ADDIS ABABA UNIVERSITY

COLLEGE OF DEVELOPMENT STUDIES

CENTER OF RURAL LIVELI HOODS AND DEVELOPMENT

PRACTICES AND CHALLENGES OF COMMUNITY MANAGAGED RURAL POTABLE WATERSCHEMES IN DELANTA, AMHARA REGION

ADVISOR: DR. ALEMU AZMERAW

BY: FENTAW DAGNAW

JUN, 2020

ADDIS ABABA

PRACTICES AND CHALLENGES OF COMMUNITY MANAGAGED RURAL POTABLE WATERSCHEMES IN DELANTA, AMHARA REGION

A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF-THE REQUIREMENTS TO THE DEGREE OF MASTER OF ARTS IN RURAL LIVELIHOODS AND DEVELOPMENT

By

ADVISOR: ALEMU AZMERAW (PHD)

FENTAW DAGNAWTESHOME ID NO GSR/6536/11

JUNE, 2020

ADDIS ABABA

APPROVAL SHEET
ADDIS ABABA UNIVERSITY

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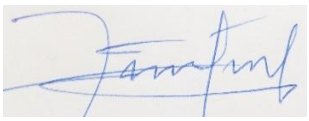
Approved by:

Advisor

Alemu Azmeraw		**14 June 2020**
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DECLARATION

Here with I, declare that, this paper is prepared for the partial fulfillment of the requirements for the award of Master's Degree in Rural and Livelihoods Development studies "**practices and challenges of community managed rural potable water schemes in Delanta, Amhara region**" is prepared with my own effort. I have made it independently with the close advice and guidance of my advisor. I hereby declare that this thesis is my original work. It has not been presented for a degree in any other university and that all sources of material used for the thesis have been duly acknowledged.

Declared By; Fentaw Dagnaw

Signature ———————————

Date ———————————

CERTIFICATION

Certification Here with I state that Ato Fentaw Dagnaw has carried out this research work on the topic entitled "**practices and challenges of community managed rural potable water schemes in Delanta, Amhara region**" under my supervision. This work is original in nature and has not presented for a degree in any university and it is sufficient for submission for the partial fulfillment for the award of Master's Degree in Rural and Livelihoods Development studies.

Confirmed By Advisor; Dr. Alemu Azmeraw

Signature ————

Date ——————————

DEDICATE TO

My beloved Family and Friends for their love and encouragement that they have gave to me throughout the process of the thesis

ACKNOWLEDGMENTS

With the help of God this has become a reality. Therefore my innumerable praise first goes to St. Marry and God Almighty for his guiding me all the way.

Next to God, the completion of this project involved kindly contribution, support and encouragement of many people. I am indebted to all who encouraged me in the process and give me the courage when I was really in need. It is a pleasant aspect that I have now the opportunity to express my gratitude for them.

I am greatly indebted to my supervisor Dr. Alemu Azmeraw for all their guidance, insightful comments, patience, and encouragement throughout the process of the project. Without his, this project can't have the present form.

Next, my heartfelt gratitude goes Ato Znabe Berhanu Delanta woreda water office head and Ato Ambachew Ababu Delanta woreda water office expert for their cooperation in filling questionnaires.. The last but not the least I am very grateful to all my families and friends Tiru Arega, Assefa Gebrewold, and Seblewongel Fentaw for their love, encouragement and patience.

Finally, it is always impossible to mention all, therefore, whoever has contributed to this project , one way or another, forgive me for not mentioning your name and accept my heartily admire

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ABSTRACT

This study was aimed to examine practices and challenges of community managed rural potable water schemes in Delanta, Amhara region. The motivation for undertaking this study is to enable community manage rural potable water schemes by itself effectively which determines its success. In this study both primary and secondary data sources were used. The primary data were collected through closed ended questionnaire was employed to collect quantitative data from selected household, an interview guide was prepared and information was gathered through unstructured interview of key informants and focus group while secondary data were collected from was from government and non-governmental publications, annual and inventory reports, previous studies, books and websites. Out of 4502 sample kebele population for the study, 108 individuals were taken as a sample through random sampling techniques. The collected data was analyzed through descriptive analysis using SPSS version 20. Water supply schemes developed by government, NGO with participation of community in the rural areas of Delanta woreda and developed water points, transfer to WASH committees so as to fill the institutional gap at the grassroots. The results of the study revealed that potable water points have not been managed as envisaged due to shortcomings in the approaches followed by interventionists, inadequacy of the emphasis given to capacity aspects and low level of commitment and participation in managing these schemes. As a result, service fees have not been collected. They do not have financial record, auditing and reporting system. Out of 497 improved water points, 130 improved water points have faced breakages of various kinds due to problems in operation and management. Most of these points were not maintained due to financial constraints to cover maintenance expenses. Furthermore, users manifest dependency feelings in that they require the government to maintain broken points. The institutional arrangement was poor. There is no cooperation and integration among WASH committees, woreda and zonal water office. These water offices have shown inadequate capacities to contribute to the continued functioning of improved points. There has been inadequate monitoring and support from local water offices to WASH committees. Recommendations were forwarded by the researcher based on the results of the findings and conclusions of the study; as designing objectives of approaches, participation, factors and institutional aspects very well; providing adequate capacity building on improved water schemes to motivating community and committees.

Key words: Community, Community management, Sustainable Management of Rural Water Supply System

ACRONYMS

CBNRM	Community-based natural resource management
DWWDO	Delanta woreda water development office
FGD	Focus Group Discussion
MoH	Ministry of health
MOWR	Ministry of water resource
NGOs	Non-Governmental Organization
O&M	Operation and Maintenance
RWSN	Rural Water Supply Network,
RWSS	Rural Water Supply System
SPSS	Statistical Package for Social Science
UN	United Nations
UNICEF	United Nations International Children Fund
WASHCOs	Water, Sanitation and Hygiene committees
WHOs	World Health Organizations

Operational Definition of Terms

In order to avoid confusion in the meaning of words used in the thesis, operational definition of some terms is described below

Community: refers to a group of households living in a particular area that share a water supply system.

Community Management: refers to the capacity of the community to control or a t least strongly influence the basic decisions over the management of the water supply system

Improved Water supply (potable water schemes): a water source (spring, well, etc) which was constructed by qualified people and protected from any possible contamination.

Practices and challenges of community managed rural potable water schemes: rural water schemes that are created after rural water supply schemes, constructed by government, NGO and private, are handed over to WASH committees and user communities for their utilization, ownership, and operation and management.

WASH Committee: Elected members of the community who are responsible for the overall management of developed rural water supply schemes.

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

Water is critical for sustainable development and the eradication of poverty and hunger. It is good key for human growth, health, and wellbeing. Sustainable water management is crucial to achieving sustainable development (High Level Panel on Water Report 2018).Globally 2.1 billion people lacked safely managed drinking water services, more than 4 billion people lack access to safe sanitation and 844 million people lacked a basic drinking water service in 2015 either used improved sources with water collection times exceeding 30 minutes (limited services), used unprotected wells and springs (WHO and UNICEF, 2017 and UNWWD 2018 report).

Rural areas in unindustrialized nations across the global continue harshly disadvantaged without sustainable water supply projects. Only 47% of the rural population of sub Saharan Africa has access to an improved water source (UN, 2010).A major challenge facing developing countries is how to supply safe drinking water to their citizens. The demand for water is rising at an exponential rate due to increasing population in both urban and rural areas, small and scattered nature of rural settlements, the lack of adequate investment by government in rural water supply, and the problem of sustainability (Akpor and Muchie, 2011). Following this crisis, several stakeholders around the globe have joined efforts to address the problem.

Realizing the critical importance of supplying potable water, over the last decade many rural water supply programs were implemented throughout the developing world, (Otti, 2012). Supplying potable water, national and regional governments, local and international NGOs invest millions of capitals every year in developing countries to tackle the problem through implementation of water supply projects (Prokopy, 2005).

There are two approaches to rural water supply demand driven and supply driven approach. By the early 1990s, World Bank had officially adopted the demand driven approach to water supply. This approach was adopted in order to correct short comings of the basic needs or supply driven approach i.e. insufficient coverage, high cost, and poor utilization (Kleemer, 1995).Community-based management approaches has established to be continuing strategy for operationalizing

main stream participatory development in rural water supply projects and programs in sub-Saharan Africa (Whaley and Cleaver 2017).

Rural Water Supply Network (2010) indicates that regardless of various efforts and investment towards ensuring access to safe drinking water, many of water projects in developing countries have failed to operate sustainably. For example, it has been estimated that the hand pump, which provides nearly half of the protected water supplies for Africa's rural population, has an estimated functionality rate of approximately 66%. Across rural Sub-Saharan Africa, an average of 36% of hand pumps is non-operational at any given time, and in some countries, it is estimated that more than 60% of hand pumps are non-operational (WHO, 2011). More than 33.3% of rural water services in Ethiopia are non-functioning (Water Aid, 2011). According to World Bank (2017) sustainability assessment of rural water service 26% of Ethiopia Hand pumps and piped rural water schemes are non-functional.

Constructing water supply systems alone would not eliminate all problems, especially in rural areas. Functionality and utilization of water schemes is important characteristics to be considered and integrated in order to achieve maximum benefits (Harvey and Reed, 2007). Community-managed water supply service is a participatory approach to water management, whereby, the beneficiary community takes responsibility for issues such as control, operation, maintenance and management of their water system (Harvey and Reed, 2007).

Rural water supplies have been recognized for some time, and a number of management approaches have come and gone with the aim of addressing these complications, (Lockwood and Smits, 2011). Current drinking water policies for developing countries are based on the ground that rural water supply facilities, such as improved hand-dug wells, hand pump fitted boreholes, or spring developments are best managed by community organizations of local water users, (Yan Sun, 2010).

Ethiopia adopted a Community Ownership and Management strategy under which community water and sanitation committees handle day-today maintenance and repair needs of the water facility. In spite of its wide application in many developing countries, the community-based approach to rural water supply is not without challenges, (Harvey and Reed 2004). Therefore, this paper, aims to assess community water scheme management practices and identify

challenges of community managed rural water schemes in the rural areas of Delanta Woreda, South woll zone in Amhara region.

1.2. Statement of the Problem

The national water supply coverage is according to GTP II standards of Ethiopia (25 l/c/d within 1 km radius for rural areas and 40–100 l/c/d for urban areas) potable water coverage has 65.7% (National Plan Commotion 2018). Despite the low coverage figures, in Ethiopia, it is also quite common to observe non-functional water sources without adequate protection. More than 33.3% of rural water services in Ethiopia are non-functioning (Water Aid, 2011).

According to Delanta woreda water development office annual performance reports (2019) out of the total 497 rural water supply schemes, the majority 120 water schemes were not sustainable, only 379 were found to provide continued service. Therefore, failure in sustainable use of rural water supply facilities has been a critical problem in the study area. The problem is similar that many of rural water supply schemes in the developing world are not working to the optimum level because of lack of effective management (Montgomery et al., 2009).

International and national organizations are needed sustainability of community management potable rural water schemes. It is necessary to study in community management factors which undermine long term sustainability of rural water schemes.

Different researchers study related with community management of water scheme sustainability. Research done by Kassa, (2014) which is entitled by Assessment of sustainability of community managed potable rural water supply schemes/Point in Tigray regional State, in Saharti-Samre Woreda described as majority of the committees were frequently not collecting or managing sufficient funds to pay for repairs and maintenance. Furthermore, without sufficient funds and without an effective spare parts supply chain, water scheme sustainability is impossible. Moreover, due to negligent external support their interests in managing the water point were found weak.

Study conducted by Gurmessa and Mekuriaw, (2019) which is entitled by What determines the operational sustainability of rural drinking water points in Ethiopia? The case of Woliso woreda of Oromia regional state pointed out water service fee, willingness to pay, occurrence of conflict

in the water points, monitoring by water user committees, willingness to sustain service, users' participation in the water point construction, satisfaction with the water point service, perception on the possibility of contamination, and training on maintenance are the major factors that affect the operational sustainability management of rural drinking water schemes.

However, previous studies conducted on the topic are not sufficient to understand the depth of the problem and didn't capture the institutional gap. Therefore, this study explores the critical bottlenecks of rural potable water supply schemes managed by the community itself. The root of the problems in sustainability of water schemes are mostly created after rural water supply schemes, constructed by government, NGO and other stakeholders are handed over to WASH committees and user communities for their utilization, ownership, and operation and management. WASH committees ceased to manage these schemes, soon after the withdrawal of contractor from the project area. WASH committees are volunteers. They do not have payments and incentive to carry out their roles; as a result they lose interest to deal with water schemes management. Formal institutions government, NGO and other stakeholder's attention on the construction of new infrastructure and lack or absence of post construction support. In the study areas is lack of committed and responsible organization that operates and manages improved rural water schemes. The failure of community management of rural water supply schemes, in the study areas, has never been studied yet. Reasons initiated the researcher in choosing the problem for investigation. Researcher have worked in the field of potable water related activities, have observed that many water supply schemes were falling at high rate, the limited available resource invested in rural water supply goes to waste when water schemes failed to provide intended benefits and when water supply facilities are not sustainable, the number of people having access to the service reduced. Therefore, it is useful to conduct research studies (as proposed here) to better understand the reasons that undermine long term sustainability of rural potable water supply schemes, as managed by the community itself.

1.3. Objectives of the research

1.3.1. General Objectives

The main objective of this study was to assess **practices and challenges of community managed rural potable water schemes in Delanta woreda Amhara region.**

1.3.2. Specific objectives

- To examine approaches and practices of community management of rural water supply schemes.
- To analyze factors affecting sustainability of community managed rural water schemes
- To analyze institutional aspect on community management of rural water supply schemes
- To examine satisfaction of users on potable water supply.

1.4. Research questions

- What are approaches and practices the community put in place to manage its own rural water schemes?
- What are the factors affecting community management of rural water schemes?
- What are the institutional aspects on community management of rural water schemes?
- How do the community's satisfaction with water supply schemes?

1.5 Scope and limitation of the study

The scope of this research is limited to explore approaches and practices; examine factors affecting the management of improved rural water supply schemes, and users' satisfaction as well as institutional mechanisms on community management of rural drinking water schemes in Delanta woreda. The other limitation of the study was the study area is single Woreda and 108 sample households because financial and time resource constraint, inter-temporal variations will not be taken care-off in this study cross sectional data will be used.

1.6. Significance of the Study's

Sustainable development is impossible without sustainable community management and utilization of resources and outcomes. Improving access to safe water supply requires ensuring the continued management of water supply schemes. Failure of sustainable use of these services hampers development and intensifies poverty.

This research contributes to the better understanding of factors related to community management of rural potable water scheme. It complements the sustainable aspects of rural water supply community management systems and the study findings and its recommendations will serve as reference for those governmental and NGOs working in water service delivery to rural areas of Ethiopia. In addition, this study will be helpful for the researcher, since it enriches their knowledge base and also enlarge the scope for further research opportunities in area of rural community management potable water schemes.

1.7. Organization of the Paper

This study comprises five chapters. The first chapter presents background of the study, statement of the problem, objectives of the study, scope and limitation of the study, and significance of the study. The second chapter reviews related literature, third chapter presents the research methodology, the fourth chapter discusses results of the study and fifth chapter concludes.

CHAPTER TWO: LITERATURE REVIEW

2.1. Theoretical Review

2.1.1. Conceptual Review of community management

The World Health Organization (WHO, 1995) explained as; "*Community Management means that the beneficiaries of water supply and sanitation services have responsibility, authority and control over the development of their services".* Responsibility implies that the community takes possession of the system, with all its associated obligations and benefits at the same time as authority indicates that the community has the legitimate right to make decision about the system.

Musonda (2004) community management has a long history of trial and error in the rural water supply sector, especially with failure of the centralized management approach. It is aimed at strengthening the capacities and willingness of the communities to take ownership and responsibility of managing on their water supply systems after the implementing agency left the community. Therefore, in the case of truly community managed water supply, the members of the community actually own, operate and maintain the water supply scheme (Davis, 1993). Community exercises community management approach in managing rural water supply schemes is through establishment of water committee.

Lockwood and Smits (2011) argued that Community-Based Management refers to a facility option whereby communities control management of their water supplies. For practical purposes, everyday accountability lies with illustrative group of community people, often referred to as a water committee, elected to take up this task. Although this group may involve local caretakers or small entrepreneurs, the committee remains responsible for ensuring a sustainable service, and accountable to the community at large.

Community management is intended to create a relationship between the water point and the user population; it is not only the functionality of the physical infrastructure that is of concern, but also the functionality of the community organization charged with managing it (Welle and Williams, 2014). Therefore, the entire concept has been applied in the context of this study.

2.1.2. Conceptual Review of Sustainable Management of Rural Water Supply System (RWSS)

Harvey and Reed (2003) define RWSS: *"The water sources are not over-exploited but naturally replaced, facilities are maintained in a condition which ensures a reliable and adequate water supply, the benefits of the supply continue to be realized by all users over a prolonged period of time, and the service delivery process demonstrates a cost-effective use of resources that can be replicated"* .

Kimberly (1998) maintains that Sustainable Management in water projects means, ensuring water supply services and interventions continue to operate satisfactorily and they generate benefits over time as expected.

Sustainability is defined by Abrams (1998) as 'whether or not something continues to work overtime'. More specifically, it implies the ability to recover from technical breakdown in the scheme.

Parry-Jones et al, (2001) defined rural water supply as sustainable if the systems: are being used efficiently, effectively and equitably by users, can be managed and financed by users with limited external support and will continue to deliver benefits for a long period after project inputs cease.

There is a broad range of definitions of sustainability in RWSS used in different studies. The majority of these definitions are similar in nature but have slight differences in emphasis. But the above definitions emphasize on issues including; the flow of benefits, relationship between community management organization and external support institutions, efficiency, effectiveness, reliability and equity issues. Therefore all have been applied in this study.

2.1.3. Theory of Community-Based Natural Resource Management

Community-based natural resource management (CBNRM) theory argues that the best way to manage natural resources (such as potable water in the in Delanta woreda) is for local people to employ their local knowledge and techniques (Ostrom 1990, Agrawal and Gibson 1999). In other way research argues that this theory is not reflected in practice and most CBNRM schemes fail (Blaikie 2006; Singleton 2009). CBNRM objects to achieve both sustainable environmental management and community development. There are a number of key arguments put across by

this theory. It is said to contribute to poverty reduction by using the local labor and asset; it is also said to promote the use of local knowledge and local technologies, local management is argued to imply that the local people have power and make decisions, thus creating accountable and democratic local institutions; the use of resources is further enforced locally by people who have a stake in its protection which is more effective than, say, government enforcement; finally CBNRM is seen as a better solution to conservation than fencing off natural resources and excluding people from them.

Community-based conservation which is appropriated to this theory, focuses explicitly on biodiversity conservation as the objective of management, involves people who directly affect and are affected by conservation decisions in planning and stewardship, and strives to provide direct economic and social benefits to communities while increasing or maintaining biodiversity. CBNRM also integrates 'co management' which implies that decision-making authority is shared between the local people and local, regional or national government. Both community-based conservation and co-management approaches are argued to be associated with a couple of benefits. They lead to increased implementation of and compliance with management decisions, application of diverse knowledge sources to management including both local ecological knowledge and science, improved on-the-ground resource management, increased monitoring and adaptive management, decreased conflict over resources, increased trust and strengthened relationships (social capital) within the community, improved livelihoods, greater community capacity, improved environmental conditions, and more resilient social-ecological systems (Thomas, J et al,2004).

In the context of this study, the natural resource which is the subject matter is water. The primary objective of the establishment of water supply schemes is to harness the water resources with a view of ensuring that the local community accesses clean and safe drinking water throughout. As it has been explained by CBNRM, water supply schemes are community-based and as such the community should not only benefit from accessibility of water, but need also participate in the scheme's management.

2.1.4. Stakeholder theory

The term stakeholder first "appeared in the management literature in an internal memorandum at the Stanford Research Institute, in 1963" (Freeman 1984). The word means "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984). Bryson (1995) proposed a more comprehensive definition for the term: "A stakeholder is defined as any person, group, or organization that can place a claim on an organization's attention, resources, or output or is affected by that output". The main assumption of the stakeholder theory is that an organization's effectiveness is measured by its ability to satisfy not only the shareholders, but also those agents who have a stake in the organization (Freeman, 1984).

The problem with the theory is that, it does not explain thoroughly the complexity of the relationships between an organization and the people, groups and other organizations from its environment. Stakeholder theory suggests that in order for any project at any organization to succeed and be sustainable, stakeholders should be involved in all stages of project life cycle. Bal et al (2013) identified six steps to a stakeholder engagement process: (i) Project identification; (ii) Relating stakeholders to different sustainability-related targets; (iii) Project prioritization; (iv) Project management (v) Measuring performance; and (vi) Putting targets into action. Failure to involve stakeholders in project development makes lack of ownership leading to poor performance of the projects. The theory was used in this study by looking at the way different levels of water scheme management at Delanta woreda engage stakeholders in all stages of water scheme development and management.

2.1.5. Approaches to Rural Water Supply

There are two approaches in the process of improving available water sources to be used as pure potable water supplies to rural communities these approaches include supply driven-and demand driven approaches. Under supply driven–approach to rural water supply governments and / or donors provide a minimum level of improved water service to as many people as possible. This is a traditional or top down approach of service delivery where the needs and preference of the community are centrally decided by government official who have little or no contact with the intended beneficiaries of the program. This approach is based on a consensus, since 1970, that governments and donors should alleviate poverty in rural areas through providing basic needs

such as safe drinking water, which was largely free at least in capital costs (Kleemer, 1995). The basic needs driven approach had been adopted for its own elements that were taken to extend water level in developing countries. The first element is that donors and governments provide with minimum level of improved water service with available funds. The second one was to build up the capacity of government agencies so as to enable them appraise, implement and manage schemes. And the third one was providing subsides to rural water supply (Kleemer, 1995)

By the early 1990s, World Bank had officially adopted the demand driven approach to water supply. This approach was adopted in order to correct short comings of the basic needs or supply driven approach i.e. insufficient coverage, high cost, and poor utilization (Kleemer, 1995).

In the early 1990s, the failure of supply-driven top down implementation of rural water supply schemes was recognized, and a growing consensus emerged that interventions needed to be "demand responsive." This entailed that, especially during the implementation phase, interventions needed to include community participation, community contribution toward capital and operation and maintenance costs, and an overall reduced dependence on higher levels of government (Sara and Katz, 1997). The Demand-Responsive Approach was elaborated in the 1990s, and progress was made in ensuring that communities take ownership of their water supply systems and that technologies are in line with the needs and capacities of users The Demand-Responsive approach evolved as its limitations became clear and the need for ongoing technical, institutional and financial support to community organizations was identified.

The main philosophy behind this strategy is community self-reliance, which ensures ownership, responsible use and sustainability. The approach is geared towards an effective community capability independently and willingly to manage facilities provided to them so as to enhance long term utilization for their good health and wellbeing (pickford1996:23).

Community-based management Approaches has proven to be continuing strategy for operationalizing main stream participatory development in rural water supply projects and programs in sub-Saharan Africa Whaley and Cleaver (2017).

According to Harvey and Reed(2006) are that communities benefiting from an improved water supply should have a major role in its development, own the water system or facility, and have

overall responsibility for its operation and maintenance (O&M). In order for rural communities to achieve the intended objectives of the community management model, Water Sanitation and Hygiene Committee (WASHCO) are created. These are typically committees of six to ten elected community members and take responsibility for a water point. Examples of these water points would be an Africa hand pump, improved a conventional lever-action hand pump designed for heavy-duty use that is fully corrosion resistant, easy to install, and has excellent potential for community-based maintenance RWSN(2018) , deep and shallow wells, protected springs, public taps from gravity flow schemes, and rainwater harvesting (Chowns, 2015).Responsibilities of these committees are both technical (maintaining and repairing the water point) and financial (collecting and saving community contributions so that funds are available for maintenance and repairs), of which its effectiveness would ensure the sustainability of water points (Harvey and Reed 2004).

2.1.6. Water and Sanitation Policies in Ethiopia

The Federal Democratic Republic of Ethiopia's constitution Article 90 sub-Article one states that "to the extent that the country's resources permit, policies shall aim to provide all Ethiopians access to public health, education, clean water, housing, food and social security.

Before 1999, provision of potable water supply and sanitation facilities has been made without any policy framework. However, based on the Federal Democratic Republic of Ethiopia's constitution Macro-Economic and Social Policies and Development Strategies, the Ministry of Water Resources Development has formulated water resources management policy (1999) in which policy on water and sanitation has been given due emphasis. The Water Resources Management Policy calls for more decentralized decision-making; promotes the involvement of all stakeholders including the private sector; increasing levels of cost recovery; as well as integrating water supply, sanitation and hygiene promotion activities . Besides, Water Sector Strategy (2002) and Water Sector Development Program (2002-2016) have been endorsed to set a basis for sustainable development and management of the country's water resource. The 'Ministry of Health, similarly, formulated and endorsed the National Sanitation Strategy (2005), which aims at 100% adoption of improved water and sanitation.

The overall objective of water supply and sanitation policy is to enhance the wellbeing and productivity of the Ethiopian people through provision of adequate reliable and clean water supply and sanitation services and to foster its tangible contribution to the economy by providing water services that meet the livestock industry and other water user's demands (Ministry of water resource 1999).

Some of the detailed objectives of water supply and sanitation policy include:

- ✓ Provision of sustainable and sufficient water supply services to all.
- ✓ Carry out operation and maintenance of water supply and sanitation services in sustainable and sufficient manner.
- ✓ Promoting sustainable utilization of water resources through protection of water sources, efficiency in use of water as well as control of wastage.
- ✓ Creating sustainable capacity building in terms of the enabling environment, including institution, human resources development, and legislation and regular framework for water supply and sanitation.
- ✓ Creating conducive environment for the promotion of appropriate sanitation service (MoWR, 1999).

As it is indicated in the policy, the development and management of water supply facilities should be at decentralized level with full participation of the community and other stakeholders a key step to words sustainability.

2.1.7. Indicators of sustainable management rural Water schemes

All the users equal benefits and participate from water facilities (now and in the near future) technically in a good condition as well as the environment around the facilities, so that it always delivers a satisfying color, quantity and quality of water at an accepted distance to all the intended beneficiaries, so that they can benefit from a better health. Facilities are maintained this means that most of the spare parts tools and means to keep the system operational are available in the community that capable and available caretakers know and fulfill their responsibilities, so that facilities are monitored and cleaned regularly and all (preventive) maintenance is carried out.

Finances are managed this means that a capable and trusted water management committee has been elected by the community and is institutionalized. so that they can set an appropriate tariff system that covers administrative, operation, maintenance and replacement costs (based on the cost-sharing arrangements), so that fees are collected and finances accounted, managed and controlled, so that facilities continue to function over a prolonged period of time. Operation, maintenance and management are indicators of sustainable rural water schemes (Joanne 2005).

2.2. Empirical Evidences

In review literature factors have been identified by Gurmessa and Mekuriaw (2019) water service fee, willingness to pay, occurrence of conflict in the water points, monitoring by water user committees, willingness to sustain service, users' participation in the water point construction, satisfaction with the water point service, perception on the possibility of contamination, and training on maintenance are the major factors that affect the operational sustainability management of rural drinking water schemes. According to Birki and Abate reveals that very important aspect is consideration user's participation in constructing water schemes develop a sense of ownership among users, which in turn, increases the operational sustainability of the water points.

Kassa (2014) described as majority of the committees were frequently not collecting or managing sufficient funds to pay for repairs and maintenance. Furthermore, without sufficient funds and without an effective spare parts supply chain, water scheme sustainability is impossible. Moreover, due to negligent external support their interests in managing the water point were found weak.

Mebrahtu (2014) stated that Poor availability of spare parts, inefficient community financing, poor skill of caretakers, and less efficient water point protection were major problems, which decreased its effectiveness of water point management.

On the other hand, based on literature review of Lockwood (2004) identified two broad sets of issues which can lead to problems for community-managed Rural Water Supply Systems after projects have been implemented: Those limitations within the community: community dynamics, political or social conflict, lack of cohesion, lack of capacity (technical, managerial etc), lack of financial resources; and Those constraints which are external to the community:

lack of spare parts supply, lack of supportive policies and legislation or the lack of long term support to help communities through major repairs, conflicts and other problems with extension and upgrading.

For the purpose of this research work the following factors are tried to be discussed in detail in relation to the role they played in promoting the sustainability of community managed rural potable water schemes.

2.2.1 Factors Affecting Community Management of Rural Water Schemes

2.2.1. 1.Community Related Factors

a) Community participation

According to Gurmessa and Mekuriaw (2019) there's a significant important to consider users participation in constructing water schemes so as to develop a sense of ownership among users, which in turn, increases the operational sustainability of the water schemes.

In order for rural communities to achieve the intended objectives of the community management model, WASHCO are created. Committees are selected by community members or otherwise delegated by their community to take responsibility for a water point. Responsibilities of these committees are both technical (maintaining and repairing the water point) and financial (collecting and saving community contributions so that funds are available for maintenance and repairs), of which its effectiveness would ensure the sustainability of water points (Harvey et.al 2004) .

In rural water scheme, a key issue of sustainability is community ownership and management. Meaning that, the communities take the final decision on important aspects of the planning and implementation of water supply schemes in sustainable rural water supply systems. Currently involvement of community in different phases of the project is widely accepted by NGOs, governments and other stakeholders. Communities' participation in which the community takes the responsibility of managing the water supply systems by themselves is factor of sustainability rural water supply schemes (Beyene 2012).

b) Demand responsiveness

Sara and Katz (1998) proved that there's a significant relationship between the extent of demand-responsiveness and sustainable management, they define demand-responsiveness as the allowance of consumer demand to guide key-investments. Demand responding to the degree that users make choices and commit resources in support of these choices. This involves that users priorities their needs; it links the willingness to pay with the level of service and allows the community to make informed decisions.

Rural water supply can only be sustainable if it is demand driven. Communities must, therefore, request for the improvement of the water supply facility before it is constructed. Conversely, unless communities show interest and essentially demand for safe water supply service, there is a danger that the schemes will not be properly used and maintained (Getinet 2009).

C) User satisfaction

Braimah and Fielmua, (2011) in their study indicated that Demand-responsiveness (meaning that demand is expressed directly by householders, rather than through traditional leaders) at the household level is a determinant of overall sustainability primarily due to its role in increasing consumer satisfaction and willingness to sustain the system. According to them consumers are more likely to be satisfied with results such as quantity of water, color and test of water, distance and waiting time to fetch water when they initiate community management of rural water scheme are involved in decision-making, and informed about their responsibilities in terms of costs and Operation & Maintenance.

2.2.1.2. Technical Factors

The type of technology chosen affects operation and maintenance. A technology is considered suitable if it is socially acceptable, economically affordable and environmentally sound. Thus, user communities should have a say in technology choice and technology choice should not be considered too technical and beyond the comprehension of the community members, Technology options which are low-cost, easy to understand and easy to maintain and repair are likely to be more manageable than those that require specialist skills or equipment, (Harvey and Reed, 2004).

Technology choice, community acceptance, availability of spare parts, operation and maintenance skill, design and construction quality are the most obvious factors that affect management of rural water supply schemes. Technology choice is crucial to the sustainability of rural water supply (Getinet 2009)

2.2.1.3. Capacity building

Monitoring is generally very poor due to low capacity and lack of allocated budget, and limited occasional post-construction training for WASHCOs on O&M, bookkeeping, etc, (Chaka, et al, 2011). The provision of functional training to users and water user committees on the management and maintenance of the water schemes and equipping the community with knowledge and skill enables the community to properly monitor and manage the schemes, and solve problems and conflicts that arise in the water points (Gurmessa and Mekuriaw. 2019).

Community-based water management is a holistic process through which people, organizations, and societies continually mobilize, maintain, adapt, and expand their ability to manage their own sustainable development (German Technical Cooperation Agency 2018)

Capacity development can also take the form of education, organizational improvement, and awareness creation and understanding of water use and value by local communities (Mvulirwen and Alaerts 2017). Understanding that appreciates the systemic and multidimensional nature of capacity, focusing on the ability of human systems to perform, survive, and self-renew (Morgan 2006).

Participation requires training on household- and committee level. At committee level the training should provide the needed competences to keep the system operational. Development of management body's capacity before a project starts is crucial. If capacity building activities appear to be too complex, it might prove necessary choose of technology. This also indicates the needed training to run the service efficiently. Training should provide committees with technical information about how to prevent major problems, to operate the water system and repair parts. Further the committee should receive the needed financial and managerial training, especially those skills related to budgets, organizing bills, collection, recording expenses and revenue, monitoring, and applying agreement (Brikké and Rojas, 2001).

2.2.1.4. Institutional and Organization issues

Building of appropriate institutional structures for administration of water services is crucial aspect to achieve water schemes sustainability (Mwakila, 2008). Study made in Ethiopia on rural water supply sustainability indicates that overall the outside support after construction is too limited (Chaka, et al, 2011). The outcome of this study shows permanently on new construction and on implementation phase and very low in long-term support for capacity building and preventative maintenance, etc. With regard to O&M the system does not work well and even minor repairs cannot be repair in the community. Almost none or very weak private sector spare parts supply chains.

A review of the World Bank's program on rural water supply in India articulated the need for institutional linkages between local governments and communities in a decentralized mandate for service delivery (World Bank 2012). More attention is still needed to create stronger community-based service providers and institutions to provide operational and financial support to schemes when needed (Andres 2017).

The Government has all along continued to be the owner and in some cases the operator of the schemes. This approach has led to a lack of beneficiaries safeguard for the facilities, and unwillingness to contribute to the cost of operation and maintenance (Jimson 2016).

Experience has shown that even a well-constructed water system needs proper institutional arrangements to keep it functioning over time. One way of enhancing the sustainability of rural water scheme is the provision of legal and institutional support is crucial. In other words, there is a need for clear policy, strategy and a legal framework that supports sustainability of rural water supply schemes. the lack in the part of the government to setup an enabling environment for the development of a system and· management of drinking water supply services through effective community participation is seen as the reason for the failure as far as sustainability is concerned (Bezabih,2008). Generally successful community management requires constant and strong institutional support to increase rural water scheme sustainability.

Through WASHCOs, communities are responsible for covering O&M costs. WASHCOs work on a voluntary basis and the system for re-electing committees and holding them to account is difficult to establish. Research shows that there are limits to what can be realistically achieved

through volunteerism (Chowns, 2015). The operation and maintenance system is designed around the water committee; the breakdown of the committee can risk the maintenance of the water schemes.

2.2.1.5. Community financing

Community management of rural water schemes includes issues of community financing and the cost of operation and maintenance (Harvey and Reed, 2004). Community revenues to generate sufficient funds for required repairs, informing their view that communities should chose technologies and set tariffs that are affordable and appropriate with their economic status (Gine and Perez-Foguet 2008). Baumann (2006) stated the inability of WASHCO to collect sufficient revenue for repairs could reduce the life expectancy of installed water schemes.

The financing process, i.e., raising and maintaining adequate funds for the Water Supply Schemes facilities and activities, is clearly of critical importance to their performance and sustainability. Insufficient financing is a major factor in performance and sustainability of water supply schemes which, in turn, is often cited as a reason for Water Supply project failure. The commitment of resources, particularly financial resources, by beneficiary communities is seen as an important factor (Harvey, 2007).

Nedjoh (2003) argue that a lack of knowledge regarding maintenance costs, inadequate tariffs and high rates of nonpayment combined with ineffective collections and poor financial management undermines the ability of communities to establish such financing mechanisms.

2.3. Conceptual Framework

As tried to mentioned and discussed on all of the above section, that community management of rural potable water schemes were influenced by different factors and also clearly discussed the contribution of community management of rural potable water schemes on the sustainability of water schemes.

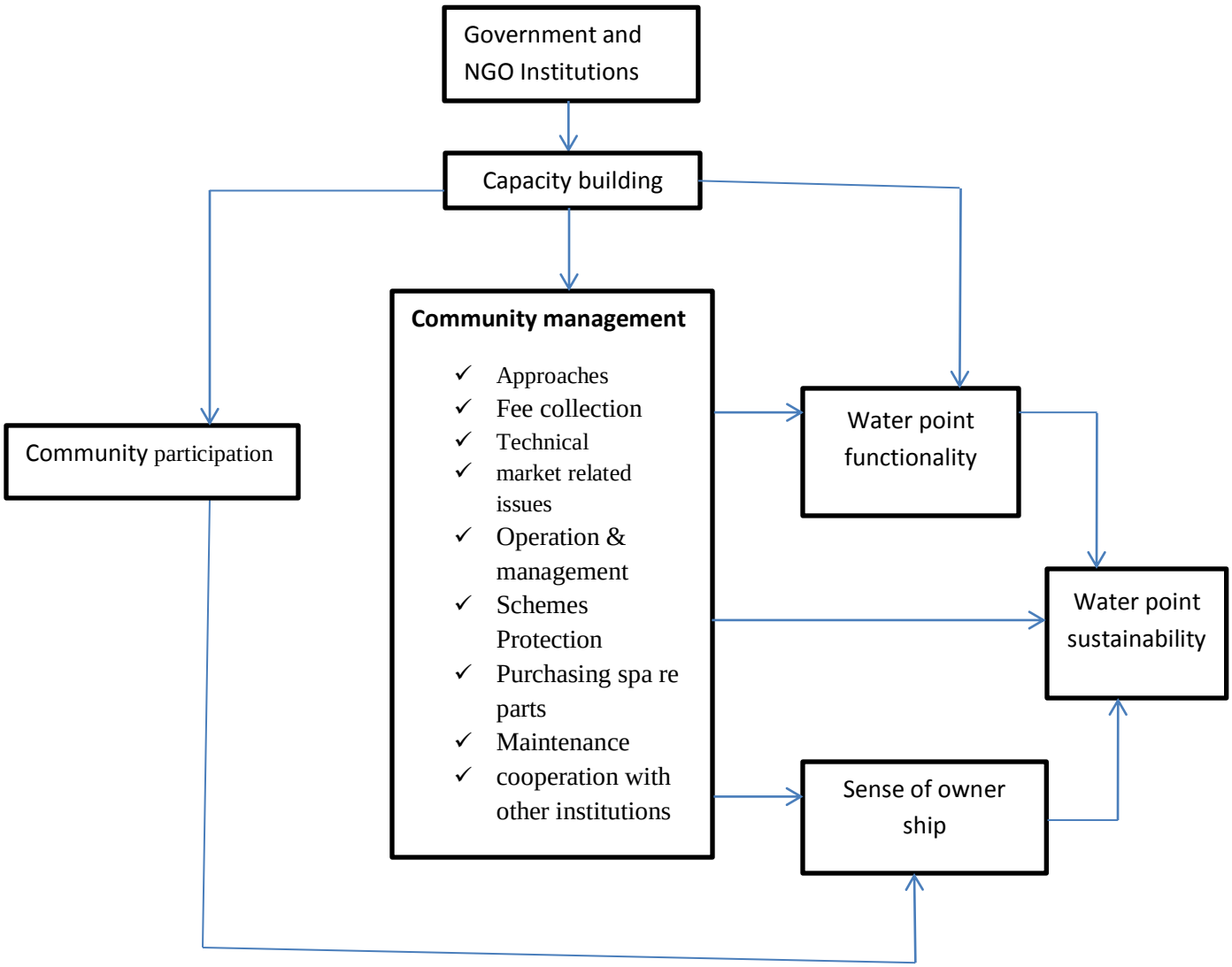

Figure2.1. Conceptual frame work of the study(source adopted from Brika2012)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Description of the study area

Delanta Woreda is located in South Wollo Administrative Zone of the Amhara National Regional State of Ethiopia. The woreda is bordered by Ambasel woreda to the East, Dount woreda to the West, Wadela and Angot to the North and Tenta woreda to the South. The woreda is divided in to 32 kebeles; 31 rural, 1 urban kebeles. The woreda's current administrative capital town Wegeltana is located at 516 km north of Addis Ababa, the capital of Ethiopia and 356 km to the East of Bahir Dar, the capital of Amhara region (Woreda finance and economy development office 2019).). The woreda has total population of 135,832 of which 124,783 in rural areas and 11,049 in urban areas (Delanta Woreda rural development office 2019).

The woreda have three agro climatic zones high lands or Dega' that covers 16 % of the area, kola 29.2 % and 54.8 % consists of moderate (temperate) or Woyina Dega. The area receives an average annual rain fall ranging from 500 to 1100 mm and average daily temperature from 15 to 20 oC. About 85.5 % of the woreda's economy is dependent on Agriculture. The major crops grown in the area are wheat, chickpea, lentils, sorghum and barley, which are mainly rain fed. Live stocks are cattle, horse, mule, donkey, goat, sheep and poultry are used for consumption, as major sources of farm power and cash income through sales. Oxen are the major source of draught power and horse and mule used for transportation purpose while, Donkeys are used for transporting for and marketing processes (Delanta Woreda rural development Office, 2019).

The data obtained from the woreda rural water development office revealed that at the end of (2019) there were about 497 water supply schemes. Out of these water supply systems 227 were hand dug well, 238 protected springs, seven shallow wells, 12 new piped constructions and 13roof water harvesting in 31 rural kebele of the woreda. Out of the total rural water supply schemes more than twenty six percent were found to be nonfunctional during the period under consideration. Regarding service coverage, access to safe water supply in Delanta woreda is estimated to be 80.59% in the urban and 76.19 % in the rural areas.

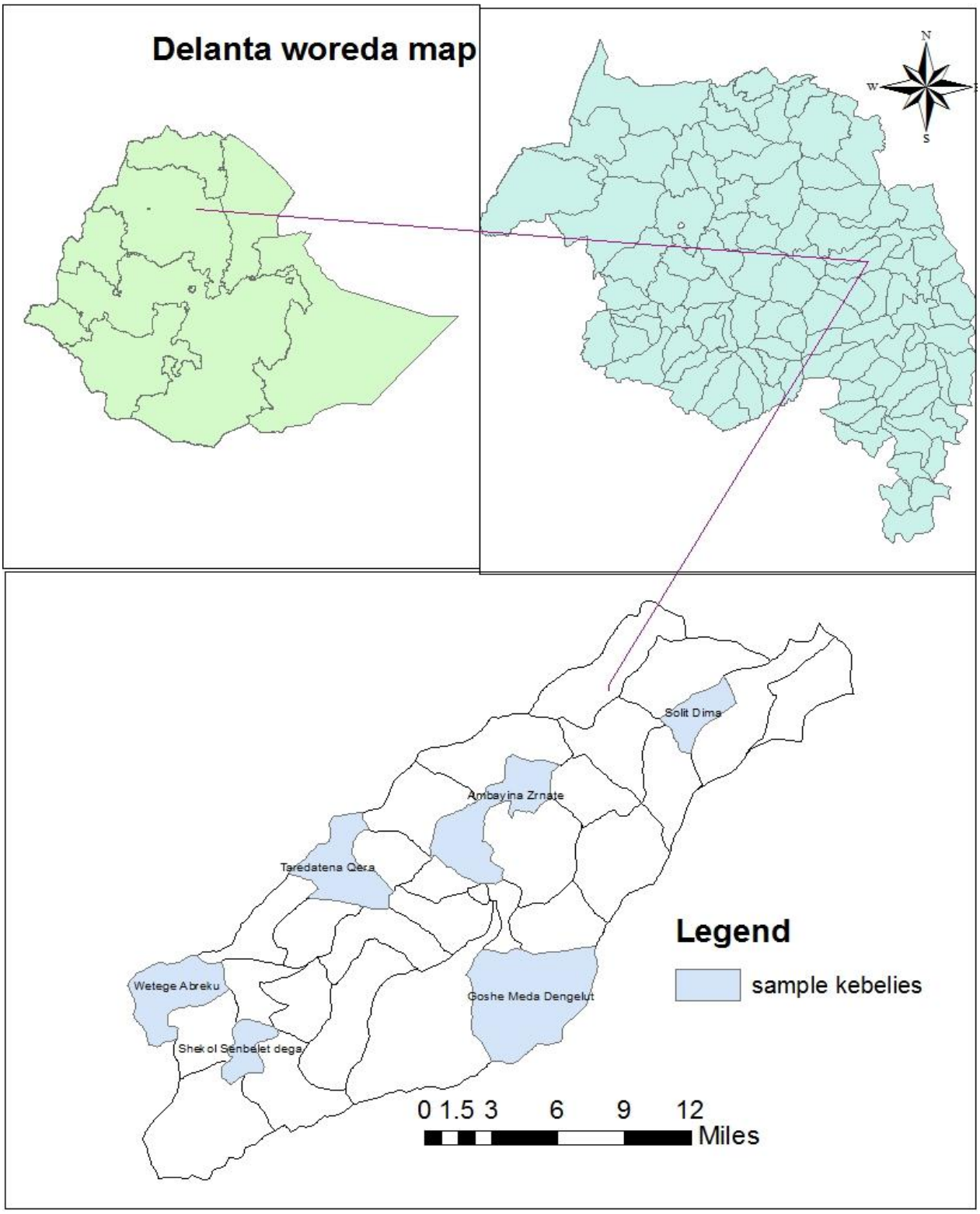

Figure3.1. Delanta woreda map

3.2. Research Design:

The research employed mixed methods as a broader research design and concurrent triangulation as a specific strategy whereby both qualitative and quantitative data were collected and analyzed at a time in order to describe the current conditions, terms or relationships concerning in a certain specific field problem (Creswell, 2009). Hence, this method was selected purposively to obtain information concerning the current status of the phenomenon, and describe and explain the current status of the practice and factors describing community management of rural water schemes in the study area once at a time. In addition, concurrent survey research design method was advantageous to collect details and rich data from many respondents once at a time which was possibly leads to important recommendation.

3.3. Target of the Population

The target populations of this study were 24,074 house hold of Delanta woreda. In addition, woreda administrative officials, experts and other relevant stake holders working on water are the target population of this study.

3.4. Sample Size Determination

According to Polit & Hungler (2013) sampling is selecting a sub-section of a population that represents the total population in order to obtain information regarding the phenomenon of concern. It's a technique by which a few subjects are chosen from the target population to be studied in such a way that the sample can be used to estimate the same characteristic in the total target population. The advantages of using samples rather than surveying the population are that it is a much less costly, quicker and if selected properly gives results with known accuracy that can be calculated mathematically.

For this research, multi-stage sampling procedure was employed to select the sample. First Delanta woreda was selected purposively from south Wollo Zone because; it is one of the high numbers of non-functional water schemes woreda. At the second stage from the existing 31 rural kebeles of the woreda, a total of six rural kebeles were selected as a sample. To select the sample kebeles, first the existing 31 rural kebeles were stratified into two group water scheme functionalities kebeles above the woreda average water scheme functionality (74%) and kebeles below and equal the woreda average functionality (74%). Then, to have a representative sample,

three kebeles, namely Ambaye Zeriniat (04), Wteyo Aberkut (012) and Tardiyat (07) out of 15 rural kebeles functionality above the woreda average (74%) water scheme functionality and three kebeles namely Selit dima (027), Gosh meda (019) and Baba (014) out of 16 rural kebeles below and equal the woreda average functionality (74%) were randomly selected

Kebeles functionality performance report According to Delanta woreda water office (2019)

Table3.1. Delanta woreda kebele water scheme functionality

Kebele	No of water scheme	Functional water scheme	Non-Functional water scheme	present	Rank	Selected kebele
026	1	1	0	100%	1	04,012 and 07 Above average woreda water schemes functionality
03	30	27	3	90%	2	
01	22	19	3	86%	3	
022	21	18	3	86%	3	
024	26	22	4	85%	5	
011	19	16	3	84%	6	
015	6	5	1	83%	7	
025	6	5	1	83%	7	
04	23	19	4	82%	9	
012	16	13	3	81%	10	
013	21	17	4	81%	10	
07	30	24	6	80%	12	
028	14	11	3	79%	13	
08	24	19	5	79%	13	
017	9	7	2	78%	15	
010	26	20	6	76%	17	
06	19	14	5	74%	18	014,019 and 09 below and equal woreda average water schemes functionality
014	19	14	5	74%	18	
02	30	22	8	73%	20	
031	11	8	3	73%	20	
018	7	5	2	71%	22	
021	9	6	3	67%	23	
05	18	12	6	66%	24	
023	27	17	10	63%	25	
016	10	6	4	60%	26	
029	15	8	7	55%	27	
019	13	7	6	54%	28	
09	5	2	3	40%	29	
020	2	0	2	0%	30	
027	1	0	1	0%	30	

Next to kebele selection determine the sample size of house hold. There are several approaches to determine the sample size of house hold. Thus, since including all target population was difficult, the researcher was use simple random sampling techniques to select household sample. Because it gives each element in the population an equal probability of getting into the sample and all choices are independent of one another.

As beneficiaries are the main primary data sources of this study, from the total of 4502 households of the six samples rural kebeles a total of 108 households, which was proportionally allocated for the sample kebeles.

To calculate the sample size of the population the researcher was used Yamane Taro formula (1967) out of 4502 total population 108 are sample. The formula provided by Yamane, Taro was used to determine the required sample size at 90% confidence level, degree of variability = 0.1 and level of precision = 10%

$$n = \frac{N}{1+N(e)^2}$$

$n=4502/1+4502(.1)^2$

n= 98+10(contingency)=108 respondents were used

Where:

n is the sample size,

N is the total number of target group, and **e** is the level of precision. By using the above formula, the total sample size of the study is 108 respondents.

Table3.2.Summary of Household Survey Sample Size

Woreda	Kebeles water scheme functionality above and below the woreda average water scheme functionality (74%)	Sample Kebeles	House Holds	
			Number of Total Households	Number of Sample Households
Delanta	Kebeles water scheme functionality above 74%	Wteyo Aberkut (012)	617	14
		Ambaye Zeriniat,(04)	1155	25
		Tardiyat (07)	972	21
	Kebeles water scheme functionality below and equal 74%	Selit Dima	320	7
		Gosh Meda (019)	764	17
		Baba (014)	674	15
		contingency	10%	10
	Total		**4502**	108

Next to house hold determination interview was made with individuals of woreda and zone water offices head, woreda water office expert, agriculture development head, health office head, Delanta woreda NGO manager, and NGO expert and Delanta woreda administrator were also interviewed using pre-designed interview guide.

Four Focus Group Discussions were conducted at Gosh meda, Tardiyat and Baba with men WASH committee members and Ambaye Zeriniat with women WASH committee members. In each group, 8-10 participants were involved in the discussion, by using pre-designed cheek list.

3.5. Data Type and Source

3.5.1. Sources of data

For the purpose of this study data were collected from both primary and secondary sources. Primary data was collected through household survey, focus group discussion (FGD) and key informant interview (KII). While secondary data was collected from government and non-governmental publications, annual and inventory reports, previous studies, books and websites.

3.5.2 Data Collection Instruments

In order to obtain the necessary information from participants, three types of data collecting instruments was used. These are;

3.5.2.1. Household survey

Closed ended questionnaire was employed to collect quantitative data from selected household respondents. This is because; this item is suitable to conduct survey and to acquire necessary information from large number of study subject with short period of time. The questionnaires have two parts: The first part of the questionnaire describes the respondents background information includes: sex, academic qualification, ages, and experience. The second and the largest part incorporate the whole possible variables using closed ended question items. The close ended items will be prepared by using Likert scales. The value of the scales was between one and five (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree).

3.5.2.2 Focus group discussion (FDG)

The FGD is used because it enables respondents to give extended ideas and it has also advantage in that it saves time, money and more information can be obtained one- time discussion (Kothari, 2004). It was providing the opportunity to involve people with various experiences and make each other to remember issues that was raised because these issues may be forgotten if the participant separately interviewed. Accordingly, the discussion is conducted using open ended question**.** On average eight people was participated in the focus group discussions in four kebele. One group with women water committee and three groups with men's water committees were participated.

*3.5.2.*3. Key informant interview (KII)

A key informant interview was particularity important in generating information related to water service management of community training and awareness creation; communities' participation, technical, institutional, technological, social and financial efforts made so far to improve problems related to sustainability of rural water supply facilities. Hence, views of water supply office (experts and heads) were important as they have better knowledge of the case in point. An interview guide was prepared and information was gathered through unstructured interview. woreda and zone water offices head, woreda water office expert, agriculture development head, health office head, Delanta woreda NGO manager, and NGO expert and Delanta woreda administrator, were interviewed.

3.6. Data Presentation and Analysis

Both quantitative and qualitative methods of data analysis were used. The Primary data collected from household survey through questionnaires was first checked for accuracy and data entries coded. Then, the data was entered, edited and analyzed using Statistical Package for Social Science (SPSS) version 20software and MS-EXCEL. Descriptive statistics such as averages, frequency, percentages, ratio, charts, graphs and was used to present the data quantitatively.

On the other hand the qualitative data collected using open ended questions of the survey questionnaire; interviews held with technical staff members of woreda, zone water offices head, woreda water office expert, agriculture development head, health office head, Delanta woreda NGO manager, and NGO expert and Delanta woreda administrator water committees was organized and analyzed qualitatively through thematic and narrative analysis. by reading through all of the qualitative data, it was reviewed and organized to develop a general understanding of the data set and short memos were prepared which was best help in organizing and categorizing the data in to themes. Then, through narrative description the results of the entire qualitative data were analyzed and interpreted. Lastly, the analysis and interpretation of qualitative and quantitative data are integrated to handle the research problem.

3.7. Pilot Study and Quality Assurance of the Instrument

A pilot test was conducted on 10 samples to refine validity of qualitative questions and identify deficiencies in the design of questions prior actual survey. Respondents suggest as there were

have repetition of questions; therefore researcher makes modification. Moreover, the researcher showed the questionnaire to different individuals to forward their comments regarding the content of the questionnaire and they replied it was consistent to the study's objective.

For the quantitative data the researcher used SPSS version 20 to conduct reliability test. Reliability is determined through the interpretation of Cranach‟s alpha, which is a reliability coefficient that indicates how well the items in a set are positively correlated to one another (Sekaran & Bougie, 2010). The reliability of each measure was assessed by coefficient alpha using the SPSS as indicate in Table below

Table3. 3. Rule of Thumb for Cronbacs Alpha Coefficient Value

Alpha Coefficient Range	Strength of Association
<0.60	Poor
0.60 to <0.70	Moderate
0.70 to <0.80	Good
0.80 to <0.90	Very Good
>0.90	Excellent

Adapted from Zikmund et al (2010)

3.8. Ethical considerations

For the desirable end of the research to be conducted, the ethical consideration is very important. In consonance with this principle, the researcher was governed by the ethics of conducting research. Here are some specific points considered:

All the research activities was based on the permission of the people who involve the research; all the information given by respondents was employed for the research purpose only and kept as secret. Objectivity vs. subjectivity in the research was another important consideration. The researcher assured that personal biases and opinions were not involved the way of research. When reporting the results the researcher accurately represents what actually observed or what was told.

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND DISCUSSIONS

4.1. Introduction

This study is to assess community managed rural potable water schemes in Delanta Woreda, Amhara Region. Data were collected from householders, focus group and key informants through closed and open questionnaire. The closed questionnaire was interviewed to 108 house holders and open questionnaire to focus group and key informants lastly analyzed using descriptive statistics and presented as follows in this chapter.

4.2. Response Rate

The response rate of a study helps to determine the statistical power of a test. A higher response rate increases the test statistic. This in return increases the accuracy of the test and subsequent inferences arising from the test. In this study, the researcher distributed 108 all questionnaires were filled and returned. This shows that the return rate is 100 % which is considered as adequate to make conclusion from the collected data.

4.3. Scale Measurement (Reliability Test)

Table4. 1. Summary of Reliability Statistics

	Cronbach‟s Alpha result	Number of Item	Number of respondents
Approaches of rural water supply and management	.839	3	108
Rural water management Practices and participation of community	.800	7	108
Factors affecting community management of rural water schemes	.803	6	108
Institutional aspect of community management	.859	6	108
Perception and satisfaction of users of potable water supply	.802	5	108
Financial related issues	.799	5	108
Capacity building related issues	.875	5	108
Technical related issues	.712	4	108

(Source: SPSS version 20.0 outputs)

According to Table 4.1, above, the Cronbach‟s alpha value of approaches of rural water supply and management is 0.839, rural water management Practices, participation of community is 0.800, Factors affecting community management of rural water schemes is 0. 803, Institutional aspect of community management is 0.859, satisfaction of users of potable water supply is 0.802, financial related issues is 0.799, Capacity building related issues is 0.875 and Technical related issues is 0.712. All dimensions‟ Cronbach‟s Alpha is above the cut point of 0.7. Therefore, it can be concluded that all the items in each construct of this study show a stable and internally reliable.

4.4. Demographic Characteristics of Respondents

Demographic factors are important indicators of sustainability of community managed rural water schemes. Even though demographic characteristics are not having great influence with this study, the researcher considers some of them which are believed to have relation with the study. Hence, the demographic characteristics like Age, Gender, Marital status, Educational level, House hold size and Major occupation are emphasized below.

4.4.1. Gender of Respondent

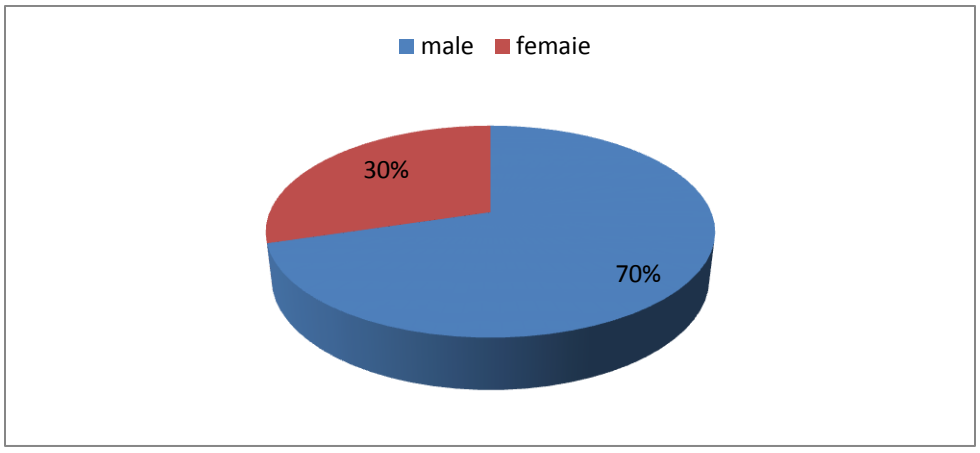

Figure4. 1. Gender of respondent

(Source: own survey, 2020)

Basing to figure 4.1, above 70 % of the respondents was male while the remaining 30% of them were females. This notifies that majority of the house hold were males. From point of interview

the approve that males less acceptance water schemes related problems rather than female household, because water related work are traditionally given to females.

4.4.2. Age of Respondent

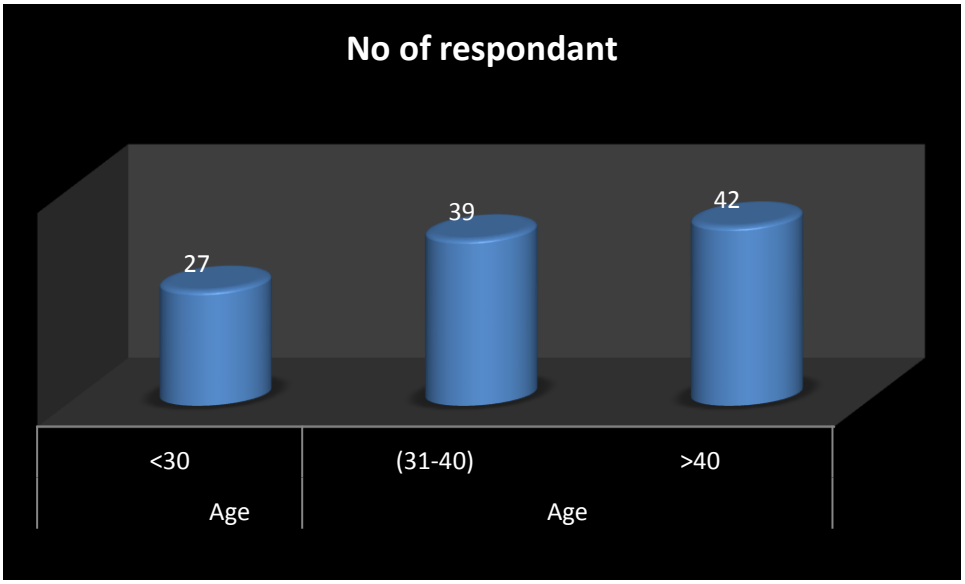

Figure4. 2. Age of respondent

(Source: own survey, 2020)

The above Figure 4.2, shows that from the total 108 respondents 27(25%) of the respondents were concentrated the range of <30 ages, 39(36.11%) respondent between the ranges 31-40 ages and 42(38.88%) of respondents were greater than 40 ages. The majority of respondents greater than 40 years ages which are mainly considered as stable population.

4.4.3. Marital Status of Respondent

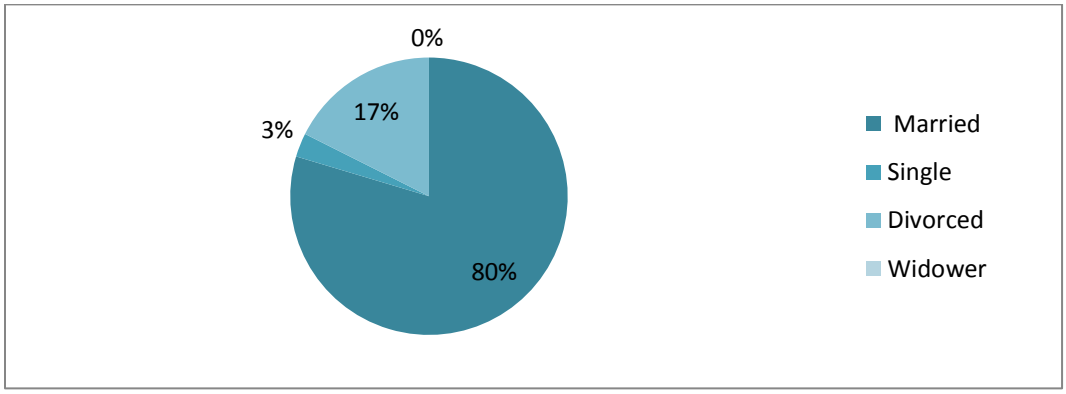

Figure4. 3. Marital status of respondent

(Source: own survey, 2020)

Figure 4.3, shows that from the total 108 respondents most of them respondents 80% were married, others were single, widowed, separated and divorced. This implies that most of the respondents interviewed were have also stability life in the study area.

4.4. 4. Household Size of Respondent

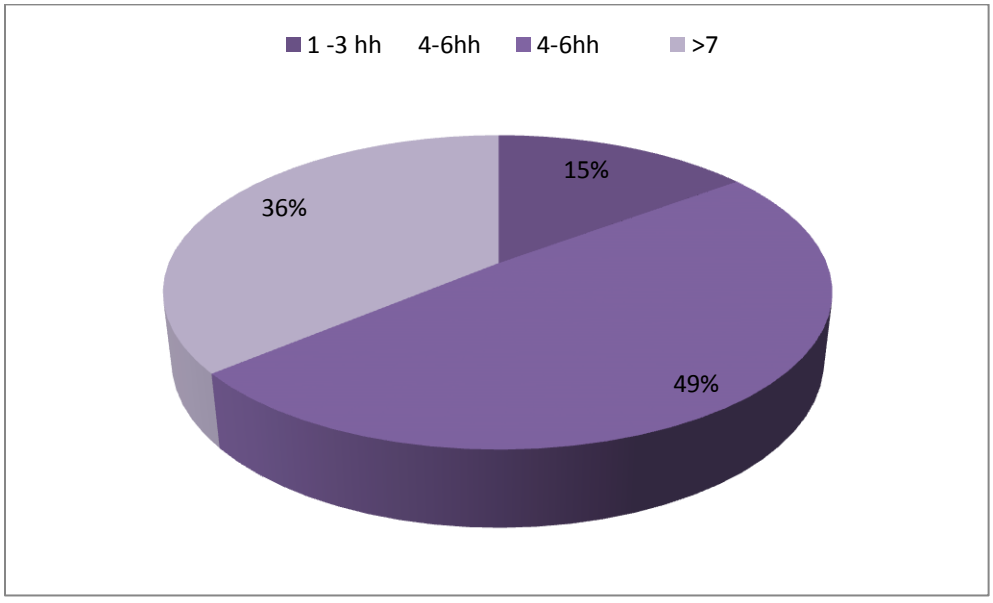

Figure4. 4. House hold size of respondent

(Source: own survey, 2020)

The above Figure 4.4, shows that from the total 108 respondents 49% of the respondents were household size concentrated between the range of 4-6, 36% respondent between the ranges 1-3 and 15% of respondents were greater than 7. The majority of respondents between 4-6 house hold.

4.4.5. Major Occupation of Respondent

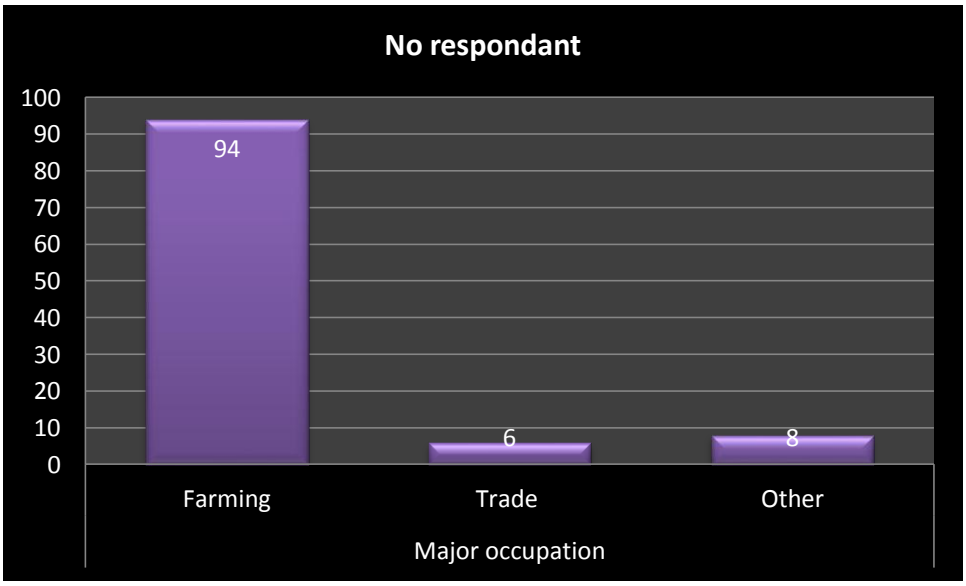

Figure4. 5. Major occupation of respondent

(Source: own survey, 2020)

Figure 4.5, above depicts from the total of 108 house hold respondents 87.03% of the respondents were working related with farming 5.5% of the respondents were trade related work and 7.4 % of the respondents were related with other work. This indicates that majority of the household were farming. According to the above data majority 87% of the household were farmers; which leads to have stability in the study area it also good to care the water schemes.

4.4.6. Educational Level of Respondent

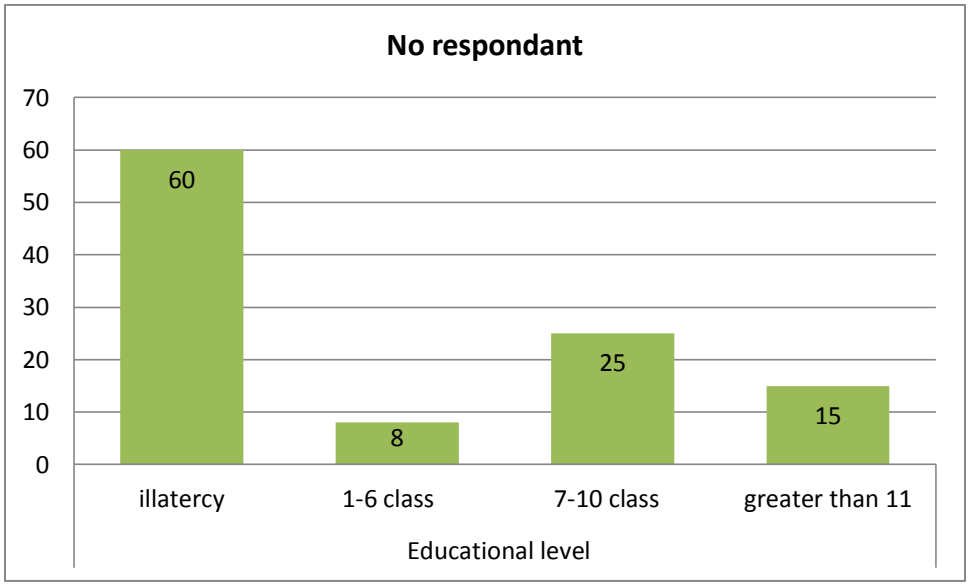

Figure4. 6. Educational level of respondent

(Source: own survey, 2020)

Figure: 4.6. Above were intended to show the household educational level. When we look at the educational level from the 108 total respondents 64.8% were illiteracy, 7.4% between 1-6 class, 27% were 7-10 class and the rest 13.88 were greater than grade 11. On the basis of the findings, we can conclude that illiteracy level in the rural setting of Delanta woreda was high. This in turn could be one reason for problems of rural water supply schemes sustainability. KII and the FGD participants indicated that the low level of awareness is the factor for absence/weak community sense of ownership to the developed water supply schemes.

4.5. Community Management of Rural Water Supply Schemes Related Questions

4.5.1. Approaches of water supply and management

There are two approaches to rural water supply: Basic need approach and demand driven approach. By the early 1990s, World Bank had officially adopted the demand driven approach to water supply management. This approach was adopted in order to correct short comings of the basic needs or supply driven approach i.e. insufficient coverage, high cost, and poor utilization

(Kleemer, 1995).As indicated in the review of related literature rural water supply can only be sustainable if it is demand driven.

Table4. 2. Approaches of water supply and management

S.N	Description	**1**	**2**	**3**	**4**	**5**	**Cumulative**
1	The water schemes were supply and managed by supply driven approach	3.7	27	0.9	66.7	3.7	100
2	The water schemes were supply and managed by demand driven approach	1.9	30.6	3.7	60.2	3.7	100
3	The water schemes were supply and managed by both approaches	7.4	8.3	0	69.4	14.8	100

(Source: own survey, 2020)

(1=Strongly Disagree, 2=Disagree, 3=Moderate, 4=Agree, and 5=Strongly Agree)

The responses were indicated on the above table 4.2, the water schemes supply and management approach were both approaches (supply driven and demand driven approach) 84.2% of them were agree and strongly agree. An interview made with KII and FDG indicates that both approaches of water supply and management are the dominant one. From the water schemes was supply driven point of view the table above depicts 70.4% were agree and strongly agree. The water schemes demand driven approach were 63.9 % of them were agree and strongly agree 32.5% disagree and strongly disagree and 3.7% were also neutral. From this we can conclude that in the water schemes supply and management external influence high that means supply driven approach. i.e., the approach was not demand responsive which could be one factor that affected sustainability of the facilities. There for the sustainability of community managed water scheme at risk.

4.5.2. Practices and participation of community water supply and management

Community can be viewed as those concerned with the water schemes management and those who stand to get benefits. Hence, sustainability cannot be achieved without their practice and participation. In rural water scheme, a key issue of sustainability is community ownership and management. Meaning that, the communities take the final decision on important aspects of the planning and implementation of water supply schemes in sustainable rural water supply systems. Communities' participation in which the community takes the responsibility of managing the water supply systems by themselves is increase sustainability rural water supply schemes (Habtamu 2012).

Table4. 3. Practices and participation of water supply and management

S.N	Description	**1**	**2**	**3**	**4**	**5**	**Cumulative**
1	Site selection of the water supply scheme	2.8	56.5	5.6	35.2	0	100
2	WAHS committee establishment	5.6	3.7	4.6	83.3	2.8	100
3	Water supply scheme Provision	0.9	14.8	1.9	76.9	5.6	100
4	Technology selection	6.5	57.4	13.0	21.3	1.9	100
5	Continuous management of water supply scheme	2.8	64.8	2.8	28.7	0.9	100
6	Improvement the problems of water supply schemes	3.7	40.7	0.9	53.7	0.9	100
7	Sense of ownership to the Scheme	4.6	9.3	2.8	77.8	5.6	100

(Source: own survey, 2020)

(1=Strongly Disagree, 2=Disagree, 3=Moderate, 4=Agree, and 5=Strongly Agree)

The responses were indicated on the above table 4.3, for example community continuous management of water supply scheme is the main cause of sustainability or not 67.6% of the respondents were disagree and strongly disagree while the rest of them were neutral, agree and

strongly agree. This indicates community did not manage the water schemes. There for the water schemes are not as such sustainable up to construction life. Us we see technology selection and site selection of the water supply scheme community participation more than 59.3% of the respondents were disagree and strongly disagree. This means that majority of the community did not participate in technology selection and site selection of the water supply scheme.

Interviews with Delanta woreda water office head Ato Zenab and manager of Delanta woreda concern non-governmental organization Ato Solomon indicate that technology selection was entirely the responsibility of mostly the expert. They further explained that observing the hydrological characteristics of the water sources to be improved need professionals' decision on the type and level of technologies to be installed in water points. Absence of community involvement in selecting technology and site, however, hampers the possibility of ensuring the appropriateness of the technology to the community, and his decision minimizes users' interest or motivation to operate and maintain technologies installed. Furthermore, escaping user involvement in technology selection is indicator of the supply-driven nature of the approach that has been adopted by the interventionists. Users' participation during the management of water points is the decisive factor to stimulate sustainable management and maintenance of schemes by communities.

At the time of FGD committee composed of five up to seven members. This provides scheme level management and an opportunity for effective community participation, where if strong leadership and capacity is created, schemes will have better chance to sustain. Similarly, majority of the participants of FGD confessed that the non-functionality problem is in one way or another related to absence of sense of ownership due to low level of awareness, failure of the scheme to provide adequate and continuous service that satisfy demand of beneficiaries, existence of alternative sources particularity traditional wells for some members of the community and party due to lack of full participation in all stages of the project cycle

KII said that community have shown active participation in the initiation stage of the water schemes and agree with the government and the contractor of the schemes to contribute labor and local materials, but not much participate in the construction time and continuous management of the schemes all thing must be done by the government think the community it was the serious problem of water schemes sustainability.

Thus, based on the above findings it can be concluded that rural communities in the study area have weak or no participations to develop and manage water supply facilities that could be major factor affecting sustainability of rural water supply schemes.

4.5.3. Factors affecting community management of rural water schemes

Table4. 4. Factors affecting community management of rural water schemes

SN	Description	1	2	3	4	5	Cumulative
1	Community participation	.9	17.6	0.9	74.1	6.5	100
2	Technical and market factor	4.6	7.4	0.9	75.0	12	100
3	Financial reasons	2.8	10.2	2.8	70.4	13.9	100
4	Capacity Building Issues	2.8	17.6	1.9	67.6	10.2	100
5	Institutional Factors	4.6	14.8	0.9	71.3	8.3	100
6	Environmental factors	32.4	35.2		24.1	8.3	100

(Source: own survey, 2020)

(1=Strongly Disagree, 2=Disagree, 3=Moderate, 4=Agree, and 5=Strongly Agree)

The above table 4.4 revealed whether the community management of water schemes through different factors and the responses of the respondents were clearly shown above by using their percentage results. Community participation, technical and market factor, financial reasons, capacity building issues and institutional factors were affect sustainability of water schemes more than 70 % of the response of respondents were agree and strongly agree

An interview with KII and FDG also support the above finding and they assured that there is no as such attractive institutional set up which may bring a good capacity building of the community, committee and other stake holders to motivate community participation and to solve technical and market factors.

From this it is safe to conclude that the majority of water scheme sustainability factors affect negatively. Regarding environmental factors affect community managed water scheme

sustainability 67.7% of the respondents strongly disagree and dis agree because the factor of environment covered by the other factors.

4.5.4. Institutional aspect on community management of rural water supply schemes

Building of appropriate institutional structures for administration of water services is crucial aspect to achieve improved water schemes sustainability (Mwakila, 2008).

Table4. 5. Institutional aspect of community management of rural water supply schemes

SN	Description	1	2	3	4	5	Cumulative
1	Community obtain adequate support from government to effectively manage water supply scheme	5.6	83.3	1.9	6.5	2.8	100
2	Community obtain adequate support from NGOs to effectively manage water supply scheme	6.5	79.6	2.8	7.4	3.7	100
3	There is clear rule and regulation to manage scheme	8.3	85.2	0	5.6	0.9	100
4	Committees effectively and voluntarily perform their water schemes management activity	14.8	58.3	1.9	25	0	100
5	Informal organization effectively managed water scheme(committee)	10.2	73.1	5.6	8.3	2.8	100
6	Community get spare parts to carry out operation and Maintenance	38.9	51.9	0	8.3	0.9	100

(Source: own survey, 2020)

(1=Strongly Disagree, 2=Disagree, 3=Moderate, 4=Agree, and 5=Strongly Agree)

As one can observe from the above table 4.5, for instance community obtain adequate support from government and NGO to effectively manage water supply scheme more than 85% of the respondents response were disagree and strongly disagree while the rest of them were neutral, agree and strongly agree. More than 83% of the respondent's response disagree quotation related with the effective management of informal organization. This indicts there is no effective institutional set up to manage the improved rural water schemes. More than 95% of the respondent's responses there were no awareness the rule and regulation to manage scheme. To solve the breakdown of the scheme and more than 80 % of the respondent's responses there were

not availability of spare parts and availability of maintenance service around the study area. This shows community managed improved rural water schemes sustainability was challenged.

Woreda water office head Ato Zenabe Berhanu and woreda water office expert said that woreda water office institutions didn't address the problem of water scheme in the rural area because, the number of water schemes increasing, they are also poorly budgeted, do not have the adequate facility to carry out their and in general do not have attention to the sector.

In addition to water committees and woreda water development offices, there are also zonal and regional water, office and bureau that are responsible for the development and management of potable water supply in the region NGOs are also the vital stakeholders in the development of the water schemes. Their contribution, however, was limited to technical support to the grassroots structures especially management of water schemes after construction.

All the above-mentioned institutions are expected to interact, both vertically and horizontally among each other to improve the sustainability of water schemes in the rural part of the woreda. But as to the key informal interviews and FGDs, WASH committees and community do not get adequate assistance and support from the above ladders. On the other hand, they themselves have not shown the initiation and effort to get support from the above ladders. They are not even trying to administer the existing points, by exploiting resources around them. The inadequacy of each support impacts the required improvement of community management of water scheme sustainability.

From this finding conclude that due to increasing number of water schemes and weak human resource capacity of the WWRDO didn't adequate support the community water sachems in the other way stake holder, committee and community low level of awareness the rule and regulation of water schemes and weak management of the grass root informal institutions (committee) water schemes in the study area are institutional factor that affects sustainability of RWS schemes.

4.5.5. Satisfaction of users on potable water

Braimah and Fielmua, (2011) in their study indicated that consumers are more likely to be satisfied with results such as quantity of water, color and test of water, distance and waiting time

to fetch water when they initiate community management of rural water scheme are involved in decision-making, and informed about their responsibilities in terms of costs and O&M increase water schemes sustainability.

Table4. 6. Perception and satisfaction of users of potable water

SN	Description	**1**	**2**	**3**	**4**	**5**	**Cumulative**
1	Satisfied with water point distance	4.6	40.7	0	43.5	11.1	100
2	Did not satisfied well with the taste and color of water	1.9	54.6	2.8	30.6	10.2	100
3	Satisfied with the available of water resource	6.5	59.3		24.1	10.2	100
4	Satisfied with the current water schemes service and Management	4.6	64.8	0.9	20.4	9.3	100
5	Equal right to benefit from the developed rural water supply schemes	4.6	10.2		46.3	38.9	100

(Source: own survey, 2020)

(1=Strongly Disagree, 2=Disagree, 3=Moderate, 4=Agree, and 5=Strongly Agree)

Table 4.6 above tried to verify whether communities are satisfaction with current improved water schemes service or not. As it can be depicted above 69.4% of the respondents were not happy with the current water schemes service and management while the remaining 30% of them are happy. This shows that communities were not feeling good to the management and service that is occurred in their water schemes. While KII and FDG tried to get the main reason why community were not satisfied with the current water schemes management loss of collected money, there is no auditing and reporting system related to the water schemes, lack of experience water schemes maintenance ,lack of skill and knowledge and soon. From this study finding due to construction and treatment of improved water schemes water tastes, smell, color fetching

distance are relatively improved, so the community satisfied. But the community didn't satisfaction with availability of improved water service.

4.5.6. Financial factors of community management of rural water schemes

Kassa (2014) described as majority of the committees were frequently not collecting or managing sufficient funds to pay for repairs and maintenance. Furthermore, without sufficient funds and without an effective spare parts supply chain, water scheme sustainability is impossible. Moreover, due to negligent external support their interests in managing the water point were found weak.

Rural communities have been given the right to set service fee rates for themselves. Before construction of water supply schemes WAHS committee elected. Discuss and set service fee rate, which should relatively fair and be affordable by users. They had also been given the right to decide the time when it should be collected. Service fee is the backbone of community management. Regular and consistent fee collection is also an indicator of community awareness, enhanced sense of ownership, and the likelihood of sustainability of developed schemes. It is the source of finance for operation and maintenance. Service fee collection increases communities' confidence to solve their own problems, than expecting others to help them.

Table4. 7. Financial factors of community management of rural water schemes

SN	Description	1	2	3	4	5	Cumulative
1	Beneficiaries pay for potable water access	1.9	40.7	0	54.6	2.8	100
2	Received water users receipt for service	11.1	79.6	0	5.6	3.7	100
3	Community agree the price of the water fees	3.7	38.9	0	54.6	2.8	100
4	There is auditing and reporting system users fee	19.4	63.0	5.6	8.3	3.7	100
5	WASH committee have the capacity to manage the finance	8.3	44.4	24.1	20.4	2.8	100

(Source: own survey, 2020)

(1=Strongly Disagree, 2=Disagree, 3=Moderate, 4=Agree, and 5=Strongly Agree)

The above table 4.7 revealed that in financial factors of community management of rural water schemes the responses of the respondents were clearly shown above by using their percentage results. For example:- Beneficiaries pay for potable water access 42.6% of the respondents were disagree and strongly disagree while only 57.4% agree and Strongly Agree. More than 50% of respondents received water users receipt for service, 82.4% of the respondents said that there is not auditing and reporting system user's fee and WASH committee have the capacity to manage the finance 52.7 strongly disagree and disagree. While KII and FDG tried to get the main reason why community were not satisfied with the current water schemes management related with financial factors loss of collected money, there is no auditing and reporting system related to the water schemes, lack of experience water schemes maintenance ,lack of skill and knowledge and rapidly. Breakdown of the protected water source the villagers forced to use unprotected traditional sources. Regarding the reason for using unprotected source FGD participant in Gara Gote, Gosh meda kebele argues:

It has been about six month the water supply scheme failed to provide service. We were very happy when the developed water supply scheme was functioning. For ours, it seemed as if I were dreaming, we found and lost it in short moment. Consequently, we reverted back to alternative traditional water source that is why we are using from our own unprotected well as staying a day is difficult without water. Source: FGD, 2020.

From this it is safe to conclude that the water scheme financial related issues have no as such well-designed and communicated to meet objectives of sustainability of developed schemes which have a negative suggestion upon a successful use of water schemes.

4.5.7. Capacity building of community to manage rural water schemes

As indicated in the review of related literature capacity limitations were restricting water user communities from getting safe and potable water from their scheme on a sustainable basis. Community participation requires training on household- and committee level. At committee level the training should provide the needed competences to keep the system operational and at community level the use of improved water schemes. Development of management body's capacity before a project starts is crucial. If capacity building activities appear to be too complex, it might prove necessary to choose for another technology. This also indicates the

needed training to run the service efficiently. Training should provide committees with technical information about how to prevent major problems, to operate the water system and repair parts. Further the committee should receive the needed financial and managerial training, especially those skills related to budgets, organizing bills, collection, recording expenses and revenue, monitoring, and applying agreement.

Table4. 8. Capacity building of community to manage rural water schemes

S.N	**Description**	**1**	**2**	**3**	**4**	**5**	**Cumulative**
1	There are educational meetings given to your communities regarding use of clean water	3.7	70.4	0.9	25	0	100
2	There is beneficiary know water schemes management means	3.7	72.2	0.9	22.2	0.9	100
3	There is training given to your committee members regarding use financial management	11.1	76.9	1.9	8.3	1.9	100
4	There is training given to your committee members on technical and maintenance issues	16.7	73.1	1.9	7.4	0.9	100
5	Local technicians can maintain water scheme effectively	24.1	60.2	0.9	12	2.8	100

(Source: own survey, 2020)

(1=Strongly Disagree, 2=Disagree, 3=Moderate, 4=Agree, and 5=Strongly Agree)

The above table 4.8 shows the respondents responses results. For example:- training given to committee members regarding use of financial management, technical and maintenance issues more than85% of the respondents were disagree and strongly disagree. From this it is safe to conclude that the WASH committees have no as such get well-designed training which have a negative connotation upon a successful management of the water schemes. Regarding the educational meetings given to communities about use of clean water and water schemes management means also more than 75% of the respondents were disagree and strongly disagree. This means the community didn't know the use of improved water use. It leads poor management of the water schemes.

Ato Abebe Moges is WASH committee member in Ambager 'Gote' of Ambaye Zerniyat kebela. He has been trained as village technician by the woreda water office. After water points are handed over to users, many technical failures have happened in her village, but Abebe and other village technicians cannot maintain it because of lack of maintenance equipment and spare parts. Source: FGD, 2020.

From the KII and the FDG with water management committees and based on the discussions made so far, the first identified challenge is the ability of the water committee to ensure regular payment for O&M of facilities. Most of the communities have problems in raising funds for O& M which adversely affects the sustainability of facilities. Another related challenge observed through this study is the ineffectiveness of the water committee due to a number of reasons, such as lack of interest (four committees were found completely inactive which was due to unwillingness and change of committee members), lack of management skills, failure of the committees to account to the community members. FGD participants have outlined that refresher training on basic operation; maintenance and overall management of the scheme to water and sanitation committee on the spot were identified to be limited.

4.5.8. Technical factors on community management of rural water schemes

Technology choice, community acceptance, availability of spare parts, operation and maintenance skill, design and construction quality are the most obvious factors that affect management of rural water supply schemes. Technology choice is crucial to the sustainability of rural water supply (Getinet 2009)

Table4. 9. Technical factors of community management of rural water schemes

SN	Description	1%	2%	3%	4%	5%	Cumulative %
1	Community have knowhow the existing technology	1.9	76.9	1.9	16.7	2.8	100
2	There is currently installed technology simple to manipulate by community level	19.4	20.4	0	57.4	2.8	100
3	Availability of spare parts around the area	21.3	68.5	0	2.8	7.4	100
4	Availability of maintenance service around the area	27.8	63	0	6.5	2.8	100

(Source: own survey, 2020)

(1=Strongly Disagree, 2=Disagree, 3=Moderate, 4=Agree, and 5=Strongly Agree)

As one can observe from the above table 4.9, for instance community have knowhow the existing technology 79.8% of them were disagree and strongly disagree while the rest of them were neutral, agree and strongly agree. To solve the breakdown of the scheme availability of spare parts and maintenance service the study area more than 80 % of the respondents disagree and strongly disagree while the rest of them were neutral, agree and strongly agree. If the communities have money to maintain the water schemes there were no spare part material and maintenance skill in the market of the study area, so the communities have only one options that was formal governmental organizations to maintain the schemes if the governmental organization have time other ways the community return to traditional water options.

Based on the finding, it can be concluded that beneficiaries of rural water supply in the study area did not have knowhow the existing technology and unavailability of spare and maintenance service in the study area major threat to rural water supply schemes.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

Water supply schemes developed by government and NGOs in rural areas of Delanta woreda were getting poorer. This is due to lack of effective community management in general. Top down approaches, poor design, and weak participation of community were pre-construction problems contributed to current status.

Rural community awareness on improved rural water use is low. WASH committee's management skill is also ineffective. Poor sense of ownership poor financial management, unsustainable water supply scheme is the indicators for the above problems.

The other major problem in rural water schemes of the study area is operation and maintenance. This problem is happed not only by scarcity of financial resources but also shortage of spare parts and maintenance skills.

Institutions in the study area (government, NGO sand other stakeholder's) give attention on the construction of new infrastructure and absence of post construction evaluation. In addition to this, there is limited capacity (man power and finance) of woreda water office to provide enough support in management of water schemes and WASH committees. This is because of increasing number of water schemes. As a result, water points are broken down and become dysfunctional. User communities are not effectively participating in the management of water schemes. They are not paying fees for the service rendered, and no maintenance was made by the users. WASH committees have not been collecting service fees effectively; do not have receipt and financial record systems. The sum of formal and informal institutional problems had been adversely affecting sustainability of community management of improved rural water schemes.

Numbers of water schemes are constructed, timely water treatment activities on water points are relatively improved. Due to this, distance for fetching is reduced; quality of drinking water became better. These brings, not only saving of time and energy but also a slight improvement in communities health condition.

5.2. Recommendation

The research recommends the following.

1. Woreda based maintenance spare part workshop, the maintenance workshop must be establishes through micro and small enterprise those workshop initially budgeted and supported under woreda water office. It needs to have a warehouse that stocks necessary spares to be purchased by Kebeles with improved water schemes.
2. Mobile maintenance team. Woreda water supply office needs to establish a mobile micro and small enterprise technician that needs to be responsible to carry out the necessary maintenance.
3. Continuous awareness creation program on improved rural water use at community level should be done to increase awareness and sense of ownership.
4. Capacity building for water committees should be done to fill the capacity gap (financial management, operation and maintenance, water treatment, community mobilization etc.)
5. The institutional absence of water supply structure at the Kebele level shall be bridged with an installment of necessary man power and facilities
6. Government shall set affordable-fixed annual fee on rural user community members amicable to their level of living.
7. Bi-annual users review meeting per developed schemes shall be set to draw on issues that affect community satisfaction and participation.

Further Research: further research is required to come up with recommendations for strong community management. Research in environmental, socio-cultural, gender related issues and political factors that affect sustain ability of rural water supply in the study area

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APPENDIX
ADDIS ABABA UNIVERSITY

COLLEGE OF DEVELOPMENT STUDIES

CENTER OF RURAL LIVELI HOODS AND DEVELOPMENT

Appendix 1- Questionnaires to be filled by sample Households

This questionnaire is prepared as an instrument to conduct an academic research for the fulfillment of Masters of Art Degree (MA) by Fentaw Dagnaw in Addis Ababa University College of development studies center rural lively hoods and development studies. The general objective of the study is **to assess community management of rural potable water schemes in Delanta woreda Amhara region**. Therefore the information you will provide is very important for the research hence you are kindly requested to forward your views and experiences as carefully each of your answer has great contribution for the completeness of the research paper. Furthermore, the information you give will be used for only the academic research. And will be kept confidential.

Thanks in advance for your cooperation.

Fentaw Dagnaw

Instructions:

1. Introduce your self

2. Inform the respondents clearly the purpose of the questionnaire

Part One: Background data of respondents;

Circles the Number Your Choose

1. Questionnaire cod no _____
2. Gender: 1) Male 2) Female
3. Age: 1)20-30 2)31-40 3)>40
4. Marital status: 1) Single 2) Married 3) Divorced 4) Widow/Widower
5. House hold size; 1)1 - 3 2) 4 - 6 3)>7
6. Major occupation; 1) Farming 3) Daily labor 4) Trade 5)Other

Part Two: community management of rural water supply schemes related questions.

A). Approaches and practices of community management of rural water supply schemes related issues.

1. What are approaches and practice of community participation in the management of water schemes? Show this by ticking under each number using the keys given.

1 =Strongly Disagree, 2=Disagree, 3=Moderate, 4=Agree, and 5=Strongly Agree

S/n	**Description**	1	2	3	4	5
Approaches of rural water supply and management						
A1	The water schemes was supply driven approach					
A2	The water schemes was demand driven approach					
A3	The water schemes was both approaches					
Rural water management Practices and participation of community						
P1	Site selection of the water supply scheme					
P2	WASH Committee establishment					
P3	Water supply scheme provision					
P4	Technology selection					
P5	Continuous management of water supply scheme					
P6	Improvement the problems of water supply schemes					
P7	Sense of ownership to the scheme					

2. Are there any other activities communities are participate to sustain RWSSs? …..

.....

.....

B. Factors affecting community management of rural water schemes related issues

Show this by ticking under each number using the keys given. Key:

1 =Strongly Disagree, 2=Disagree, 3=Moderate, 5=Agree, and 5=Strongly Agree

S/n	Description	1	2	3	4	5
F1	Community participation					
F2	Technical factor					
F3	Financial reasons					
F4	Capacity Building Issues					
F5	Institutional Factors					
F6	Natural factors					

2. If there are any other Factors affecting community management of rural water schemes, state below……
……
……
……..

3. What are the solutions of the factors?

.....
.....

C. Institutional aspect of community management of rural water supply schemes related issues.

Show this by ticking under each number using the keys given. Key:

1 =Strongly Disagree, 2=Disagree, 3=Moderate, 5=Agree, and 5=Strongly Agree

S/n	Description	1	2	3	4	5
I1	Community obtain adequate support from government to effectively manage water supply scheme					
I2	Community obtain adequate support from NGOs to effectively manage water supply scheme					
I3	There is clear rule and regulation to manage scheme					
I4	Committees effectively and voluntarily perform their water schemes management activity.					
I5	Informal organization effectively managed water scheme(committee)					
I6	Community get spare parts to carry out operation and maintenance					

2. What types of supports are needed by the community to ensure sustainability of water supply schemes?

   .....

   .....

3. What do you recommend to improve Institutional and Organization Factors related with community management of water schemes?

   ……...

D. Satisfaction of users on potable water supply related issues.

Show this by ticking under each number using the keys given Key:

1 =Strongly Disagree, 2=Disagree, 3=Moderate, 5=Agree, and 5=Strongly Agree

S/n	Description	1	2	3	4	5
S1	Satisfied with water point distance					
S2	Did not satisfied well with the taste and color of water					
S3	Satisfied with the available of water resource					
S4	Satisfied with the current water schemes service and management					
S5	Equal right to benefit from the developed RWSS					

1. What are the other Perception and satisfaction of users of potable water supply related problems?

   .....
   .....

2. What do you recommend to improve Perception and satisfaction of users of potable water schemes?

   .....
   .....

E. Financial related issues

Show this by ticking under each number using the keys given. **1 =Strongly Disagree, 2=Disagree, 3=Moderate, 4=Agree, and 5=Strongly Agree**

S/n	**Description**	1	2	3	4	5
FI1	Beneficiaries pay for potable water access					
FI2	Received water users receipt for service					
FI3	Community agree the price of the water fees					
FI4	There is auditing and reporting system users fee					
FI5	WASH committee have the capacity to manage the finance					

2. What are the other financial related problems?

.....
.....
.....

3. What do you recommend to improve users satisfaction related with financial management of water schemes?

.....
.....
.....

F. Capacity building related issues

Show this by ticking under each number using the keys given. **1 =Strongly Disagree, 2=Disagree, 3=Moderate, 4=Agree, and 5=Strongly Agree**

S/n	**Description**	1	2	3	4	5
C1	There is educational meetings given to your communities regarding use of clean water					
C2	There is beneficiary know water schemes management means					
C3	There is training given to your committee members regarding use financial management					
C4	There is training given to your committee members on technical and maintenance issues					
C5	Local technicians can maintain water scheme effectively					

1. What are the other factors related to Capacity building related issues?

.....

.....

2. What do you recommend to improve Capacity building related with community management of water schemes?

.....

.....

G. Technical related issues

Show this by ticking under each number using the keys given. **1 =Strongly Disagree, 2=Disagree, 3=Moderate, 4=Agree, and 5=Strongly Agree**

S/n	**Description**	1	2	3	4	5
T1	Community have knowhow the existing technology					
T2	There is currently installed technology simple to manipulate by community level					
T3	Availability of spare parts around the area					
T4	Availability of maintenance service around the area					
T1	Community have knowhow the existing technology					

2. What are the other factors related to technical issue?

   .....
   .....
   .....

3. What do you recommend to improve technical factors related with community management of water schemes?

   .....
   .....
   .....

Annex 2: Focus Group Checklist

Date of discussion _____ _

Kebele _ _ _____ _ ___ _

1. What are approaches and practices the community put in place to manage its own rural water schemes?
2. What are the factors affecting the community management of rural water schemes?
3. What are the institutional aspects of community management of rural water schemes?
4. What are the Perception and satisfaction of users of potable water supply?
5. What are the financial factors that affect community to manage and sustain their water supply schemes?
6. What are the technical factors that affect community to manage and sustain their water supply schemes?
7. What are the capacity building factors that affect community to manage and sustain their water supply schemes?
8. What are the natural factors affect community to manage and sustain their water supply schemes?
9. What are your involvement and contribution water scheme management?
10. What is the role of community, committee, government and NGO's the in rural water scheme sustainable management? Does it have formal and clear job description?
11. Is there formal rule and regulation?
12. Do the users pay user fee regularly? (yes/No), if 'No' why do you think the reasons and what measures have been taken to alleviate the problem?
13. Does the government adequately support the community/committee to manage and sustain the water supply? (Yes/No), if 'No' why do you think the reasons?
14. From your experience, what major problems are encountered relations to sustainable water supply scheme management?
15. What solutions do you recommend in order to alleviate the problems and to sustain the functionality of the scheme?

Thanks in advance for your cooperation.

Annex 3: Checklists for Interviewing for Key Informant Interview

Position of the respondent _____ ___ _

1. What are approaches and practices the community put in place to manage its own rural water schemes?
2. How much schemes are sustainable in the community management of rural water supply in the Woreda?
3. What are the factors affecting the community management of rural water schemes?
4. What are the institutional aspects of community management of rural water schemes?
5. How do the communities perceive, participate and satisfaction related water supply schemes?
6. What are the financial factors that affect community to manage and sustain their water supply schemes?
7. What are the technical factors that affect community to manage and sustain their water supply schemes?
8. What are the capacity building factors that affect community to manage and sustain their water supply schemes?
9. What are the natural factors affect community to manage and sustain their water supply schemes?
10. What is the role of community, committee government and NGO's in rural water scheme sustainable management? Does it have formal and clear job description? Does it have formal rule and regulation?
11. What solutions do you recommend in order to alleviate the problems and to sustain the potable water scheme?

Thanks in advance for your cooperation.

Annex 4: Correction on plagiarism text

	Matched text	Changed text	page	paragraph
1	Rural areas in developing countries across the world remain severely	Rural areas in unindustrialized nations across the global continue harshly	1	3
2	water supplies have been recognized for some time, and a number of management approaches have come and gone with the aim of addressing these problems,	water supplies have been known for some time, and a number of administration methods have come and away with the aim of addressing these complications,	2	4
3	What determines the operational sustainability of rural drinking water points in Ethiopia?" The case of Woliso woreda	" What determines the operational sustainability of rural drinking water points in Ethiopia?" The case of Woliso woreda	4	1
4	to a service provision option whereby communities control management of their water supplies. For practical purposes, day-to-day responsibility lies with a representative group of	to a facility option whereby communities control management of their water supplies. For practical purposes, every day accountability lies with a illustrative group of	7	3
5	The water sources are not over-exploited but naturally replaced, facilities are maintained in a condition which ensures a reliable and adequate water supply, the benefits of the supply continue to be realized by all users over a prolonged period ss="quote">of time, <spa< span="">n class="quote">and </spa<>	*"The water sources are not over-exploited but naturally replaced, facilities are maintained in a condition which ensures a reliable and adequate water supply, the benefits of the supply continue to be realized by all users over a prolonged period of time, and the service delivery process demonstrates a cost-effective use of resources that can be*	8	1

	the service delivery process demonstrates a cost-effective use of resources that can be replicated'	*replicated*‴ .		
5	water service fee, willingness to pay, occurrence of conflict in the water points, monitoring by water user committees, willingness to sustain service, users' participation in the water point construction, satisfaction with the water point service, perception on the possibility of contamination, and training on maintenance are the major factors that affect the operational sustainability management of rural drinking water	‴ ‴ water service fee, willingness to pay, occurrence of conflict in the water points, monitoring by water user committees, willingness to sustain service, users' participation in the water point construction, satisfaction with the water point service, perception on the possibility of contamination, and training on maintenance are the major factors that affect the operational sustainability management of rural drinking water″	13	Last paragraph
6	community dynamics, political or social conflict, lack of cohesion, lack of capacity (technical, managerial etc), lack of financial resources; and Those constraints which are external to the community:	community changing aspects, political or community conflict, lack of unity, lack of awareness (technical, managerial etc), lack of financial incomes; and Those constraints which are outside to the community:	14	4
7	External support in post construction is very limited (Chaka, et al, 2011). The finding of this study shows emphasis is nearly always on new construction and on	External support after construction is too limited (Chaka, et al, 2011). The outcome of this study shows permanently on new	17	4

	implementation phase,	construction and on implementation phase,		
8	Spare parts distribution was problematic with very weak private sector supply chains. <s< span="">pan class="quote"> </s<>	Almost none or very weak private sector spare parts supply chains.	17	4