ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
COLLEGE OF DEVELOPMENT STUDIES

THE PROBLEMS OF RURAL WATER SUPPLY IN ASOSA WOREDA, BENISHANGUL GUMUZ REGIONAL STATE.

BY

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Title

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Acronyms and Abbreviations

AMCO- African Ministers' Council on Water

AWARDCO- Asosa Woreda Agricultural and Rural Development Cooperation Office

BG-HB- Benishangul Gumuz Health Bureau

BGRS- Benishangul Gumuz Regional State

BoFED-Bureau of Finance and Economic Development

BoH - Bureau of Health

BoWMERD -Bureau of water Mineral and Energy Resource Development

CISP- International Committee for development of people

CSA - Centeral Statistical Center

ESRDF-Ethiopia social Rehabilitation and Development Fund

FGD - Focus Group Discussion

HDW- Hand dug well

HH - Household

IRC- International Rescue Committee

IWMI - International Water Management Institute

KI - Key informant

Masl - Meter above sea level

MDG - Millennium Development Goals

NGO- Non-Governmental Organization

RF - rain fall

RWB - Regional Water Bureau

RWS - Rural Water Supply

SW - Shallow well

UNDP -Unit Nation Development Program

UNICEF- Unit Nation International Children Fund

VLOM- Village Level Operation and Maintenance

WC - Water Committee

WSP- Water Service Program

WSS - Water Supply Service

WSS - Water Supply System

WSSH- Water Supply Sanitation and Hygiene

WWAP- World Water Aid Program

WWD- Woreda water Desk

ZAWD - Zonal Agricultural Water Desk

Abstract

Water is one of the basic necessities for survival and socio-economic development, and access to safe water and adequate sanitation is a universal need and basic human right. The lacks of access to improve drinking water still a serious problem in many Asia and African countries.

However, it is lacking in most of rural areas of Asosa woreda in general and the two study kebeles in particular. In addition to limited provision of this basic service in the study area, significant numbers of water supply schemes that contribute for service coverage are also poorly managed; provide service with problems and others mal-functioning at any time. So, the study has tried to find solution for rural water supply to continued services for long.

In order to obtain the required information, that the objective of the study, sampling techniques were employed. In carrying out the study, the researcher selected **70** HH beneficiaries. Data obtained from HH survey were mainly analyzed quantitatively while information from FGDs, KII, and observation were analyzed qualitatively to supplement data from HH survey.

As far as the findings, the survey results found that the lack of proper managing or functionality of the schemes or lack of protected springs have been major problems and for seeable bottlenecks in the study area and the majority of communities in the study area which **86%** depend on unsafe water sources and covering these large segments of the community in the short period of time and in foreseeable future could be a challenge. So, the community should be given awareness and get supported on safe use of unprotected water sources such as boiling, before use and through provision of chemical disinfectants so that they are rescued from water-born and water-related health problems. Besides, cleaning and clearing of unprotected water sources to minimize the infestation of microbes and other micro-organisms are also important.

In addition, most of the schemes are also found poorly managed poor quality and provide services with problems. The survey results revealed that schemes are managed by communities through water committees who are responsible is given or managed by.

However, the study found that water committees were not capable of managing the schemes properly as they lack the skills and basic trainings on the financial, technical etc. Furthermore, absence of working manuals, lack of incentives, private work loads, absence of adequate supports are found reasons for water committees not to work their responsibilities and the study found that they were in adequately trained, lack technical skills to carry out operation and maintenance as well as ill equipped.

Absence of qualified spare parts which provided by private sector in the woreda identified as one of major problem to carry out repairs when needed. The study also found that none of the implementing agencies once constructed the schemes no more monitoring, allocation of unfair budget for it and others. Communities of rural area is known by its unable to all costs of operation and maintenance due to weak fee collection mechanisms, absence of sense of ownership and problem of spare parts.

Therefore, this research was aims to address the problem of water supply and schemes constructed in rural area and forward the ways how the agents finding the best solution for sustaining the existing and which constructed for future in the rural area.

1. CHAPTER ONE: Introduction

1.1 Background

Water is one of the basic necessities for human survival and socio-economic development. Access to safe water and adequate sanitation is a universal need and basic human right.

It is currently estimated that 1.1billion people in the world lack access to potable water supplies and 2.6 billion people lack adequate sanitation (UNICEF, 2004). The global health burden associated with this condition is staggering with an estimated 4000-6000 children dying each day from diseases associated with lack of access to safe drinking water in adequate sanitation and poor hygiene (WSSCC, 20004). The UN Millennium development Goals (MDG) aim to reduce by half the proportion of people with out sustainable access to safe drinking water and basic sanitation by the year 2015. The lack of access to improved drinking water is still a serious problem in many Asia and Africa. In sub-Saharan Africa, only 36% of the population has access to basic sanitation (UNICEF, 2004).

To meet the MDG for basic sanitation alone implies that sanitation must be provided for approximately 2.1 billion people from 2002 to 2015. In order to provide toilets for 2.1 billion people over 13 years requires a minimum of 44,300 installations per day for the next 13 years (assuming one toilet for every 10 people).They must not provide "improve" water and "basic" sanitation to those who currently lack these fundamental services but also to ensure that these services provide safe drinking water, adequate quantities of water for health, hygiene, agriculture, development and sustainable sanitation approaches to protect health and environment(WHO, 2000).Water supplies and sanitation were first high lighted on the development agenda about 30 years ago.

This was a result of the 1977 UN conference in Mardel plata, Argentina, that recommended proclaiming the 1980s to be the international drinking water supply and

sanitation decade with the goai of " providing every person with access to safe adequate water quality along with basic sanitary facilities by 1990" (WWAP,2003). International water policies and management (IWPM) practices have generally considered water to be free and renewable resources.

According to Kingo (2005), shortage of water is not only bad for health, but also contributing to the poor food security and a lagging social development. Globally, there are 1.1 billion people those do not have an access to safe drinking water. Many of these people live in rural areas and the poorest and vulnerable (Kingo 2005 :1), the proportion of people with out access to safe drinking water is significantly higher in rural areas than urban areas through out the less developed world. For example, 56% of people living in rural areas of sub-Saharan Africa and 34% of those living in Latin America lack access to safe adequate water, as compared to only 17% and 6% of their respective urban population. It is estimated that 35% of improved rural water supplies in sub-Saharan Africa are out of service at any given (Harvey 2005:1). Women and Children are bearing heavy burdens in providing water for their families in many African countries by walking long distance and in some areas conflict over water are increasing at local, regional and international level.

The poor are particularly vulnerable to water scarcity (dryness), quality, pollution and flooding. Safe drinking water and basic sanitation is of crucial importance to the preservation of human health especially among children. Water related diseases are the most common cause of illness and death among the poor. According to World Health Organization 1.6 million deaths of children per year can attribute to polluted water, poor sanitation and lack of hygiene.

Government in developing countries have often subsidized water supplies, typically in an attempt to achieve social and health benefits for low-in come of house hold that compromise a large majority of the rural population (Lammerink;1998,Whittington et al.1998).

Thus, there exists clear linkage between agriculture, water and sanitation sub-sector for the overall socio-economic development of the region (MoWR,2006).

In general, by realizing the importance of supplying safe drinking water to rural community, government at different level, NGOs and donors invest a lot of capital every year in developing countries including Ethiopia and BGRS in particular to solve the problem through construction of new water supply project.

However, supplying water service schemes which providing less quality material alone would not contribute for communities in rural areas to have reduced problems and the issues of functionality, utilization by intended beneficiaries and continuity of water supply schemes to serve for long period of time are very important issue to be included.

1.2 Statement of the problems

The provision of safe and adequate water is becoming a critical issue for rural dwellers. When comparing urban population to rural is better services provided for urban than to rural (MoWR,2002).

Ministry of water resource defines " adequate" water supply to mean 20 liters of water per person per day and accessible within a range of **0.5-1.0** km from a dwelling place. But the current level of per capita water consumption is for below the adequate level set by (1996). In Ethiopia, rural water supply programs which affect the majority of the country's population. The sources of nearly all of the domestic water in the rural areas can be generally said to be ground water or surface water.

Available information on water coverage of the region revealed that, urban population in the region had better access which 76.2% and 41.36% rural. However, most of the region water supply is mainly through traditional dug wells (bore holes), unprotected spring, and River (BGRS-BoWMERD, 2006).

Hence, to fulfill the water demand of the households, it is Women's and Children's responsibility to fetch water and spent at an average 2-3 hours per day in fetching water from the sources. Unprotected water supply services and non-functional schemes are major severe problems in the rural area of the woreda.

Most of water supply schemes constructed in rural area of Asosa woreda that have contributed for service coverage is not working for long, problem in quality of water, sanitation and hygiene, and water borne-disease.

The significant numbers of water supply points are mal-function at one as a result of the number of people accessed to safe water has decline (BoMWR,1997).Those with out access to safe water depend on surface water sources such as un-protected spring river, Streams, and others.

Besides, factors affecting the continued use of the out come of rural water supply projects in the background of limited resources are not adequately and systematically studied in the Asosa woreda area. As a result, the reasons behind failure to the continued functioning of rural water supply schemes have not been clear. Hence, it seems that there is a lot will be done in the area of rural water supply sector and problem related to the sustainable use of the benefit.

In short, there are three main reasons that initiated the researcher in the choosing the problem to investigation.

- Having worked in the field of community development activities in the study area that many water supply schemes are falling in to disuse at high rate and wanted to identify factors that lead to the problem,
- The limited available resource invested in rural water supply goes to waste when projects failed to provide intended benefit,
- When water supply facilities are not sustainable, the number of people having access to the service will reduce.

Some Research has been done on the water sector in the woreda. A study conducted by Assefa D; 20006 focused on assessing the magnitude of challenges of water supply in Asosa town and by Babekir H; 2009 Constraint and Community Participation of rural water supply in Asosa District. But the study especially by Babekir Halifa, do not specifically consider (narrowing) on the norm of problem of rural water supply services.

Therefore, this research will aims to address the problems of water supply in rural area and narrow existing research gap in the area by assessing the problem of rural water supply coverage in Asosa woreda of Benishangul Gumuz Regional State.

1.3 Objective of the study

The objective of this paper is to assess the main problems of rural water supply at household level of Asosa Woreda B/G/R/S.

The specific objectives are

1. To assess the existing status of water supply in rural setting of Asosa Woreda
2. To assess the community sense of ownership in the study area
3. To assess technical factor, financial factor and institutional factor that affect rural water supply and utilization facilities
4. To identify institutional support system related problems in the study area

1.4 Research Question

The study will try to address the following question:-

1. What are the status of existing schemes and other services of rural water supply?
2. What are the problems that hinder water supply development and management?
3. How users of services monitor and evaluate their constructed water supply?

1.5 Significance of the study

The result of this study will give key information for those who will be interested to conduct research study (an in depth investigation) on the problems of water supply to bring sustainable of rural water service (RWS) in the Woreda.

The lesson that will be drawn from this study contribute to current efforts by agents to find better policy option to address the problem of RWS that will bring better service coverage.

The finding of the study were helped in filling the gaps which some researcher not found the solution, and if the research is not done in this part, it was filled the gaps by identifying problem and bring sustainability on proper functions of RWS in the study area. In general, the rural area of Asosa woreda is the part of which facing the problems of water supply, so further investigation were contribute solution for rural water supply (RWS) and sustainable system in the area.

1.6 Scope of the study

This study specifically was focused on assessing on involvement of both community in the planning, implementation, operation and maintenance of the WSS system points.

The study was limited to the rural area of Asosa woreda that which not include part of urban water supply because of its relatively better water supply (WS) coverage.

1.7 Literature

1.7.1 Concept of problem of Rural Water Supply

The problems people experienced with water supply services in developing countries are numerous and complex. The nature of the problem differs depending on the context of rural, urban routine or civil emergency and the level of engineering of RWS, excrete disposal and waste water disposal (WHO,1996)

It is useful to break down the wider problem in to its components. It adequacies in water supply service infrastructure pose separate, but linked problems. The immediate problems result in a spring of further consequences, which adversely affect the quality of life of the poor.

The direct human consequences of poor or non-existent water and sanitation infrastructures are:-

- large amounts of time (often several hours per day) and energies are spent on water collection and hauling (mostly by women and children);
- Children in particular, suffer poor health as a result of
  - direct injury through hauling heavy loads (15-20 kg) over long distance

- through use of insufficient amount of water maintain adequate standards of hygiene (where the source is more than 2 km from the home consumption may be as low as 3-4 liters per cap per day
- through faucal-oral disease transmission because of excrete or waste water contaminated environment, note also that poor health may be due in large part to poor hygiene practices, whether or not infrastructure is adequate etc.

1.7.2 Quality problems

Historically, the provision of water supply directly to the household has been associated with improved hygiene and reduction in diseases. So far, as standards of living have risen and water infrastructures have aged, there has been growing recognition that distribution systems are vulnerable to intrusion and contamination and may contribute to endemic and epidemic water borne disease. However, the proportion of water borne disease out breaks associated with problems in the distribution systems are increasing.

Craun and Calderon (2001) examined causes of reported water borne disease out breaks from 1970-1998 and noted that in community water systems, 30% of 294 out breaks were associated with distribution system deficiencies, causing an average of 194 illness per out breaks. Distribution system contamination was the single most important cause of out breaks in community water system over the time period.

Contamination of water mains and HH plumbing problems caused 39% of out breaks, and contamination of storage facilities caused the remaining 10% of out breaks. Problems with water quality in the distribution systems are especially serious in middle in come and developing countries where inadequate resources to maintain the distribution system infrastructure and disinfect and residual.

Rapid urbanization in developing countries are often accompanied by over whelming demands to distribution systems in poor neighborhoods; many systems have cracks and high leakage.

For some cities and countries, it may be more feasible to maintain medium quality, economic water ("e-water") in the distribution system for most HH water needs and practice home treatment of small volumes used for drinking.

A study of HH water chlorination in Nukas, Uzbekistan reported that 38% of HH received piped water with no detectable levels chlorine, and people in houses with out a chlorine residual in their piped water experienced 60% more cases of diarrhea than did those with a chlorine residual in the their piped water (Semenza,1998).

1.7.3 Water shortage, distance, and time problem

Fresh water is finite global resources and basic requirement for human body. The available quantity of fresh water is linked to human health in several ways and water for ingestion, water for hygiene and water for food production.

Adequate water for ingestion and food preparation is necessary for health. Estimates of minimum daily water in take range from 1.8-5 liters per capita per day (Gleick 1996). However, water consumption increases in warm climates, with physical activity and during pregnancy and location. A recent WHO review recommended minimum of 7.5 liters per capita per day to meet the requirements of most people under most conditions (Howard,2003).

Water is necessary for hygiene, the amount of water use various with distance from the water source and climate. Where people must walk more than 1 kilometer or spent more than 30 minutes for total water collection time, per capita water use drops to between 5 and 10 liters per day.

1.7.4 Household need of water

At this level of service, adequate hygiene is not possible, when there is IHI water connection, per capita water use for basic need rises to between 60 and 100 liters per day or more if used for gardening (Gleick, 1996; Howard et al, 2003). In 1997, Bradley,

observed that many "water borne" disease due to in adequate quantities of water available for washing hands, food preparation, laundry, and cooking utensils etc.

1.7.5 Irrigation problems

The international water management institute (IWMI) estimates that over 70% of the world's developed water supply are used for irrigation (Seckleret,1998).

Recent estimation show that 300-3000 liters of water are required to produce 1kg of grain and that food production for a balance diet requires 1300 cubic meter of water per person per year (SIWI et.al,2004).

However, water requirements for food production vary regionally by type of diet and need for irrigation. Gleick estimated the average daily water in put to produce a typical diet in California, with high meat consumption and heavy water irrigation to 3242 liters and in Tunisia with lower meat consumption and less irrigation to be 2961 liters (Gleick,1996).

Global water use has risen dramatically in the past 50 years due to population growth and demands of irrigated agriculture. There is growing recognition that increasing scarcity threatens agricultural production, human health and political stability in many pars of the world. Current water use rates are not sustainable. There is serious aquifer depletion in China, India, Pakistan, the western US, North and Middle East.

The countries in the most critical categories are those with " physical water scarcity", those that will not have enough water in 2025 to maintain 1990 levels of per capita food production from irrigated agriculture as well as meet water needs for industry, HH and environment etc.

1.7.6 Health problems

Facing the challenge of water scarcity requires improving efficiency of agricultural, industrial and domestic water use, developing technologies for implementing and monitoring save water reuse and developing technologies and economic policies to promote effective conservation.

Epidemiologic studies of the possible health risks associated with potable water reuse and understand how to protect public health, as these practices becoming more wide spread.

The appropriate intervention to prevent diseases such as shigellosis, trachoma and scabies, is to provide more water quality rather than improve microbiological water quality. This includes providing HH connections or closer public stand pipes and setting up hand washing station, communal bathing and laundry facilities.

The classical review of the impact of water supply service intervention by (Esrey,1991), observed that water quality and hygiene intervention were associated with 20-30% median increase in diarrheal disease morbidity.

The magnitude of the water problem crises will have grave can sequences on the health and well-being of a large proportion of the world's population. Many water scarce problem areas in Africa and the Near East have some of the highest population growth threats in the world and international water management institute (IWMI) projects that 1.8 billion people will live in areas facing physical water scarcity problem by 2025 (Seckler,1998).

1.8 Factors affecting rural water supply

According to Brikke and bredero (2003:4) and Smet and Van winjk (2002:30-31), continuity of rural water supply scheme relies mainly on five interrelated problem, community, technical, financial, institutional and environment.

As one can understand, each problem is very broad and constitutes different important elements.Therefore, some important elements of each problem in relation to rural water supply are discussed as follow.

1.8.1 Community factor

Community factors which are likely to impact continuity of rural water supply schemes in general and rural water supply in particular are the availability of demand or perceived need for an improved service, community (men/ women, social group) in all project phases including planning, designing, constructing and managing the services and the Operation and Maintenance services, and management through locally organized and recognized group.

a/ Demand for an improved service

Demand for an improved service by the community is a prerequisite for sustainability. It is an expression of their commitment, and a way to make communities responsible for their choices and future tasks. However, demand should be promote because communities must be made aware of the different technology options available, and of their financial consequences.

Demand can be manifested in the form of an initial contribution in cash or in kind to capital costs, or in the form of a written solicitation from organized community group to the competent authority/ responsible organization (Brikke 2000:46).

As result, responsible organization should determine and respond what the community needs and is able to support and sustain, instead of providing water supply facilities that have not been demand for water supply agencies should ensure that projects that are based on effective demand are given the first priority (Mc pherson 1994, as cited in Musonda 2004:42).

b/ Community participation

Community participation refers to "an active process where by beneficiaries influences the direction and the execution of the development project rather than merely receiving a share of a project benefit " (paul 1986 as cited in Mc common et al 1990:6).

In order to increase the chances of the water supply service to meet the needs of the users community participation should begins as early possible in the project development. In fact, community participation should begin as soon as a community has requested water supply facility. Therefore, community members should be directly involved in planning the new schemes and deciding how it can be run, and by so doing, the prospects of its success so improved (Brikke 1993, as cited in Musonda 2004:42).

In this regard, according to Brikke, 2000:46), participation of communities (men and women) throughout the whole project cycle is essential since it is away to motivate, make responsible and build the capacities of communities in their new tasks and functions.

Therefore, community participation in all projects phases, including planning, designing, constructing and continuity of rural water supply schemes.

According to Harvey and Reed (2006:3), community participation involves "mobilizing" a community to become involved in planning and implementing a water supply project. This may take considerable time and should not be rushed. Some communities may be came actively involved in water supply activities with a matter of weeks, others may take several months or years.

Community participation (including the simplest level of involvement) from early on a water supply project enhances the future sense of ownership, but on going motivation is required for continuing participation. This is of a key importance; just because a community has participated in planning process does not mean it will successfully manage its water supply. However, community participation is a prerequisite for continuity that is to achieve efficiency, effectiveness, equity and replicability.

As far as the way of participation is concerned some water supply agencies reduce community participation to the provision of labor and locally available materials. In order to ensure ownership and continuity, however, communities shared participation in making major decisions concerning the projects.

The community should also participate in carrying out baseline surveys conducted at beginning of the project in order to ensure that they continue to participate throughout the project life (Osei-Hwedie, Mwange, Mfune 1999; pickford et al 1996; Brikke et al 1995; umgeni 1993; Briscoe and Deerranti 1998 as cited in Musonda 2004:43)

However, the conventional form of community participation in Ethiopia especially during rural water supply hand pump development is restricted to access road preparation, local material provision (stone, sand in most cases), and fencing around water scheme by the time. After a year or so, however, is impossible to see even the fence around the scheme because of lack of continual motivation and monitoring of community to participate in the scheme management.

Hence, the danger of not involving the community in the planning and implementation of the water supply system is the community ownership of water supply system is compromised, and consequently community members except the provider of the water supply system operate and maintain it for them.

Brikke (2000:6) argues that with community participation, much more is likely implementation to accomplished and services provided cheaply. As a result, the larger number of community will be supplied with water and also sustainability of the schemes will not be compromised.

c/ Women participation

Community participation should also be looked at from the gender perspective, because women have the responsibility of fetching water and yet they are usually not involved in the decision making process. Accordingly, women have been consistently excluded from any dialogue about the priority of improved water supply which has contributed to the disastrous failure of improved water supply systems. It should be borne in mind that women are the prime collectors of water and also the primary beneficiaries of any improvement and should therefore be involved in any attempt to improve their water supply facilities (churchil 1987 as cited in Musonda 2004:45).

d. Community management

Community participation could only be sustained when there is system for organizing the community (RSU 1999, as cited in Musonda k 2006:31).

Community organization, therefore, entails that a community has the institutional capacity to manage the development and operation of the water supply schemes, if it is to be sustainable (Mc Common et al 1990:10). Hence, responsibility to manage water supply system should not be transferred on to the community structure that does not have the capacity to operate and maintain it (Musonda 2004:45).

Because of aforementioned reasons, community management of water supply system usually relies on the formation of a water committee which is responsible for all management issues related to water supply in community (Harvey and Reed 2006:4). That means, water committee is responsible for all activities (managerial, operation and financial) of a particular scheme, which cover a large area than a neighborhood and possibly the whole community (Brikke 2000:171).

Typical tasks of a water committee include: represents the community institutions and decisions-making bodies; ensure efficient and effective overall management of systems take up assigned roles and tasks, ensure equity, organize contribution, organize effective operation and maintenance, ensures accurate financial management, promote hygienic or effective use of the facilities, hold regular committee meetings, ensures good communication of all levels, provide information and feed back, and collects information (IBID).

The composition of a water committee values according to its management and operational mandate. Generally this is composed of a chair person, secretary, treasurer and representatives of uses with a balance between posts occupied by men and by women. In a case where by the community is directly responsible to technical operation and maintenance of the system, the committee also includes the operator and or care taker (Brikke 2000: 173). According to the some source and researcher experience, the water committee does not have legal status. This makes it vulnerable in situations with material, financial, contractual or legal problems. At the same time it is also difficult to make water committee accountable for their financial emblezzment.

1.8.2 Technical (Technology) problem

According to Brikke (2000:45), the technical problem which are likely to influence sustainability of rural water supply schemes in general water supply hand pumps in particulars are technology selection, technical skills needed to operate and maintain system, availability, accessibility and costs of spare parts, and construction quality of schemes.

i/ Technology selection

According to Musonda (2004:49), technology selection is crucial to continuity of rural water schemes because the type of technology chosen effects operation and maintenance. If a community is to manage water supply care takers can maintain with little outside assistance.

Also, technology must suit the existing locally available skills or skills that can be acquired by community members.

Technology is considered suitable if it is socially effective, and environmentally sound. Communities should have a say in technology option. The technology option should not be too technical and beyond the comprehension of community members.

In this regard, according to Gelete et al (2002:20), socio-economic viability, social acceptability and appropriateness of technology influence the ability and willingness to manage the improved water supply service systems. The use of appropriate technologies which are low cost, easy to maintain, simple to use, and readily available is one response to challenge sustainability.

Appropriate technologies are integral to the concept of village operation and maintenance (VLOM). Which emerged in the water decade (Haysam 2006:8).

The VLOM concept includes the development of hand pumps specifically designed to be maintained by village care taker, but also extends into the institutional arrangements needed to ensure that skills, tool and spare parts are available when needed (Arlosoroff et al 1987:13).

Also, community participation in the selection of technology type in general and the mark of technology depending on their easiness for operation and maintenance in particular should be considered.

In this regard, the study in Mirab Abay has shown that water community never been participated in technology selection activities (Israel and Habtamu 2008:32)

ii. The availability, accessibility and costs of spare parts

Hand pump installation is the most wide spread solution for supplying water to millions of people in Africa's rural areas. However, at any given moment, average percent of all potentially functional hand pumps in Africa are not working. In some area, 50% or more are non-functional, partly due to difficulties in obtaining spare parts (WSP 2006:2). The problem of spare parts for rural water supply hand pumps primarily attributed to lack of formal supply chain mechanisms. Hence, lack of spare parts has been a recurring problem.

In some cases, it has led to the complete abandonment of the water supply system (Brikke et al 1995:30).If sustainability is to be achieved, it should be ensured that after appropriate technology is chosen, spare parts for that type of technologies are made readily available (Musonda 2004:51).

iii/ Availability of toolkits and technical skills needed for operation and maintenance

For VLOM hand pumps, there should be trained care takers those can under take maintenance work when needed. The care takers should be capable of doing preventive maintenance work replacement of worn out parts, and maintain breakage. Therefore, in order to discharge those responsibilities, the care takers should have necessary trainings from the very beginning of scheme installation.

Their performance also should be evaluated in continual bases. At the some time the care takers should be provided with necessary toolkits those required for maintenance purpose. However, if necessary skill and toolkits for community hand pump care takers were not provided, the sustainability of the schemes will be compromised (Arlosoff et al 1987:32).

iv/ Construction quality of hand pumps

From experience, it is not uncommon for the failure of water supply hand pumps because of construction quality problems.

Common construction quality problems that result in scheme dysfunctionality are improper site selection due to poor and /or lack of feasibility study, partial penetration of an aquifer, poor casing arrangement, poor gravel packing and poor estimation of well yield. Such kind of well completion problems eventually results in well dry up and as a result hand pumps will be abandoned (Harvey and Reed 2004:140).

1.8.3 Financial/ Economic Problem

According to smet and Vawijk (2002:30), important financial problems that are likely to be considered for rural water schemes in general and rural hand pumps in particulars are: financial ability to meet the cost of maintenance that is presence of tariff structure covering operation and maintenance and replacement costs; willingness and ability to pay; and financial management system.

a/ Financial ability to meet the cost of operation and maintenance

Failure to adequate cover costs of improved water supply services in developing countries has been identified as major problem to achieving the goal of safe water supply for all on a sustainable basis. In recent years, increased community financing through user payment for services has been strongly promoted as a solution (Evans 1992:1).

In this regard, according to Getachew (2002:77), even small water supply systems require investments, operation and maintenance.

These are often costly and through to be beyond the financial capacity of community, however, experience shows that communities are willing to shoulder portions of the investment costs and to pay for full operation and maintenance provided that they are in need of the service and appropriate community promotion exercise is being carried out. Although there are undoubtedly some areas in some countries where poverty is extreme, the review of global situation reveals that most rural communities can afford to pay for improved water supply service (WSSS) provided that appropriate technology is used. The reason for this argument is that people in rural areas are already spending large amount of time and energy in water collection (Musonda, 2004).

As far as payment for water supply service is concerned, Ethiopia water resources management policy (1999:23), promote that for rural water supply schemes partial cost recovery principle to be applied that is user communities should cover operation and maintenance costs.

Such kind of payment is proposed to be effected through different tariff structures. The tariff structure that is adapted for rural water supply schemes that provide communal services like hand pumps and public stand post is flat rate tariff in which all beneficiaries are expected to contribute equal amount either in cash or kind in fixed time interval (for instance, on monthly basis).

b/ Willingness and ability to pay for service

Providing services which people can afford is a pre-condition for cost recovery (partial cost-recovery in rural water supply case in Ethiopia).

Being able to pay for some thing and being willing to do so, however, do not always go hand in hand. From an economist's point of view demand is only real or effective when it is accompanied by willingness to pay in cash or kind for goods or services offered from this point of view, "willingness to pay" and "demand" essentially means the some thing (Evans 1992:20).

In order to the communities meet the cost of operation and maintenance, community members must be willing to pay for services.

Willingness to pay for the service is influenced by number of problems.

For example, a community with a river near-by is prepared to pay much less for a hand pump than a community with similar income who has to walk kilometers to fetch water. This is why a survey should be done before the project is started to determine willingness to pay (Roark et al 1998; Briscoe and de Ferranti 1998, as cited in Musonda 2004:48).

c/ Financial management system

In order to cover operation and maintenance costs and other important replacement costs, the collected money from user community should be managed properly and used for the intended purposes.

Necessary thing should be given for water committee for prudent financial management. Or else, there should exist transparent working and accountability mechanism in order to avoid mis utilization and embezzlement of collected money (Davis and Brikke 1995:66).

1.8.4 Institutional problem/ factor

According to Brikke and Bredero (2003:4) and Smet and Vanwijk (2002:30-31), institutional problems that are likely impact sustainability of rural water supply service schemes in general and rural water supply hand pumps in particular are: institutional capacity; availability of technical to community (NGO and Government); involvement of formal and informal private sector; and capacity of technical staff to deal with community development and knowledge of participatory approaches.

i. Institutional capacity and support

According to Brikke (2000:155), institutional capacity is a critical problem in the water supply sector and influenced particularly by the organizational frame work and the quality of staff. The organizational frame work should encompass all components of the sector from planning and design to operation and maintenance with support for program of health, education and community participation. There should be clear lines of authority and responsibility, and when several government agencies are involved, coordinating mechanisms are essential coordination among stake holder is crucial but difficult unless there is a formal organizational agreement and frame work.

Another important requirement for a successful institution is allocation of adequate budget to carry out the mandate, including budget lines for staff salaries, administrations equipment, transportation and training.

Unless aforementioned technical, material and financial capacity of the responsible institution is fulfilled the institution cannot discharge its responsibility properly and as a result sustainability of the schemes will be compromised.

Furthermore, according to Misigina (2006:26), one way of enhancing sustainability of rural water supply scheme is the provision of institution support to community management bodies. Problems that are beyond community level need to be addressed by supporting agencies like NGOs and government staff.

Studies indicate that lack of assistance to local community management body is one of important failures of improved water supply schemes. In this case, the capacity of technical staff is very important factor.

The more staffs are capable, trained and professionals, the better would be their effect for the sector.

ii/ Involvement of private sector

According to Brikke (2000:153), the private sector may have a role in the design, construction, maintenance, and repair of water supply facilities. In some countries, now a day, private sector is involving in the water supply provision. According to Musonda (2004:32), twenty fives years ago the private sectors almost completely uninvolved in the provision of goods and services in rural water supply.

The development of affordable hand pumps and rapid expansion of demand for these good have resulted in a radically different situation today.

However, private sector involvement in Ethiopia is very limited even though EWRMP (1999) advocate the involvement of private. It failed to be robust enough to attract and involve the sector (Tesfaye 2008:330). According to the researcher's experience, private sector involvement in water sector project is limited only to pre-implementation and construction activities such as design, civil construction well drilling.

But the involvement should been extended to post-implementation activities. For instance, spare parts suppliers and local artisan /crafts man ship could have been involved in maintenance of rural water schemes in general and rural hand pumps in particular. Such kind of involvement can certainly contribute for sustainability of rural water supply schemes.

1.8.5 Environmental problem

According to Brikke and Bredero (2003:4) and Smet and Vanwijk (2002:30-31), the most important environmental problem that affect sustainability of rural water supply schemes are: the quality of water source, the quality of water source and continuity of supply.

i. The quality of water source

The quality of water source determines whether the water needs to be treated or not. It also influences the technology choice. Thus, domestic water should be available in acceptable quality to satisfy minimum requirements for drinking, cooking, and food preparation as a priority in addition to water for washing clothes and utensils, bathing and personal hygiene and for watering small plots and/or small number of livestock or poultry. Therefore, water source to be developed should fulfill a minimum set of quality standard (Dereje 2007:23).

Furthermore, water quality problem can easily understood and mitigated by routine testing and understandings the nature of geology and ground water resources (Foster et al 2003, as cited in Dereje 2007:24). Other wise, if minimum quality standard of drinking water is not fulfilled, sustainability of water supply schemes would be questioned.

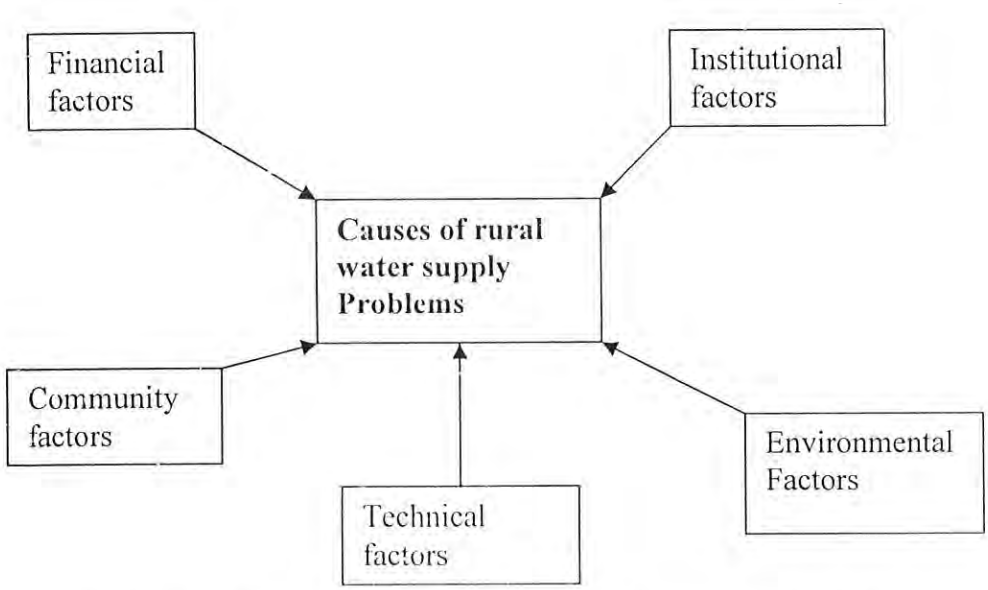
ii/ The quality of water and continuity of supply

In selecting site and appropriate method of developing and providing water for domestic uses, attention should be given to potential future demands on the system. The system should be designed with a view of possible future expansion in population or other condition requires it. In addition, to this knowing and calculating the different uses of water important, single uses (user appropriate is whether efficient nor sustainable). And ultimately, it may generate wastage and conflicts between uses and user (Ibid).

Therefore, understanding the hydrology is the key in the process of identifying how the water sites behave under stress and also the long-term sustainability of water sources under the impact of the drought and climate change. Well planned communities' supplies, which take into account the nature of ware resources, will be more sustainable. It is thus vital that for the sound development of water resources, the integrated strategies should be adopted (Foster et al 2000, as cited in Dereje (2007:25).

1.9 Conceptual Frame Work

The problems of RWS system involve a number of issues that are internal and external to the community. Based on the reviewed literature, problems of RWS system depends on a number of factors. These factors include: community, technical, institutional, financial, and environmental factors. Therefore based on the literatures reviewed, the researcher tried to develop conceptual framework to assess problems to RWS schemes (points) in Assosa woreda



Source: Adapted from Musonda (2004); Dereje (2007) and by the author (2010).

1.9.1 Community factor

- community participation
- demand for service
- users sense of ownership
- responsible of WC

1.9.2 Financial factor

- Cost recovery for O& M
- Ability & willingness to pay
- Financial management
- Affordability of spare parts

1.9.3 Technical factor

- Availability of spare parts
- Availability of adequate toolkits
- Technical skills needed for O & M
- Construction quality of schemes

1.9.4 Institutional factor

- technical
- financial
- training and monitoring

1.9.5 Environmental factor

- quantity and quality of water supply sources

1.10 The need of water supply

Access to safe and drinking water supply is essential to health, a basic human right and an integral component, both a means and an out come of socio economic development of a nation.

To put it differently, improved water supply is intrinsically linked to poverty reduction, and economic status of the population (AMCO,et al. ,2008:vii; pickford, 1991:69;WHO,2004). With out water, pick ford(1991:69) states human dies within few days from dehydration and death tends to be higher and life expectancy is lower in the areas with poor water supply. So drinking water is precious commodity (panchdlari,1995:42).

There may be a combination of reasons for developing a community water supply that could be divided in to two broad categories. Improvement in the social and economic conditions and health benefits (Davis,et al 1993;9).

Regarding social and economic gains, the introduction of improved water supply has welfare benefits, particularly when time and energy spent on the water collection is reduced. This could reduce the work load of women which is often very heavy as they are usually responsible to these tasks. The review of related literature indicated that these benefits differ considerably between and with in house hold depending on environmental conditions, the age and position of women in the house hold and socio economic class (davis et al,1993:9; IRC ,2003:2).

The use of more water of improved quality and safe method of excreta disposal, adequately personal hygiene. and food hygiene by all members of the community can lead to significant reduction in these diseases.

Therefore, the importance of water, sanitation and hygiene for health and development has been reflected in the out comes of series international policy forms. These have included water oriented conferences such as in mardel plata, Argentina which launched the water supply and sanitation decade of 1981-1990, as well as MDGs adopted by General Assembly of Unit Nations in 2000 and the out comes of the Johannesburg World Summit for sustainable Development in 2002.

1.11 Rural water supply in Ethiopia

Water supply service in Ethiopia is among the lowest in Africa. Moreover, the physically powerful urban bias on the part of succeeding government since the early 1970s has kept back water supply savings in the rural areas, quite low.

Accessible information in the water treatment of the country exposed that; urban people in the country had improved access to water supply service (WSS) than rural areas. As it can be seen from the below table, the urban water supply coverage exceeds the rural coverage, from the table, in habitants having access to water supply in the urban areas increased from **72.1%** in 1996 to **92.4%** by the year **2004**. From this data, it can be conclude that "substantial number of the country population don't have access for clean and safe water" Malkamu (2008) by referring to CSA (2004).

1.12 Water and sanitation in Ethiopia

Water is universally acknowledged to be a basic need in sustaining life and recognized as a human right. Besides, Ethiopia is known to be the water tower of Eastern Africa, that is the country rich in the availabiiity of water resources. However, the drinking water and sanitation coverage of the nation is very low and minorities of Ethiopian have been access to safe drinking water and improved sanitation (MoWR, 2002).

According to the available data 35.4% millions or 47.3% of the total population of the country have access to water supply at the end of (2005/2006). Service coverage is higher in urban areas than rural where as indicated in the same source, the figure for urban and rural is 78.8% and 41.2% respectively (MoWR, 2002).

1.13 Water Sector in the Region of Benishangul Gumuz

Even though, the ground water potential of the region is not known with certainty due to in sufficient hydro-geological data, the region estimated to have sufficient water resources due to its existence in the Blue Nile (Abay) and Baro-Akobo basins.

Many studies indicated the region's substantial amount of water resources, but its distribution and occurrence through time and space is erratic for example, in the western and North Western part of the region Kurmuk, Menge, Sherkole and Guba, there are lack both surface water and ground water sources especially in dry season(BGRS- BOWR 2007). Lack of access to safe drinking water is a problem in Ethiopia in general and in BGR in particular, even if sufficient resources are available.

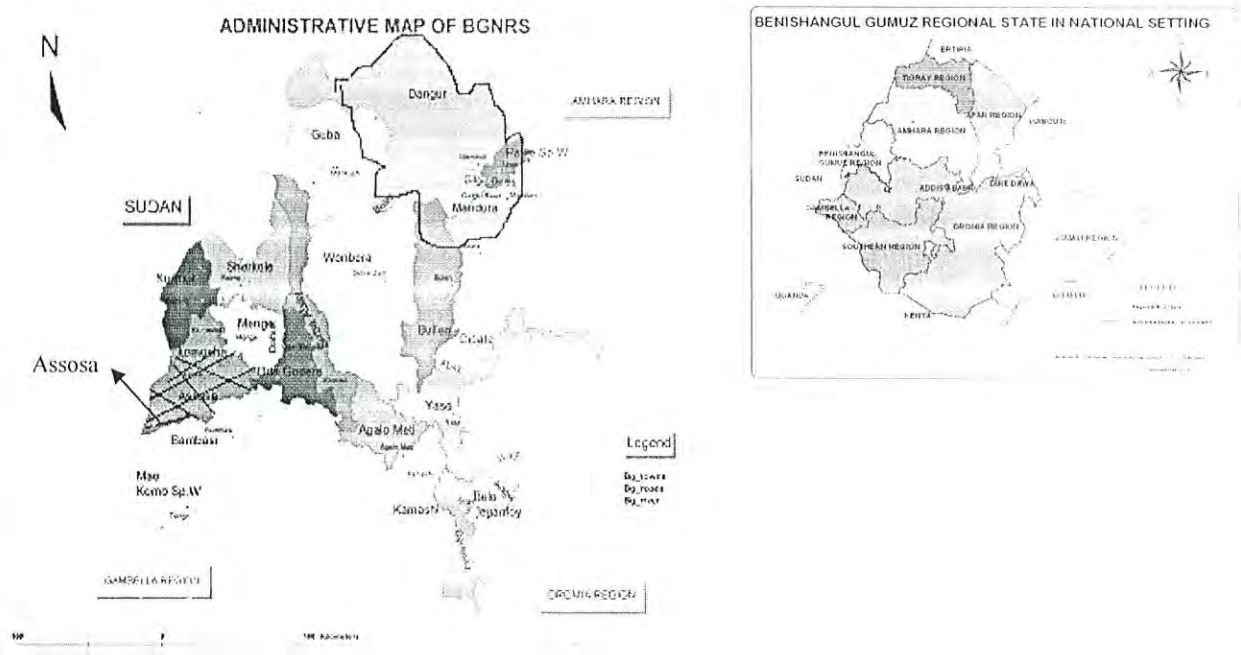
CHAPTER TWO: Description of the Asosa woreda and its Location

Asosa Woreda is one of woreda of Asosa Zone situated in Benishangul Gumuz Regional State. It is found between 34°12'32"N and 10°35'45"E and bordered with Bambasi woreda in the southern, Oda-buldigilu woreda in the eastern, Homosha woreda in the northern, Menge woreda north eastern, Kurmuk woreda in the north western, and republic of Sudan in the Western. It is 659 km far from capital city of Ethiopia.

The elevation of the woreda ranges from500-1500 meter above sea level and geographically, it is large made up of plain from woreda of zone.

The religious composition and different nations of the Woreda also divers composed of Muslim, Orthodox Christians, traditional religious, protestant, catholic and others (BoFED,2007).

Fig 1.1: The Geographic Location of the Region in the County and the Specific Study Area



Source: Benishangul Gumuz Regional State, 2007

2.1 Settlements pattern

Both the Indigenous and non-indigenous people are living in the woreda. Resettles, which are Amhara ethnic group, predominantly live in the around the town of the woreda. Asosa resettlement established in 1979 as part of the nation wide effort which was conducted in response to the drought occurred in other parts of Ethiopia, particularly in Amhara Region, Wollo area (Jemal 1996). The settlement pattern of the indigenous people are scattered while that of resettled people are densely populated.

Based on the population and Housing Census of Ethiopia in 2007, the total population of Asosa woreda was estimated to be 87,366 (of 44,176 male and 43,190 females) and about 74% of them reside in rural areas (CSA, 2007). The total area of the woreda is 2371km^2 and therefore, the woreda has a population density of about 37.7 persons per km^2.

Asosa woreda comprises of 78 kebeles (74 rural and 4 urban). The 39 rural kebeles are inhabited by resettles, and the rest 35 rural kebeles are inhabited by indigenous people. Based on the projection of the 1994 Population and Housing Census, as cited by Dagnachew (2004)/ there were 43,811 or 61% resettles and 27,316 or 39% native people in the woreda.

2.2 Agro-ecology, Climate and Vegetation

The climate of the woreda is characterized by humid hot weather having distinct dry wet seasons. The temperature ranges from 14°c-39°c and the average temperature is 27°c. The rain fall pattern is mono-modal, and the area usually gets rain starting in May and ending in October. The average annual rain fall is more than 1200mm. Generally, the climate of Asosa is suitable for annual and perennial crops. The area has good vegetation covers. It is dominated with tropical bamboo forest, acacia and other trees, tall grasses, bushes and shrubs.

2.3 Soil Condition, Land use Pattern and Farming System

Sandy soil predominates in Asosa woreda. It accounts for 60% of the soil type. Clay soil represents 30%. The remaining 10% of soil is other type.

The texture of soil can vary from course to heavy clay which is fertile and suitable for crop production of various perennial and annual crops. According to Asosa Woreda Agricultural and Rural Development Cooperation Office (AWARDCO), the vast majority of land about 44.4% could potentially be used for farm land that is cultivable land, 12.93% of the land is covered with forest and bushes 10.31% used as grazing land. It is only 26.32% of the total land that so far has been used for farming. The rest 6.3% is not arable land (unsuitable for farming) (BGRS 2004).

The majority of the people of Asosa woreda depends on subsistent agriculture and the farming system is characterized by traditional and under developed technology (source: AWARDO).

2.4 Socio-Economic Activity

In the woreda, population distribution is odd not even. The area is flat and plain land which are relatively suitable and productive support more density.

Almost all the indigenous in habitat (the Barta people) of the area are those surrounding resettlement area which are dependents on low in put rain fed subsistence agriculture, while some are traditional hunters of wild animal (animals/roots of trees, forages and fruits and other small scale traders (BoFED,2OO7).

They mainly cultivate crops like maize and sorghum as well fruit like Mango, Banana, Papaya and Guava and Vegetables like Cabbage, Tomato, Onion, Sweet potato, Lady-Finger and Soyaben family etc.

2.5 Infrastructure

The transport and communication facilities rural area of Asosa are very poor. There is no all-weather road except the main gravel road and in some other kebeles near to town that connects Asosa with other woreda of the region.

Rural road net works are poor, access is possible only with dry weather roads in most kebeles. The coverage of social service facilities of Asosa woreda is relatively better than that of other woreda of the region.

In the woreda, there are 34 primary school, 5 secondary school, 30 health post, 3 health centers and one zonal hospital.

2.6 **Sample kebeles**

For this study, two contiguous rural kebeles (ura and Belmili) were purposively selected to the study the problem of rural water supply. Ura kebele Belmili kebele are the two kebeles where sever problem is faced. The two kebeles found north of Asosa town. Belmili kebele is situated along the road to the Dabus river which is around 23 kilo meter from Asosa town, where as the Ura kebele is found easterly to the Amba 1 kebele and 25 km from Asosa town.

Belmili kebele is bordered with salga 20 to west, Basha buda to east and Afedagonsho to the northern and has total population size of 986 and a total household 287 (source: AWARDO, unpublished). The kebele has 3 gotts (sub-kebeles).

Ura kebele is one of the sample kebele located at the eastern side of Amba1 kebele.

The kebele is bordered by Akuda-tumat and Afanesho kebele in the East, Baro kebele in south west, Amba 11 in the north. Ura kebele has a total population size of 1,684, and a household size 343 (source: AWARDO unpublished data).The kebele has five gotts. The kebele has one primary and one secondary school, one health post and one extension post.

CHAPTER THREE: Asosa woreda water resources

Even though, the potential ground water resource of the woreda is not known with certainty due to insufficient hydro-ecology data and because of the gorges, hills. Lakes and Ponds are not found in the woreda.

As the woreda contain 74 rural and 4 urban kebeles, so that the woreda estimated to have potencial sufficient water resources due to its existence in the Dabus, Hoha, Salga, Agole, Buldadine and Afa river as major one and some small river in the kiremti (summer) and Bega (winter).

Many studies indicate the woreda has substantial amount of water resources, but its distribution and occurrence through time and space is erratic for example, in the western and northern.

Those kebeles found in the western part like Gungan, Ansha etc they lacks surface water and access of ground water sources in the sand (Jamama in rutanagna) especially during dry and wet season (BGRS- BoWR, 2007).

Lack of access to safe drinking water is problem in the region in general and severe in the woreda in some kebeles during dry season particularly, even if sufficient water resources are available.

3.1 Problem of water supply and its impact in the woreda

Analysis of the achievements of the international drinking water supply and sanitation Decade (1980-1990) suggested that with current approaches continued heavy reliance on the donor and government funding to sustain improved services means that the goal of safe water and improved sanitation for all many never be achieved (WB).

The major constraint of is lack of adequate financing, while increasing funding to the sector is providing difficult in many countries, the use of available funds tends to be efficient and potential sources of funding from system users remain largely under utilized (BoFED and UNDP, 2005 as cited in Tegegn, 2008).

Sustainability is a high topical issue in the rural water supply (RWS) sector literature and is one of the top concerns in development efforts more broadly; as one commentator notes "it has become one of the most over used and a based words in the development vocabulary" (sugden,2003:1).

During my field survey and information from some **FGD, KII** reported that in Asosa woreda achieving full and effective gender participation in development activity is a difficult job in much dependency on the way members of the woreda is approached by field staff, extension workers and technical consultants experience of development workers bounds with stories of projects that did not succeed because the intended beneficiaries failed to behavior or attitude that were critical to the projects successes. While there are many reasons why costly facilities may fail to dis repair, one critical factors no doubt has been the failure to mobilize the **will of the people** and **willingness to pay.**

The latter has given to be more important in predicting success than the ability to pay money to community that are able to pay have not in fact been able to raise the cash, while some poor communities who are less able to pay in the community.

It has been widely established and accepted that more and better quality water reduces water borne-disease. Healthy people are able to work more productive and improved water supplies can also reduce time and effort spent to collect water especially for women and children who shoulder is burden of water collection, less money is spent on drugs to treat illness. Moreover, well designed, planned and implemented water projects can strengthen and extend the capacity of local organ in the area like decision making, financial, management and ability to carry out operation and maintenance (IRC, 2003).

In this net-work, well managed adequate water supply will be resulted in health improvement and time saving and improvement on health of family members and time saving will be resulted in expenditure saving and income improvement. The implication is that properly managed rural water supply has positive impacts on the livelihood of the user community (IRC 2003).

The following problems are responsible for the slow pace of progress in rural water supply of **Asosa woreda** during **my field survey and visit** which **I** gathered from **FGD** and **KII** that:-

- **Limited capacity of resource assessment:-** lack of institutional capacity to manage resources properly and inadequate data information system for effective planning and monitoring, undermine sustainable use of water resources.
- **Poor operation and maintenance of water schemes:-**this is one of the chronic problems that have continually upsetting the water sector and debilitating whatever meager efforts where put towards development.
- The causes are many include improper designs, wrong technologies, and use of expensive equipment, lack of trained manpower, lack of rehabilitation programs, and low level of community participation and lack of monitoring mechanisms. The following underlying problems are identified in relation to operation and maintenance of water schemes.
    - poor organizational setup in the sector coupled with the absence of trained manpower at all levels
    - low community awareness regarding the importance of clean water
    - absence of adequate spareparts shops and repair hand tools financial shortage to support operational and maintenance
    - substandard designs, poor construction quality, and inappropriate technology
    - unwillingness to pay for services for some users
    - low attention paid to local skills and minimal support to artisans and private sector
        - lack of competent contractors and consultants in the woreda

- poor infrastructural facilities:- telecommunications especially at kebele level and to connect the woreda.
- low community participation and water supply schemes are poorly managed by the agents
- lack of spareparts provision and non existing of supply chain mechanism

Poor communication and coordination among Zonal, woreda and kebele structures (source: from author, 2010 during field survey observation

Impact on Kids

Children are dies from a water-related disease. Children in poor environments often carry 1000 parasitic worms in their bodies at any time.

For children under age 5, water related diseases are the leading cause of death. Many of Children die each year from diarrhea, (BG- HB).

Impact on Women

In Asosa woreda many women and children spend several hours a day collecting water from distant, often polluted sources. Lack of toilets makes women and girls vulnerable to violence if they are forced to defecate only after night fall and in secluded areas.

Sanitation enhances dignity, privacy and safety, especially for women and girls. Schools with decent toilet facilities enable children, especially girls reaching puberty, to remain in the educational system.

Evidences show that women are responsible for half of the world's food production and in most developing countries; rural women produce between 60-80% of the food. Women also have an important role in establishing sustainable use of resources in small scale fishing communities, and their knowledge is valuable for managing and protecting water sheds and wet lands woreda health office (WHO).

Impact on Health

At any given time, half of the world's hospital beds are occupied by patients suffering from a water-related disease. In Asosa woreda, it is estimated that improved sanitation facilities could reduce diarrhea-related death in young children by more than one third.

If hygiene promotion is added such as teaching proper hand washing, death could be reduced by two thirds. It would also help accelerate economic and social development in woreda where sanitation is major causes of lost work and school days because of illness (BG-HB). No intervention has greater overall in impact up on national development and public health than the provision of safe drinking water and the proper disposal of human waste (WHO, 2002). As the interview indicated during survey, more than **67% "** of **Ura kebele** communities said that because of unprotected water our healthy affected and when we go to Asosa Hospital we have told that by physician that we caught by water born disease like Amoeba and typhoid etc".

3.2 The sanitation situation in rural area of Asosa Woreda

During the study, the researcher met with different agencies and made interviews and summarized his ideas. In the village of Asosa woreda, flowing streams and springs are commonly used sources of drinking water. Traditional shallow wells are common in the rich people's home stead. However, almost, all of the traditional sources of water are unsafe, low yielding, seasonal, and far from the village.

In some parts of villages surveyed made by the researcher, the streams are infested with schistosomisiasis and other water borne diseases such as dysentery shigola and gastroenteritis are common though out the woreda and the region (BG-HB). Streams, springs are the least protected water supply sources in few areas. Latrines are virtually unknown in the rural communities and thus they defecate on open fields or along drainage, people wash their clothes and bath in the same area where drinking water is collected, live stocks are allowed to wade in to streams, springs and reservoirs to drink and defecate.

Based on the survey responses, in general, the water supply conditions in the woreda can be classified as follows: poor sanitation, inaccessibility marked by very long, steep, and rugged trails to reach water sources and extreme scarcity particular during dry season.

Mean while, a recent study of water and sanitation stated that over all, aid is rising but the share given to the sector is in decline.

The following points out issues in the **Asosa woreda** relation with **water supply and sanitation**:-

- sanitation and water are vital to health and education yet are given a low priority
- Aid is not given to the poorest to solve problem of sanitation
- less focus given to water and sanitation and
- Donors are increasingly investing in large scale schemes in urban areas but not in rural areas or poor

As the communities of the kebeles are Muslims, water is their basic necessity for their life and religion. As the survey conducted with health extension to get document about sanitation and hygiene percentage since and before they starting working in the kebele they replied that no any evidence available even in the woreda and why because they assigned in this area not more than 6 month.

Also, during the survey, FGD and KI of selected women and men they reported that for the question which forwarded about sanitation and hygiene? it is now improving from time to time than the previous one and health extension in each kebele they have weekly program to train or teach the communities how they keep their self and environmental hygiene and sanitation in the area.

The training or program based on the current under implementation health services extension (HSEP) is believed to be the major tools for sanitation improvement at household community levels and which depend on the 16 packages.

Such as:- 1.Excreta, solid and liquid waste disposal,

2. Water quality control,
3. Food hygiene,
4. Proper housing,
5. Personal hygiene, health education and promotion which are dedicated to preventive health (FDRE, MoH, 2005:20-21).

Because of budget allocation problems to sanitation, health extension replied the following points;-

-Almost more than half of household have access to improve sanitation expect few of them,

- Some of disease burden will occur because of absence of the sanitation
- A few household did not use latrine in their area.

And also the core principle of hygiene and sanitation to improve strategy under rural water supply problems in the study area.

So, we conclude from above sentences, that there is some improvement on the hygiene and sanitation but less monitoring observed etc.

4. CHAPTER FOUR: Research Methodology

4.1 Data source and type

The data inputs for this study were both from primary and secondary sources. Primary data were collected from sample households, participants of focus group discussions and key informants made with water supply agencies.

To this effect, relevant study tools or instruments that help to elicit necessary information such as observation, interview (key informants and focus group discussion), household survey, photo graph for primary data gathering are used. In addition to this, Secondary data is important to complement the primary data that secondary data were acquired from the review of relevant documents, book, earlier research, government and NGOs publication and websites etc.

4.2 Method of Data Collection

Techniques used to collect primary data that would met the research objectives are sampling technique, HH survey, FGD key informant interviews, personal observation and photograph etc.

4.2.1 Sampling technique

Purposively sampling techniques were selected the sample kebeles of water supply to develop understanding the problems of water supply in rural area of the woreda which contains 74 kebeles. The sampling techniques were used for the selection of sample kebeles, KII, focus group discussants and households.

4.2.2 Selection of Sample kebeles

In Asosa Woreda, there are78 kebeles (**4** town and **74**). To select some sample kebeles from the rural kebeles purposively due to the distance they have from the woreda, transport facility, accessibility, time and cost factor (budget), level of water supply problem, and type of scheme etc. The researcher selected **Ura and Belmili kebeles** according to the problems discussed above.

4.2.3 Selection of Sample Water Supply Point

The data were obtained from Asosa woreda agriculture and rural development cooperation office (AWARDCO) that would consider the total number of unprotected water supply. The office staff would provided information selected from beneficiary kebeles.

The total water supply sanitation hygiene (WSSH) and the problem exist with in each selected kebeles would considered whether functional or not functional and supply they provided for community and problem they will face.

The reason for considering of non-functional rural water supply (RWS) point is because of the problem that communities were faced that the researcher needs to know and major problem for non-functionality, measure which going to taken and implementing agencies to maintain the water point sustainability.

At the same time to learn experience to promote sustainability of the functional RWS point.

4.2.4 Selection of sample House hold and Determination of sample size

The selection would based on the information of regional water bureau, zonal water desk as well as Asosa woreda Agricultural and Development Office (AWADO) and the average number of people or house hold beneficiaries that are served would listed which has a sampling frame **70** house hold beneficiaries of each sample kebeles selected, which means (**10%** of them would selected), **5%** would taken from male, while **5%** would from women if possible to make the sample representative.

The primary data would meet the research objective; basically would generated from the responses of the house hold beneficiary (through house hold survey).

To supplement, complement, validates and triangulate data would obtained from the sample house hold and key informant interviews were also made purposively. The selection of FGD participants from water committees **4** men and **3** women and **4** key informant interviews with purposively were selected from water implementing agencies (from government of different levels and NGOS).

The **researcher** selected purposively **2 group** members of water committees that would serve and whose members **5-7 or less than** would contacted for discussion in the kebele. This was done with intention that water committees have better information about the problem which they were facing in sustaining the functionality of water supply service.

Similarly, women group members were also selected purposively for discussion. As women are the principal users of water and associated problems they face. FGD were held with water committees and women.

4.3 Observation

Because of own experience and knowledge in the area, personal observation in the sample kebeles having water supply scheme and in those kebeles using unprotected water sources were made. For this purpose checklists for respective kebeles were produced. In kebeles having water supply schemes data regarding source, location, scheme type, physical components and its use and management etc were gathered. While in kebeles using unprotected water sources, the types of source, reliability, location, how water being collected, transported, used and others were observed. Besides, informal questioning as stimulus to get the people's reaction about the existing anomalies was made.

Yet taking pictures and location were made to substantiate own observation. **During** observation informal questioning the researcher took important notes and summarizes the same every night while the information is still fresh in mind.

4.4 House hold survey:-Households with equal gender composition who were beneficiaries of potable water supply services and living in kebeles having water supply schemes, and those depend on unprotected water sources and residing in sample kebeles were included in the survey.

The questionnaire comprises of open-ended and closed-ended questions that were designed to elicit adequate information related to social, technological, technical, financial, environmental and institutional factors from the sample households at the grass root level was prepared and used. To this effect, five enumerators that are literate, conversant with indigenous culture, speak local language who were previously involved in some community activities undertaken by the government and NGOs in the woreda and acquired some exposure and experience were recruited. Necessary short-day (half-day) training that focus on the essence of research, data collection methods, water supply development and management (phases, projects, schemes, community based water supply development activities) and others was given to them at office level.

Prior to the actual survey work the questionnaire was prepared in **English and translated to Rutanagna (Berta language) with** enumerators' those active participation and thereby pre-testing of the tools (questionnaire) was conducted. Accordingly, based on the feedback from field exercises amendments such as avoiding technical jargons, rewording and rephrasing some words and that causes confusion and misinterpretation, and re-correcting some skipping questions were made. Beside Ato Mulugeta Kebede expert from Asosa woreda is used as supervisor for enumerators.

Detailed data relevant to the problem of rural water supply in both categorized sample kebeles were collected from the respondents.

The interview process was supervised by expert from Asosa woreda and the researcher while it was on progress and the results were rechecked at the night too so as to ensure reliability and validity.

In general the bottom line in choosing the aforementioned research methods and data collection tools in preference to others are:-

1. Researcher's own experience and knowledge in the area of the problem at hand,
2. Help in making triangulation,
3. Flexibility of the tools and opportunity for person to person interaction'
4. Time and cost factor,
5. Create better opportunity to involve those who have got the stakes in the area of the problem,
6. Better elicit rich information at the grass root levels and
7. Limitation in respondents' level of education and like.

4.5 Focus group Discussion:-Primary data collected from the sample house hold would enrich by additional information gathered through FGD. Accordingly, with the helps of checklists (structured questionnaires), held with water committees, women group, and communities that would selected for discussion.

The researcher used development agents (DA) workers that familiar with the families' indigenous language and cultural to facilitate discussion.

Discussion mainly made on different issues that related to Water supply service management and related problems or reasons for failure of their system to provide service as well as associated problems of communities facing.

4.6 Key Informant interviews: key informants from grass root level, Zonal water desk, up to Regional Bureau of water resource and mine who have direct stake and got managerial responsibilities, social power were included in the interview process.

Accordingly, DAs, HEWs, Elders, Chair person of the kebele, gender were included at kebele level, those included at woreda level were woreda administrator, woreda water desk expert operational and maintenance as well as NGO those working on the water supply service in rural area and one expert from Zonal water desk is included in the interviewee and particularly important in getting information pertinent to the institutional aspects of water supply sanitation hygiene (WSSH).

Hence, views of water supply agencies (head and experts) were very important as they had better knowledge and experience on problems and prospects of rural water supply issues.

4.7 Data Analysis

Based on the categorized samples kebeles, the HH survey questionnaire was coded, identification number was given and data were fed in to statistical package for social science (spss) soft ware of version15.

The primarily data would collected from house hold (HH) surveys would organized based on the nature of data.

The survey data were analyzed using descriptive statistics such as percentage, ratio, frequency and cross tabulations etc would use to quantitative data.

On the other hand, qualitative data that would obtain from key informant interviews, FGD and Personal observation, photograph would analyzed qualitatively to strengthen the data that obtained from house hold survey.

5. CHAPTER FIVE: Finding and Discussion

In the survey that the total of 70 households, that were selected from two kebeles in the study woreda were interviewed. Accordingly, in this chapter, the socio-economic and demographic characteristics of the respondents are described. Results on availability and use of unprotected water sources and accessibility of improved water supply schemes in their respective categorized sample kebele associations are discussed.

The findings from personal observational, key informants, and focused group discussants are discussed along information with household survey results. The profile or background information of KI and FG discussants are annexed below.

5.1 Sample household Description

5.1.1 Sex and age Distributions

In pursuant to sample design equal proportion of male 50% and 50% compositions are maintained so as to ensure gender equality and the voices of females are better heard.

As it can be seen from the table 5.1 below, nearly **73%** of the respondents lie in the age group of 24-38 years and fourteen (**20%**) of them are fall in the age group 40-50 years. Five (**7%**) respondents are in the age category of 51-84. The three age groups are accounted 100% the respondents.

Table 5.1 sex and age distribution of respondents

variable	sex			Age group			
category	male	female	total	24-38	40-50	52-84	Total
frequency	35	35	70	51	14	5	70
percent	50.0	50.0	100	73	20	7	100

Source: HH survey, 2010.

5.1.2 Religion and Ethnicity

Nearly, 100% of the respondents are Muslim and all of the sample households are Berta nation that speaks Rutanagna, Amaric and Arabic language

5.1.3 Marital status and Family size

According to the result tabulated here 91.43% of the respondents are married, and 5.71% of them are widowed and 2.86% divorced. Regarding to family size, 60% of the respondents have the family size equal to 9 and above 30% and 8% of them comprise 3-5 and 2-3 family members respectively. Only 3 of them have family size less than equal to 2. Besides, the average family size of household respondent is 5.

Table 5.2 Respondents' marital status and family size

variable	Marital status				Family size				
category	married	Window	Divorced	Total	less than 2	2-3	3-5	greater than 9	%
Responses									
Frequency	64	4	2	70	2	8	30	60	100
percent	91.43	5 .71	2.86	100.0	2	8	30	60	100

Sources: HH survey,2010

5.1.4 Place of Birth

The majority of the sample household were born in the kebele where currently living. So, in addition to the traditional way of water supply planning and designing, it is important to consider intra and inter kebele displacement of households in the provision of water services in rural areas as water supply coverage is estimated basically based on the number of people served vis-avis those un served with the services.

5.1.5 Educational status

As the survey result, nearly 40 (57.14%) of respondents in the study areas are illiterate. those who able to read and write 18 (25.71%) of them were able to attend, primary and secondary of 7 (10%), high school 3 (4.29%) and college education is 2(2.85%). The literacy rate of the sample household is medium in the both kebele.

Table 5.3 Educational levels of household respondents

No	Educational status of HH	Responses	
		frequency	Percent
1	Illiterates	40	57.14
2	Primary school	18	25.71
3	Secondary school	7	10.0
4	High school	3	4.29
5	College graduate	2	2.86
6	Total	70	100.0

Source: HH survey,

5.1.6 Source of in come

Approximately most of respondents 64 (91.43%) of the sample households are dependent on agriculture as their primary sources of income of the remaining 4 households. 2 (2.86%) lives on peaty trade and 2 (2.86%) depends on both agriculture and peaty trade and 2 (2.85%) on government work as sources of in come. That means, it shows that. income diversification is very marginal in the study area.

Table 5.4 source of household in come

No	Sources of in come of household	Responses	
		Frequency	Percent
1	Agriculture	64	91.43
2	Trade and Agriculture	2	2.86
3	Trade	2	2.86
4	Government employee	2	2.85
	Total	70	100.0

Source: HH survey, 2010

5.1.7 Access of Social Service

Most of respondents indicated their needs of social services to be provided according to the survey result shown in the table 5.5 below 36 (51.43%), 12 (17.14%) and 9 (12.86%) of respondents replied that water supply is the 1st wish, the road as the 2nd and 3rd education.

The remaining respondents 6 (8.57%) prefer health, 3 (29%) prefer electricity, and 4 (5.71%) prefer telephone as their primary social service.

Table 5.5 Access to social service

Social Service	Need to be provided as primary, secondary etc	
	Frequency	Percent
1.Water supply	36	51.43
2.Road	12	17.14
3.Education	9	12.86
4. Health	6	8.57
Electricity	4	5.71
Telephone	3	4.29
Total	70	100.0

Source: HH survey, 2010

As it is clear above table demonstrates that majority of the community depends (wishes) on water supply as 1st and 2nd road services 3rd education and other respectively.

5.2 Availability and use of unprotected water supply services

As the result presented here, the main sources of community drinking water supply for the respondents during the survey.

A total of 70 samples HHs who are depending on protected and unprotected water sources and are residents of the selected two kebeles of study area were part of study area.

The survey result, the most majority of 85.71% of sampled HH use unprotected spring and 11.43% use unprotected hand-dug well and protected HDW, remaining 2% depend on river (stream) and others.

So far, from above we conclude that because of lack of attention, lack of well constructed HDW, and protected spring. Majority of the community forced to depend on the unprotected spring and river and traditional water sources.

Table 5.6 types of unprotected water sources used by respondents

No	Types of UWs	Responses	
		Frequency	Percent
1	spring	60	85.71
2	HDW	8	11.43
3	river (stream)	2	2.86
	total	70	100.0

Source: HH survey, 2010.

Besides, it is found that (table 5.7) the average volume of water use per HH, the distance and frequency they should travel to fetch the water from its main sources are more than 20 liters per day and 0-2 kilometers and twice 27 (38.57%) while 40 (57.14%) three times per day and 3 (4.29%) and once per day respectively.

When we see how community bring water from the sources, majority of 37 (52.85%) replied that they carry water on the shoulder and head, 23 (32.86%)replied that on head ,7 (10%) on back and 3 (4.29%) by domestic animal (donkey) as the residence of the two kebeles especially as Ura kebele responded respectively.

Table 5.7Volume of water needed; distance and its frequency to sources.

No		**statistics**		
	Variable	Minimum	Maximum	Average
1	Volume of water use per day by HH	10 liter	> 20 liter	15 liter
2	Distance of water from sources (km)	1 km	2 km	1.5 km
3	Frequency of fetching water per time	2	>3	2.5

Source: HH survey, 2010.

For estimating volume of water and distance travel the holding capacity of Jerry cans of various size like (5, 10 and 20) liters used by respondents and the average walking distance of a single trip to water source is assumed and takes 0-2 kilometer and an average of 15 minutes.

Moreover, women and children are the family members who are actively engaged in water fetching activities.

It is also revealed that 86% of respondents use (drink) water direct collected from unprotected water supplies only 14% of them do boil before drinking it.

Figure 5.1 photo graph showing that how community transport water from sources to their home

Sources: HH survey. 2010

As a result of UWSs use they responded that the following health, economic and social problems have constrained their livelihood and well-being. These are:-

- Healthy problems probably owing to water born and water related diseases,
- Spend much time to fetch water and inability to engage in other productive works
- Extra fuel wood consumption for those who boil unsafe water before drinking.

Finally, the respondents emphasized the following immediate and lasting solution for their problems:-

- They would come together and accordingly appeal to concerned bodies to have improved water supply service,
- Cleaning and clearing existing UWSs

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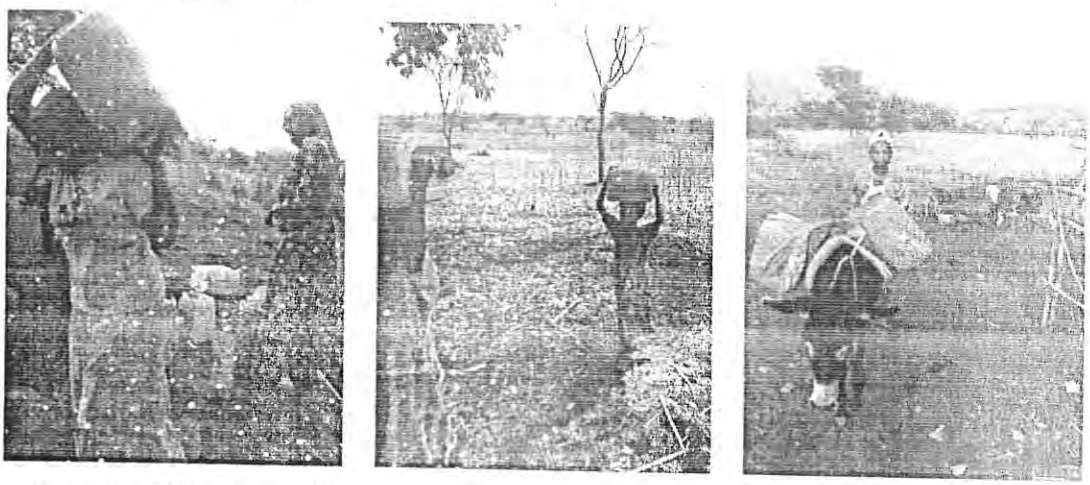

Sources: HH survey. 2010

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Finally, the respondents emphasized the following immediate and lasting solution for their problems:-

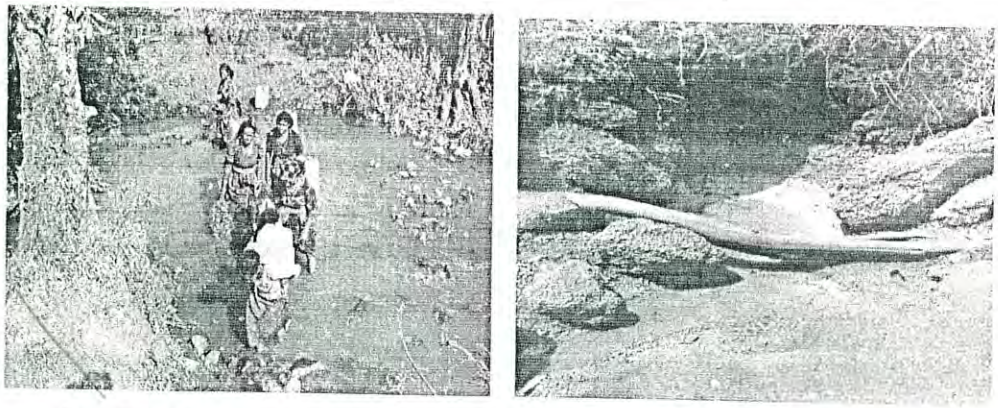
- They would come together and accordingly appeal to concerned bodies to have improved water supply service,
- Cleaning and clearing existing UWSs

- ❖ Government must immediately respond to their problems,
- ❖ Existing water sources should be studied and developed to them other one and also should find appropriate private market quality spare parts,
- ❖ Need awareness creation on to use how to boil which come from source and use chemical disinfectants.
- ❖ Willing to participate in what can on water supply projects and on HDW development.

Likewise, all **KIIs** and **FG** discussants in two kebeles (Belmili and Ura) invariably explained that the community depend on unprotected water sources like hand-dug well, springs, rivers or stream those engaged mostly in water fetching were women and children and some times as a chance when wives became ill or children go to school husband or men contribute few as they responded during visit and interview.

In both kebeles those using unprotected water sources, it is also observed that the majority of the community depend on unprotected springs and river that emerged from surrounding hills of the area. Nearly, all steams or springs are located along the river channels and it is susceptible to flooding. The type and location of those observed unprotected water sources in two kebeles are shown in the figure 2

Figure 5.2unprotected river and spring which used by community from left to right Ura kebele and Belmili



Source: HH survey, 2010

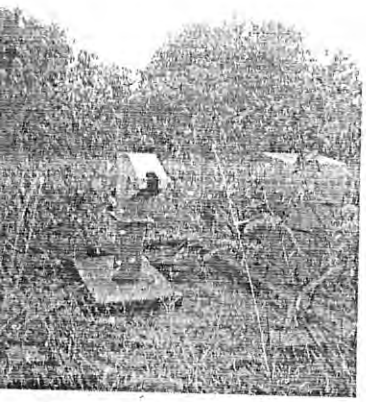
5.3 Construction Quality of schemes or points

As described in literature review parts, technical issues related to design and construction qualities are the most obvious factors that affect sustainability of rural water supply schemes. In other words, poor construction quality and the use of low quality materials may lead to the failure of WS schemes before the end of its design life.

Similarly, design flows, including HDW or unprotected springs in different areas of the kebele, structural collapse, over estimates of the water source may cause a system to fail from the outset.

When question related to the year of construction the majority of the respondents replied hat the old one Indian mark 2 is constructed in 1990-1993EC which now non-functional few in number and constructed in 1998 E.C by CISP &ESRD. For that reason, technical ssue related to construction quality and the year of construction was assessed by taking he responses of sample HHs.

Figure 5.3 Show HDW fitted with hand pump of construction quality problem of non-functional and site selection problem in Ura kebele



Source: HH survey, 2010

he evaluation criteria introduced for them were poor (good, very good, not good). As n bee seen from table 5.8, the large proportion 47 (67.14%) and 17 (24.29%) of HH rvey respondents reported that the construction quality of WS schemes were not good d good respectively, while only 6 (8.57%) respondents evaluated their WS facilities nstruction quality as very good.

Participants of FGD from non-functional schemes (Ura kebele Gott 2 and 3 also reported that they were not happy with the work of local artisans and the construction quality of their water schemes was poor.

Table 5.8 HHs evaluation of poor WSSs construction quality problem

Issue	Responses	Frequency	Percent
Construction quality of WS schemes	Not good	47	67.14
	Good	17	24.29
	Very good	6	8.57
	total	70	100.0

Source: HH survey, 2010

As results show that, 98% and 2% respondents replied that the decision on site selection was taken lonely by government and NGO with out community idea contribution respectively. Similarly, KII respondents said that they were not satisfied with WS schemes construction quality because site selection did not include community, most of the construction of the schemes during summer as Ethiopian calendar and poor contractor etc.

Besides, the data collected through field observation and interview made with chair person, elders replied that:-

> *When the water which is construct not being working during construction, because of site selection, the constructors of the schemes bring some amount of water from river by jerry cans and add in the hole they dug and reported to whom it concern and show that it is constructed and functional, then after two or three day we see that the scheme encounter non-functional.*
>
> Source: Ura kebele February, 2010.

Hence, based on the findings, it can be concluded that poor construction quality is one of the majority problem that hinder sustainability of rural water supply in rural area of Asosa woreda. The finding supports the study results of Kantz and Sara (1997) which revealed that even when demand responsive approach was used, poor construction quality lowered the chances that the WS system would be sustained.

As result show that 67(95.71%) and 3(4.29%) WS schemes technologies easily manageable by user respectively and also for question that when problems encountered for the technologies (schemes) and it became non-functional who take a care to be functional? The majority of 58 (77.14%) responded that there is local technician carry out repairs and maintenance, 7(10%) responded that no one and the remaining 5 (7.14%) they are replied that technician come from office of Asosa woreda water desk respectively.
As evidence clearly showed that, 60 (85.71%) of them are male and 3 (4.29%) female 7(10%) both male and female and none of them are not adequate with tools to carry out repairs a major break off.

As one explain to me during survey from WC, because it is beyond our capacity, in order, we immediately report to Asosa woreda water desk only, and the Office arrange the program to handle the problem of the schemes

Source: WC February,2010

Table 5.9 percentage distribution of community respondents

Issue	Response	Frequency	Percent
Manageability of technology	Yes	67	95.71
	No	3	4.29
	Total	70	100.0
Sex distribution of the committee	Yes	60	7.14
	No	3	92.86
	Both	7	10
	Total	70	100.0

Source: HH survey, 2010

As can be seen from majority of the respondents replied that the participation of the women are very low and also in any job division of women seen as inferior in the community. So as to me women are the most job creator even though the work of the homestead is the main works of them culturally, so participation of them must included in water supply services and such culture should be ignored as much as possible.

Also, the WC of the two kebeles (Ura and Belmili) responded that 65 (93%), 5 (7%) of them did not get well trained on water scheme (point) management and remaining almost in small degree they will get and 68 (97%) of them replied that once in the year and remaining 2 (3%) as situation they will get once in six month by World Vision Ethiopia.

Table 5.10Percentage distribution of respondents training and schemes operation

Issue	Response	Frequency	Percent
Adequacy of training	Once in month	-	-
	Once in 3 month	-	-
	Once in 6 month	2	2.86
	Once in year	68	97.14
	Total	70	100.0
Methods of training	A. trained	5	7.14
	B. not trained	65	92.86
	Total	70	100.0

Source: HH survey, 2010

The WC also asked that do you make regular meeting? They replied that all in all but if not problem encounter and the question to recommend to alleviate problems that WS experiences and to make the water point (schemes) functional properly and be sustainable, generally, they responded that:-

- every individual of user of the water supply service should have the scheme as the owner and use it carefully
- quality of construction should given more consideration,
- Government or NGOs should select best contractors,
- Monitoring and evaluation should given place by government
- Quality of spare parts should provide in the market.
- Ensuring community demand for service before hand
- Building capacity of water management committee
- Integrating scheme management with local community based organizations

- Employing scheme guard, particularly women FGD participants recommend female guard
- Ensuring proper book keeping
- Regular financial utilization and audit report
- Community involvement in selecting the technology to be installed, site selection to insure construction quality
- Ensuring availability of spare parts at woreda and community level
- Keeping schemes fenced and clean at all time, allocating required budget to Asosa woreda water desk.

5.4 Community related factor (problems)

5.4.1 Demand of community for water supply service and existing problems of RWS schemes

As indicated in the literature part, development projects which are based on demand of the end-users tend to be more sustainable than those projects with less or no demands.

In relation to this, respondents were asked whether they had demands for constructed water sources prior to its construction. The majority, 54 (77.14%) of the sample respondents replied as they had demand for the water supply service, the remaining 16 (22.86%) replied that they did not have asked before the construction of the existing water points.

From this, it can be concluded that majority of communities were aware of the benefits of water supply due to lack of adequate water supply sources near their villages and water related problems they face from their secondary sources before construction of the water point.

In assessing who initiated the existing water supply schemes, 2 (2.86%) of the respondents reported community, the majority 50 (71.43%) said government, 4 (5.71%) by NGO,6 (8.57%) both community and government, 8 (11.43%) by all in collaboration. From this it is clear that, communities were not actors in initiating their water supply schemes (points) to be constructed.

5.4.2 The role of community participation

The nature of community participation and type of contributions made by sample house hold respondents are shown in the table 5.11 regarding participation of community at any phase of their water supply project, the survey result revealed that 62 (88.57%) of the sample respondents have made participations while the remaining 8 (11.43%) said they did not participated in the water supply project.

Table 5.11 percentage distribution of respondents by participation

Issue	Response	Frequency	Percent
Participation on construction of water supply	participated	**62**	**88.57**
	Not participated	**8**	**11.43**
	Total	**70**	**100.0**

Source: household survey 2010.

If water supply schemes have to be sustainable, the involving communities in the planning, construction, operation and maintenance and evaluation phase of RWS project is crucial. Berhanu (2007) quoted in Wijk, 1998.

The survey result in community participation, shows that out of the total 70 household, who have made participation, 7 (10%) of the respondents participated in planning phase 45 (64.29%) during construction (implementation) 6 (8.57%) during post construction, and 12 (17.14%) in all phase this implies that majority of the users did not participate totally in the site selection and also they did not participate adequately, especially during planning phase, which are the most important phases that gives on opportunity for communities to make sense of ownership and informed decision about the water supply (e.g. in the site ,and technology or scheme type selection etc).

Table 5.12 percentage distribution of respondents' phases

Issue	Response	Frequency	Percent
Phases of participation	a. during pre-implementation	45	64.29
	b. during post construction	6	8.57
	c. In all phases	12	17.14
	Total	70	100.0

Source: HH survey, 2010.

This finding also confirms the recommendation by (IDRC,1981:90) cited in Bazebih (2008) which stated that if due consideration is not paid to social aspects when planning, the risk for failure is high, that the water supply system will either not be used or it will be misused.

Table 5.13 further shows that among respondents who have made participation, the majority 25 (35.71%) of them replied that they were making contribution freely using traditional construction (sand, wood, stone), 19 (27.14%) labor and material during construction and post construction only 14 (20%) contributed free labor while. Communities are mainly limited to fencing the water supply (schemes) points. Surprisingly, no respondents were found to made financial contribution during implementation (i.e. contribution to capital cost but not fees contributed by users for operation and maintenance.

Table 5.13 percentage distribution of respondents

Issue	Response	Frequency	Percent
Type of contribution	A. labor only	16	22.86
	B. in cash	-	-
	C. local material	35	50
	D. labor &local	19	27.14
	Total	70	100.0

Source: HH survey,2010.

Due to absence of participation of communities and clearly defined roles in project planning, implementations, operation and maintenance, most of the discussants indicated that as most of critical problem for sustainability for RWS.

In relation to this, respondents were asked about who made decision about site selection of the constructed water supply points. The survey result shows that 86 (86.58%) of the respondents replied that implementing agencies are decision makers. That means the water supply points which will be constructed by RWB Government were decided by them. The same is true for water supply points constructed by NGO, they themselves are decision maker. While the remaining 10 (10.42%) suggest that both government and community are the decision makers.

Based on the finding stated above, absence of gender participation in site selection, in the planning operation and maintenance would have negative impact on sustainability of the water supply points as decisions were mainly made by implementing agencies. As the survey result shows that the evaluation capacity of gender participation in WC undertaking their duty that means replied by respondents 63 (90%) of them, 5 (7.14%), and 2 (2.85%) low, medium and high respectively.

As survey result show that in achieve full and effective community participation in development activities of water supply services 27(38.57%) and 43(61.43%) replied that awareness creation to the community and giving well training respectively. As project design be adjusted to improve community access and control over water source productivity of the community is increasing and their participation in water supply project implies in the survey result that 61(87.14)% of respondents replied and 14% remaining is responded that no improvement in increasing community productive life respectively. As can be see from field visit, some FGD, and KI interview in addition, what are the approaches to enhance equal participation and benefit of community in water supply? The survey indicated that 87% of the respondents and 13% replied that in equal benefit ways and not equal benefit respectively.

5.4.3 Communities sense of ownership to water supply points

In assessing users ownership feeling to the water supply points the survey result shows that 22 (31.43%) of the respondents reported as they feel sense of ownership while the majority i.e 48 (68.57%) of them were not, as they were not fully involved or fully committed.

The result of key informant interviewed held with government officials and NGO also show absence of communities' sense of ownership to the water supply points in most cases due to low or lack of awareness.

During the time of the survey, the researcher also identified some indicators of weak or absence of communities' sense of ownership to the schemes as most of water supply points are poorly managed, where the water supply points have weak or no fences and guard.

The water supply points (schemes) are over used by users and children's and also not protected from domestic animals. Of all visited functional water supply (schemes) points only HDW inUra kebele has no fence, guard and is not protected from domestic animals and not provide appropriate service for users but in Belmili kebele observation and interviewed made from total of 5 HDW and unprotected spring only 2 (two) of non-functional.

The above mentioned facts show weak or lack of sense of ownership to the water supply points (schemes). This leads to poor managements that in turn hinder sustainability of the problem of water supply (schemes) points.

In regarding to rating participation of design and construction of existing schemes (points) stages, the majority of respondents made contribution in site selection is low, and through labor contribution high, while in cash medium as they replied during interviewed. As a result, the respondent of the kebele were asked about the benefits of consulting community at time of water scheme site selection they were responded that consulting the community of the water supply service user is has many benefits, because traditionally community know where water found and so we responded.

With respect to gender composition, result of respondents explained that they contributed their labor, cash during study and design, and construction of existing water supply service schemes more than their men counterpart.

Besides, the number of women participated in WC were 21(30%) replied by respondents and those who did not take part were 37(52.86%) among 12 (17.14%) both sex category claimed that they took part respectively.

Also, regard to role of gender as water committee respondents 59 (84.29%) replied that male are more active than women ,because women are more burden too much home and out side home jobs and the remaining respondents replied that 11(15.71%) the role of gender equal in WC. As the survey indicate that respondents asked about WC member 67 (96%) responded that 5-7 member in the group contain of both gender and 2 (2.86%) responded that 8-11 member in the group and 1(1.43%) replied that he did not know respectively.

5.5 Financial factor (problems)

Water supply project implementation and continued use of intended benefits require financial resources. This simply because, of the establishment, operation, maintenance and management of water supply scheme cost money. Hence, whether it is community managed or agency managed the money for running the supply must come from some where and needs to be utilized and managed properly (Davis et al. 1993:157). Accordingly, the nature of community financial contribution to costs recovery, ability and willingness to pay, adequacy of funds, proper management and utilization of fees are some of the major financial issues that were assessed as factors that affect sustainability of RWS in the study area. Hence, in this section, the results of the finding on financial factors that affect sustainability of RWSs are present and discussed.

5.5.1 Community financial contribution

The problem of cost sharing and cost recovery is important in development of sustainable water supply. Hence, the nature of communities' financial contribution to the development of WS in the study area was assessed.

In this regard, the results indicated that capital costs were fully covered by WS agencies. Meaning, all respondents of HH survey unanimously reported that they did contribute money for the construction of WS schemes.

Further more, sample HH were asked to tell by whom capital costs of their WS project were covered. The majority 62 (88.57%) of respondents replied that WS projects were financed by NGO and 8 (11.43%) by government. The data collected from FGD and some documents review also confirmed that capital costs (costs of construction industrial materials and skilled labor) were covered by implementing agencies.

Table 5.14 percentage distributions of community pay fees

Issue	Response	Frequency	Percent
The contribution of capitals	a. community	-	-
	b. government	8	11.43
	c. NGO	62	88.57
	d. a & b	-	-
	e. all	-	-
	Total	70	100.0

Source: HH survey, 2010

Yet, community failure to cover or share the cost of improved WS in developing countries has been identified as the major problem to achieving goal of safe WS for all on sustainable basis (Evan,1992:241).

The water resource management policy of Ethiopia (1999:23) clearly stipulates that the provision of drinking water supplies in urban areas are based on the principle of total cost recovery while in rural areas WS are based on the covering costs of operation and maintenance, therefore, beneficiaries are expected to pay for WS services, particularly to cover operation and maintenance costs.

In assessing whether communities pay fees for the water services they use or not, the results of the survey found that less than 32 (45.71%) of the sample respondents were paying during the time using while 38(54.29%) respondents reported that they were not paying during the time of survey (per month).

Table 5.15 percentage distribution of setting price.

Issue	Response	Frequency	Percent
Paying of fees for services	A. during time of using the service	32	45.71
	B. Once in the month	38	54.29
	C. Others	-	-
	Total	70	100.0

Source: HH survey, 2010

The data collected from FGD also confirmed that although a system of payment for the water service had been established in all the sample schemes, but the system of paying a fee is different in both kebeles. In Ura kebele user pay 10 cents per jerry can during they get services and the same also in the Belmili kebele, but what is different there, the fees of water is not during getting the service, it is per month that WC will collect. I asked the user during my visit that they replied that the system is good especially in Ura kebele, but the fee which we are paying is very low. Because of this the money which is collected can not buy the spare parts when break down encounter. While in Belmili kebele, I asked the users that is the system of paying per month is good? They replied that it is not good, the decision made by Water committee. And immediately I turn over to WC and asked them that the system of paying 10 cents is fair? The water committee replied that it is not fair, the committee decided that to make meeting and adjust the fair price with kebele administration and community.

The finding is the same with the study of result of Bezabih (2008:66) that revealed (97.4%) of HH in Menge Woreda BGRS were paying for the water service they use but different in the system. On the other hand, the result supports the research findings of Haysom (2006 :22) that indicates Water supply fee collection is weak in the majority of the rural village of Tanzania which primarily correlates to non-functionality.

Surprisingly, the major hitch, as reported by Ato Mulugeta Kebede expert and technician of Asosa Woreda Water Desk replied that, the problem of budget (finance) at Woreda and kebele level to provide support for operation and maintenance costs at community level.

This shows that the money required for operation and maintenance had not been collected in most WS schemes in the study area and the Asosa woreda water desk had very limited financial capacity to provide support which could in turn affect sustainability of the schemes. Never the less, ever since the last decade, it becomes clear that neither government nor the donors continue to afford to pay for the costs of providing water supplies and of running them. And there has been a trend of paradigm shift away from provision towards users significant contribution to the cost particularly to operation and maintenance cost (Evan 1992:42).

Based on the findings, it can be concluded that community's failure to pay for water supply service and limited government budgetary allocation/support to operation and maintenance cost were financial factors that hinder continued use of the benefit of water supply facilities in the study area.

5.5.2 Adequacy of fund/financial

As it indicated in the preceding section, the Ethiopian Water resources management policy (1999:23), clearly states that rural water supply service tariff setting to be based on the objective of recovering operation and maintenance costs as compulsory.

Thus, the amount of money needed for operation and maintenance must be contributed by the user community which follows a decentralized approach of resource mobilization and management.

Regarding the amount of the payment in Ura and Belmili kebele, majority 59 (84.29%) of the sample HHs average who have made payment between 4 and 6 Ethiopian birr per month per HH while 11 (15.71%) respondents were paying less than 3.0 birr per month per HH. The study also found that the amount of payment was not fair or it was too low to recover operation and maintenance cost (see table 5.16).

Table 5.16 percentage distribution of responses in financial

Issue	Response	Frequency	Percent
The amount of money paid by HH per month(in birr)	A. <3	59	84.29
	B. >3	11	15.71
	Total	70	100.0

Source: HH survey, 2010.

Amazingly, even from among those less than half of 35 (50%) of the respondents who have made payment during the time of survey 25 (35.71%) HHs assured that they were not paying user fee regularly because no guard or no any from WC can be here to collect fees. This shows that majority of the HHs in the study area were not paying for WS service and those who were paying have not been doing it regularly. Data collected from FG discussants also indicated that, except Belmili water points that were in a relatively better set of functioning, the amount of WS service fee paid by users were not adequate to cover costs of operation and maintenance. Regard to setting of the price of water fees, the majority of the respondents 61 (87.14%) of replied that the community of water committee 4 (5.71%) replied that government, and 2 (2.86%) NGO while the remaining 3 (4.29%) of them replied that all in collaboration.

Hence, it can be concluded that in adequacy of funds collected from the community to cover operation and maintenance costs was not enough and one of the financial factors that affect sustainable use of WS facilities in the rural setting of Asosa Woreda.

Table 5.17 percentage distribution of responses on responsibility

No	Issue	Responses	Frequency	Percent
1	responsibility of setting fees	A. community	61	87.14
		B. government	4	5.71
		C. NGO	2	2.86
		D. all together	4	4.29
		Total	70	100.0

Source: HH survey, 2010.

5.5.3 Willingness of community to pay money

In order for community to meet cost of operation and maintenance, members must be willing and able to pay for the services. This is why a survey is recommended to be done before a project is started to determine the community's capacity and willingness to pay.

As the result of the study showed that 47 (67.14%) replied that they need to pay during the service they get and 23 (32.86%) respondents reported that they are willing to pay for serving at the time or at the beginning of the month of water services respectively.

A considerable number a majority of the respondents also indicated that they are willing to pay for water point they using without paying regularly or month because we need the schemes to sustain to serve us for long and buy the spare parts for more when any issues occur.

Thus, the survey result revealed that HHs are willing and able to pay more than what they were paying. Similarly, the data from FG discussants and KI confirmed that users of WS schemes are willing and capable of paying for service in fair way to sustain the schemes for long as well as the water, although the majority of them were not actually paying during the survey.

This was because, as indicated by the FGD discussant, KI and villagers were not satisfied with the service as scheme were not functional for a relatively a long period of time (Ura kebele water points were not providing service for about 3-4 years), the WC were not collecting the money regularly because they have no salary and lack of transparency and accountability in fund management.

From the above findings, it can be concluded that majority of the HH were able and willing to pay for service. Therefore, the study found that willingness to pay is not a major problem related to sustainability of rural water supply, but the major problem is who take responsibility to collect the fee in the study area.

The result supports the findings of the survey conducted in Malawi were communities were willing to make significant payment for water supply service even when the distance is not reduced.

This is because there is an inherent attraction in many settings for modern services similar to these available in towns and cities (Briscoe and de Ferranti,1998:12).

5.5.4 Community fund management

As indicated in the review of related literature revenue management deficiency is one of main problem to the smooth functioning of decentralized water supply service system. Thus, in addition to find mobilization, smooth financial management methods like proper book keeping and savings are crucial elements in sustainable rural water supply. Proper management of funds on the other hand, depends on the capacity of WC to raise bank and make use of money as it should be.

According to Article 31/3 of the urban and rural water supply and sewerage service regulation No. 32/2003, the WCs are obliged to keep financial records and bodies designed through woreda Administration council and woreda water resource development office should audit the records. In a view of above, community fund management capacity in the study area were assessed and the results are presented as follow. Regarding to fee collected from users, question forwarded, the majority of respondents 63 (90.0%) replied that by WC, 5 (7.14%) government while, 2(2.86%) all in collaboration respectively.

As issue related to adequacy of funds shows, all respondents reported that WS fund was managed by the community through established water management committees in managing the money, majority 67 (92.86%) of sample HHs replied that WCs lack the competence to properly handle the finance collected from community, while only 3(4.28%) respondents replied that committees have the required capacity.

The data collected from FGD also confirmed that except Gott 2 of Belmili kebele water point where participants have clearly shown trust and confidence on the competence of the committee, who were able to properly manage users fee and proved to ensure continued functioning of the facility in ability to raise adequate users fees, misuse of the collected, and lack of proper book keeping and saving were some of the fund management related problems that were seen especially, in Gott1,Gott2 of the Belmili kebele and Gott3, and Gott5 of Ura kebeles of water supply schemes as discussants informed. Regarding to fund keeping, the study found that no book accounting system had been put in to effect and the money was kept in the hand of water committee home.

In case of Belmili kebele during survey indicated that the money will be in the hand of kebele administration. Besides, all respondent of HH survey and FGD unanimously confirmed that cash receipt invoices had never been given for the payments made. In addition, the WCs book keeping skills were found to be near to the ground and these could be some of the reasons that allowed the way to corrupt and mis appropriate of money which in turn affect uses' interest to contribute money to cover operation and maintenance costs in the study area.

The results support the finds of studies that indicated misappropriation of revenue collected from user is a major finance related problem that hinders the continued uses of WS services (Bezabih,2008:71).

So on the basis of findings, it can be concluded that revenue management paucity by community is major threats to continuity of rural water supply and money collected being in the hand of kebele council is also obstacle for sustainability of services for the community in rural area of Asosa Woreda.

Table 5.18 percentage distribution of community fund management ability

No	Issue	Responses	Frequency	Percent
1	Collected fee management and responsibility	A. community (WC)	63	90.0
		B. gov't	5	7.14
		C. NGO	-	-
		D. WC& gov't	-	-
		E. all together	2	2.86
		Total	70.0	100.0
2	Capacity of WC to manage money collected from users	A. capable to	67	92.86
		B. do not have	3	4.28
		Total	70	100.0

Source: HH survey, 2010.

5.6 Technology related factors (problems)

As explained in the review of literature, technical aspects related to technology selection, availability of spare parts, operation and maintenance skills are the most obvious problems that affect continuity of RWS schemes.

5.6.1 Technology selection

It is important to continuity of RWS as the type of technology selected affects operation and maintenance. To put differently, if the community is to manage WS system, the technology used needs to be the type that users are interested in and can maintain with little out side support (Davis et al.,1993:155). A technology is accounted suitable if it is social acceptable, economically affordable and environmentally sound.

Thus, user communities should have a say in technology selection and technology should not be considered too technical and beyond the comprehension of the community members. In consideration of community involvement in selection of technologies, majority of respondents 61(87.14%) that replied community (not involved) or not consulted,7 (10%) they said we consulted and 2 (2.86%) we don't know respectively. When we see the nature of technology to be operate and used by community, they reported that 53 (71.71%) of them replied that simple and 17 (24.29%) not simple because it very hard to push up and down, especially also researcher recognized this during observation and those in age above 40 and walk long distance to fetch the water service.

Table 5.19 percentage distribution of respondents in material

issue	Responses	Frequency	Percent
participation in selection of technology	A. not consulted	61	87.14
	B. consulted	7	10
	C. do not know	2	2.86
	Total	70	100.0
operation of the technology	A. simple	53	71.71
	B. Not simple	17	24.29
	Total	70	100.0

Source: HH survey, 2010

In considering adequacy of water source since they starting to using, as majority of respondents 64 (91.43%) replied that the HDW, springs and rivers start to decreasing while the rest 6 (8.57%) replied that during summer season and some times it increasing respectively.

Table 5.20 percentage distribution of the amount of the water

adequacy of water source since community start to use	A/ Decreasing	64	91.43
	B/ Increasing	6	8.57
	C/ I don't know	70	100.0

Source: HH survey, 2010

As can be seen from above table, majority of respondents of the household survey reported that community member did not have opportunity to selection of technologies they using.

Because of this, the data collected from KI revealed that the type of technology to be installed was predetermined by implementing agencies. This idea is also similar to Aklilu (2009). Similarly, majority of HH is confirmed that existing technologies were selected by government or NGOs. The result contradicts with the recommendation that indicates communities should always be consulted for a technology to be appropriate (Mc pherson in Musonda, 2004:122 cited in Aklilu, 2009).

Based on the finding, it can be concluded that beneficiaries of rural water supply in the study area did not have a say in selection of the technology which is a menace for continuity of the facilities.

Sustainability can not be fully realized if the communities are not able to operation and maintain their own water supply facilities. This is because operating and maintaining water supply schemes on the day to day basis ensures that it continues to work for a long time. Hence, effective operation and maintenance of schemes by the community is vital element that contributes for the continued utilization of the feature of any developed water supply schemes or points. Carrying out effective operation and maintenance requires availability of skilled technicians at community level.

In view of the above, the capacity of the community to operate and maintain their supply facilities were evaluated. The large percentage 85.71% of the respondents replied that they do not have ability to operate and maintain water supply facilities due to absence of well trained technicians at community level, while 14.29% HH replied that they have trained local technicians in small ability. Surprisingly, even though Female technicians there, they did not participated in the operation and maintenance in both study kebeles.

The study further inquired whether local technicians have been actually maintaining technical failures. As the findings of the HH survey showed, all respondents together reported that local technician did not repair any break down of water schemes except the minor one.

Similarly, KI respondents from water supplying agencies said that although they have trained 3-5 local technicians which maintain male and female group from each community they were supporting the achievements so far are not encouraging as trained technicians and did not respects their responsibility and communities have persisted seeking external technical support even for minor technical failures.

This is because, as the information collected from FGDs indicated, the training given did not adequately prepared and enabled local technicians to carry out effective operation and maintenance.

Consequently, a considerable number of water supply facilities in the study area are not providing service as intended.

The does not go along with (Davis et al. 1993:150) who states, training of community members in operation and maintenance skills should help to promote continued functioning of water supply schemes.

Based on the finding, it can be concluded that majority of communities in Asosa woreda do not have the ability to operate and maintain their water supply schemes properly because of absence of trained local technicians which is a major problem that constraints continuity of facilities.

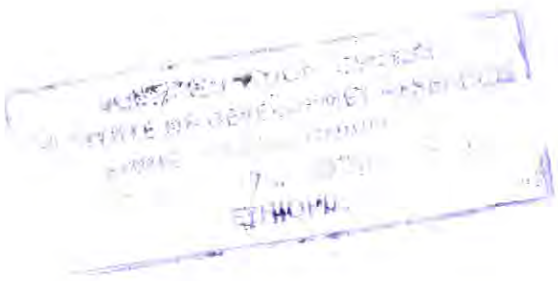
5.6.2 Availability of tools and spare parts

Availability of spare parts and tools for maintenance are very crucial for the sustainability of water supply schemes. In assessing whether the local technicians were equipped with necessary toolkits to carry out repairs or not, all respondents of the HH survey, who reported the existence of local technicians in their kebele replied that technicians were ill equipped. Similarly, KII respondents at WWD reported that local technicians were not provided with necessary tools required to carry out repairs by implementing agencies and it was difficult to the community to find tools needed to repair water supply schemes failures in the Asosa woreda.

Based on the discussion above, one can draw a conclusion that absence of toolkit was one problem that constraint local technician from operating and maintaining their water supply facilities which in turn lead to non-functionality of schemes for a larger period of time. The result indicated that suggestion made by Musonda (2004:139) who states "appropriates tools for carrying out repairs should be made available to achieve sustainability" needs to be considered.

Availability of spare parts at community level is another important constituent that contributes to sustainability of rural water supply schemes. Accordingly, the research required whether spare parts were readily available at community level or not and the result is presented in community involvement in operation and maintenance that availability of spare parts at community level wanted showed as majority of respondents 69 (98.57%) while 1(1.43%) replied that unavailable and available respectively.

As the findings of the survey shows, the great majority 68 (97.14%) of respondents reported that the communities do not have any access to spare parts, while only 2 (2.86%) HH reflected that they have the access respectively. Similarly, respondents of KI interview and FGD mainly from non-functional schemes replied that lack of spare parts at woreda and kebele level were the major problem that obstacles the possibility to carry out day to day maintenance of the water supply schemes.



This situation is made worse by the fact that implementing agencies only participate in the construction phases of the project and do not make provision of spare parts following the transfer of ownership to the communities and there were no private suppliers at woreda level those provide spare parts as Ato Mangistu who is expert in BoRWR replied during KI interview.

With regard to affordability, the majority 58 (82.86%) of sample HH replied as they do not know the price while 12 (17.14%) respondents reported that the communities are unable to meet the costs of spare parts because they are expensive.

As Ato Mulugeta Kebede who is an expert and delegate of Asosa woreda water desk expressed that communities are only able to meet the costs of less expensive spare parts such as valves, rubber, faucets, and U- seal spare parts(rods, O ring, PPC, Section pipe and foot valve) are beyond the financial capacities and fees collected in communities those users of water supply services.

Based on the findings, it can be summarized that, unavailability of spare parts at community level is major threat to rural water supply schemes sustainability in the study area because they are not readily obtainable either at woreda or community level.

The findings support the inventory result of BoWMRD of region 3 (2005:18) that indicated, almost all schemes in Asosa woreda B/G/R/S do not have spare parts at hand and there are no local suppliers or privates to provide spare parts or quality of spare parts they provide is very low quality. However, it contradicts with the findings of Musonda (2004:127) who found that availability of spare part is not a major problem to sustainability of RWS sector in Zambia.

Table 5.21 percentage distribution of respondents' in tools

Issue	Responses	Frequency	Percent
Availability of toolkits to local technician	A. equipped	68	97.14
	B. un equipped	2	2.86
	Total	70	100.0
accessibility and conducive of spare parts	A. available	1	1.43
	B. un available	69	98.57
	Total	70	100.0
Affordability of spare parts in community level	A. affordable	-	-
	B. expensive	12	17.14
	C. I don't know	58	82.86
	Total	70	100.0

Source: HH survey,2010

5.7 Institutional factor (problems)

There is a high need to provide technical and managerial support by government or NGO agencies to the community so as to ensure continued use of the benefits of developed WS program. For this reason, the institutional set-up or organizational arrangements are considered to be a central factor in sustaining water supply facilities (Davis, et al., 1993). In order to provide the necessary support to the rural community, therefore, it is important to build adequate capacity at all levels, but in particular at local government level. This world ensure their support systems are in place for service delivery and maintenance (Musonda, 2004:41)

5.7.1 Asosa Woreda Water Desk situation and capacity of human resources management

It is obvious that, man power is the most important resource that coordinates all other resources towards the attainment of organizational objectives.

In contrast, absence of the required qualified personnel will threaten the realization of planned goals.

Accordingly, water supply project management and sustainable utilization of benefits by the community calls for assigning people of required number, qualification and experience at different levels most important at WWD which responsible for ensuring that the community has access to potable water supply and schemes are providing continued service as intended.

The results of the assessment revealed that, according to the existing organizational structure, the desk need capacity of human resources. So as information showed the desk lack capacity of human resources which means at the moment the desk composed of total of 5 works in the office desk and 7 kebele based including head of desk.

However, out of them, one technician, the 6 are technical school 10+3 graduate of water sanitation This show that the WWD is lack focus in capacity to manage water supply which is life of rural water supply. As the head of water desk replied every year we report that the desk need to build him self to work more for rural dwellers no one can give us ear to reply and in solving the problem. Similarly, Ato Mulugeta a delegate person on WWD replied that one of the major problems of his desk faced was lack of the required personnel due to budget constraint access in the labor market, car and absence of interest on the part of professionals to serve rural communities.

From this finding, as described in description area of the woreda that which contain 74 rural kebele, one can concluded that weak human resource capacity, lack of budget to provide support to the community in the development and management of water supply is one institutional problem in the study area.

5.7.2 Financial Resource and Material capacity of the Desk

In the issue of human resources, material capacity and financial resources are critically crucial to discharge roles and responsibilities of a certain organizational properly.

Hence, as the WWD is responsible for leading and coordinating of the overall development and management of the water supplies at rural area level of woreda, the required budget needs to be allocated materials.

However, according to the data obtained from woreda head office, despite the trend has shown progress since 1990 EC, the amount of the budget allocated for the water sector is very limited.

As can be seen from 1990-2002 E.C capital budget were not allocated at all for the water sector at woreda level. Even in adequate recurrent budget was mostly earmarked to cover compulsory salary expenses. As a result, the share of the water sector from the total woreda annual government budget was very minor which is not cover any maintenance of the WS schemes even though, the trend is positively increasing.

Ato Mulugeta Kebele delegate of WWD, explained that water sector was not given attention that deserves in the past which was the great challenge faced in providing support to the community in potable water supply and in operating and maintaining developed schemes.

The researcher has also observed during the time of survey that the Desk was not equipped with required materials like furniture, computer and transport facilities which are key important to closely follow up schemes status and to take appropriate corrective measures on timely, were also found to be weak. What is amazingly, the information collected from KI at woreda water desk implied that toolkits to carry out major maintenance were not available insufficient quality and some were worn out and some are very old became rusted because of an appropriate absence of store to put them.

In sum, the research found that Asosa woreda water desk has limited institutional capacity which is manifested in terms of the inadequate number and under qualification of personnel, financial materials and the transport system available for the desk. This show us that the water sector was not given priority in the woreda for water supply program costs were expected to be covered by NGO agencies and the findings similar with findings of Aklilu (2009).

As a result, the desk was unable to provide the necessary support to the community in operation and maintenance of the water supply schemes put in place which in turn threatens the continued functioning facilities in the study area.

The result, supports the findings of Roark et.al and Musonda, 2009:40 as cited in Aklilu,2009) that states institutional weakness is singled out as a reason for difficulties in providing the necessary service for communities in RWS system.

Therefore, institutions require radical change they are to meet challenges facing the rural water supply sector, if they are to provide effective service

5.7.3 Institutional support system

It has been realized that although communities can take up a substantial share of responsible, external support services are still required. This is because the community may play an active role in managing the system, but still does not own it. Major repairs job and decision on the future of the systems could also be beyond community capacity. Therefore, in addition to covering costs of construction, implementing agencies particularly, the support that Asosa woreda water desk need is fair budget and technical support to discharge the task of rural water supply in rural area that the government should continue to provide support to the community if the type of backing given to be identified cautiously and known by all concerned in order to promote sense of ownership and responsibility by the users and to trim down persistent dependency on external support. For the question of support that majority of respondents 62 (88.57%) replied that no any and 7 (10%) reported that yes but not enough respectively and also they reply that awareness on how to use unprotected source safely boiling and chemical disinfecting some times. In addition, FGD recognized that the same idea which is reported by community during survey. So beside government, Such supports may include providing adequate training on the system how to manage, financial management, operation and maintenance techniques and procedures, carrying out O and M on major break downs which are beyond the technical and financial capacity of beneficiaries, ensuring availability and affordability of spare parts, and closely follow up water committee (WC) and equip them with the necessary toolkits.

Besides, regular water system inventory and water quality control needs to be carried out by the external agencies, so as to ensure proper and sustainable functioning of schemes.

As regard to finding showed, majority of respondents of HHs 66 (94.29%) replied that aid service given to rural community water service from government and NGO to effectively manage their water system were inadequate to sustain the schemes in all and the remaining 5.71% replied that some what better. Similarly, FGD discussants also, explained their idea that complaint with regard to the question of support given to their water supply on part of implementing agencies after once the schemes were handed over to the communities.

Majority of the participants of FGD particularly who represented of kebele administration and WC at both kebeles of Gott 3 Belmili and Gott5 of Ura of non-functional water schemes explained emotionally that their frequent request for support schemes maintenance which were beyond their technical and financial capacity were not reacted to them timely and positively on the part of Asosa woreda water desk as a result their facilities were not providing service for an extended period of time. Almost, all participants of FGD were complaining that the implementing agencies did not adequately prepare WC to properly manage and sustain water supply facilities.

Further more, the WC members criticized that the duration content and method of training given to them were not enough and satisfactory in acquainting them with necessary knowledge and skill needed to manage community WS properly. That is why the theoretical training given to local technicians did not enable them to handle even minor O and M activities in the kebeles.

Besides, participants of FGD were also irritable (complaining) on implementing agencies for their absence in ensuring availability and affordability of spare parts, shortage (dearth) of close follow-up and monitoring which are crucial for sustainability of WS schemes.

KI interviewees from government officials also approved that the institutional support service given to communities in managing RWS are far below what should have been mainly because of resource limitation which include human, financial, material and transport system.

Except report from world vision Ethiopia (WVE) that who give refresh training which means once in six (6) month and reviewed performance, all KI respondents supports that implementing agencies are almost absent once they handed over the schemes to communities.

The data collected through personal observation also evidenced the weak or inadequate aid given from external agencies to the rural communities in managing their water supply in sustainable way. For instance, Ura kebele Gott 5 developed springs have technical problems which are beyond community capacity and the responsible agency mainly WWD have not take considerable measures for the last four years starting from the system became non-functional.

Depend on the above results, it can be concluded that the institutional support service given to communities with regard to WS in the rural setting of Asosa woreda was inadequate, which is major problem that influenced the continued functioning of schemes as most of the rural communities lack basic skills and training to manage their schemes properly. The finding is similar with the study results of Musonda (2004:122) and Aklilu (2009) who reported that in Zambia and Amhara region of Ethiopia, Leban woreda that the institutional support to rural water supply is not adequate which will continue to impact negatively on sustainability of schemes.

5.8 Environmental related factor (problems)

The provision of adequate and potable water supply that is accessible within the easy reach to the community by improving the existing unprotected water sources and sustaining the services from protected schemes would improve rural water supply coverage Wordy, 2009:1-3).

5.8.1 Adequacy of water supply from developed source and Environment

Increasing the quality of water that is available and bringing the water closer to the point of use can help to enhance productive activities.

The respondents were asked about adequacy of their water supply for users. The survey result revealed that except 7 (10%) the majority 63 (90%) of the respondents indicate inadequacy.

Majority of participants in FGD held with water committees and women also indicated inadequacy of their water supply and even its drying up during the dry season due to shallow well depths of their water points which is mainly constructed during the wet season (kiremt).The depth of visited HDWs ranges from 9-12 meter while shallow well reported to have depths of 16.5-32 meters .FGD from Ura Kebeles raised the issues of 4 HDW in different sites of the areas, 3 of the HDW are not functional on the time of survey, while the other one is low yielding which reported to provide an average of 7-12 Jerry can per day in Gott 5 of Ura kebele while the beneficiaries are about 82 HH. Interviews form WWD indicated low yielding of the water supply and even dry ups of the constructed water points are increasing from time to time in the woreda. The implication here is that the water supply that are constructed from July to December always dry up at dry (Bega) season, due to low ground water resource probably as the woreda is located in the low land.

In addition to the above environmental related problem, data obtained from respective water committees and WWD shows total water supply in studied Kebeles were serving more HHs than what was recommended by regional water bureau and WWD which limited the adequacy of water supply for users.

5.8.2 Quality and capability of existing water supply schemes

In this view, HHs depending on unprotected water supplies was asked whether environmental problem characterized or not for unavailability of improved water supply services in their area. To the question of household respondents, majority 65 (92.86%) replied that of course while the remaining 5 (7.14%) is replied not respectively. Regard to environmental problem for unavailability of improved WS services 4 (5.71%) replied that water quality, 47 (67.14%) complained the settlement on inaccessible low topography and 19 (27.14%) remoteness from woreda town respectively.

Unavailability of water source; being remoteness from woreda town, quality problem of existing water source, availability of water source at flood prone area and on the other hand, adequacy of existing sources and their quality were asked sample HHs having improved water supply services.

As the result of quantity of existing water schemes majority 57 (81.43%) respondents replied that decreasing, even start from last year. and 3 (4.29%) increasing while 10 (14.28%) the water remaining the same respectively. When considering quality of existing schemes, almost 59 (84.29%) respondents replied that they had problem of quality, especially during survey, FGD also recognized that in Ura kebele, there is problem while 11 (15.71%) replied that no quality problem because we use water purified (wuha agar) respectively.

> *The chair man of the Ura kebele said that the water which is constructed in our kebele really it lacks quality, the color of the water changed and when the community uses this water, our kebeles' members automatically they felt sick. Kebele wrote many letters to Asosa woreda water desk, still no answer for our letter, the kebele residences feel water born disease like Guardia, Amoeba, typhoid and diarrhea etc.*
>
> *Source: FGD February, 2010*

Table 5.22 percentage distribution of respondents in existing water supply schemes

No	Issues	Responses	Frequency	Percent
1	adequacy of water to community	A. Yes	63	90
		B. No	7	10
			70	100.0
2	evaluation of quantity and quality of existing water services	A. decreasing	57	81.43
		B. increasing	3	4.29
		C. no change	10	14.28
3	Distance and situation of constructed water supply	a. water quality problem	4	5.71
		b. being far from town	19	27.14
		c. settlement on low topography	47	67.15
			70	100.0
4	factor which affect improved water supply service	A. Yes	65	92.86
		B. No	5	7.14
		Total	70	100.0

Source: HH survey, 2010

Similarly, Fitsum et al (2008) as cited in Wordy (2009:4-7) found out that the main the investments in new water points were more likely in relatively well connected kebeles while kebeles far from roads were less likely to get water points.

On the view, those informants such as woreda administrator, Zonal water desk, Water bureau and NGOs those work around woreda level and should play role inadequacy of water sources to climate change, land degradation and Deforestation of natural resource (soil, forest, small bushes etc.)

The implications of environmental factors such as unavailability of adequate water sources, agro-ecology and physical location of the population in rural area those depends on un protected water sources, and inadequate water discharges that can be used to growing number of population and poor quality problems of existing water supply schemes could play role in raising problem of rural water supply.

CHAPTER SIX: CONCLUSSION AND RECOMMENDATION

6.1CONCLUSSION

In this sub- section the major findings of the study are concluded inline with the basic questions of the study. The study has identified that there are different interrelated problem in providing water supply schemes and their uses. The beneficiaries had limited role on site selection and technology choice for their water supply. They had limited involvement in the design of their water supply schemes. As a result of such case there arises a problem in the studies areas.

The task of recovering operation and maintenance cost for water supply in the study area was found to be very difficult, if not impossible. As stipulated in the country's water resource management policy, rural communities are expected to cover the operation and maintenance cost of the system. But in all communities studied, the people use their water for free, putting the sustainability of the water supply points at risk.

The survey also made assessment of the major problems that affect sustainability of rural water supply points in the study area.

The findings of the study show that there are many problems which play role in un sustainability of water supply schemes. Below are some of these problems.

It was encouraging to note that in all sites water supply schemes are managed by users through water committee who are responsible for overall management of the water schemes.

However, the study found that water committees were not capable of managing water supply points properly as they lack the skills and basic trainings on financial, technical and overall management of their water points. In addition, absence of working manuals, lack of overall support, as well as work loads of water committees are the major problems that limited water committees from properly managing their water schemes.

The survey result shows that, most water supply points are poorly managed. The reasons are identified as; low sense of ownership to the water schemes from users due to dissatisfaction with the water supply as most of the time the supply of water from their points was small or there is no water at all, non-functionality of water points to provide appropriate service, inadequate participation of users and low awareness. In addition to this inadequate trainings and supports from implementing agencies for community have also contributed for poor managements of the water supply schemes.

The study also identified that community have shown motivation in paying user fees, which is too minimal for operation and maintenance However, poor or weak fee collection and its management are one of the problems that limited adequacy of water fees to cover costs of operation and maintenance. The other reason for users, inability to raise adequate user fees to purchase spareparts was because spareparts are expensive and even not available.

The other major technical issue hindering sustainability of water supply schemes in the study area was difficulties in accessing spareparts to all community, woreda and regional level.

The study further found that none of the implementing agencies have ensured availability of spareparts to communities, in addition, there was no spare part stocking at all levels. Both the regional water bureau and WWD failed to allocate budget for spare parts and no formal private sector those provides quality spare parts providers exist in the woreda.

The study found that once the water schemes experienced heavy break down no more maintenance without keeping as chance only to construct new one or any other non-functionality problems, the measures taken to repair and maintain the service was almost absent as most of the problems are beyond the financial and technical capacities of local technicians.

The survey result has displayed various reasons for breaking down of the water schemes. Poor operation and maintenance is the most important contributor and the cause can be traced back to several issues such as; lack of sense of ownership among the users, a weak supportive system, difficult access to spareparts, lack of trained people and toolkits as well as inability of users to meet costs of operation and maintenance.

One reason for failure of keeping water supply schemes sustainable was due to lack or weak support system to the communities in the part of implementing agencies after water schemes are installed and handed over. Similarly, weak coordination among stack holders and absence of adequate monitoring, supervision and evaluation during construction of the water scheme was found as reasons for poor construction quality and faulty installations which affected sustainability of water supply schemes and /or poor performance in the water sector.

The study also found that weak institutional capacity of the local government (WWD) was one of the major challenges in supporting sustainability of water supply schemes in the study area. At woreda level absence of allocation of fund, both recurrent budget and capital budget to the water sector, lack of skilled manpower as well as lack of transportation services are identified as the major factors that restricted supports given to the community to maintain the proper functionality of the water schemes.

Generally, the approaches in water supply in the study area focused on provision of new water supply points or running for coverage without giving due considerations for sustaining the installed water supply schemes.

This was evidenced by one of the implementing agencies had made spare parts available for communities, allocated budget mainly recurrent budget and adequately prepared the community to manage their water schemes.

In Assosa woreda still now no institute prepare users for over all management.

6.2 RECOMMENDATION

Asosa woreda is wide and contain 78 kebeles, most of the time; a problem of water supply is critically faced. The water supply services provided inappropriate, inapplicable and rank low level in rural area of the study area. The frame-works for the management and arrangements of rural water supply. Therefore the following recommendations are suggested for the problem:-

- The majority of the communities in the study area (86%) depend on unsafe water sources. So, the community should be given awareness and get supported on safe use of unprotected water sources such as boiling, before use and through provision of chemical disinfectants so that they are rescued from water-born and water-related health problems. Besides, cleaning, and clearing of unprotected water sources to minimize the infestation of microbes and other micro-organisms are also important.
- There should be properly compiled and regularly up dated inventory of existing water supply service schemes, provide access of spare parts in time and space so as to have actual water supply coverage and proper management of the schemes in the study woreda.

- ❖ The full involvement of the beneficiaries in general and the women in particular during inception and under-going water supply projects and in post-construction management are vital for successfulness' of the projects and sustainability of the schemes. So, these should be the guiding principles in planning, implementation and management of rural water supply interventions.
- ❖ The Asosa woreda water desk as the lowest administrative tier is expected to support the community temporarily on safe use of unprotected water sources, conduct study and design, execute construction to improve the unprotected water sources as the lasting solution and technically support water committee in operation and maintenance and in other water supply scheme management. But the office constrained to discharge its duties and responsibility and therefore:-
    - ➢ Asosa woreda water desk should be capacitated with skilled man power
    - ➢ The office should be equipped with necessary quality material like spare parts etc.

As staff management by water committee is generally poor, external support is thus require for monitoring and supervising the activities of technical operators, particularly maintenance activities .

In general,

- ➢ Developing a culture of fair payment which feet moment price of material with a project area is vital to sustainability. This is aided by developing a sense of community ownership and awareness. The following factors play a critical role in these developments.
- ➢ Active and informed participation of community based structures from the start of rural water supply projects.
- ➢ Strong attention to training and awareness intervention aimed not just at committees but at the broader community as well.
- ➢ Involvement by both local government and traditional structures at project level

- A high commitment by water services authorities to developing sustainable projects based on adequate cost recovery will be an important factor in future development and should be encouraged and supported.
- The lack of awareness of local government at rural community level must be dealt with as part of formalizing management arrangements.
- This should be done at project level and supported by broader intervention at district and provincial levels.

Therefore, in the study area the marginalized community living in rural area, so as water is basic for human being and animal, quality construction of water supply service scheme will support the study area.

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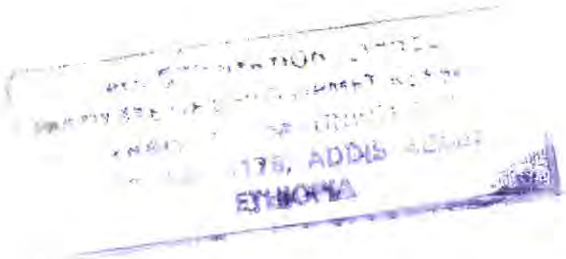

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Annex 1: Questionnaires

Addis Ababa University School of Graduate studies College of Development Studies.

Introduction to the questionnaire:-

The purpose of this study is to generate relevant information on the problems of rural water supply in the rural area of Assosa woreda Benishangul Regional State, for the partial fulfillment of **MA degree** at **the college of Development Studies** of Addis Ababa University.

I hope that this study will come up with feasible findings that are helpful for better understanding and deal with problems of rural water supply and in the area and particularly related to the rural water supply projects. Thus, **your genuine and honest responses** are crucial for the success of the study. Therefore, you are kindly requested to respond to all questions and give your reliable and complete information on the issues.

Introduction for interviewee:

A. **Introduce your self.**

B. **Inform the respondents that the questionnaire is only used for the purpose discussed above.**

C. **Circle or make x mark for your response among alternative choices and describe the opinions of the informants for the questionnaires that require explanation.**

Part I. Background information:

1) Name of the interviewee_____

Date of interview_____

Kebele in which the Interview is conducted _____

1.1 sex 1/ Male _____ 2/ Female_____

1.2 Age_____

1.3 Religion_____ A/Muslim B/ Orthodox

E/ Catholic D/ Protestant E/ if others specify _____

1.4 marital status A/ single B/ married C/ divorced

D/ widow E/ if others specify _____.

1.5 size of family house hold: _____.

1.6 Ethnic group: A/ Berta B/ Amhara C/ Oromo D/Gumuz E/ Berta and Oromo F/ Berta and Amhara g/ if other specify_____.

1.7 Educational level A/ Illiterate B/ Literate C/ Junior (7-8) D/ Primary School (1-6) E/ Secondary school (9-12) F/ College graduate G/ If others specify _____.

2) What are the major sources of in come to the household? A/ Farming B/ Government employee C/ Traditional gold mining D/ Daily labor E/ Business/ trade F/ farming and traditional gold mining G/ if others specify _____.

3) Among the following choose the two or than most important services Range as 1st and 2nd etc **(Water supply, health, education, electricity, road, telephone)** if others specify_____.

Part II Question related to the community those users of constructed schemes Water source availability and use

1) What type of water source (s) you use for domestic use and drinking

A/ unprotected spring B/ unprotected HDW C/ pond

D/ river/ stream water E/ sand dug well

2) How many times per day do you collected water?

A/ once B/ twice C/ three time D/more than three time

3) How much water is collected by family per day for domestic purpose?

estimate_____liters?

A/ Less than 5L B/ 6-10L C/ 11-15L D/ 16-20L E/ greater than 20

4) How far the water source you use for domestic purpose from your residential area (in kilometers,_____, in minute's or hours_____.

A/ 0-2 B/ 3-5 C/ 6-8 D/ if others specify_____.

5) Who is responsible for fetching water for domestic purpose in your home?

A/ husband B/ the wives

C/ children D/ both wives and children

E/ if others specify_____.

6) How do you bring (transport) water from the source?

A/ on back B/ by domestic animal C/ on head D/ A and B E/ All

if others specify_____.

7) How do you drink water from unprotected sources?

A/ direct use as it come from sources B/ boiling before drinking

C/ use chemical disinfectants D/ if others specify_____.

8 When did these schemes or springs are constructed?

A/ 1990-92 EC B/ 1993EC C/ 1994-96 EC

D/ 1998 EC E/ 1999 EC F/ do not know

9) Who selected the site of the water point or scheme and the type of technologies? A/ community B/ government C/ NGO

D/ both community and government

E/ all together

F/ if others specify_____

10) Is/are the technology/ies easily manageable by the user? A/ Yes B/ No

11) How do you evaluate the construction quality of the water supply in the area?

A/ good B/ very good C/ not good D/ if others specify _____.

12) Is/are there local technician/s that has/have taken basic training to carry out repairs and maintenance when the water supply point encounter problems or become non-functional? A/ Yes B/ No

12.1 If your response to Q No 12 is yes, is/ are they living with the community?

A/ Yes B/ No

12.2 Are any of them male or female?

A/ Yes B/ No C/ both

12.3 Is/are he/ she/ they equipped with adequate tools to carry out repairs when needed?

A/ Yes B/ No

12.4 Does/are he/she/they having technical skill/s to handle major repairs?

A/ Yes B/ No

12.5 If your response to question number 12 is No, who could carries out the repairs and maintenance when needed? _____

_____

13) Is there water committee in your kebele?

A/ Yes B/ No

13.1 Is the committee well trained on water point management O&M?

A/ Yes B/ No

13.2 Could they get training on water supply services?

A/ Yes B/ No

13.3 if you respond that yes to Q no 14.2 how often do they get training in?

A/ once in the month B/ once in three month

C/ once in the six month D/ once in the year

F/ if others specify_____.

14) Do the committee me d to alleviate the problems that the water supply experiences and to make the water point function properly and be sustainable?

_____

_____

Part III. Community related participation factors (problems)

1) Did you have demand for the water supply services before construction of the new water schemes (points)? A/ Yes B/ No

2) Did the community participate in water supply construction, project planning, implementation, operation and maintenance?

A/ Yes B/ No

3) What are the approaches to achieve full and effective community participation in development activities of water supply services?

_____

_____.

4) How could the project design be adjusted to improve community access and control over water resource increasing their productivity and their participation in water supply project?

_____

12.5 If your response to question number 12 is No, who could carries out the repairs and maintenance when needed? _____

_____

13) Is there water committee in your kebele?

A/ Yes B/ No

13.1 Is the committee well trained on water point management O&M?

A/ Yes B/ No

13.2 Could they get training on water supply services?

A/ Yes B/ No

13.3 if you respond that yes to Q no 14.2 how often do they get training in?

A/ once in the month B/ once in three month

C/ once in the six month D/ once in the year

F/ if others specify_____.

14) Do the committee me d to alleviate the problems that the water supply experiences and to make the water point function properly and be sustainable?

_____

_____

Part III. Community related participation factors (problems)

1) Did you have demand for the water supply services before construction of the new water schemes (points)? A/ Yes B/ No

2) Did the community participate in water supply construction, project planning, implementation, operation and maintenance?

A/ Yes B/ No

3) What are the approaches to achieve full and effective community participation in development activities of water supply services?

_____

_____.

4) How could the project design be adjusted to improve community access and control over water resource increasing their productivity and their participation in water supply project?

_____

_____

5) What are the approaches to enhance equal participation and benefit of community in water supply? _____

_____

6) Are there division of labor on water supply among men and women, boys and girls?

A/ Yes B/ No

7) Is there effective integration of community in development of water supply both as contributor and beneficiaries? A/ Yes B/ No

8) Does the gender has clearly defined roles in community water supply management like operation and maintenance of water scheme or point?

A/ yes B/ No

9) Have you participated in the construction of water supply schemes?

A/ Yes B/ No

9.1 If your response to Q 9 is yes, at which phase have you participated?

A/ during planning B/ during construction

C/ during implementation D/ in all phase

E/ if others specify_____.

9.2 What was your contribution in the construction of water supply?

A/ Labor B/ in cash C/ local material (stone sand and wood)

D/ Labor and local materials E/ if others specify _____.

9.3 If your responses is` No' to question 8 what do you think to be the reason for your absence from participation?_____

_____.

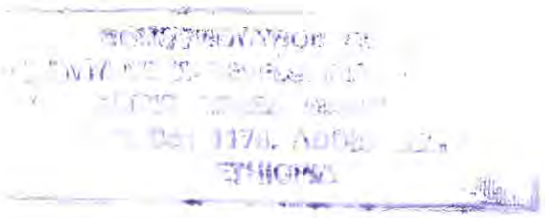
9.4 Do you feel sense of ownership to the constructed water scheme or point?

A/ Yes B/ No

10) How do you rate community participation in water supply services and design, construction of the existing schemes (points)?

A/ site selection	(a/ high	b/ medium	c/ low)
B/ labor contribution	(a/ high	b/ medium	c/ low)
C/ in cash contribution	(a/ high	b/ medium	c/ low)

11) How do you evaluate the effectiveness and sufficiency of the organizational structure



in integrating community issues in water supply services?

_____

_____

12) What are the benefits of consulting community at the time of water point site selection?

_____

_____.

13) Did the community have any idea about water point management?

A/ Yes B/ No

14) Did the community given an equal opportunity to participate in all process of rural water supply development? A/ Yes B/ No

15) How do you evaluate the capacity of gender participation in water committee under taking their duty? A/ Low B/ Medium C/ High

16) What are the responsibilities of community in the rural water supply management?

_____

_____.

17) How do you evaluate the participation and role of community (gender) as water committee members? Who is more active? What is the reason?

_____

_____

_____.

18) How many members exist in the water committee?

A/ 0-4 B/ 5-7 C/ 8-11 D/ If others specify

/ breakdown, it is not functional most of the time

D/ if others specify?_____.

Part IV. Questions related to finance factors (problems)

1) Who is financed the constructed water supply point?

A/ Community B/ government C/ community and government

D/ NGO E/ all in collaboration F/If others specify _____.

2) Do your family pay for constructed water supply service regularly?

A/ Yes B/ No

2.1 If your response to Q 2 is yes, how much you/your family/ pay per month and or per container or jerry can you use to fetch water? _____.

2.2 do you think that, the payment is fair? A/ Yes B/ No

2.3) If your answer is no for Q No 2 specify your suggestion_____.

3) How is the payment made for the water supply service?

A/ every day as they fetch B/ monthly C/ If others specify_____.

4) Who sets the water fees tariff? A/ community B/ government

C/ community and government D/ NGO

E/ all in collaboration F/ If others specify_____

5) Do you think that, the water fees collected from the beneficiary are adequate to purchase spare parts, and carry out O &M and cover other costs of the water points?

A/ Yes B/ No C/ If other specify_____

5.1 If your response is No, what do you think to be the reason?

_____

6) How do you evaluate the level of water service fee tariff?

A/ low B/ fair C/ high D/ if other specify_____.

7) What do you suggest to the level of service fee?

A/ should be increased B/ should be reduced

C/ should be free of paying D/ remain as it is E/ if other specify_____.

8) Which cost can be covered by fees collected from users?

A/ costs of minor repair B/ costs of major C/ costs of technician

D/ cost of spare part E/ salary of guard f/ if other specify_____.

9) Who managed the water fees collected from users?

A/ community or WC B/ government C/ NGO D/ A&B

E/ kebele administration F/ All together

10) Do the committees have bank account? A/ Yes B/ No

11) Do you ever once received receipts for paying during service fees? A/ Yes B/ No

12) Do you think that the scheme managers have capacity to manage the finance?

A/ Yes B/ No C/ if other specify_____.

Thank you!!

V. Technical (Technological) related factors (problems)

1) How do you see the adequacy of water sources since you started using it?

A/ Decreasing B/ Increasing C/ I Don't know

2) How do you see community involvement in selection of technologies?

A/ consulted B/ Not consulted C/ if other specify_____.

3) How do you see the nature of technology to be operate and used by user?

A/ simple B/ Not simple C/ if other specify_____.

4) How often the existing water supply scheme(s) in your community breakdown?

A/ once B/ two times C/ three times D/ more than three

5) How do you evaluate availability of toolkits for local technician

A/ equipped B/ un equipped C/ if other specify_____

6) How do you see availability of spare parts at community level when needed

A/ available B/ un available C/ if other specify_____

7) Ho do you see the affordability of spare parts in community level

A/ affordable B/ expensive C/ I do not know

8) What do you think are the reason (s) for breakdown?

A/ construction problem (way) B/ technological problem

C/ design problem D/ if other specify_____

9) How do you see the capability of local caretakers in minor maintenance and operation of the scheme (village level operation and maintenance)?

10) Do you faced water quality problem in using existing water supply schemes?

Part VI Question related to Institutional factors (problems)

1). Do you get the support of Asosa woreda water desk in the using unprotected water sources?

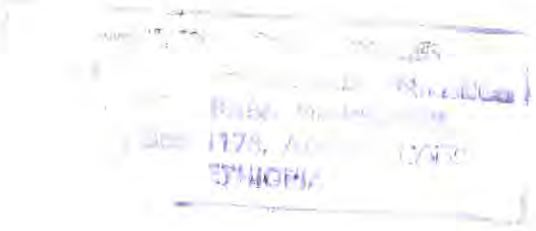
A/ Yes B/ No C/ If others specify_____

2. If Yes to question number 1, what types of support provided to

A/ awareness on how to use unprotected sources safely boiling and chemically disinfecting before

B/ provision of chemical disinfect

C/ others specify_____



V. Technical (Technological) related factors (problems)

1) How do you see the adequacy of water sources since you started using it?

A/ Decreasing B/ Increasing C/ I Don't know

2) How do you see community involvement in selection of technologies?

A/ consulted B/ Not consulted C/ if other specify_____.

3) How do you see the nature of technology to be operate and used by user?

A/ simple B/ Not simple C/ if other specify_____.

4) How often the existing water supply scheme(s) in your community breakdown?

A/ once B/ two times C/ three times D/ more than three

5) How do you evaluate availability of toolkits for local technician

A/ equipped B/ un equipped C/ if other specify_____

6) How do you see availability of spare parts at community level when needed

A/ available B/ un available C/ if other specify_____

7) Ho do you see the affordability of spare parts in community level

A/ affordable B/ expensive C/ I do not know

8) What do you think are the reason (s) for breakdown?

A/ construction problem (way) B/ technological problem

C/ design problem D/ if other specify_____

9) How do you see the capability of local caretakers in minor maintenance and operation of the scheme (village level operation and maintenance)?

10) Do you faced water quality problem in using existing water supply schemes?

Part VI Question related to Institutional factors (problems)

1). Do you get the support of Asosa woreda water desk in the using unprotected water sources?

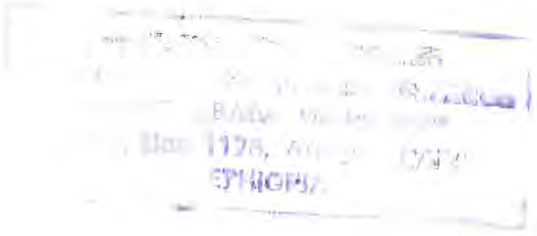
A/ Yes B/ No C/ If others specify_____

2. If Yes to question number 1, what types of support provided to

A/ awareness on how to use unprotected sources safely boiling and chemically disinfecting before

B/ provision of chemical disinfect

C/ others specify_____



V. Technical (Technological) related factors (problems)

1) How do you see the adequacy of water sources since you started using it?

A/ Decreasing B/ Increasing C/ I Don't know

2) How do you see community involvement in selection of technologies?

A/ consulted B/ Not consulted C/ if other specify_____.

3) How do you see the nature of technology to be operate and used by user?

A/ simple B/ Not simple C/ if other specify_____.

4) How often the existing water supply scheme(s) in your community breakdown?

A/ once B/ two times C/ three times D/ more than three

5) How do you evaluate availability of toolkits for local technician

A/ equipped B/ un equipped C/ if other specify_____

6) How do you see availability of spare parts at community level when needed

A/ available B/ un available C/ if other specify_____

7) Ho do you see the affordability of spare parts in community level

A/ affordable B/ expensive C/ I do not know

8) What do you think are the reason (s) for breakdown?

A/ construction problem (way) B/ technological problem

C/ design problem D/ if other specify_____

9) How do you see the capability of local caretakers in minor maintenance and operation of the scheme (village level operation and maintenance)?

10) Do you faced water quality problem in using existing water supply schemes?

Part VI Question related to Institutional factors (problems)

1). Do you get the support of Asosa woreda water desk in the using unprotected water sources?

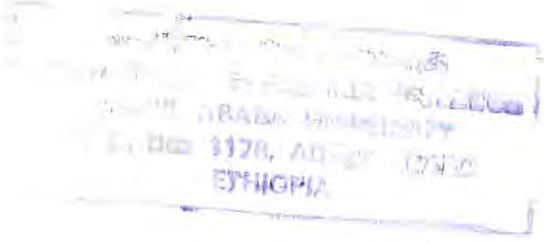
A/ Yes B/ No C/ If others specify _____

2. If Yes to question number 1, what types of support provided to

A/ awareness on how to use unprotected sources safely boiling and chemically disinfecting before

B/ provision of chemical disinfect

C/ others specify_____



3. If No to question number 1, what do you think the reason to hinders the office to provide you necessary support

A/ the problem was not informed and is not known by office?

B/ the office has financial constraints?

C/ the office has capacity limitation

D/ if other specify_____

4. What institutional support Asosa woreda water desk do you think need from other government organization to discharge its tasks responsibilities?

A/ fair budget allocation from woreda administration

B/ technical and other supports from zonal water desk

C/ if other specify_____

5) What kind of supports did the community get from the government organization and NGO in relation to managing water supply point to make them functional and sustainable? _____

_____.

Part VII Question related to Environmental factors (problems)

1) Do you think that the water supply is adequate to the beneficiary?

A/. Yes B/ No

2) What are the major problems that have been seen on the existing water point?_____

_____.

3) Are there any other alternatives water sources for the community when the water point become non-functional?_____

_____.

4) How do you evaluate quantity and quality of existing water?

A/ increasing B/ decreasing C/ no change D/ if other specify___.

5) How environmental problems influence the development of improved water supply service

A/ water quality problem B/ being far away from town C/ resettlement on low topography D/ unavailabiiity of water sources to improve

3. If No to question number 1, what do you think the reason to hinders the office to provide you necessary support

A/ the problem was not informed and is not known by office?

B/ the office has financial constraints?

C/ the office has capacity limitation

D/ if other specify_____

4. What institutional support Asosa woreda water desk do you think need from other government organization to discharge its tasks responsibilities?

A/ fair budget allocation from woreda administration

B/ technical and other supports from zonal water desk

C/ if other specify_____

5) What kind of supports did the community get from the government organization and NGO in relation to managing water supply point to make them functional and sustainable? _____

_____.

Part VII Question related to Environmental factors (problems)

1) Do you think that the water supply is adequate to the beneficiary?

A/. Yes B/ No

2) What are the major problems that have been seen on the existing water point?_____

_____.

3) Are there any other alternatives water sources for the community when the water point become non-functional?_____

_____.

4) How do you evaluate quantity and quality of existing water?

A/ increasing B/ decreasing C/ no change D/ if other specify___.

5) How environmental problems influence the development of improved water supply service

A/ water quality problem B/ being far away from town C/ resettlement on low topography D/ unavailabiiity of water sources to improve

E/ if other specify_____.

6) Does environmental factor affect unavailability of improved water supply service in your area?

A/ Yes B/ No C/ if other specify_____.

Annex 2: Checklist for key informant interview of institutional government working on rural water supply of Woreda Water Desk

Name of interviewee_____

Date of interview_____

Name of the organization represented _____

Position of respondent _____

1) What are the major goals of the establishment of your organization in relation to rural water supply?

_____

_____

2) Which kinds of technologies do you provide to the rural water community? Why?

_____

_____

3) Did the government agencies adequately prepare the community to manage and sustain their water supply point? A/ Yes B/ No

3.1) If No, what is the reason? _____

_____.

4) What type of institutional support is given to the rural community to sustain the functionality of the rural water supply point?

_____

_____.

5) Are spare parts and tool kits readily available and affordable at regional/Zonal/ woreda and community level?

_____

_____.

6) What problems are faced by your organization/ office to not support the rural water supply to be functional and sustainable?

_____

_____.

7) What requests are mainly reported to your office from the rural community and stakeholders to support water supply service?

_____

_____.

8) Are there competent private sectors, that can provide spare part and able to do water supply construction in the region?

_____

_____.

9) How do you see the coordination of your office with rural community and stakeholder to support water point?

_____

_____.

10) How do you evaluate the status of the water point constructed by your office or other? _____

_____

11) Are there well trained technicians who can carry out major repairs that are beyond the financial and technical capacity of the community? A/ Yes B/ No

12) What are the major reasons for rural water supply failures in the woreda?

_____

_____

13) What are the measures have been taken by the regional water bureau/zonal water office and woreda water desk to improve the status of water supply?

_____

_____

14) How community mainstreaming carried out in your office?

_____

_____

15) Is their any responsible body to mainstream community across all activity of water supply? A/ Yes B/ No

15.1) If your response is Yes for Q no 15, would you mention the major ones?

16) What are the approaches that your organization follows in mainstreaming gender and attaining gender equality? _____

17) Do you think that institution (Government and NGO) structure provides enough room to exercise community mainstreaming in water supply

A/Yes B/ No

18) How do you evaluate the practice and progress of community role in water supply? Are there any indicator regarding community participation in your office?

A/ Yes B/ No

18.1) If your response is yes, would you mention the major ones?

19) What intervention measure do you recommend to alleviate the problems and to improve the benefits for the constructed water point?

Thank you!

Annex 3: Checklist for key informant interview of institutional government working on rural water supply of Zonal Water Desk

Name of interviewee_____

Date of interview_____

Name of the organization represented _____

Position of respondent _____

1) What are the major goals of the establishment of your organization in relation to rural water supply?

2) Which kinds of technologies do you provide to the rural water community? Why?

_____

_____

3) Did the government agencies adequately prepare the community to manage and sustain their water supply point? A/ Yes B/ No

3.1) If No, what is the reason? _____

_____.

4) What type of institutional support is given to the rural community to sustain the functionality of the rural water supply point?

_____

_____.

5) Are spare parts and tool kits readily available and affordable at regional/Zonal/ woreda and community level?

_____

_____.

6) What problems are faced by your organization/ office to not support the rural water supply to be functional and sustainable?

_____

_____.

7) What requests are mainly reported to your office from the rural community and stakeholders to support water supply service?

_____

_____.

8) Are there competent private sectors, that can provide spare part and able to do water supply construction in the region?

_____

_____.

9) How do you see the coordination of your office with rural community and stakeholder to support water point?

_____

_____.

10) How do you evaluate the status of the water point constructed by your office or other? _____

_____

11) Are there well trained technicians who can carry out major repairs that are beyond the financial and technical capacity of the community? A/ Yes B/ No

15) What are the major reasons for rural water supply failures in the woreda?

_____

_____

16) What are the measures have been taken by the regional water bureau/zonal water office and woreda water desk to improve the status of water supply?

_____

_____

17) How community mainstreaming carried out in your office?

_____

_____

15) Is their any responsible body to mainstream community across all activity of water supply? A/ Yes B/ No

15.1) If your response is Yes for Q no 15, would you mention the major ones?

_____

_____

16) What are the approaches that your organization follows in mainstreaming gender and attaining gender equality? _____

_____

17) Do you think that institution (Government and NGO) structure provides enough room to exercise community mainstreaming in water supply

A/Yes B/ No

18) How do you evaluate the practice and progress of community role in water supply? Are there any indicator regarding community participation in your office?

A/ Yes B/ No

18.1) If your response is yes, would you mention the major ones?

_____

_____

19) What intervention measure do you recommend to alleviate the problems and to improve the benefits for the constructed water point?

_____

Thank you!

Annex 4: Checklist for key informant interview of institutional government working on rural water supply of Regional Water Bureau

Name of interviewee_____

Date of interview_____

Name of the organization represented _____

Position of respondent _____

1) What are the major goals of the establishment of your organization in relation to rural water supply?

_____

_____

2) Which kinds of technologies do you provide to the rural water community? Why?

_____

_____

3) Did the government agencies adequately prepare the community to manage and sustain their water supply point? A/ Yes B/ No

3.1) If No, what is the reason? _____

_____.

4) What type of institutional support is given to the rural community to sustain the functionality of the rural water supply point?

_____

_____.

5) Are spare parts and tool kits readily available and affordable at regional/Zonal/ woreda and community level?

6) What problems are faced by your organization/ office to not support the rural water supply to be functional and sustainable?

7) What requests are mainly reported to your office from the rural community and stakeholders to support water supply service?

8) Are there competent private sectors, that can provide spare part and able to do water supply construction in the region?

9) How do you see the coordination of your office with rural community and stakeholder to support water point?

10) How do you evaluate the status of the water point constructed by your office or other?

11) Are there well trained technicians who can carry out major repairs that are beyond the financial and technical capacity of the community? A/ Yes B/ No

18) What are the major reasons for rural water supply failures in the woreda?

19) What are the measures have been taken by the regional water bureau/zonal water office and woreda water desk to improve the status of water supply?

20) How community mainstreaming carried out in your office?

_____

_____

15) Is their any responsible body to mainstream community across all activity of water supply? A/ Yes B/ No

15.1) If your response is Yes for Q no 15, would you mention the major ones?

_____

_____

16) What are the approaches that your organization follows in mainstreaming gender and attaining gender equality? _____

_____

17) Do you think that institution (Government and NGO) structure provides enough room to exercise community mainstreaming in water supply

A/Yes B/ No

18) How do you evaluate the practice and progress of community role in water supply?

18.1) Are there any indicator regarding community participation in your office?

A/ Yes B/ No

18.2) If your response is yes, would you mention the major ones?

_____

_____

19) What intervention measure do you recommend to alleviate the problems and to improve the benefits for the constructed water point?

_____

Thank you!!

Annex 5: Checklist for interviewing NGOS Official

Name of interviewee_____

Date of interview_____

Name of the Organization_____

1) When did your organization established?_____
2) What are the major goals or objectives of the establishment of your organization

in relation to rural water supply?_____

_____

3) In which Woreda and kebeles have you intervened?_____

4) How many water supply schemes have been implemented by your organization since intervention time and how many people (house hold) have benefited from the served as aresult?_____

_____.

5) How do you evaluate community involvement in general and women participation in particular in water supply project management?_____

_____.

6) What the policy stipulates about costs of the water supply, cost of recovery of operation and maintenance as well as recurrent expenses?_____

_____

7) What technologies you mainly use and why?_____

_____

8) Are spare parts and toolkits readily available, affordable at woreda and community level? (Yes/ No); if no, where do you get it?_____

_____

9) What request are mainly reported to your office community in relation to water supply?_____

_____

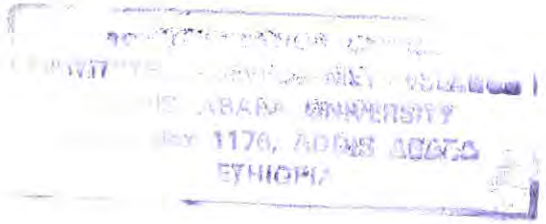
10) What supports (contribution) did you get from the government in relation to provision of water supply?_____

11) What trainings and support did / do you give to the government official and community to manage the schemes properly by them selves and carry out repairs, when needed to make sustainable?_____. How frequently are support?_____

12) How do you evaluate the status of the schemes?

_____

_____



13) What are the major problems related to sustainability and consumption of rural water supply schemes in the woreda or kebeles?_____

_____

14) What solution do you recommend to alleviate the problems of water supply schemes sustainability?_____.

Thank you!

Annex 6: Point of discussion with water committee's

Date of discussion: _____

Kebele (Got): _____

1) How many people /HH/ are using the water point?

_____.

2) When was the water scheme or point constructed in your kebele?

_____.

3) Who decided about the membership of water committee? _____.

4) Does it has formal recognition? _____.

5) Are there activities that you do regularly beside water committee?

A/ Yes B/ No

5.1) If your answer is yes, could you mention the major ones?

_____

_____

6) Is there any, care takers who are giving support with the necessary tools so that they can carry out repair when water point breaks down?

_____

_____

7) Did the user pay the user fee regularly? A/Yes B/ No

7.1) If your answer is No for Q no7, what would you think to be the reason and what measures have been taken to alleviate the problem?

_____

_____

8) What support (technical, financial and others) have been given to the community/ committee from the external (government and NGO) to sustain the water supply point?

9) Does the committee evaluate the community participation in general and women participation in particular at all phase (pre implementation during implementation past construction operation &maintenance) of the water point?

10) How do you collect the money and save it for community purpose?

11) Are there care takers who are supported with the necessary tools so that they can carryout repairs when schemes breakdown (face problems)? A/ Yes B/ No

12) What supports (technical, financial and others) have been given to the community/ committee from the external (Gov't and NGO) to sustain the water supply service?

13) Did the gov't adequately prepare the community/ committee to manage and sustain the water supply? (Yes/ No)

14. if No, what do you think the reason?

21) From your experience, what major problems are encountered in relation to water supply schemes?

22) What solution do you recommend in order to alleviate the functionality of the schemes?

Thank you!!

Annex 7: Point of discussion with selected women

Date of discussion

Kebele

1) Are there gender participation or consultation during the planning of rural water supply projects? A/ Yes B/No

1.2 If your response is Yes, what were your contributions and if not why?

_____

_____

2) Who is mainly responsible to fetch water for domestic purpose?

_____

_____

3) Is the potable water available during dry and wet seasons?

_____.

4) Does the management of water point involve community and treat users fairly?

_____.

_____

5) Have you faced the problem of non functional A/ Yes B/ No

5.1) If your response is yes, what do you think to be the major reason?

_____.

_____

6) How do you evaluate the overall performance of water schemes or point?

_____

_____

7) How do you evaluate the advantages of having the new schemes compare to traditional

sources?_____

_____

8) From your experience, what major problems are encountered in relation to water supply schemes to make them properly functional and to sustain the benefits gained from the water supply?_____

_____

9) What do you recommend to be as solution to alleviate the problem of water point and maintain it functional for long period of time?

_____

Thank You!!

Annex 8: Checklist for Personal Observation

A. Peasant (kebele) Association Using Water supply Sources

1/ What type of water sources being used by users?
2/ How the water schemes are constructed?
3/ Realibility of the water resources (annual, perennial)?
4/ How far the sources from users community?
5/ What is the physical condition (quality) of the water source?
6/ How the water collected from the sources?
7/ Who engaged water fetching?
8/ What materials are used for water collected?
9/ How the sources are being managed(near by sanitation,fencing,retaining wall, guarding?
10/ How collected water is being transported?
11/ What is the peak time for water collection in a day by users?
12/ Geology and topographic setting near by water sources?
13/ What is dominant vegetation cover around the water sources?

B. kebele associations water supply scheme:

1. What is the scheme source and type?
2. How is the scheme vulnerable to natural disaster and protective measure in place? (source selection, design problem manifestation etc)?
3. Major components of the scheme:-
   -If it is hand pump fitted on HDW and SWs; well data (deph, well completion), platform and drainage system condition and its management(fencing, guarding, others), schemes status.
   -if it is spring on-spot: spring box and capping condition, sanitation around the out let, management(fencing, retaining wall); scheme status.
   -If it is gravity spring with distribution and: condition of spring capping and box; water points ; management (fencing, guarding and sanitation);scheme status.
4. Physical state (quality) of scheme water?
5. The time water points are open to water users?
6. Geology and topographic setting around the scheme type?
7. Vegetation covers near by the scheme source?

Annex 9:Interview Guide for Key informant and focus group Discussion

Introduction and explanation on the objective of the study will be

A. Interview Guide for Development Agents

1. Background information (name, age, sex, qualification, experience, marital status and place of birth._____,_____,_____,_____
_____,_____,_____.
2. How long you have been here?_____
3. What are your major duties and responsibilities?_____
4. What are the major sources for household consumption in the kebele?_____
5. What proportion of the people use the unprotected sources vis-à-vis those having water supply scheme?_____
6. What development activities are being undertaken to improve domestic water supply at the community and peasant association level?_____
7. What do you think arethe main problems to improve water supply?_____
8. Have you recognized any problems caused by unsafe water consumtion?_____
9. How do you assess the community management of existing scheme(s)?_____
10. What are the major causes for dysfunctional of existing water supply schemes (S)?_____
11. How often the existing scheme failed and what time it took to be maintained?_____
12. What community efforts are there to improve the unprotected water sources in their locality?_____
13. Does the community appeal the existing water supply problem to the peasant association administration and woreda Official?_____
14. What do you think the responses the administration bodies at peasant association and woreda level to the community appeal?_____
15. How do you assess the capacity of woreda especially water desk to improve water supply and providing technical support for the water committee?_____
16. Do the gov't and NGOs (if any) attempts to promote public participation in water development activities ? In what ways the people participate?_____
17. What do you think the contribution of improved water supply for socio-economic development?_____
18. What do you suggest to improve water supply and ensure sustainability of existing scheme(s) should be done at the community and peasant association level?_____

Thank You!!

C. Interview Guide for Health Extension Worker

1. Background information(name, age,sex, qualification, experience marital status, place of birth
2. How long have you been here?
3. What are the major activities of health extention workers?
4. How do you see the use of unprotected water sources by the community?
5. How do you relate improved water supply with health?
6. How prevalent water-born and water related disease in the PA?
7. What segment of the community affected by the water-born and water related diseases?
8. How do you support the community using unprotected water sources for consumption in order to avoid health risks?
9. How far unavailability of improved water supply schemes affected your task?
10. Do the community willing and accept preventive measueres to minimize water born and water related diseases?
11. Are there community initiated activities to improve unprotected water sources?
12. Do you report the unprotected water sources and dysfunctionality of existing schemes as the hindrance to your work in the community?
13. How do you assess the scheme management of the committee?

14. Do you have work relation with water committee?_____

15. Do you report water related problems as priority and felt needs of the community to the woreda? When? What were their response?
_____
_____
_____

16. What do you think should be done to improve unprotected water sources and to sustain community managed water supply scheme(s) in the peasant association?_____
_____

Thank You!!

D. Interview Guide for kebele Association Chair man

1.Background Information: name, Age, Sex, Educational status, Duration on position, marital status, place of birth and ethnicity
_____,_____,_____
_____,_____,_____
_____,_____

2. How long have you been in this PA as a resident?_____
3.How long have you been in this position?_____
4.What are your tasks and responsibility for ws?_____
5.Can you tell me the number and type of unprotected water sources in the peasant Associatrion? And what about improved water supply schemes?_____
_____

6.Are there indigenous water supply development practices by the community of the PA?_____
_____

7 How do you see the use of unprotected water sources consumption by the majority of people?_____
-Impact on the health?_____
-Impact on education?_____
-Impact on agriculture?_____

8. What effort being made to improve unprotected water sources by mobilizing the community?_____
_____
-what household and community based indigenous water supply dev't planned, executed and being used the last 2 years or so?_____
-How the communities participate in water supply dev't project from its inceptions up to completion?_____

9. What are the major challenges both indigenous water supply dev't and on those funded water supply project?_____

10. How existing water supply schemes being managed by WC?_____

11. How often the schemes fails and how long it takes to maintain?_____

12. How closely you work with water committee to ensure continous services delivery of water supply schemes?_____

13. How do you rank the problem of water supply with respect to other social services neeed in the PA?_____

14. Have you ever report the existing water supply problem as the priority, felt-needs and un-met needs of the community to higher officials at woreda and to others?_____

15. How do you assess the institutional capacity of Asosa woreda water desk to support PA in improving unprotected water sources and technical support for the water committee?_____

16. What are the major limitations to properly manage water supply schemes by water committee?_____

17. What do you think should be done to improve unprotected water sources at community (PA) level? What the woreda should doas well?_____

18. What do you think should be done sustain existing water supply scheme(s) service delivery? What WC should do? What woreda water desk should do?

_____

_____.

Thank you!!

E. Interview Guide for Elderly

1. Background Information: name, age, sex, educational status, marital status, place of birth, ethnicity and religion
2. How long since you are living in this area?
3. What is your social status with in the community?
4. How do you perceive the use of unprotected water sources and of those improved water supply system?
5. What proportion of the people use unprotected water services sources and that of improved water supply system?
6. What do you think the advantages of having or not having improved water

supply services?

7. Can you tell me the reasons why the numbers of people still use unprotected water sources?
8. What should the community do to improve the unprotected water sources in their locality? What about DA administration? CBO etc?
9. How do you see the relation between the community and government institution?
   - Does the government involve the community in development activities in general and in WS development activities in particular?
   - In what way the communities are willing to participate in WS development activities?
10. How do you see the community managed water supply scheme (s)?
    - Are they properly managing the scheme (s)?
    - What are their problems?
    - What support they need from....?
    - Who should support them?
11. How do you observe the interaction between the woreda and kebele administration in planning and implementation of development activities? What about the r/ship between WC and WWD?
12. What do you suggest to improve unprotected water sources in the kebele?
    - What the community, CBO and others should do?
    - What woreda administration and WWD should going to do?
13. What do you also recommend to sustainability of existing schemes and protected spring?
    - What the community and WC should do?
    - What support of kebele administration and WWD should provide?

Thank You!!

Annex 10 list of people contacted during interview

No	Name	Organization/ Office	Responsibility
1	Ato Muluget Kebede	Asosa Woreda Water Desk	An expert technician of Asosa Woreda Water Desk
	Ato Elias	World Vision Ethiopia -Asosa Homosha	Dep't Head Coordination
	Ato Ashanafi	Asosa Zone Water Desk	Act as Asosa Zone assistance water engineer
	Ato Fekadu	Regional water and Mine Bureau	Acting as W/W/S/D/C/A/ Dep't Head

Annex 11 list of water supply schemes in sample kebeles

o	kebele	site Name	scheme type	technology type	status during survey time	Year of construction
	Ura	Got 1	2 HDW	Afridiv	NF	1996 EC
		Got 2	HDW&spring	>>	F	1999 EC
		Got 3	3 HDW	>>	NF	1996 EC
		Got 4	HDW	>>	F	2000 EC
		Got 5	HDW	Indian mark 2	NF	derg regime
	Belmili	Got 1	HDW	Afridiv	F	1996 EC
		Got 2	HDW	Indian mark 2	NF	derg regime
		Got 3	NF	Afridiv	F	1997 EC

ource: HH survey 2010 and Asosa Woreda Water Desk
Note:- F means Functional
NF means Non-functioal

Annex 12 Back ground of WC and Health Extension

o	name of WC and kebeles	position in WC & HE	Sex	Age	Educational level
	Ura Kebele				
	Ato Abduljalil Mohamed	Technician	M	40	Grade 6
	>> Alkasim Halid	member	>>	33	>> 4
	W/o Jedda Mohamed	Cashier	F	36	>> 7
	Ato Omer Ibrahim	Secratory	M	26	Completed (10)
	Ato Ibrahim Sharif	member	M	34	Grade 4
	W/o Batul Ahimed	>>	F	30	>> 5
	>> Hawa Ali	>>	F	29	>> 4
	Sister Mariam Ibrahim	Health Extension worker	F	23	Completed (10)
I	Belmili kebele				
	Hamid Adem	Chair person	M	27	Completed (10)
	Zahra Jima	Cashier	F	26	Grade 7
	Ato Mustefa Jabir	member	M	37	>> 6
	>> Umar Habib	>>	M	25	>> 4
	Ibrahim Adem	Secratory	M	28	>> 9
5	W/o Hajije Musa	member	F	32	>> 3
7	>> Markaniya Hussen	>>	F	28	>> 5
8	W/o Zakiya Halil	Health Extension worker	F	36	Completed (10)
9	Ato Halid Zaruk	elder person in the kebele	M	58	Religion education

Declaration

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

Declared by:

Abdulkerim Musa Mohammed

Candidate

Confirmed by:

Dr. Yohannis Aberra

Advisor