes /www.africa recovery.org/. The result shown that in the area the main means of transportation used by the dwellers were back of animals especially donkey and Jeri can was the main container. Using back of animals were due to the location of the scheme far away from their households for most users and Jeri cans were used due to its durability and portable to handle.

Table 19. Means of transport used by the community

Transport	Water supply Scheme Users from			
	Functional		Others neighbor functional	
	N	%	N	%
Back of animals	91	65	101	64.3
Human back	29	20.7	32	20.4
Rent cart	20	14.3	24	15.3

Source: Own survey, 2008

4.3.4 Quality of water from the improved source

In the assessment to the perception of the users related to the quality of the water from the main source, the FGD revealed that, the water was very clean and safe for health. In the FGD with the experts from water office affirmed that they had not received any compliant from the users about the quality of the water from the main source. They added that the main problem from all the schemes was not related with color, odor or presence of mud rather the excess amount of fluoride, which the users could not recognize. The water quality analyses of the regional water Bureau indicate that in the area the fluoride value range from 2.53 to 13.1mg/l, which is increasing from west to east direction or approaching to the Rift valley.

Table 20. Fluoride content in each scheme from the chemical test

Scheme type	Debeso	1st Ansha	L/Lenda	1st Choroco
Fluoride (mg/l)	3.9	3.44	4.71	2.45

Source: BoWRD, 2005

Water is pure when it is free from biologically, chemically and physically if it full fill the minimum standard requirements set by the WHO or the country. Most of the under ground water is free from bacteria and

turbidity that can be easily detected by the users but chemically it is not detected easily and timely but its effect can be observed in through time. The water quality test result confirmed that in the study area all schemes have greater value than the WHO standard (1.5mg/l) and except for the scheme 1st Choroco, all others were greater than the regional standard (3mg/l) (Table 20).

4.3.5 Frequency of Scheme breakdowns and their maintenance gap

75%, 75% and 85% respondents from L/Lenda, 1st Ansha and Debeso scheme respectively said that the frequency of break down per year was twice and 97% of respondents from 1st Choroco scheme said that still the scheme was not break down (Table 21). The water point mapping result indicate that 1st Ansha and L/Lenda stayed for 9 years and 18 months with out major maintenance respectively (Annex 1). The result shown that the frequency of break down was twice per year in the area.

Table 21. Users perception on the frequency scheme breaks down per year

Break down frequency	% of respondents in each scheme			
	Debeso (n=58)	L/Lenda (n=93)	1st Ansha (n=64)	1st Choroco (n=78)
Once	10	-	5	-
Twice	85	75	75	
Three times	5	25	20	-
Not	-	-		97

Note: Percentages and totals are based on responses.
Source: Own Survey, 2008

Regarding frequency of time gap in major maintenance, the majority 78% from Debeso scheme and 85% from L/Lenda said that the gap were with in the two months. The majority, 89% respondents from 1st Ansha said that it was not maintained even with in a year (Table 22). In Ethiopia scheme non-functionality rate is 33% at any time (MoWR, 2007) and in the study area, SNNPR (BoWRD, 2007) 22-24% at any time. The result shown that in the area, the frequency of break down twice per year and the time gap in maintaining the major maintenance with in two months and even the schemes stayed with out maintenance a year. This is due to the limited capacity of community to report timely and limited capacity of woreda water office in maintenance machinery and skilled manpower for major maintenance.

Table 22. Users perceptions on the time gap of major scheme maintenance per year

Maintenance gap	% of respondents in each scheme			
	Debeso (n=58)	L/Lenda (n=93)	1st Ansha (n=64)	1st Choroco
With in one month	22	-	-	-
>> two >>	78	85	5	-
Not maintained though out the year	-	25	95	-

Note: Percentages and totals are based on responses.
Source: Own Survey, 2008

4.4. WATSAN Cos Organizational Setup

4. 4.1. Participation of Users at WATSAN Cos selection

In FGD with users except L/Lenda users from Debeso, 1st Ansha and 1st Choroco said that they were participated in WATSAN Cos election. This also confirmed with WATSAN Cos' FGD. Who else in the election, WATSAN Cos from Lower Lenda said that during the first election only the Kebele council members and influential people were participated; however, during the second and third elections, to replace reluctant and weak members of the committee, the community actively participated and it was democratic. About 90% of respondents from functional and 45% respondents from others neighbor functional schemes participated in election (Table23). In the committee organizational manual, it is clearly stated that the users should participate in the election of the committee election with responsible organization. Similarly, Lockwood (2004), expressed that to sustain water supply schemes, the involvement of the community is the form of full participation, control-over the scheme operation and maintenance and overall management, strategic decision-making, ownership and cost sharing for operation and maintenance and construction activities is indispensable. The result shown that there was participation of users in the election at the majority scheme and through time the participation has been increasing in the area due to the awareness creation to the community.

Table 23. User's participation at first WATSAN Cos election

	Water supply Scheme Users from			
	Functional		Others neighbor functional	
Participated	N	%	N	%
Yes	127	90.7	71	45.2
No	13	9.3	86	54.8

period and the members serve as long as they had community acceptance. During FGD with WATSAN Cos at Choroco said that two-committee members were changed due to their weakness on the work; however, the rest four had been working since the first election. According to the WATSAN Cos in the other schemes replacement of the missed WATSAN Co members took very long time due to the lack of effort from the WWRDO. In the organizational manual of MoWR (1999), not clearly stated the term and duration of election except stating changing the mismanaged member of the committee. The result shown that there were no terms and duration of elections, due to the government not considering about the effect on the sustainability of the scheme.

4.4.5 Reporting system and to whom they were Accountable

About 70% and 90% respondents from functional and others neighbor functional scheme respectively said that WATSAN Cos was not reporting to the users (Table 24). The FGD with WATSAN Cos of all schemes except Choroco said that they were not reporting to the users. The WATSON Cos of Choroco; however, said that they were reporting to the community every three months. The interview with the three-kebele chairman confirmed that the WATSAN committees had never report to the community. The FGD with users indicated that in all the schemes the WATSAN Cos had not been told about the financial, physical and material status of the institutions so far. The WWRDO experts said that the office told the WATSAN Cos to report to the office every three months about the financial status of the scheme. At the start they had been reporting to the office; however, the reporting system usually stopped with the breakdown of the scheme and continued with that.

According to FGD with WATSAN Cos, when asked to whom they are accountable they mentioning different bodies. Some said they were accountable to the WWRDO and the others to the kebele administration and the community respectively. In the WATSAN Cos organizational manual it is clearly stated that the committee would report to the beneficiary and they are accountable to the users and the woreda water office. The result shown that in the area there is no regular reporting system and clear accountability to whom. This is due to lack of timely follow up activities and low awareness creation by the water office.

Table 24. WATSAN Cos reporting to the users

	Water supply Scheme Users from			
	Functional		Others neighbor functional	
Reported	N	%	N	%
Yes	68	+8.57	14	8.92
No	72	51.43	143	91.08

4.4.6 Training for the Community to manage the scheme

From field observation the numbers of the committees members were more the seven (7) at 1st Ansha and L/Lenda, seven at 1st choroco and less than seven at Debeso. Pertaining to the number of trained committee members were 4, 8, 8 and 3 at Debeso, 1st Ansha, L/Lenda and 1st Choroco respectively. Regarding the frequency of training were 2,1, 1 and 4 at Debeso, 1st Ansha, L/Lenda and 1st Choroco respectively (Table 25). The FGD with the WATSAN Cos regarding to trainings confirmed that, all the WATSON committees' member said that they took one training at least on financial, human, and material resource managements. They also revealed that except Debeso, the operators in all the schemes received trainings on operation of generator and motors. In Debeso new untrained operator was hired due to the death of the ex-

trained operator. Regarding the training manual, except Choroco the WATSAN committees said that no training manual had been used except a notebook during the training. The duration of training varied from 3 to 10 days depending on the organization. Generally three-day trainings were given to the WATSAN committees. All the WATSAN committees said that the trainers were well skilled except the frequency and, time allocated for the trainings and irregularity of the trainings. The operators from all the schemes except Choroco and lower Leneda said that they received theoretical trainings, which was not supported by practical activities. The finding shown that except the scheme 1st Choroco, the frequency of the training for others scheme is low and the operators at the two schemes acquired only the theoretical trainings. This is due to the water provider giving attention in considering the importance of the training as well as the financial constraint of the woreda water office to give refreshment training to the committee.

Table 25. The number of WATSON Cos members with the frequency of training in each scheme

Scheme	Number of WATSON committees members	No of trained WATSON committees members	Frequency of training	Coordinated by
Debeso	4	4	2	One BoWRD and one by WWRDO
First Ansha	8	8	1	BoWRD
Lower Lenda	8	8	1	PINF
Choroco	7	3	4	3 Water Action and one WWRDO

Source: Owen, 2008

mechanisms. In the study area the result shown that, in addition to the high operational costs of the scheme, misuse of the scheme financial resource attributed to the failure of some schemes to cover the operation and maintenance cost. The result also shown that, the collection of revenue depends on the management capacity of WATSAN Cos and the system designed. From the result it was shown that the management system at Choroco scheme relatively better than the others three schemes due to the awareness creation to the community by the implementing organization (Water Action local NGO).

4.5.2. Water tariff setting

77%, 89% and 65% respondents from Debeso, 1st Ansha and L/Lenda respectively said that, they were not participating in tariff setting. But 66% respondents from the 1st Choroco said that they participated in tariff setting (Table 26). The FGD with three scheme confirmed that, the users not participated at tariff setting except 1st Choroco. When the users asked who set the tariff, they said that only men member of the community took part during tariff setting and the implementer together with the community, kebele administration, sets the tariff. The users in the other schemes said that the WATSAN committee and Kebele administration set up the water tariff. In the FGD with users, the majority said that the payment of the cart for a single Jeri can was very expensive to afford for most of them and also the condition execaborated when the scheme was not functional. According to the water management manual, tariff set with the presence of the users with the responsible body. For the affordability and willingness to pay all users consideration in the water tariff setting is factor that impact the sustainability water supply service for the households. Management committees in all the schemes and Water office said that operation and

maintenance was the main factor taken into consideration when setting water charges.

Table 26 Users participation at the tariff setting

Participated	% of respondents in each scheme			
	Debeso (n=58)	L/Lenda (n=93)	1st Ansha (n=64)	1st Choroco
Yes	22	35	11	66
No	77	65	89	44

Note: Percentages and totals are based on responses.
Source: Own Survey, 2008

More than 80% respondent said that the tariff setting was not considering all users. The result shown that no significant difference was observed from the two uses in participating tariff setting (Table 27). The FGD with all users confirmed that the tariff setting in the schemes did not considering the poor and marginalized people. During field investigation it had been observed that the cost of 25 liter Jeri cane water at Choroco, Lower Lenda, and Debeso were 10, 20, 15 cents respectively, where as at first Ansha the cost of 25 litter Jeri can were 15 cents. Despite the high cost of water, people were using the source due to the absence of a near by alternative source, especially during dry season. The users where the schemes were not functional also said that, they used rent carts to transport water from the neighboring kebele water scheme with high payment for a single Jeri can.

From the result it was found that, in most scheme the tariff setting process were done with out the participation of the users, so that the

4.5.4. Financial Documentation and Auditing System

In the filed observed that, all WATSAN committees had no legal revenue collection receipts. Two schemes Choroco and Debeso some times use ordinary receipt from shops for revenue collection. In the FGD with the WATSAN Cos, the committee from Debeso and choroco said that some times they had been using the stamp of the Woreda water office while that of choroco the Kebele administration stamp. Generally, all the WATSAN Cos had no legal justifying documents like receipts and payroll for their expense. Most of WATSAN Cos use blank paper and some times ordinary receipts from shops for revenue collection. Sustainability issues are also associated with the ability to give a backstopping support for the new community indefinitely; to bring legal accountability to financial management by auditing water committees and to facilitate disagreements and resolve conflicts (Schouten and Moriarty, 2003).

During the investigation only one scheme-Choroco have relatively good book keeping system and well-organized financial document, which shows the income and expenditure of the institution. Regarding trained bookkeeper, only the WATSAN Cos of Choroco and Lower Lenda said they had a trained bookkeeper. It also observed that except Debeso using the powerhouse as an office, all the others schemes have no WATSAN office. They have no financial document that shows all the transactions and the balance at the end of the day. In addition to that all the WATSAN Cos had no financial report document that had been previously reported either to the community or other concerned bodies.

The WATSAN Cos in Choroco scheme money was collected from the tap attendants every 15 days and if the collected money were more than 500

birr the cashier would deposit it in the bank. The WATSAN Cos of Debeso said that the money was collected from the tap attendants' every week through the cashier and deposited in the bank. The WATSAN Cos of Lower Lenda said that they could not save money in the bank due to the high operation cost of the scheme. The result shown regarding the collection of money from the tap attendants was not regular. That is the entire committees collect the money from the tap attendants in different times.

The water office experts added that the committees' had serious problem in financial management and saving money in the bank. The office experts also added that, of all the WATSAN Cos in the Woreda, the WATSAN Cos at Debeso was relatively good because they save more than 60,000 birr within 5 years and the committee also regularly meet with the office for technical support. From recently constructed water [illegible] committees those established by Water Action could be taken as a very good model due to their best financial management. They added that some of these schemes could save more than 15, 000 birr within 3 years time. During the field investigation it had been observed that only one scheme that had been constructed by Water Action had relatively good financial management system, indicating the income and expenditure of the scheme. The idea is supported by Solomon (1994), the Systems constructed by NGO were more likely to be sustained if they were managed by communities. In the area due to lack of follow up from the office and the community; absence of legal entity; lack of sense of ownership and lack of trainings were the major reasons for the misusing of the schemes finance.

WATSAN Cos from Debeso said that the monthly income of the institution was higher than that of the expenditure. WATSAN committees from 1st Ansha and lower Lenda said that the monthly income of the scheme was less than that of the expenditure due to high operational cost of the scheme and high frequency of break down. The result shown that, due to lack of proper handling and documented financial documents it was difficult to show the financial flow of most of the institutions. The problem of O and M is worse in countries where the rural population is illiterate and supplied with no infrastructure /Franklin, 1983:144/. In the area lack of training and as previously indicated in Table 4 that, the educational status of the committee members from the users were very low, which was taken as the main causes for low financial management system.

4.6.Participation of different stakeholders in the different project stage

4.6.1. Project Planning

More than 90% respondents from Debeso, 1st Ansha and L/Lenda said that they were not participated in the planning stages of the project and more than 90% from 1st Choroco were participate (Table 28) and about 80% respondents from 1st Choroco were participated in problem identification and prioritization, service level selection and site selection (Table 29). In the FGD users at Choroco said that they had participated at the different stages of the scheme development and it was little when compared with other phases. They had added that the need to solve water problem and get improved water near by influenced them to actively participate in project activities. Document review report of pre-

4.6.2. CBO's participation on the project management

FGD have confirmed the presence of CBOs in the area. They are association that society has created to ensure its continuity. Some of the CBOs have also been established to serve their members with social, political and economical functions for the peaceful, cohesive and stable society. From the organized CBOs in the area the majority, 65% were organized in Iddir from the two users (Table 30). The result shown that Iddir is the main social organization in the area.

Table 30. User's membership in CBO's

CBOS member	Water supply Scheme Users from			
	Functional		Others neighbor functional	
	N	%	N	%
Iddir"	98	70	104	66.2
"Equb	9	6.4	11	7
Religious	20	14.3	25	15.9
Not member of any CBO's	13	9.3	17	10.8

Source: Own survey 2008

About 80% of the users from the functional and neighbor schemes said that CBO's were not participated in any of sustainability roles (Table 31).. The interview with the elders revealed that religious CBOs have a great influence in mobilizing community and resolving the different conflicts in the area. The result shown that they were no CBO'S role in sustaining the scheme. This is due to the local government were not fully recognized their potential role in sustaining the scheme .

Table 31. Potential roles to be played by the CBO's to sustain the scheme

Have potential role	Water supply Scheme Users from			
	Functional		Others neighbor functional	
	N	%	N	%
Yes	23	16.4	30	19.1
No	117	83.6	127	80.9

Source: own survey 2008

4.6.3 Project implementation

95.12% and 90.62% respondents from 1st Choroco and 1st Ansha respectively said that they were participated (Table 32). About 80% confirmed that from the two schemes they participated in terms of labor, provision of locally available materials and contribution of money (Table 33). The users from Debeso and Lower Lenda users said that no participation of the users in project planning and implementation. Community participation in its various forms consisting mainly of labor, cash, service, kind, and advice contributions is critical and decisive for developing and using water supply projects (White, 1981). The users from 1st chrorco participated in all phases. The result shown that participation for most scheme were very low in the area. This is due to the interventionist-planning programme in the design phase in participating the users.

Table 32 Users participation on project construction

Participate	% of respondents in each scheme			
	Debeso (n=54)	L/Lenda (n=86)	1st Ansha (n=64)	1st Choroco (n=82)
Yes	-	-	90.62	95.12
No	93.1	92.47	9.38	4.88

Note: Percentages and totals are based on responses.
Source: Own Survey, 2008

Table 33 Users ways of contribution on project construction

Contribution	% of respondents in each scheme			
	Debeso (n=58)	L/Lenda (n=93)	1st Ansha (n=64)	1st Choroco (n=78)
Labor	-	-	-	3.85
Money	-			-
Supply of local materials			18.97	11.53
Contribution of all	-	-	81.03	84.62

4.6.4. Management Stage

Back stopping support from WWRDO to WATSAN Cos

WATSAN Cos members in all scheme said that the office did not make regular follow up and supportive supervision unless asked by the committees. Interview with manager of Water Action, he said that there was a visit and supervision of the WATSAN Cos and the schemes between the provisional and final hand over of the scheme to the community. I the FGD Woreda water office experts affirmed that there was no any effort by other providers and the bureau to supervise and visit the schemes. They added that even though the office has a plan to follow up and supervise schemes and the WATSAN Cos every year; due to financial, logistic and human resource constraints the accomplishment was below 10% and they also confirmed that absence of permanent head office had been creating a serious problem in the day to day activities of the office.

During the field investigation it had been observed that the office has no checklists for follow up and supervision, and no field report from the

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5. Conclusions and Recommendation

5.1. Conclusion

The issue of sustainability of water supply services depends on the technical, social, financial, institutional and environmental factors. A water supply service is sustainable if: It is able to deliver an appropriate level of benefits in terms of quality, quantity, convenience, continuity and, health to all, including the poorest women and men. This study is focused on challenges on the sustainability of water supply services in rural area. Sustainable utilization of water sources mainly depended on their functionality and proper services delivery to the community. This in turn depends on management capacity of the users; type of stakholder's participation such community and important stakeholders in any activists; accessibility; water quality and quantity, and timely maintenance of the scheme. For each finding the following conclusions may be drown:

Based on information collected from the users, WATSAN Cos and household survey, the following important findings were identified in relation to service provision of the water scheme: time taken to collect water from the improved sources is greater than the recommended value; the distance traveled to fetch water by majority users significantly higher than the UAP programme value, and the amount of water consumption by the community was significantly lower than the WHO and UAP values for users from functional and neighbor functional schemes. In comparing the users from two schemes, the result shown that, for the users from the neighbor functional scheme, time to fetch water were relatively

water management, absence of skilled manpower in financial management and absence of the accountability for misuse of income.

In relation to stakeholder participation, the finding shown that there was low participation from stakeholders' side as their backstopping services were limited in area of technical, financial and material supports. The problems are mainly related with limitation in area of supporting the schemes with financially and technically. Moreover, stakeholders' participation in very inception of the scheme was not taken seriously by implementers, which finally resulted in low ownership of the schemes by the stakeholders.

In general, from study findings, it can be conclude that the very reasons for the non-functionality of the water supply schemes were related with institutional setup and financial management system of WATSAN Cos and low participation of stakeholders. On top of this, low service provisions of the schemes to the users were related with high rate of non-functionality, problems related with scheme design i.e. uneven distribution of the water points and absence of others source options that could be constructed by low cost in the area.

5.2. Recommendation

Rural areas have long been using traditional water sources for their domestic consumption, especially in developing countries. People have the right to live, and water is the prime prerequisite to sustain life. The current global trend in this regard is, therefore, to provide everyone with pure water accessibility, safe and adequate in quantity and quality, so as to improve the health, and welfare of the citizens as well as to promote socio-economic development and there by alleviate poverty.

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ANNEXES

Annex 1. Water point mapping

Id No	Description	Kebeles			
		Debeso	1st Ansha	1st charoco	L/Lenda
1	Year of construction	1966 E.C	1983 E.C	1996 E.C	1997 E.C
2	Installing organization	BoWRD	BoWRD	Water Action	PINF
3	Depth	318m	>317	183.5	254
4	Reason for non-functioning currently	-	Pump	-	Pump and general head problem
5	How long has it become NF (in month)	-	108	-	18
6	Number of water point	5	1	4	6
7	No of NF water point -Reason for NF	1 -To save money	1 -Pump failure	1 - To save money	6 -Scheme failure
8	Power source	Electricity	Generator	Generator	Generator
9	Pump type	Submersible	Submersible	Mano	Submersible
10	Discharge (l/sce)	3	2	6	3.8
11	WASHCos office near by	Yes	No	Yes	Yes

Source: own, 2008

ANNEX 5

Household survey

To determine the sample size (n) for household survey a statistical approach based on Cochran (1977) is adopted:

$$n = \frac{NZ^2P(1-P)}{Nd^2 + Z^2P(1-P) - d^2}$$

For household population <10.000

$$n = \frac{Z^2P(1-P)}{d^2}$$

for household population >10,000

Where:

n: Sample size

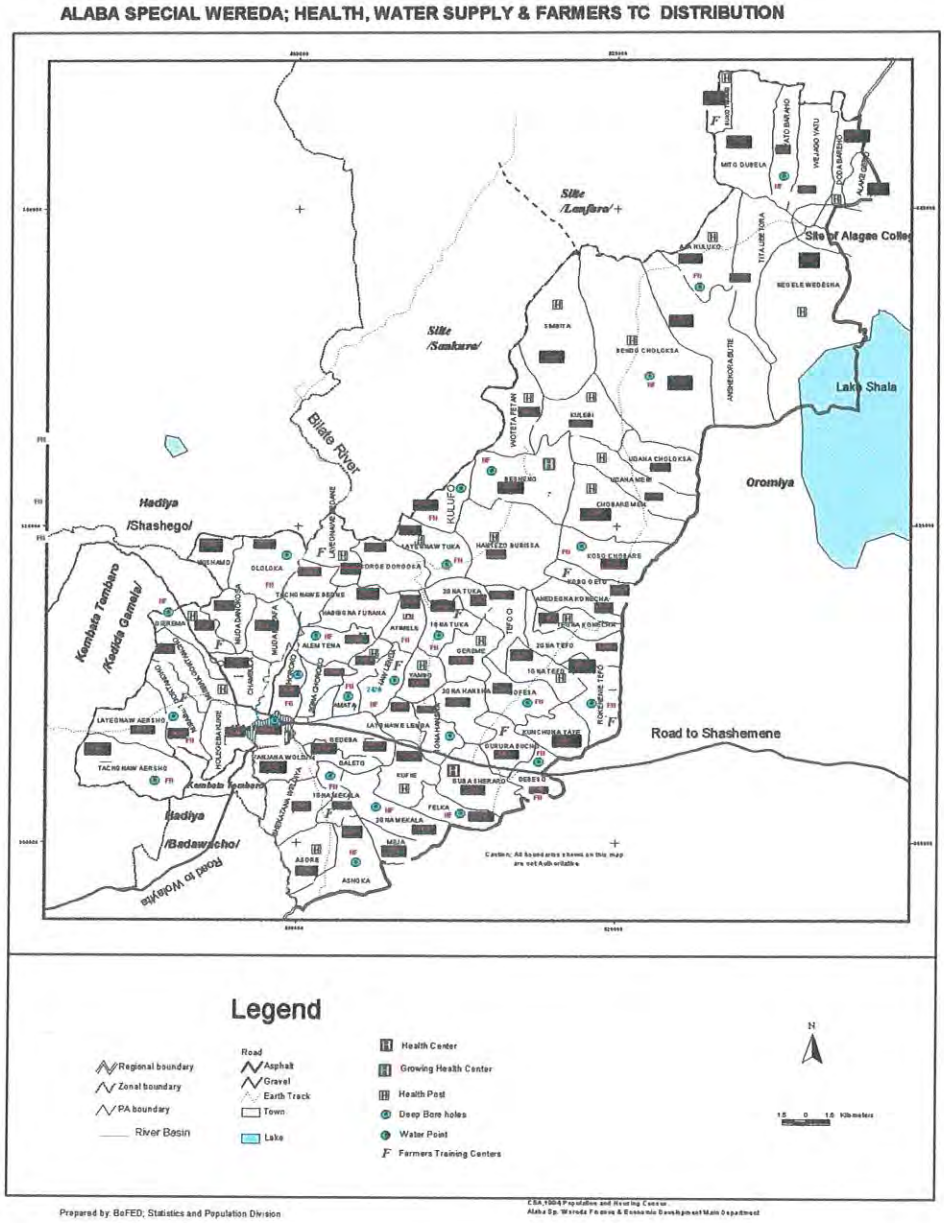
N: Total number of households in the selected kebeles

Z: Confidence level (at 95% confidence interval Z=1.96)

P: Estimated population proportion (for our case 30% household population i.e. p= 0.3)

d: Error limit of 5% (0.05)

Figure 2. Map of Alaba Woreda water points and schemes locations



Source : Research inspired Policy and Practice Learning (RiPPLE)

Declaration

I, the undersigned, declare that the thesis is my original work, has not been presented for a degree in any other university and that all sources of material used for the thesis have been duly acknowledged.

Declared by:

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