TAMPERE UNIVERSITY OF TECHNOLOGY
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COMMUNITY MANAGED PROJECT (CMP) IN IMPLEMENTING RURAL WATER SUPPLY IN AMHARA REGION, ETHIOPIA

Master of Science Thesis

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Examiners:
Adjunct Professor Dr. Tech. Jarmo J. Hukka
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ABSTRACT

TAMPERE UNIVERSITY OF TECHNOLOGY

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The rural water supply in Ethiopia has experienced significant changes over few years with the implementation of Community Managed Project (CMP) approach by RWSEP supported by the Ministry of Foreign Affairs of Finland which has shown the good result of improving the living condition of the rural population. CMP approach is now becoming a very successful approach for community initiation, implementation and management of water supply and sanitation activities. The beneficiaries take the sole responsibility in the construction; operational management of the water point planned and is also accountable for management of funds required for implementation by itself.

The principle objective of this research was to enhance the achievement of Universal Access Plan and sustained functioning of built WSS facilities. Furthermore, this research also focused on to examine the existing rural water scenario in Amhara region of Ethiopia, to determine the nature and level of community participation in rural water supply and to analyze whether community managed projects are more efficient to meet demand of rural communities.

The methodology followed both qualitative and quantitative analysis methods; the research central to the community participation and CMP approach. The tools such as desk study, questionnaire survey and semi-structured interview were used to get a wide view of actual conditions and experiences. The main method of the study was SWOT analysis to build on strengths, eliminate weakness, exploit opportunities and mitigate the effects of threats of CMP approach.

The field survey showed that there was high level of community participation in CMP approach. All members of the communities were beneficiaries and part of the improvement of the water, sanitation and hygiene conditions in their localities. The communities had ownership feeling for water schemes since they themselves are responsible for entire process of improving their water supply service. The communities are represented by WASHCOs formed in each of them. The water officers provide training. After training, communities were fully responsible to water schemes from pre-construction to post-construction and had to make commitment for the future operational management where the certain amount of funds are was collected before construction of water schemes through micro-finance named ACSI.

The effectiveness of CMP approach was seen higher than other direct fund approach since in CMP approach there is high utilization of allocated funds, short construction time and most importantly the strong ownership of the community. CMP approach is demand driven and promotes community participation and mobilization. Therefore, CMP approach can be very efficient to address the need of safe drinking water in rural areas of Ethiopia and improving the quality of life of rural people.

In rural areas where socio-economic abilities of communities are poor, the project has to promote productive uses of water to improve lives and reduce operation and management costs by creating awareness of wise use of water points and protecting it from external damage and misutilization. There has to be equitable distribution of water points among the communities during implementation based on the priority.

PREFACE

This Master of Science Thesis has been carried out in the Department of Chemistry and Bioengineering at Tampere University of Technology (TUT), Tampere, Finland as a part of CoWASH project during May 2012 – December 2012. The thesis work has been funded by Maa ja Vesitekniikan Tuki ry. (MVTT) and supported by CoWASH Project in Ethiopia which are greatly acknowledged.

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Finally, it is a pleasure to thank my family and friends for their support and motivation to pursue this Master's degree.

Tampere, 12th December, 2012

Nabin Prakash Sharma

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LIST OF ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ADLI	Agricultural Development Led Industrialization
APFED	Asia-Pacific Forum For Environment And Development
ANRS	Amhara National Regional State
BoEFD	Bureau of Economic and Finance Development
CDF	Community Development Fund
CLTS	Community Led Total Sanitation
CMP	Community Managed Project
CP	Community Participation
EREP	Ethiopian Rural Education Project
GoE	Government of Ethiopia
GTP	Growth and Transformation Plan
HDWs	Hand Dug Wells
IDWSSD	International Drinking Water Supply and Sanitation Decade
IRC	International Water and Sanitation Centre
JMP	Joint Monitoring Program
m	Meter
MDGs	Millenium Devlopment Goals
MoFED	Ministry of Finance and Economic Development
MoWE	Ministry of Water and Energy
NGOs	Non Governmental Organizations
OECD	Organization for Economic Cooperation and Development
O&M	Operation and Management
PASDEP	Plan for Accelerated Sustained Development and to End Poverty
RWSEP	Rural Water Supply Environmental Program
SDPRP	Sustainable Development and Poverty Reduction Program
SWs	Spring Wells
SWOT	Strength, Weakness, Opportunities, Threats
TASAF	Tanzania Social Action Fund
UNDP	United Nations Development Program

UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children Emergency Fund
UAP	Universal Access Plan
UN WWAP	United Nations World Water Assessment Program
WASHCOs	Water, Sanitation and Hygiene Committees
WB	World Bank
WHO	World Health Organization
WPs	Water Points
WSF	Water and Sanitation Forum
WSS	Water Supply and Sanitation
WUGs	Water User Groups
WWT	Woreda Water Team
WASH	Water, Sanitation and Hygiene

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1 INTRODUCTION

1.1 Background

Water is increasingly recognized as a main pillar in economic development and reduction of poverty. Water is considered as economic good nowadays. The studies made by different agencies have considered the importance of water in meeting the Millennium Development Goals (MDGs), which has focused water's direct and indirect contribution to all of the goals and a majority of the targets. In contrast to that, the role of water is not only focused on its central role to achieve the goal on environmental sustainability and on the way to meet the target on water supply and sanitation, rather centred to other developmental activities also. (Dowa 2007)

The interaction of water in developing world for lives of the poor communities is complex in character and operates through multiple dimensions: improved livelihoods security, increased food security, reduced health risks, reduced vulnerability, and pro-poor economic growth. Additionally, though water plays a vital role in poverty reduction but water infrastructure and management has a huge impact on national economy (Grey & Sadoff 2006). The significance of water has gained attention to the multiple values of water for society including cultural, economical and social components.

Dublin Principles (1992) state that "Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment", based on that it is necessary to address that there is no option for water. Sustainability can be achieved by appropriate management of water resources by holistic approach with linkage to social and economic development, hence considering natural environment. Water crisis is the leading cause of poverty in developing countries. (APFED 2002)

In order to reach the target set by Millennium Development Goals (MDGs), especially Goal 1, "Eradicate extreme poverty and hunger" within 2015, water resource management and its development is inevitable factor. The target 10 under MDGs is to halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation. Johannesburg conference 2002 has also focused on increasing the access to clean water and sanitation, and has stressed that for optimizing water resource management, integrated land use and water management plans plays a pivotal aspects. (http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POI_PD.htm#_ftn6)

Community management, nowadays, has become the main model for implementing water and sanitation services in most of the rural areas. A community management project has been emerging as way of self sustainability in rural water supply and sanitation. The World Bank has stated that community management project through

community participation is key to success of water supply in rural areas, mainly focusing on developing countries (Schouten and Moriaty, 2003). Therefore, international development cooperation and donor agencies have now been giving preference to community managed model as a better option for rural water and sanitation service delivery.

1.1.1 Growing Water Demands

The availability of water is decreasing, whereas as a consequence of population growth and economic development, there has been increasing demand of water for agriculture, industry and households worldwide. Groundwater is primary source of drinking, agricultural and commercial purpose in African nations. The population has escalated over few decades challenging the carrying capacity of the Earth's water resources. The increase in the food consumption has added additional pressure on the water resources. As a result; they are increasingly exploited in recent time.

The overexploitation of groundwater can lead to serious consequences like disrupting the hydrological cycles and damaging freshwater ecosystems. Furthermore, it can degrade land quality resulting salinization, which may finally reduce water availability and food productivity. The water insecurity and increasing water demand in all sectors may perhaps lead to conflicts among sectors and within each sector over water allocation. The domestic water stress is more risk to marginal and poor people, hence more vulnerable to water-borne diseases. (APFED 2002)

1.1.2 Water for Poverty Reduction

The people in the rural areas are at a risk to water-related crisis. Compared to urban communities, the rural communities have very little access to water supply and sanitation facilities. The people are forced to travel a long distance in order to fetch drinking water for their daily requirements, and women are often responsible for the job. For instance, in remote area of Nepal, in poor communities, people spend as much as a day in fetching water travelling up to 15 km to the water sources (ADB 2001). The quality of fetched water often does not meet the guidelines prescribed by World Health Organization (WHO).

It has been observed that the poor people are more susceptible to the water-related natural calamities thus impacting their livelihoods. Since, the people in rural areas are heavily dependent on natural resources, the overexploitation of water resources and pollution caused by industrialization affect their source of income from water. Rural development should be more prioritized to mitigate these impacts. Another key policy area is water rights, where there are significant gender and poverty implications. 'Minor' water uses, for instances, livestock watering, fisheries and small-scale industry (Local beverage in rural Ethiopia), are very important factors for poor households livelihood strategies. (Grey & Sadoff 2006)

1.1.3 Water Security

Food security and Energy security are commonly used term which means consistent access to adequate supply of food and energy to meet fundamental requirements of individual, community or nation. In general term, water security is also the reliable access to plentiful supply of water to reach the minimum demand of daily water to person, community or nation. Therefore, we define water security "to be the reliable availability of an acceptable quantity and quality of water for production, livelihoods and health coupled with an acceptable level of risk to society of unpredictable water related impacts" (Grey & Sadoff 2006).

Household water insecurity is one of the biggest challenges in developing countries due to increase in population growth rate and agricultural production along with industrialization and urbanization. As a result, the number of countries facing water scarcity has been increasing since last decade. It is experienced that the poor pay higher price for water and is still water insecure. Progress towards water security can be made only if there is a more wide-ranged understanding of the interactions among waters' various characteristics and functions including combination of management capacity and infrastructure investment. The problem of water insecurity can be grouped as availability, access and usage of water. (Webb & Iskandarani 1998)

The basic water security is accomplished when the communities have no more panic to impacts of water – for example, lack of access to water-related services and vulnerability to water-related impacts (like drought, flood, water-borne diseases and so on). Webb & Iskandarani (1998), in their paper mention that "Until basic water security is achieved, the scale of social impacts (morbidity, mortality, resource conflict) and related economic impacts (from industrial failure, production inefficiencies, disaster shocks) can be such that the economy, environment and society are significantly affected, and economic growth cannot be reliably and predictably managed".

1.2 Justification of the Study

In Ethiopia, most people reside in rural area which accounts about 85%, and it is anticipated that only 29% and 19% of rural population has access to sustainable water supply and sanitation respectively according to Joint Monitoring Programme (2012). Therefore, it can be said that water supply and sanitation service level in Ethiopia in terms of coverage, quantity and quality is below the standard due to various factors. The functionality of the systems in use is often doubted. The vulnerable age group population like children and old people are at the risk of mortality due lack of access to safe drinking water and sanitation. Thus, it seems necessary to have the role of community enhanced for scaling up the community managed water and sanitation services for their own goodwill. The stakeholders involved in the intervention have also realized that community managed water service is feasible for long term sustainability of rural water supply.

It has been few decades since different international agencies like UNICEF, World Bank, international and local NGOs along with Ethiopian government has been working in rural water sector for its development. Though, the coverage of rural water supply has increased to certain extent in the last few years, the target to reach the Millennium Development Goals by 2015 seems to be bit daunting. The problem of accelerated population growth is one of the prime factors for low implementation rate and functionality rate that guides to low water and sanitation coverage in rural areas.

The report by African Development Fund (2005) revealed that 33% of water services in rural areas of Ethiopia are non-functional because of poor operation and maintenance due to funds unavailability, and lack of hardware and software issues for water structures. But the main underlying issues for water services in rural areas are inadequate community mobilization and commitment. Therefore, there is doubt in sustainability though there is increase in rural water service projects. The community managed project influences community people to feel their ownership and helps make whole the project process transparent. Every community group is involved in decision making process with equal involvement of women participation. The implied approach is decentralized and demand responsive.

Through the community participation, the key elements of water and sanitation services in rural areas like capacity building, institutional mechanism, policies, legislation, operation and maintenance can be managed ensuring sustainability with equitable water provision to all of the people (Davis and Iyer, 2002).

1.3 Overall Objectives, Purpose and Results of the Study

Logical Framework Approach (LFA) was adopted by United States Agency for International Development (USAID) for assistance in the planning, management and evaluation of the project development (Coleman, 1987, p. 251). The World Bank (2000) has stated that, "the logical framework has the power to communicate the essential elements of a complex project clearly and briefly throughout the project cycle. It is used to develop the overall design of a project, to improve the project implementation monitoring and to strengthen periodic project evaluation". In my research I have used LFA as a way of structuring the main elements which links between objective, purpose and anticipated outcomes.

Table 1.1: *Logical Framework Approach (Rural water supply Logframe Matrix)*

Project Description	Indicators	Source of Verification	Assumptions
Overall Objective To enhance the achievement of Universal Access Plan and sustained functioning of built WSS facilities.	Water coverage in the rural areas. Percentage of the population with their well-being attributed to access to rural water services through CMP approach.	Secondary data, Survey reports, RWSS study reports.	Water supply reform accepted by rural water user communities.
Purpose 1 Optimize environmental, economic, and social benefits by setting goals and selecting projects through a transparent and inclusive process with the community.	Satisfaction level of local communities. Implementation rate of the water schemes per year with CMP approach. Quality of service provided by CMP approach to rural communities.	Desk study, RWSEP reports, questionnaire survey, semi-structured interview.	Commitments of all water user communities groups are sustained. Water supply reform accepted by rural water user communities. Willingness of different stakeholders to develop planning, resource mobilization and implementation of rural water development activities.
Purpose 2 Consistently assess a range of alternatives that address utility and community goals.	Percentage of rural communities with access to safe drinking water supply. Increased number of rural communities with operation, management and maintenance capabilities. Community interaction with water office after post construction phase.	Focus group discussion in communities, semi-structured interview with water bureau officers.	Government and external donor's commitment to rural water sector development. Other approaches are also implementing parallel with CMP approach.
Purpose 3 Enhance the long-term technical, financial, and managerial capacity of the utility	Technical, institutional, socio-economic and environmental factors. Functionality and non-functionality of water schemes. Women empowerment in rural water communities.	RWSEP reports, field observation, questionnaire survey	Government and external donor's commitment to rural water sector development. Adequate financial source for operation and maintenance for minor breakdown of water schemes.

	Addressing cross cutting issues.		Capacity built initially to implement for this purpose.
Purpose 4	Number of population access to potable drinking water Willingness of communities to take ownership of project.		Adequate financial resource available
Rural water supply infrastructures are managed sustainably.			
Result 1	-	Interviews from water experts and water office personnel.	Willingness of water experts and water officers for correct information.
A comprehensive assessment of strengths, weaknesses, opportunities and threats related to the sustainability of CMP approach used in rural water supply.			
Result 2	-	RWSEP study report Personal observation	Full participation and involvement of stakeholders at the national and international level.
The recommendations to enhance the roles and responsibilities of stakeholders involved in CMP approach.			
Result 3	-	RWSEP study report Personal observation	Decentralized policies of government are maintained. Water sector policies of government, INGOs, CBOs, private sector participation and demand driven approach are hold on.
The recommendation for the strategy for, action and steps for the future improvements in the CMP approach.			

2 THEORETICAL BACKGROUND

2.1 Background

Water Supply and Sanitation (WSS) for the developing countries has been assisted internationally on the large scale since 1970s. Realizing the importance of safe drinking water globally, this support increased significantly during the International Drinking Water Supply and Sanitation Decade (1981-1990). Though there was a huge contribution made by the donor agencies towards the recipient countries, the progress made in the field of service coverage and operation of water and sanitation facilities was modest. The expectation made to enhance the water and sanitation services has been hindered by several internal and external factors. Apart from that, sanitation facilities have not gained the importance as water during policy making process. (Seppälä, 2002)

Table 2.1: *Water Supply and Sanitation in the International Drinking Water Supply and Sanitation Decade, 1981-90 (Tebbutt 1998)*

	Millions of people without			
	Safe water supply		**Adequate sanitation**	
	1981	1990	1981	1990
Urban	213	243	292	377
Rural	1613	989	1442	1364
Total	1826	1232	1734	1714

Water is recognized as a main indicator of economic development and poverty reduction. MDGs have emphasized the importance of meeting the target by water's direct and indirect contribution to all of the goals and a majority of the targets, relatively than only focusing on its central role in obtaining the goal on environmental sustainability and attending goals on water supply and sanitation (UNDP 2006). Therefore, it can be explained that the water's interaction in the lives of the poor is rather complex in character and operates through multiple dimensions: improved livelihoods security, reduced health risks, reduced vulnerability, and pro-poor economic growth. Moreover, attention has been given to the multiple values of water for society, and covering also cultural and social components besides ecological aspects. (OECD 2007)

2.2 Water Supply and Sanitation Worldwide

UNESCO (2006) has stated that, the daily requirement of portable water per person for their basic needs is 20 to 50 litre/day, but more than one in six people does not have access to such amount of portable water. The lowest water supply coverage in the world is in Africa where only 62% of the population have access to improved water supply. The rural area has more panic in the situation as it covers only 47% of the total rural population. Therefore, rural people are more susceptible to poverty and diseases and causes death of thousands of people every year. More vulnerable groups are children and old people.

Worldwide around 2.6 billion people are deprived of the basic sanitation due to lack safe water resulting in death of more than 1.5 million people every year. The most victimized people are from East Asia and sub-Saharan Africa. The basic sanitation coverage in Africa as a whole is only 60%, with the coverage varying from 84% in urban areas to 45% in rural areas. (JMP 2010)

The world has met the MDGs water target, but has fallen short in sanitation. Two and a half billion people are still without access to improved sanitation – including over 1 billion who have no such facilities at all and are forced to engage in the hazardous and demeaning practice of open defecation. For both water and sanitation, there continues to be major disparities among regions. Sanitation coverage is lowest in sub-Saharan Africa and South Asia, where 70% and 59% of people do not have access to improved sanitation respectively. For water, coverage is only 54% in Oceania and 61% in sub-Saharan Africa, but all other regions have coverage rates of 87% or higher. Other disparities also continue: poor people and people living in rural areas are far less likely to have access to improved water and sanitation facilities than their richer and urban compatriots. Therefore, more focus has to be given to sanitation along with safe water supply to meet the demand by MDGs till 2015 (UNICEF 2012).

Saleth & Dinar (2000), have outlined the common water problems in developing countries as:

- Increasing relative water scarcity and stress
- Deterioration of water quality
- Inter-sectoral and inter-regional water allocation conflicts
- Inappropriate pricing of water, inadequate cost recovery, and non-viable operational and financial performance
- Excessive governmental involvement and bureaucratic control
- Outdated institutional arrangements
- Fragmented and poorly coordinated water administration

2.3 MDGs and Water

Millennium Development Goal 7 (MDG7) encompasses to ensure environmental sustainability. The MDG Target 10, "Access to water and sanitation" is a main element of quality of life and is also central to other MDGs, for instances, reduction in poverty and infant mortality rates, improvement in maternal health, gender equality and educational opportunities for girls. It is highly unlikely that the development target of halving the proportion of people having no access to adequate sanitation will be achieved. Out of 2.6 billion people worldwide, nearly 2 billion inhabit in the rural areas. Though compared to 1990, the access to improved sanitation in 2002 has increased moderately, , in 27 countries including Eritrea, Ethiopia, India, Nepal, Laos, Namibia and Yemen in 2002, 2 out of 3 people did not have access to improved sanitation. (United Nations 2002)

The United Nations' Millennium Declaration adopted their committed nations to a global partnership with the goal to reduce extreme poverty. Eight time-bound goals were set, which are supposed to be achieved by 2015. For each goal, different measurable targets are stated and indicators are given. The seventh goal is to "Ensure environmental sustainability", and among the four targets in that goal, one is to "reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation" (United Nations 2012).

The study made by UNDP (2005) has focused on a number of issues related to water and sanitation where water and sanitation have been given supreme priority to any developmental agenda where there is requisite for developing and strengthening various institution mechanisms in the state, NGOs and private sectors, need to pursue a policy of cost recovery of operations and maintenances, and investment based on user's willingness to pay while ensuring the poor have access to the services.

2.4 Community

UNDP has defined community as "A group of people living in a geographically defined area, or a group that interacts because of common social, economic, or political interests". (TASAF project handbook 2005:6). The essence of community development approach was highlighted in early 1970s due to wide spread disappointment by top down bureaucratic approach to development and its failure to distribute benefits to local communities. At this time, communities were not involved in vital project process like plan formulation and decision making process, rather they were used as labors to facilitate the project activities. (Mwakila 2008)

2.4.1 Community Participation

Kasiaka (2004) in his paper has stated that "Participation is an approach through which beneficiaries and other stakeholders are able to influence project planning, decision

making, implementation and monitoring phases". Every community is different from each other and they have their own norms and values. Therefore, there has to be some motivating factors to anchor community together for common participation to feel the sense of equity and ownership feeling. Every member in the community has to be benefitted with the local water supply systems. (Schouten and Moriarty 2003)

In a high community participation, the necessities of people are addressed in broader sense and they are mostly likely to be effective (Figure 1991). But the effective community participation is made when there is no discrimination in the aspects of races, gender, religion, poverty, disabled and old people. In community participation, communities take part in role in its own affairs by sharing and implementing political and economic power in developing projects. (McCommon et al 1990). The motive of community participation in water supply schemes are to share certain proportion of project cost, increase project effectiveness and efficiency and increase community empowerment along with women's role in a community.

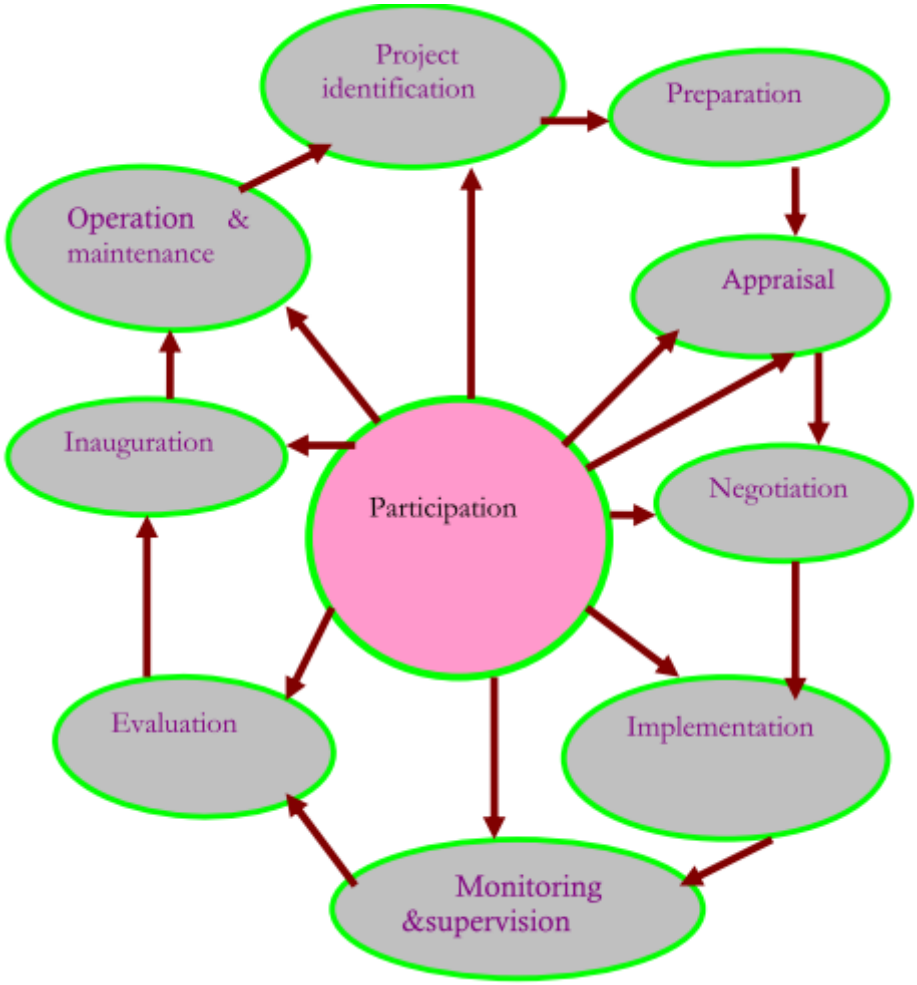

Figure 2.1: *Community Participation Cycle (Kasiaka 2004), cited in Mwakila (2008)*

2.4.2 Community Management

It is the potential and enthusiasm of the community beneficiaries to take responsibilities and determine the nature of development affecting the project. Communities are responsible for decision making and controlling over the succeeding implementation of decisions during project progress. Communities are literally on the driving seat to take full range of managing tasks to operation and maintenance of domestic water supply systems, such as setting water tariffs, payment per households in terms of cash or in kind, regular monitoring and surveillance, maintenance in regular basis, conducting meetings and decision making process about the water system. (Schouten & Moriarty 2003)

Components of Community Management

WASH mentioned three basic components of community management (IRC 1993):
Responsibility: The community takes on the ownership of and attendant obligation to the community.
Authority: The community has the legitimate right to make decisions regarding the system on behalf of the users.
Control: The community is able to carry out and determine the outcome of its decisions.
Similarly, the common characteristics of successful community management include (IRC 1993):

- Community decision making
- Community responsibility, backed by legitimate authority and effective control
- Community mobilization of resources
- Community access to external support (public or private), to supplement local management capacity
- Agencies acting as facilitators and supporters and helping to build community self sufficiency.

2.4.3 Community Management of Water Supply

Management of water supply by community has been practiced since more than two decades which involves the cooperation between support agencies in the water sector and communities. The community management of water supply tries to seek the problems related to local water supply system, and the possibilities for, and constraints on, management by communities, as well as possible solutions that may be tested. The basic principles for community management of water supply are (Lammerink et al. 1999):

- Communities own the process of change.
- Facilitators and local researchers participate in the community’s projects, not the way around.

- Increased management capacities are the basis for improved water systems.
- Each community develops its own specific management systems

The donor agencies are facilitator of the processes to develop and improve the capacity of the community for the management of their own water supply systems. The members of communities are active participants, well-informed, trained and accountable for their accomplishment. There should be mutual partnerships between governmental bodies, private sectors, NGOs and CBOs with the communities (Lammerink et al 1999). This entitles that community is highly people centered approach to development which aims for the successful and sustainable water systems. For this purpose there has to be analogous objectives formulated in order to strengthen the capabilities of communities for the determination and promotion of their priorities, and to provide external agencies to facilitate and support an expanding program of community/demand actions. (IRC 1993)

There are responsibilities of communities in water project to provide essential contribution, owning the projects, participation in project security and implementation of project activities, monitoring project activities, receiving and discussion on reports, regular meetings to provide worthy suggestions and ideas for the improvement of project performance. (Mwakila 2008)

2.4.4 Community Development Fund

Community Development Fund (CDF) is a contribution made by the donor agencies for the construction of community managed water points. CDF is disbursed through a microfinance institution on demands from communities which are supported by local governmental bodies or institution (for example, in case of Ethiopia, it is supported by Woreda Water Resource Development Teams). It is a triangular partnership which results in win-win situation.

CDF is now becoming very successful approach in community initiation, implementation and management of water supply and sanitation activities. The water beneficiaries take the sole responsibility in the construction, management and maintenance of the water point planned and is also accountable for management of funds required for implementation by itself. This approach has been very reliable and effective to create ownership among the community and supreme way to achieve sustainable development of local water supply systems.

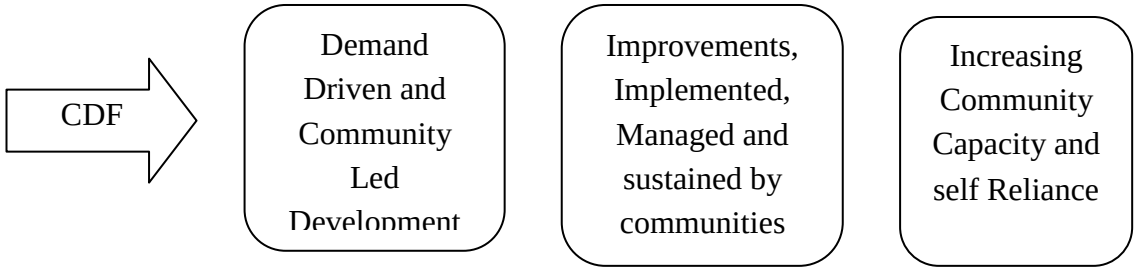

Figure 2.2: *Community Development Fund Approach Achievements*

(Source:http://www.worldwaterweek.org/documents/WWW_PDF/Resources/2009_20thu/CDF_Ethiopia_Program_Overview.pdf)

2.4.5 Gender and Water

There is linkage between water and gender in several ways which is often referred for the management of water supply systems. Since the time immemorial, women are regarded as the domestic water managers whose role is neither limited nor static. Thus, women are primary water users and managers in household and other activities including agricultural and industrial sectors (Brismar 1997). The importance of women's role in water resource management at community level has been given importance since early 1980s, where women are empowered in the involvement in water sector from 'users' (beneficiaries) to 'managers' (actors), with increased choice and voice in the water management processes. (Singh 2006)

The study made by different authors summed that the women are universally facing problem to access safe water, come across different difficulties in fetching water and are denied equal water rights and resources within their societies (Singh 2006). The 1992 Earth Summit in Rio de Janeiro highlighted in term of gender equity, and focused that women, as well as men, are water users, and so must be able to express their demands for services. It was recognized that women participation and involvement was not sufficient and possibly not always desirable. Therefore, focus was rather shifted from women to gender where the roles and responsibilities of women and men identified and how decisions are made in water development activities. (Wijk-Sijbesma 1998)

To understand the dynamics of gender in water and growth, it is necessary to identify and value the often under-enumerated activities of women as sources of economic growth. To illuminate the gender impacts of inter-sectoral water allocation policies, women's and men's shares of employment and income in water using sectors must be disaggregated (the "gender intensity of production", for example, is known to be particularly high in agriculture). It is also important to understand the degree to which water-led growth impacts particular classes, especially by landholding status. Finally, any such productive investment towards growth and poverty reduction is also predicated

upon sufficient allocation to domestic water supply to ensure human health, a sphere that has been largely the gendered responsibility of women and girls.

2.4.6 Community, Water and Health

There is linkage between water and health which has been understood from the historical time. During the decades of 1970s, most of the priorities of water policies were focused in quality of water in order to reduce the mortality caused due to unsafe drinking water mostly in the developing countries. Before International Drinking Water Supply and Sanitation Decade (IDWSSD), more importance was given to quantity of water used for the domestic and personal hygiene purposes rather than quality of water. The diseases caused by water are given in table 2.3. After implementation of IDWSSD, the studies showed that there was modest improvement in public health due to water borne diseases without a well-integrated hygiene education program. (UNICEF 1999)

Table 2.2: *Disease Transmission Mechanisms*

Transmission Mechanism	Diseases (Examples)	Preventative Strategies
Water-borne	Diarrhoea, Cholera, Typhoid	Improve water quality Prevent casual use of other unimproved sources
Water-washed	Roundworm (Ascariasis), Trachoma Typhus	Improve water quality Improve water accessibility Improve hygiene
Water-based	Bilharzia (Schistosomiasis), Guinea Worm (Dracunculiasis)	Decrease need for water contact Control snail populations Improve quality
Water-related Insect Vector	Malaria, River Blindness, Sleeping Sickness	Improve surface water management Destroy breeding sites of insects Decrease need to visit breeding sites Remove need for water storage in the home or improve design of storage vessels

(Source: Evaluating for village water supply planning, Cairncross et al., 1981)

During 1990s, the implementation of various projects throughout the world had concluded that:

- Isolated water supply interventions were not effective in the prevention of diseases.
- Sanitation alone has a larger impact on health than does water alone.
- Hygiene education, together with sanitation, has more of an impact on the reduction of diarrhea than does water (because many of the causes of diarrhea are not water-borne).

- Improvement in the quality and quantity of water in communities continues to be important for public health, if implemented together with effective sanitation and hygiene education programs.

The quality of water along with sanitation and hygiene education has become now integral part for water supply projects assisted by the donor agencies and projects run by government. The water quality is very a crucial factor in public health programs which is the component of integrated WES programs, and as a necessary prerequisite to all hygiene education programs (which are impossible without water) and most sanitation programs (especially in societies where water is culturally necessary for excreta disposal). (UNICEF 1999)

2.5 Water Supply in Developing Countries

It is clearly known fact that the water is unevenly distributed throughout the world. The issues of climate change, economic development, human interference in development activities, global economic and policies, technical innovation and financial markets are directly or indirectly impacting important decisions affecting water management. The extreme poverty in the third world countries can be directly linked with the accessibility of water (UN WWAP 2009).

Figure 2.3: *World population with access to an improved drinking water source in 1990, 2004 and 2015 (WHO & UNICEF 2006)*

Globally 1.2 billion people were accessed to improved drinking water sources from the period 1990 to 2004. Nevertheless, the global population has been increasing substantially every year where there has been increasing demand of water supply every year, especially in Africa and South Asia where the birth rate is comparatively higher compared to rest of the world. Due to this reasons, the inclusive number of people without access to an improved drinking water source decreased by only 118 million. There was hardly any progress made within the same time frame in Sub-Saharan Africa,

hence, the number of people without access to safe drinking water increased with 23%. Therefore, approximately 900 million people by 2015 will be without access to improved water sources, out of which 75% will be residing in rural areas. Thus, great preference has to be given to the Sub-Saharan Africa region. (WHO & UNICEF 2006)

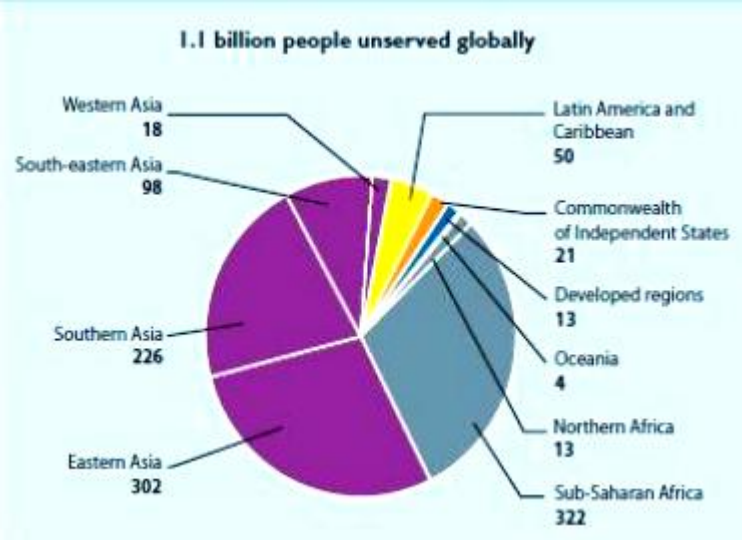

Figure 2.4: *Population (million) without improved drinking water sources by region, 2004 (WHO & UNICEF 2006)*

There has been change made in the components of water management due to broader reform of governance, initiated in Agenda 21. In some of the developing countries like Ethiopia and Tanzania, the responsibility of operation and maintenance has been transferred to local municipal governments and communities. The subsidiary principle is seen as a benefit to the water supply, because the decision makers are closer to the water sector managers and to the water using communities, which is beneficial for exchanging information. (UN WWAP 2009)

2.5.1 Sources of Drinking Water in Developing Countries

There has not been problem in the water supply in the developed countries either in urban, peri-urban or rural areas. There has been efficient use of water treatment plants to ensure the health of people such that water is feasible to drink, as a result, the percentage of health problems due to water borne diseases are remarkably low in developed countries. Whereas, in developing countries people are prone to use traditional water supply which are untreated, thus risking their health problems. Hence, thousands of people die every year due to unsafe drinking water. Therefore, it is wise to take into account the quality parameter along with biological quality in relation to sources of water.

Rainwater

It is one of the reliable sources of water during rainy seasons in which the water is collected and stored from the runoff from roofs which is quite likely to be safe for drinking purposes. Depending upon the quantity of the rainfall in the particular area, the size of the water storage container can be constructed. It is estimated that 50-80% of the water can be collected from rainfall if there is appropriate gutter and downpipe system. But, if the storage tanks are not constructed properly and if there is contamination of stored water with other chemicals from the soil, then there might be chance of some health problems. (Tebbutt 1998)

Springs

Springs are derived from an aquifer which is not simply the discharge of a stream that has gone underground for a short distance. Water from the spring is usually of good quality for drinking unless they are contaminated by human and animal faces. Therefore, it is important to protect the surrounding of the springs by fencing and some check dams in order to prevent it from landslide in case of excess rainfall. Another thing that has to be taken into consideration is that the collecting tank has to be constructed to cover the eye of the spring and prevent debris washed into the supply.

Tube wells

The natural purification process makes tube wells generally good bacteriological quality. Additionally, it also removes suspended particles like algae and other small worms. But an attention has to be given to the sanitation practices, or lack of them, does not cause groundwater contaminated. A long metal tube is drilled into the ground where the tube reaches the groundwater level. With the manual effort water is then pumped up which is generally used for drinking, cooking and other household purposes. If the community can accommodate the motor pumps, then water can be extracted by electricity when there is lack of enough rainfall, low groundwater level or need more water for irrigation facilities. (Tebbutt 1998)

Hand-dug wells

It is one of the traditional methods for water supply system in rural areas of the developing countries, and still most common. These dug wells are made by hands, therefore, there is some restriction in some circumstances, for instances, certain types of ground, such as clays, sands, gravels and mixed soils where only small boulders come across. Nowadays, skilled manpower is used by the communities, where some members of communities are trained as artesian. But still in some rural areas, excavation is done under the supervision by the villagers themselves. The volume of the water in the well

below the standing water table acts as a reservoir, which can meet its demands during the daytime. Additionally, water is itself replenished during periods where there is no abstraction. Periodic chlorination has to be done to avoid the contamination from microbes. (WaterAid 2000)

Table 2.3: *A brief guide to water resource development*

Water Source	Capital Cost	Running Cost	Comments/Requirements
Rainwater	Medium Storage tanks needed	Low	Needs two wet seasons a year, preferably. Water quality is poor.
Spring Protection	Low Medium, if piped to community	Low	Needs a reliable spring flow throughout the year.
Hand-dug wells	Low (Local labor) Hand Pump needed	Low	Abstraction can be done by bucket and windlass, but hand pump is preferred.
Gravity Supply	High Pipelines and local storage	Low	Needs a stream or spring source at a higher elevation. Major advantage is that tap stands can be near houses.
Tubewells or boreholes	Medium Well drilling equipment needed. Borehole to be lined	Medium Mechanical Pumping	Suits deep underground aquifer. Needs maintenance of mechanical pumps.
River/Lake abstraction	High Design and construction of intake	High Treatment and pumping usually needed	Last resort. Filtration essential. Maintenance required for filtration and dosing.

(Source: http://www.wateraid.org/documents/plugin_documents/technology_notes_07_web_1.pdf)

2.6 Water Supply and Sanitation in Ethiopia

Water supply and sanitation has been lowest in Ethiopia in the Sub-Saharan Africa and globally. Though Ethiopia has potential groundwater resources, it is hardly exploited for human welfare; as a result people in different regions in a country are facing water scarcity problems. The involvement of different donor nations and agencies has channelized fund for development of rural water but there has to be put a lot of effort to

achieve the target set by MDGs of halving the share of people without access to water and sanitation by 2015, in order to improve sustainability and for improving service quality by providing good operation and maintenance facilities.

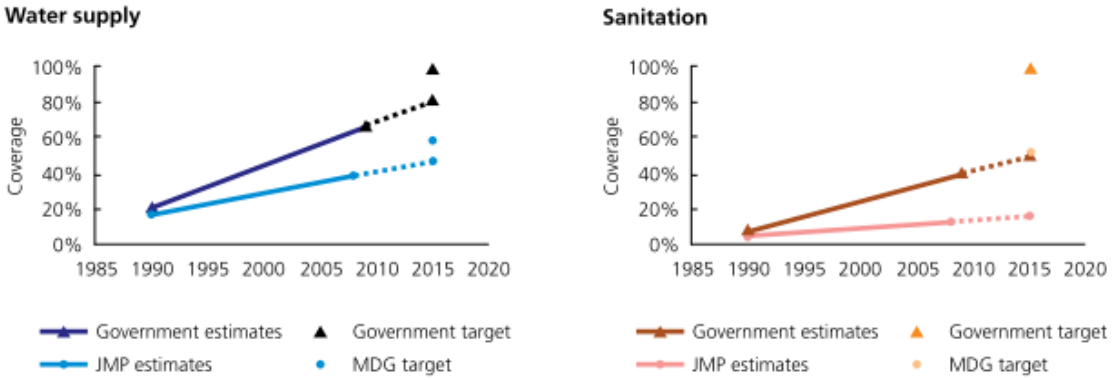

Figure 2.5: *Progress in water supply and sanitation coverage*

(Source: Sustainable Development and Poverty Reduction Appraisal Report (SDPRP) (2003), Central Statistical Agency (CSA) (2003), MoWR, Ministry of Health, and JMP 2010 Report)

The data available from different international agencies and governmental sector as shown in figure 2.5 reveals that the water supply coverage in Ethiopia has increased from 19% in 1990 (11% in rural and 70% in urban) to 66% in 2009 (62% in rural and 89% in urban). Ethiopia has already met the MDG target of 60%. In sanitation, the results has not been as satisfactory as water supply since Ethiopian Ministry of Health has shown an increase to 39% coverage by 2009 (30% in rural and 88% in urban) from a baseline of close to zero in 1990. (WSP, ADB, UNICEF, World Bank & WHO 2010)

2.6.1 Background

There was central planning and implementation of water and sanitation projects by national government before 1995. When Ethiopia became the federal state in 1995, the power of many functions was decentralized to the lower level of government. But, on the course of development, decentralization has been frequently disrupted by the limited capacity of local government because it was not in position to consider the new responsibilities; rather it followed its own traditional bureaucratic way. Ministry of Water Resources (MoWR) was established in 1995 which took the responsibility of water development activities. (ADB 2005)

National Water Resources Management Policy was adopted by government in 1999 which was followed by Water Resources Development Fund (2002) and a Water Sector Development Program. Plan for Accelerated Sustained Development and to End Poverty (PADEP) under government policy was implemented to increase provision to an improved water source to 84% and access to improve sanitation to 80% within the period 2005-2010. This target was well ahead of targets set by MDGs. National

government proposed another motivated Growth and Transformation Plan (GTP) 2011-2015 in 2010 that had set a target to uplift the coverage of drinking water from 68.5% to 98.5%. (MoFED 2010)

2.6.2 Rural Water Supply and Sanitation

Water Supply and Sanitation Development (2002) gives a roadmap for GoE efforts for the rural and urban water supply sector. For drinking water, the UAP states that the development of technologies for rural areas will focus on the following criteria (GoE 2006):

- Water schemes that can be completed with least cost, shorter time, and which could minimize water tariffs.
- Reliability and purity of water.
- Low cost of operation.
- Simplicity of management system and its sustainability

2.6.3 Water Resource, Access and Use

There are 12 river basins in Ethiopia with an annual runoff volume of 122 m^3 of water and an estimated 2.6-6.5 billion m^3 of groundwater potential. Hence, there is practically large volume of water available per person per year which corresponds to an average of 1575 m^3 of water. But as mentioned above, due to country terrain and topography along with difference in spatial and temporal variations in rainfall and lack of storage, water is not easily accessible where and when needed. Out of total water potential, only 3% of water resources have been used, of which only about 11% (0.3% of the total) has been used for domestic purposes. (Awulachew et al. 2007)

The rural communities are heavily dependent on groundwater through shallow wells, deep wells and springs. There is poor quality of water available from traditional water sources such as rivers, unprotected springs and lakes where large groups of communities are relying on. Apart from that, rainwater harvesting is also common alternative source.

Serious health problems have been reported in the past due to lack of safe drinking water supply in rural communities of the Woredas (Districts) where majority of the communities do not have access to potable water. Especially in the dry season, the problem is more severe and they have to rely on conventional water sources which are often contaminated. The lack of sanitation and personal hygiene awareness in majority of households (70% in rural areas) has resulted in morbidity and mortality which corresponds to the inadequate water supply and unhygienic waste (including human excreta) management. (ADF 2005)

2.6.4 Water as a Priority in Development

Ethiopian's Interim Poverty Reduction Strategy Paper, 2001/01- 2002/03, is consisted of four building blocks:

- Agricultural Development Led Industrialization (ADLI)
- Judiciary and Civil Service Reform
- Decentralization and Empowerment
- Capacity Building in Public and Private Sectors

Sustainable Development and Poverty Reduction Program (SDPRP) was launched in 2002 where agriculture was focused as the major source of rural livelihood. In this program, irrigation, water harvesting and agricultural research were regarded as vital elements to ensure the long-term food security (Natea & Habtamu 2004). The GoE has developed the MDG water Sub-Sector Program (2002-2016) for meeting the MDG plan for irrigation, water supply and sanitation (GoE 2001).

Since the current government came to power in May 1991, the irrigation and WSS sub sectors have undergone a series of institutional reforms, both at the federal and regional levels, to accommodate a decentralization policy encouraging the transfer of powers down to the level of the Woredas. This has included the sharing of manpower, equipment and facilities to empower and strengthen the Woredas at the grassroots level. As a result of such operations, some institutions were separated, while others merged together. A discussion of the two sectors is given below noting, where relevant, policies related to these reforms (Dowa et al. 2007).

The GoE has given very high priority to the water sector, which is reflected in the accelerated rate of achievement in recent years. However, little has been done to stimulate the involvement and capacity building of the private sector, which could potentially play into accelerating the development of irrigation, water supply and sanitation.

2.6.4.1 Water Supply and Sanitation and Universal Access Program

In the line with wider reforms, in 1999 GoE developed the following general policies for WSS (GoE 1999):

- Recognize that water supply is an integral part of the overall management of water resources management and incorporate water supply planning in domain of comprehensive water resources management undertakings.
- Promote the development of water supply through participatory, demand driven and responsive approaches, without compromising social equity norms.
- Integrate and coordinate the development of water supply with other sector development objectives, including those for irrigation and hydropower.

- Create and promote a sense of ownership in communities, making them aware of their responsibilities for O&M of water supply systems, and develop participatory management practices.
- Improve rural water supply by enhancing the development of different indigenous water sources currently utilized by communities.
- Ensure that rural drinking water and livestock water supply systems shall be an integral part of overall socioeconomic development, centered on self/reliance, community participation and management.

GoE has also created an Integrated Water Supply and Sanitation Policy which are (GoE 1999):

- Recognize that water supply and sanitation services are inseparable and integrate the small at all levels through sustainable and coherent frameworks.
- Promote the "User Pays" principle for urban water supply and sanitation services.
- Promote, as much as possible, the development and O&M of water supply and sanitation systems by the most appropriate body and at the decentralized level.
- Ensure efficient and sustainable management of water supply and sanitation system by avoiding fragmented management but at the same time avoiding over/centralization of management.
- Create conductive situations for the participation of all stakeholders in integrated water supply and sanitation activities.
- Develop national standards, guidelines and procedures for the different aspects of water supply and sanitation.
- Work in partnership with stakeholders on water supply, drainage and wastewater master plans in major urban areas, and prepare water supply and sanitation strategies in rural and other peri-urban areas.
- Ensure that water supply and sanitation financing is based on an established set of criteria incorporating and prioritizing the relevant factors.

2.6.4.2 Community Led Total Sanitation Programs (CLTS)

CLTS is a growing approach which is used for the promotion of sanitation and hygiene worldwide in developing countries. In Ethiopia, CLTS has emphasized in water supply and sanitation projects. Currently Plan Ethiopia is implementing CLTS in five of its intervention Woredas. With the collaboration with UNICEF, GoE is implementing CLTS approach in its development intervention in many Woredas. Furthermore, Water and Sanitation Forum (WSF) and World Bank (WB) is adopting Amhara Regional Behavioral Strategy in Amhara which is more intensive and focused approach intervention. CLTS approach has capacity to induce the behavioral change in the communities which is the most perquisites in development activities in rural water and sanitation programs. (Global Sanitation Fund 2009)

3 METHOD AND METHODOLOGY

3.1 Amhara National Regional State (ANRS)

ANRS has 10 administrative zones, one special zone, 151 administrative woredas, 3418 administrative kebeles and 78 centres. The capital city of the State of Amhara is Bahir Dar. The ANRS is located in the north western and north central part of Ethiopia. It has common borders with the state of Tigray in the north, Afar in the east, Oromiya in the south, Benishangul-Gumuz in the south west, and Sudan in the west. ANRS has a total area of 152,559.48 square kilometres, and estimated population 21,184,252 of which more than 18,434,483 (above 85%) live in rural areas (BoFED 2010, Kebede 2010).

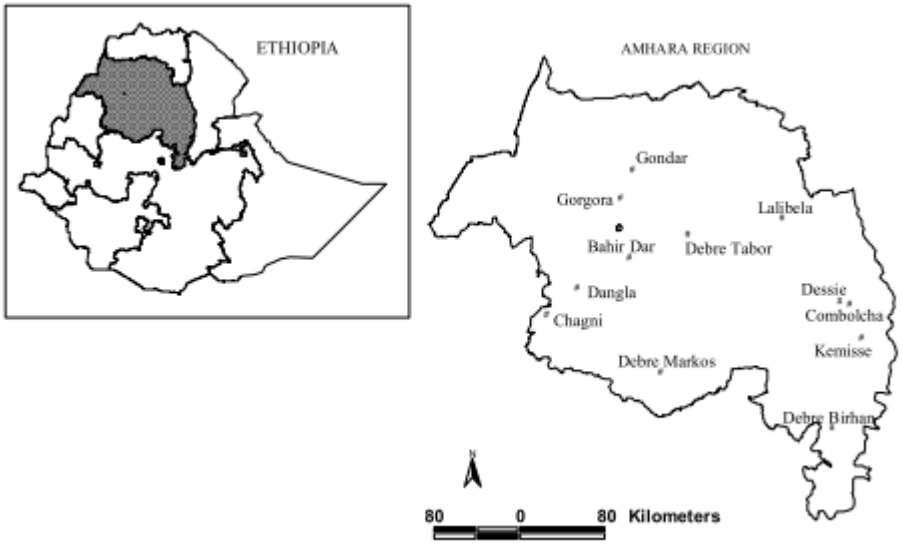

Figure 3.1: *Map of Amhara National Regional State*

The state of Amhara region is located within the coordinates of 11.36°N and 37°23'E. The annual mean temperature for most parts of the region lies between 15°C-21°C. The state receives highest percentage about 80% with the annual average areal rainfall is 1194 mm (Bewket 2009) in the country. The highest rainfall occurs during the summer season, which starts in mid June and ends in early September.

ANRS is topographically divided into two main parts: the highlands and lowlands. The highlands are above 1500 m above the sea level and characterized by chains of mountains and plateaus which includes the highest peak Guna (4236 m) in the country. The lowland covers mainly the western and eastern parts with an altitude between 500-1500 m above sea level. Areas beyond 2,300 m above sea level fall within the 'Dega' climatic zone; and areas below 1,500 fall within the 'Kolla' or hot climatic zone. The

Dega, Woina Dega and Kolla parts of the region constitute 25%, 44% and 31% of the total area of the ANRS respectively. (GoE 2011)

3.2 Research Methods

The purpose of the study was to analyze the applicability of CMP in implementing rural water supply and sanitation. Apart from that, the research was carried out to examine the existing water and sanitation service scenario in selected Woredas in South Gondar (Farta, Fogera, East Estie and Levo kem kem Woredas) of Amhara region and to determine the nature and level of community participation in rural water development. The study was carried out during month of May-June 2012. Though water supply and sanitation development projects are recognized as engineering activities, there are social science factors that need to be considered. They are interdisciplinary projects, involving the fields of engineering, public health, sociology, economics, and anthropology (Cairncross et al. 1991).

Desk Study

For secondary data collection, it was based on data and information issued by various institutions managing the Rural Water Supply in Ethiopia and also on information from related projects. Furthermore, data was collected from reference books, journals, and other sources from sectoral offices and concerned water and other related bureaus.

Interview

For the collection of primary data, project and other local authorities' officials were interviewed. The format of the interview for the respondents was semi-structured interview. The interviews were administered with Woreda experts and administrative officials concerning water supply and sanitation assessment and their technical support and with community water communities about women participation, cross-cutting issues, training and water service management (Operation and Maintenance).

Questionnaire Survey

The questionnaires were employed to water beneficiaries groups, local people and project officials. The questionnaire covered the information on socio-economic characteristics of respondents, demand responsive and sustainability factors of the services, issues of cost sharing and recovery, community training and awareness creation, gender equity, condition of the existing water points and operation and maintenance of the infrastructures.

The questionnaire was used to evaluate the degree and type of participation, and to evaluate the institutional support during design, construction and maintenance phases.

The questionnaire included questions about community contribution (capital, labor and material), female participation, technical factors (design of construction), financial factors, environmental factors (the sustainability of the water source) and health factors.

Field Observation

The field observation was conducted in the randomly selected Woredas in ARNS which helped to identify the standard of the construction, the condition of the contributing watershed, the type of the water point and determine the degree of preventive measures taken to protect water points from natural disasters (landslides and erosion), livestock and children.

3.3 SWOT Analysis

I recognized the key tool for planning the sustainable water supply through Community Managed Project for sustainable development is Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis.

- Build on Strengths
- Eliminate Weakness
- Exploit opportunities
- Mitigate the effect of Threats

The two main components of SWOT are indicators of the internal situation described by existing Strengths and Weaknesses and the indicators of the external environment described by existing Opportunities and Threats.

4 RESULTS AND DISCUSSION

4.1 Characteristics of Respondents

During the data collection process, the majority of respondents were Water User Groups (WUGs) in the community. The respondents were categorized according to their age, marital status, household size, educational background and occupation. The income level of the respondents was not included in the result because many of the respondents hesitated to tell their income; therefore, it might not reflect the actual result. The total respondents of 92 persons were categorized as CMP and non-CMP respondents. Both questionnaire and semi-structured interview were carried out during study to the respondents.

The data tabulated below may not represent the actual percentages from the respective Woredas. Among the respondents, about 55% were male and 44.% were female. To avoid the biasness in the result, almost equal numbers of male and female respondents were drawn but during the actual data collection, percentage of male respondents in terms of gender was greater than female respondents. The age of the respondents ranged from 18 to 82. The majority of respondents were in the age bracket of 25-50. These age groups were targeted because people in this age group were actively taking part in community activities for the pre-construction, construction and post-construction phases.

Respondents were asked about their marital status and the result showed that more than 80% of the respondents were married. The household sizes of the respondents were taken into consideration and results showed that 40.2% and 57.6% of households have household size below 5 and 5-10 respectively. Due to lack of awareness in the family planning, the number of family members was large. Respondents mentioned that the need for large household size is due to need of manpower for farming activities.

Most of the people in the study area were illiterate, and only few had attained primary level education. It was explored that the overall literacy rate of Ethiopia was 28% as studied by UNDP 2011. In rural areas only 20% of the men were literate, whereas, the figure is even lower for women (EREP 2009). Those people of the communities who had completed their secondary or university level had migrated to cities for job opportunities and in search of quality life.

The primary occupation of most of the rural people was mixed farming. The survey revealed that about 80.9% of the respondents were involved in farming activities

whereas, some of the respondents were also daily labors, and other were involved in business and working for the government jobs.

Table 4.1: *General Background of the Respondents*

Respondents Background		Frequency	Percent
Gender	Male	51	55.4
	Female	41	44.6
Age	10-20	8	8.6
	21-30	26	28.2
	31-40	23	25.0
	41-50	18	20.6
	Above 50	14	15.2
Marital Status	Married	75	81.5
	Single	12	13.0
	Divorced	4	4.3
	Widowed	1	1.1
Household Size	Below 5	37	40.2
	5-10	53	57.6
	Above 10	3	3.2
Education	Never been to School	53	57.6
	Adult Education	8	8.6
	Primary	24	26.0
	Secondary	6	6.5
	University	2	2.1
Occupation	Farmer	80	86.9
	Daily Laborer	6	6.5
	Business	4	4.3
	Government Employee	3	3.2

4.2 Water, Sanitation and Hygiene Committees (WASHCOs)

In the community, there were five members selected from the WUGs which are also known as WASHCOs. WASHCO members were selected on the basis of their activeness, leadership capability, community mobilization capacity and respect from the community. In the study area, the composition of most WASHCOs was found to be three females and two males with females holding the key positions. The WASHCO was comprised of chairperson, secretary & accountant, treasurer, store person and was controlled with one person each holding the positions. Nevertheless, in non-CMP Woredas, the number of WASHCO members varied from 5-7 and there also was variation in the sex composition of the WASHCO members. In both types of Woredas

(CMP and non-CMP), there was no discrimination to be WASHCO members in terms of gender, religion, age, wealth or other social status.

4.2.1 Roles and Responsibilities of WASHCOs

The roles and responsibilities of WASHCOs on the constructed water schemes in CMP approach are presented below:

4.2.1.1 Pre-construction Phase

The WASHCOs have the following roles and responsibilities during the pre-construction phase:

- Project initiation and site selection, technology choice, operation and maintenance arrangements
- Application preparation and submitting application to Woreda WASH Team (WWT).
- Receiving training by WASHCO member from the WWT about planning, financing management, implementation, maintenance and operation of the water schemes.
- WASHCO member are responsible for procuring materials from near local store to the water construction site.
- Addressing the gender sensitive issues by empowering women in development activities along with marginalized group of people.

4.2.1.2 Construction Phase

The beneficiary community has the following roles and responsibilities during construction of the water points in CMP approach:

- Contribute at least 15% of the project cost in cash and/or in kind (in a form of labor and raw materials)
- Deposit some amount (at least Birr 1000) for operation and maintenance: for buying things like spanners, grease and hand-pump spare parts for the mechanic and also enough to pay the hand-pump mechanic for the work done.
- Contributing for and participation in the construction of water points.
- WASHCO members are also responsible for allocating funds and are accountable to the community for transparency in their work in terms of economic and social aspects.
- WASHCO members are responsible to provide labors and raw materials for the construction of water points.

4.2.1.3 Post-construction Phase

The committee is expected to accomplish the following during post construction of the water points in CMP approach:

- Setting the time for opening and closing of the water points by caretakers.
- Oversee the utilization and management of the water points.
- Monitoring and inspecting the usage of the water points and their safety to the users.
- Mobilizing people within beneficiaries for cleaning of pump and surrounding areas.
- Fencing the water points to prevent it from damage.
- Make sure caretakers and pump attendants are appointed and do their job properly.
- Promote improved hygiene practices and sanitation among water users and record current latrine status.
- Discuss and agree with the water users on O&M.
- In order to promote a feeling of ownership and community based management, it has to be committees themselves preparing their own bi-laws guidance from the facilitators.
- Keep proper written record of all money collected and spent.
- Ensure that damages to the scheme are immediately reported to the regional water office.
- Ensure re-election and on-the-job training of new members when necessary.
- Reporting to WWT on the overall implementation and status of the water points.

In CMP approach, WASHCOs are responsible for the full development process through planning, financial management, implementation, operation and management of the water schemes. WASHCOs also manage the subsidy provided by government for the capital investment. Apart from that, WASHCO is accountable for the of the goods and services required for the water scheme construction and installation. In contrast to that, in WMP approach, the difference is the procurement of construction materials and services were provided by Woreda finance offices. But the participation of communities in kind and even in cash is there in WMP approach with low level of ownership by the communities.

4.3 Community Contribution

Previously, it was thought that the contribution of certain amount of money in project activities was considered as community contribution which was the base of community participation. However now a days, community contribution includes cash, labor, raw materials, and ideas in planning, decision making, implementing and financial managements. (Claud 1998)

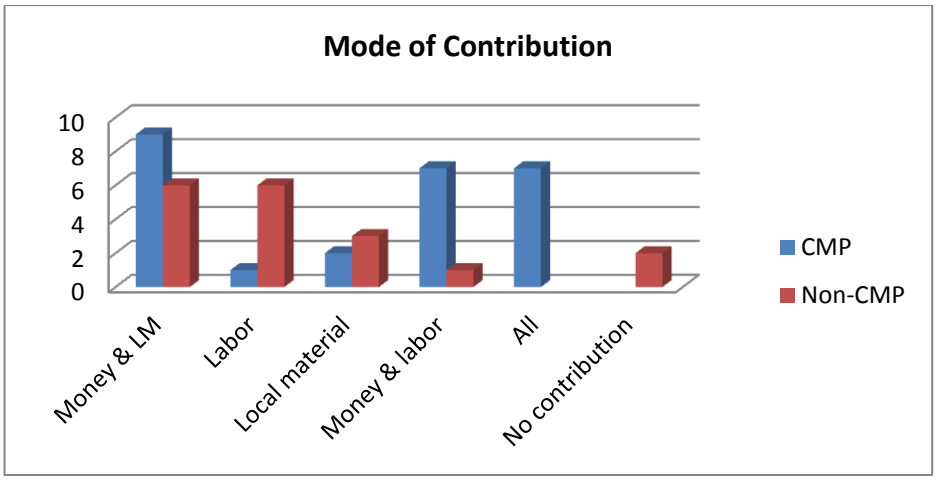

***Figure 4.1**: Mode of contribution in terms of cash or in kind in CMP and non-CMP approaches*

The figure 4.1 depicts that, in CMP and non-CMP approaches, the communities had contributed in terms of cash and/or in kind (labor and local materials). It seems that the modes of contribution in both approaches were quiet similar because both were demand-driven approaches. Previously, most of the schemes from non-CMP approach were supply driven; therefore, water points were handed over to communities without their contribution or contribution only in terms of labor and local materials. Later, non-CMP approach adopted demand-driven approach and mode of contributions in term of cash increased gradually. But it can be clearly seen from the graph that the project contribution made by CMP approach in term of all (money, local material and/or labor) is in larger quantity than non-CMP approach.

As per CMP approach, the contribution from the community should be at least 15%, while in the case of non-CMP approach (those water points constructed by CARE International and World Bank), the minimum contribution was set to be 10%. The finding of the study showed that the community contribution in CMP approach is from 23-40% which exceeds the minimum requirement set by the project. In fact, interview with one of the CARE International officers revealed that the contribution of the community in construction reaches up to 40% approximately.

4.3.1 Ownership of the WUGs

The active participation of the community for the identification of problems, resource mobilization and implementation leads to the sense of ownership feelings. The WUGs had elected WASHCOs for the managing facilities and they have shown their capabilities in terms of their administrative, financial and technical capacity. Not only the WASHCOs but also all WUGs know their responsibilities during planning, implementation, management and sustainability of water points. This commitment of the community has created ownership on the water points.

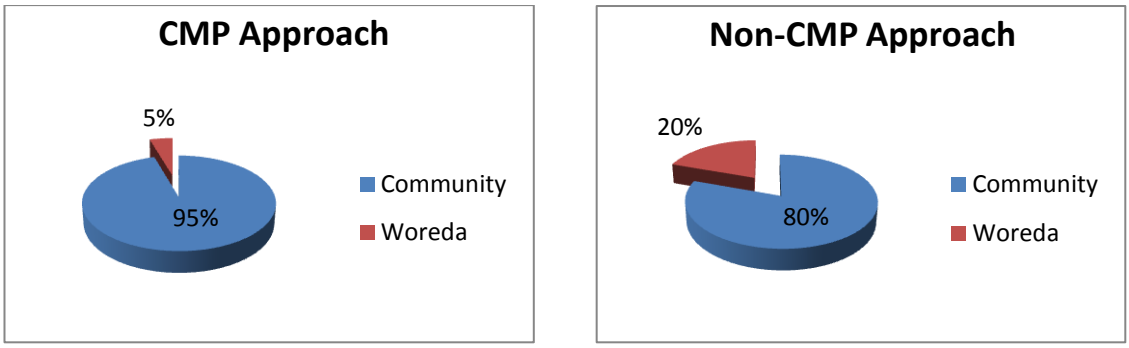

Figure 4.2: *Sense of ownership feeling in CMP and Non-CMP Woredas by communities*

The figure 4.2 depicts that in both approaches there were strong feeling of ownership. However, in CMP approach about 95% of the respondents feel the ownership feeling which is comparatively higher than non-CMP. As the community in CMP approach has marked its participation at phases of the project, it is usual that their ownership feeling was higher. There was also commitment seen in non-CMP approach water points though some of the water points in the study area were handed to the community and furthermore, they were also implementing the same strategies as CMP approach for the operation and maintenance.

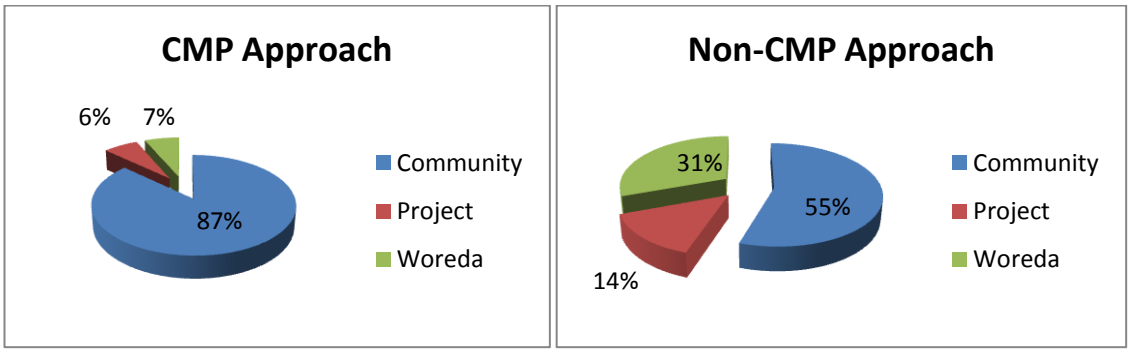

Figure 4.3: *Community share for project initiation, site selection and technology type in CMP and non-CMP communities*

The figure 4.3 illustrates why CMP approach community has strong feeling of ownership. As seen in the figure about 87% of the community had taken part for the project initiation, site selection and technology type whereas, there were 55% participation in non-CMP approach. As in non-CMP approach, WWTs were responsible for the site selection and technology type along with community; therefore, 31% of respondents had stated that Woreda was responsible for site selection and technology type though they felt the ownership of the water points.

4.3.2 Willingness to Pay

"Willingness to pay in cash, materials, labor and upkeep can be taken as a useful indicator of the demand for improved and sustained water services" (Kebede 2010). If people are willing to pay for a specific service, then it is possible to conclude that they value the service On the basis of the above statement it can be said that people who

voluntarily contribute cash or in kind are known about the importance of safe drinking water in terms of social, economic and health aspects.

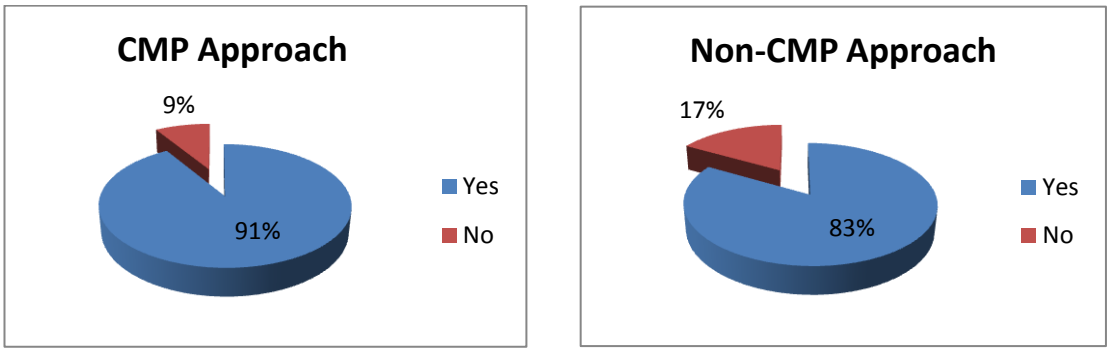

Figure 4.4: *Communities willingness to pay in CMP and non-CMP woredas*

In figure 4.4, it can clearly be observed that communities were willing to pay in both CMP and non-CMP approaches. Respondents were asked why they were willing to pay for water services. Most of the respondents responded that they knew the importance of quality water. Previously they used to take water from unsafe sources (river, pond, spring) which caused different water-borne diseases and even death. They spent their money in health treatment which causes economic burden and there was also loss of time in fetching water from other unsafe sources.

4.4 Water Use and Accessibility

4.4.1 Water Coverage of the Woreda

The water coverage in the studied Woredas was remarkably high and it was of very high standard compared to the overall rural water coverage in Ethiopia which was 49.2% in the year 2010 as shown in table 4.2.

Table 4.2: *Water Supply Coverage Targets, WSSDP (Water Supply and Sanitation Development Program)*

Rural Water Supply (Year)	2000	2005	2010	2015 (expected)
Percentage coverage	23.1%	34.2%	49.2%	67.2%

(Source:http://www.communityledtotalsanitation.org/sites/communityledtotalsanitation.org/files/Ethiopia_Overview_0.doc, accessed 26th October 2012)

It showed that the Woredas which have implemented CMP approach have more water coverage than the Woredas which have implemented only direct fund approaches.

Table 4.3: *Water coverage of CMP Woredas*

Woreda	Population	People with access	Coverage%
Farta	235,939	225,322	95.50
Fogera	203,259	166,706	82.00
East Estie	234,321	232,681	99.30
Guangua	215,365	203,365	99.40

(Source: Woreda Water Office, Farta, Fogera, East Estie & Guangua, 2012)

In the table 4.3, we can observe that except Fogera Woreda, other Woredas has have water coverage more than 95% which sets an example of high implementation and functionality rate of water points constructed under CMP approach.

4.4.2 Type of Water Sources

The drinking water source available for the communities is very important. Generally, there are two sources of water for drinking purposes, namely surface water and ground water. After the construction of water points, communities have shifted towards the groundwater as their main source of drinking water. Since groundwater is safe to drink, it can be treated easily and has less fear of water-borne diseases. Hand Dug Wells (HDWs) has become premium technology for the communities. But depending on the water source, Spring Wells (SWs) are also other options of drinking water.

Before the construction of water points, people had no choice except using unsafe water sources which were surface water in the forms of river, spring, pond and rain water. As shown in the figure 4.5, about 69% of the respondents were using river water near their communities for the purpose of drinking whereas, 17% used rain water in rainy season for drinking which was quiet safer than other unsafe sources. According to the respondents, some people in communities still practice water from rain though they have water points in the community. The reason was they prefer to choose rain because it saves time and energy especially in the scattered community where people have to walk long distances for collection of drinking water from water points.

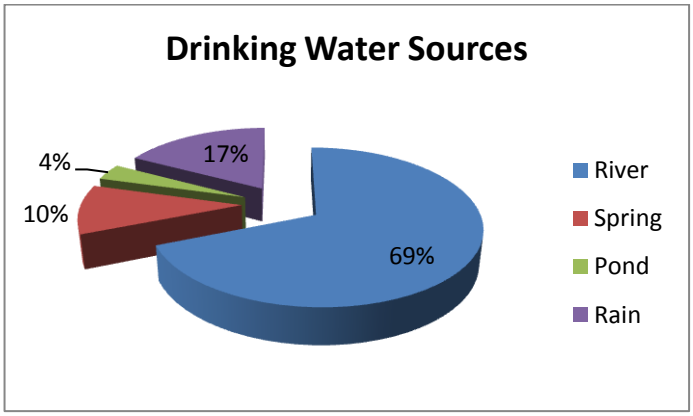

Figure 4.5: *Drinking water source in both CMP and non-CMP woredas before the construction of water points*

Even now, if the water points are non-functional or have minor breakdown, community people are forced to move towards unsafe water sources for the drinking purposes. However, in some community there was mutual understanding seen between the groups of two communities. If one of the communities had adequate water, they used to allow people from other communities to share water with them. The community used to charge 25 cents per Jerkin (20 liter container) for another community people. The collected amount was saved by the WASHCOs of the community for the operation and maintenance in case of minor damage of water points.

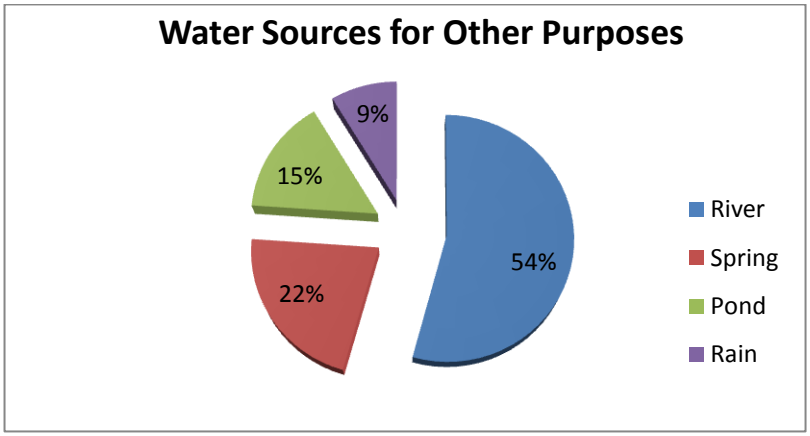

Figure 4.6: *Proportion of respondents using water for purposes other than drinking in CMP and non-CMP woredas*

For the other purposes than drinking (for household activities like washing clothes and utensils, bathing and livestock), the community people had no choice than to use traditional source. Even the water collected from the water points was insufficient for some households for drinking purpose. Therefore, there arises no question for using water from water points for other activities. The quality of surface water was very poor. The children bathing from those water sources had some skin infections and even sometime livestock had suffered from water-borne diseases. The figure 4.6 shows that 54% of the community people used river water as their alternative source for other purposes while some people with poor water quality in surface water relied on rainwater (22%) for other household purposes.

4.4.3 Amount of Water Collected

The amount of water collected per day depends upon different factors of water points i.e. availability of water, groundwater level, population, number of household and household size in the community. It was found that most households of the communities were allowed to fetch about 3-4 Jerkin (60-80 liters) of water from the water points. The figure 4.7 provides the figure of water users in the communities. The number of households determined the amount of water collected per day in the communities. If the numbers of households was large, each household was allowed to take only 2 Jerkins of

water and on the other hand, if the household member was small, then each household was allowed to take more than 3-4 Jerkins of water.

The other problems associated with water collection was depth of the well and groundwater availability especially in HDWs. It was observed that, though the water points were functional, due to low groundwater level, the discharge of water was very low. Sometimes people had to wait in long queue for water in those communities where water points were constructed in rocky terrain, for example in the Levo Kem Kem water points constructed by World Bank.

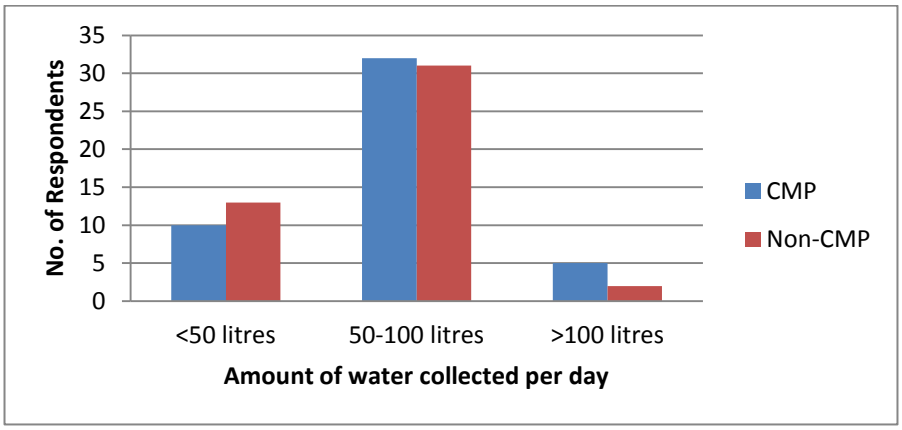

Figure 4.7: *Amount of water collected per day in both CMP and non-CMP Woredas*

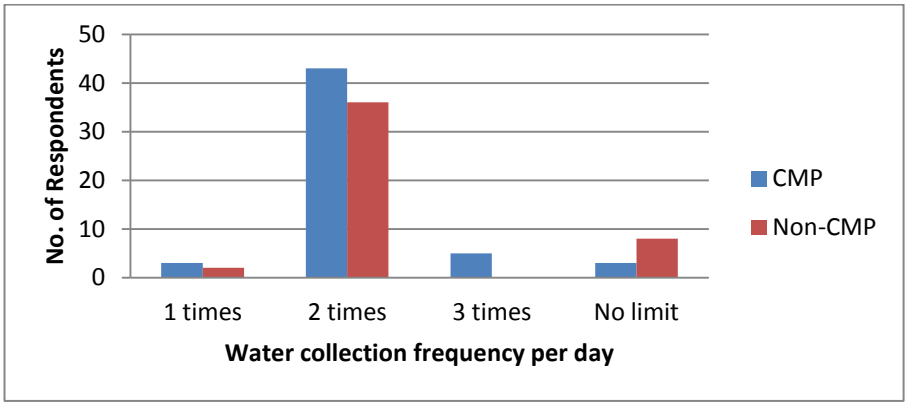

Figure 4.8: *Water collection frequency per day in both CMP and non-CMP Woredas*

The water collection frequency also depended upon the availability of water in water points. In most communities in both CMP and non-CMP approach, there were two schedules for opening and closing for water points: one in the morning and another in the afternoon. In each session, people from each household were allowed to take either 1 or 2 Jerkins of water depending upon the water availability. In the figure 4.8 it can be observed that the maximum frequency of water collection per day was 2 times in both CMP and non-CMP Woredas. In some of the non-CMP communities, for instance Tihozakena kebele, Fogera Woreda, due to lack of effective WASHCOs, there was no limit for water collection. Therefore, there were no limitations of the Gotts (villages) of

non-CMP approach due to internal conflicts in the community and lack of community management.

But, in case of some of the CMP communities, there was abundance of water, thus each household from those communities were allowed to take water 3 times or in some communities there was no limitation. One thing the community should bear in mind was that the over utilization of the water points might lead to breakdown of the system, hence good operational management would be required in those communities which had no limitation to collect water per day.

4.4.4 Distance from the Water Source

The construction of water points in the communities had encouraged people to access safe and quality drinking water. Therefore, community people gave their time to fetch water from the water points. It was observed that most of the water points in the visited area were built at the centre of the community so that the water could be accessible within the distance of 1.5 km as indicated in the UAP of the country. But in case of scattered community, some of the respondents put their views that it took them almost an hour for single trip to fetch water from water points, thus, sometimes, they preferred to fetch water from traditional/unsafe water sources nearby to save time that could be utilized for other household activities.

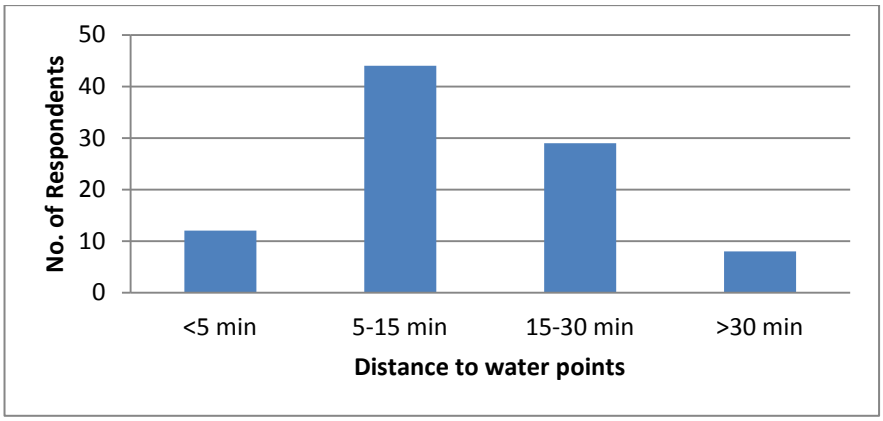

Figure 4.9: *Average distance to the water points in both CMP and non-CMP Woredas*

The figure 4.9 illustrates that about 92% of the respondents were able to fetch water within the distance of less than 30 minutes (single trip) and they were very satisfied with the service provided to them whereas, about 8% of the respondents in the scattered community were not satisfied with the water points constructed far from their area since it took them more than 30 minutes to fetch water. Respondents were asked whether they needed to have additional water points in their locality.

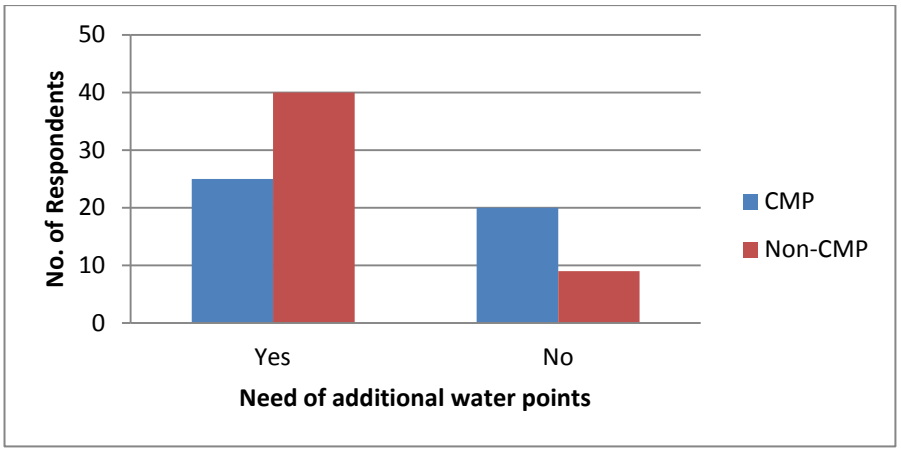

Figure 4.10: *Need of additional water points in CMP and non-CMP Woredas*

Most of the respondents, as indicated in the figure 4.10, responded that they needed additional water points in the community. There were several reasons behind the need of additional water points: i) increasing number of households, ii) inadequate water for the household whose size is more than five, iii) seasonal variation in the water quantity and iv) remoteness of the water points. Compared to CMP communities, non-CMP communities were not satisfied with the area of construction of water points. The interview with Mieyesuse Kebele, the administrator revealed that water points constructed by Woreda and ORDA did not involve the community participation and respect the decision made by the community during site selection and project initiation. As a result, people were suffering from inadequate water supply due to breakdown of the system and quality of service provided was not good. Hence, people in this community needed additional water points for better quality of life.

On the other hand, majority CMP communities were satisfied with service provided. As seen in figure 4.10, 27% of respondents from CMP communities needed additional water points, in contrast to that of 44% non-CMP communities. It can be summed that, community participation and resource mobilization in the CMP communities were found more than non-CMP communities which led to have more ownership feeling. The respondents of CMP communities believed that they had to make the existing water points more sustainable instead of having additional new water points.

4.4.5 Water Quality

Water quality refers to the physical, chemical and biological characteristics of water which is regarded as suitable for drinking purposes in consistent with the guidelines prescribed by WHO. The people in the study area were found to know the importance of quality water in their daily life but still there was lack of awareness about safe drinking water among people.

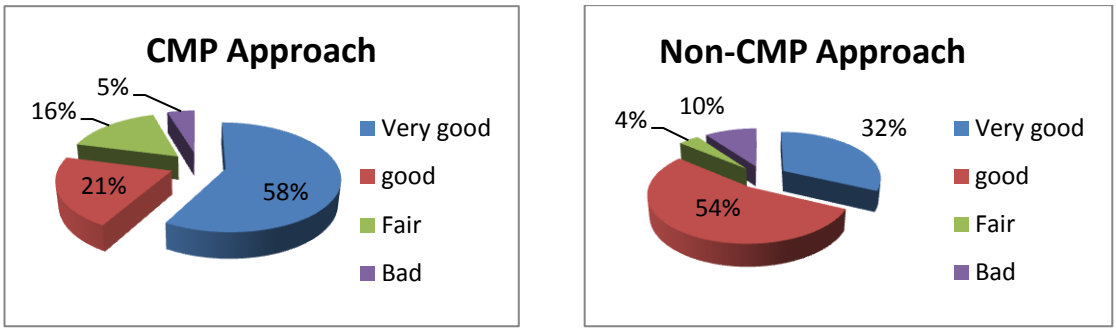

Figure 4.11: *Perception Water Quality in CMP and Non-CMP communities*

According to the respondents, the quality of water differed in wet and dry seasons in both CMP and non-CMP constructed water points. Generally, in wet seasons, the quality of water was not good since the water was turbid and was not suitable for drinking. The respondents were asked what they did when water from the different sources was polluted. Almost all respondents responded that they would inform Woreda water office, and if they did not arrive in time they had no options than to drink the polluted water. From here, it is clear that as it was mentioned earlier they knew the importance of quality water but there was lack of awareness of safe drinking water. They even did not purify the water using simple filtration techniques. As a result, they suffered from water-borne diseases.

The situation was even worse in Spring Wells. The respondents complained that there was prevalence of worms and insects and even sometimes algae in the water from water points during wet season. They reported that they were forced to use the water or return to the unsafe water source which was more disastrous. However, in dry season people had no complain about water quality. As seen above in figure 4.11 in both CMP and non-CMP, the respondents reported that the quality of water was very good in dry a season which was 58% and 54% respectively. It was observed that the community people knew the importance of chlorination for safe drinking water. Therefore, they were urging to increase the frequency of treating water by chlorine more than twice a year.

4.5 Water Sustainability

'Sustainability is the most desirable, yet elusive characteristic of water supply projects' (WHO 1994). For the sustainable water, it is very essential to develop sustainable water supply projects. The factors governing the sustainable water supply systems are issues related to technical, financial, attitudinal, institutional, legal framework, lack of community participation (ownership feeling), operational and maintenance problems and political interference. The breakdown or failure of water supply system are correlated with poor planning, construction or community or inability of water bureaus to meet the commitments required to keep the installed facility functioning.

4.5.1 Functioning

The water supply system should be sufficient to meet the basic demands of communities in the project areas and water is consistently acceptable. There are four indicators of functioning of water supply facilities to manage the increased necessity of water use which are water quality, water quantity, reliability of water supply and convenience (Issayas 1988).

Table 4.4: *Functionality of CMP water points in 4 Woredas Phase IV woredas*

Woreda	RWSEP WPs	CMP WPs	Functional CMP WPs	Overall Functional WPs%	RWSEP excluding CMP functional %	Functional CMP WPs %
Fogera	491	350	342	87.5	95.2	97.7
Farta	378	282	277	84.0	96.0	98.2
East Estie	354	276	275	95.8	91.8	99.6
Guangua	474	443	438	97.0	95.1	98.9
Average	1697	1351	1332	91.0	94.5	98.6

The table 4.4 shows the functionality rate of water points in four studied Woredas using CMP approach with others. It can be clearly observed that the functionality rate of water points has increased since implementation of CMP approach because of high motivation of community for participation and feeling of ownership.

Most of the existing water points in the study area were at good condition needing minor maintenance in some of the water points But, the conditions of some of the water points were very bad and if attention is not given, there is the possibility of system failure.

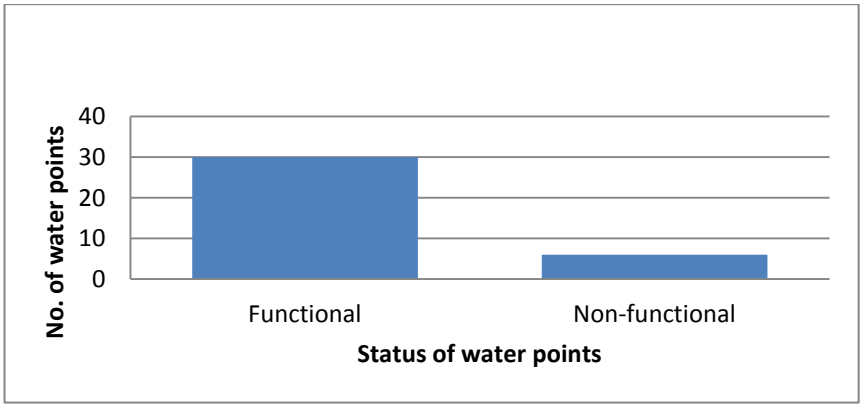

Figure 4.12: *Status of water points in study area*

From the Figure 4.12, it can be observed that status of water points in study area was more functional. Out of total 36 water points visited, 30 water points were functional which indicated that water points were in working conditions. Some of the functional water points came to be temporarily non-functional in dry season due inadequate water

in groundwater table, for example as in the case of Worjie Kebele of Fogera Woreda. This problem was seen in few water points visited. Only 2 water points were non-functional in CMP woredas. Out of 6 non-functional water points 2 of were SPWs, where the source of water dried after use for some years. Other 4 water points were non functional due to lack of maintenance and availability of spare parts in time because of dispute among the WUGs.

4.5.2 Utilization

In most of the communities, the actual population utilizing water service was unknown. The number of household varied from community to community ranging from 25 to 75 households per water point users. The actual reason for this disparity in the number of water household was the serious concern about the availability of water for the communities. It was observed that, the water points having low household number had no problems with drinking water compared to that of water points having high household number. The average water collection per household in study area was 40-60 litres per day and it was estimated that the average household size in the family was 5 members. Therefore, it showed that, the average consumption of water per person was far below the guidance prescribed by WHO which is 20 litres per person per day and 15 litres per person per day is prescribed by GoE.

It was also observed that, in the communities where the number of household was larger, there was breakdown of system due to its over utilization compared to small number of household communities. It showed that the number of household utilizing water was directly affecting the use of water points and its durability over the time. The other fact was that, the number of household also increased after the construction of water points and community members were compelled to allow new household members to use the water points with certain fee (mostly 25 cents per Jerkin).

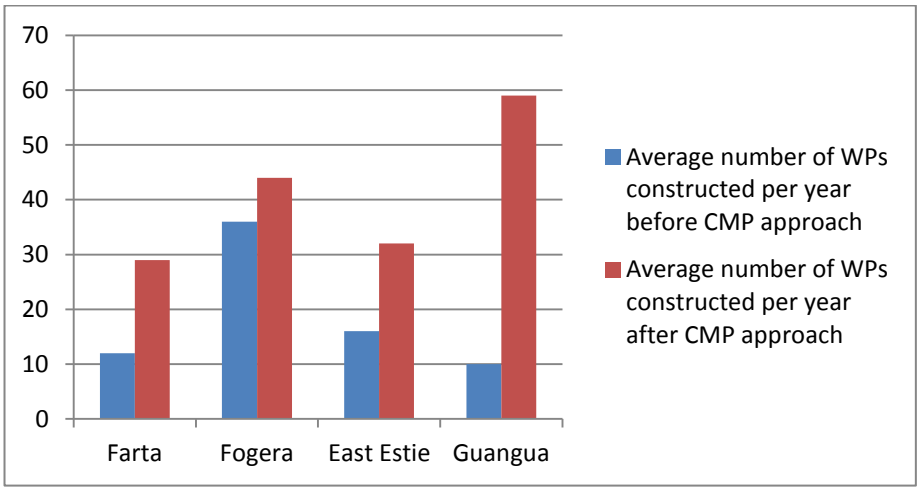

Figure 4.13: *Implementation rate of water points in four Woredas*

The figure 4.13 shows the implementation rate of the water points in studied four woredas before and after the introduction of CMP approach. The implementation rate has increased more than double in average after implementation of CMP approach. In Guangua Woreda, the implementation has increased almost by 6 folds which is very good achievement of CMP approach use. Though the implementation rate has been increased remarkably, unavailability of water services in rural areas still exists. There are still some hindering factors that have made people abstain from utilization of water services.

4.5.3 Female Participation

In developing countries, women are responsible for household water collection. They spend hours for fetching water per day. Thus, they are primary water users. They procure, manage and use water for domestic purposes. In the study area, as shown in figure 4.14, solely 73% of women were responsible for collection of water since men were engaged in other activities to support family. Apart from women, children were also involved in fetching water. However, in some of the communities men were also supporting their partner to fetch water which showed gender equity and set one good example for men in other communities who thought they were not meant for doing household activities.

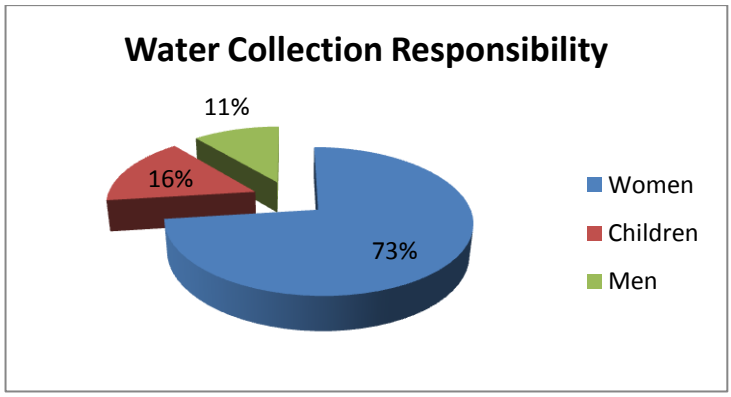

Figure 4.14: *Water collection responsibility*

The interview with respondents revealed that previously women were excluded from all project activities but later they realized that women were also part of communities and had equal right as men to take part in every stage of project - planning, implementation and arrangement for operation and maintenance. In cases of total exclusion of women from water projects, failure rate of the water supply system might increase because their motivation to use the new source would be small. (World Bank 1976)

4.5.4 Community Capacity Building

It is the capacity of the people in the communities, who are enabled to participate in interventions based on community interests, both as individuals and through groups,

organization and networks. The local communities are empowered with technical and managerial knowledge and skills which enable them to manage their water supply system with the establishment of WUGs. From the WUGs, WASHCOs are selected according to their activeness, leadership capability, community mobilization capacity and respect from the community. In my study, I tried to find whether the WUGs are given training by the WWTs to build up their capacities.

The training was given to WASHCOs by WWTs during the implementation phase for 3-5 days to prepare them to carry out the projects once completed. Once the WASHCOs were trained, they gave training to WUGs in the communities.

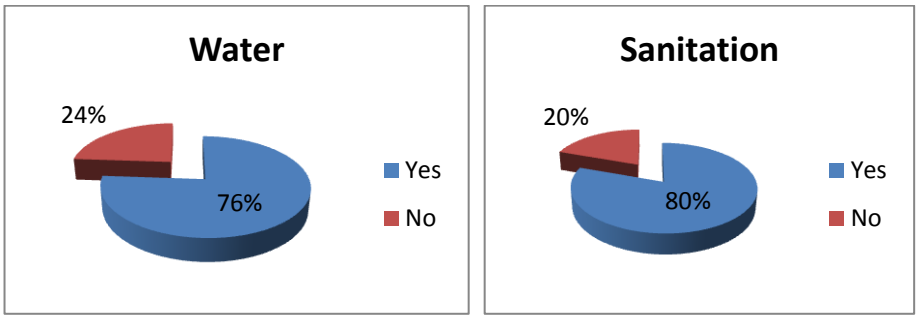

Figure 4.15: *Training received for water and sanitation in CMP woredas*

The figure 4.15 shows that about 76% and 80% of the beneficiaries had got training for water and sanitation program respectively. Interview with the respondent revealed that some of the beneficiaries didn't receive training because they were unaware about the training and some responded said that they were very busy at their work, therefore, no enough time to receive trainings. The WUGs groups were satisfied with the initial training received from the Woreda office but they were complaining that the training received was not enough for the sustainability of water points.

According to them, those training packages are to be conducted annually to sharpen their technical and managerial skills. The training has to be provided to the caretakers about basic knowledge and skills on how to operate the water system in case of minor breakdown. It was observed in study area that, in case of minor breakdown, the community moved towards the unsafe water source because of their inability to maintain the water points. The WUGs and WASHCOs as their executive bodies were the focal institutions in CMP approach. Training of WASHCOs, pump attendants and caretakers on the operation, maintenance and management of water and sanitation facilities and ensuring the availability of spare parts and tools are very necessary to build up community capacity level.

4.5.5 Institutional Support

As mentioned above WUGs were the focal institutions in the CMP approach. These institutions have to provide incredible support to the WUGs and WASHCOs to support water points in the communities for its sustainability. There was linkage between the

Woredas and communities, up to some limited extent; therefore, it requires further strengthening. Communities cannot independently handle whole project process without the external assistance of Woredas which act as facilitators. There might raise social conflicts among communities when all authorities are given to community at very initial phase and might lead to monopoly of local leaders.

In the study area, it was observed that some Woreda staff lacked proper qualifications and the number of staff in water desk was very limited. Thus, there was necessity to place good personnel for proper capacity building work. The number of manpower has to be increased sufficiently. The water bureau officers at Fogera and Guangua mentioned that there had been too much work load in the office due to less number of working personnel; therefore it was not possible for them to look after every aspects of water development projects in Woreda. To run the water project effectively in long run, there has to be addition of qualified personnel in water bureaus. Furthermore, the institutional capacity in Woredas was also severely affected by lack of office equipment, logistic constraints and budgetary constraints.

4.5.6 Operation and Maintenance of Water Points

There has to be regular monitoring of the water supply system for its optimal use and to derive most benefit from it. Therefore there has to be effective operation and maintenance strategy implemented by the community to ensure sustainability of the scheme in their area with the support from Woreda water office and local institutions. For operation and management, WUGs were trained for regular monitoring and in case of minor breakdown. In case of major problems, there were pump attendants and artesian to fix the problems.

Section 4.3 has already described the community upfront contribution in project activities during implementation phase and their willingness to pay for the water supply. In most of the communities, there were regular meeting arranged to discuss the issues about water points safety, rotation of water guard, collection of water money for guard and problems related to operation and maintenance. The frequency of meeting varied from community to community. On the other hand, in non-functional water points, the meetings were abandoned and it was even difficult to find WASHCOs.

The figure 4.16 depicts that in both CMP and non-CMP communities, the WUGs had safeguarded the water points by fencing. Out of 19 studied water points in CMP Woredas, 14 were fenced. It showed that communities owned the water points as their personal assets and they were very sensitive in this issue. However, the techniques for the fencing were very simple.

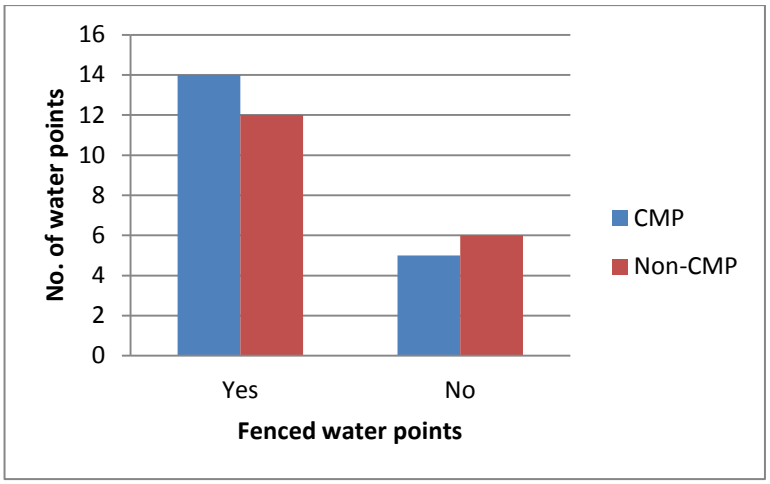

Figure 4.16: *Fenced and non-Fenced Water points in CMP and non-CMP Woredas*

In some communities they were fenced with wooden blocks with leaves covered and in some communities it was very ordinary fencing. The WUGs believed that the main reason for fencing is for protection from the cattle and children. Due to low income status of villagers, the villagers were not able to construct high quality fence. The existed fence was not fully safe to protect the water points from cattle. In one Gott, it was observed that the fence was completely destroyed by cattle after its construction within less than 3 months.

It is important to collect water fee on regular basis to support the operation and maintenance cost in case of any problems in the water points. According to CMP approach, it is obligatory for communities to deposit certain amount of money in micro-finance institute, ACSI, upfront for operation and maintenance. But in the study area it was surveyed that most of the communities had not continued to save the money in ASCI after the completion of project. Though they collected the water fee on monthly basis through the treasurer, the purpose of money collection was to pay for the guards or caretakers. They believed that they still had some money deposited in ASCI; therefore, there was no need of addition money for operation and maintenance. This was the concerning factors because they were not aware about the consequences when there would be major breakdown of water system and did not have enough budget for maintenance. This might lead to failure of system due to lack of maintenance and inadequate budget as observed in Guangua Woreda.

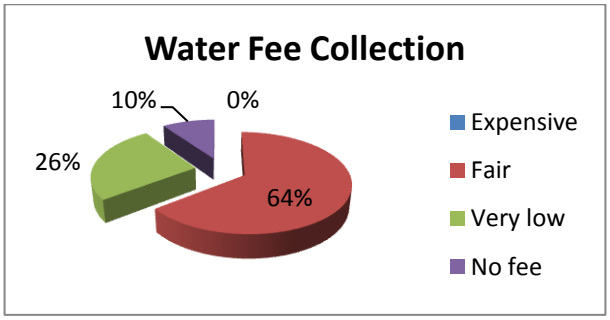

Figure 4.17: *Respondents response to water fee collection*

The figure 4.17 shows the respondents' view on water collection fee per month in the community. About 64% of the respondents believed it to be fair to collect water fee because of low income of communities. The water fee varied from communities to communities ranging from 0.5-2 Birr depending upon the number of household water users in the communities. Additionally, some of the communities had generated income by trading water to the neighbouring communities and small market place nearby. However, about 24% of villager respondents were willing to pay for water supply. They wanted to pay more to increase the quality of water because some communities were not happy with the quality of water as it was often turbid or had foul smell. They expressed their feelings that the chlorination has to be done frequently, at least 4-5 times annually instead of only 2 times.

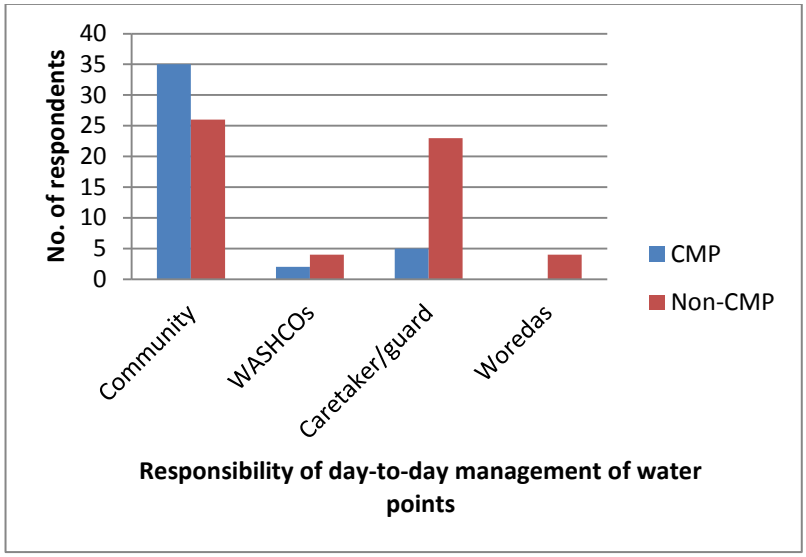

Figure 4.18: *Responsibility of day to day management of water points in CMP and non-CMP Woredas*

The WUGs were asked about their views on the responsible person to take responsibility of water points. In most of the communities, the villagers themselves are responsible for safeguarding the water points. They responded that it is their assets and they themselves had to be responsible for safeguarding it. The community people make their schedule of guard on the monthly regular meeting. The figure 4.18 clearly reveals that in CMP Woredas communities were keener to take responsibilities unlike non-CMP woredas. However, in some communities caretakers or guards were hired at night to protect the water points from burglars from the town, for instance at Tihozakena Kebele of Fogera Woreda which is non-CMP community, there was incidence of robbery of hand pump at night. The salary was paid to guard/caretaker on monthly basis out of the water fee collected from the WUGs.

4.6 Problems of Rural Water Supply

To solve the water problems in the rural areas, there has to be development of reliable and consistent low cost technology affordable by local communities based on the

availability of the water sources. However, there has been various challenges for the sustainability of these low cost water supply schemes. In this section, I will be discussing about the problems of rural water supply in sample woredas related to sustainability of water schemes.

4.6.1 Technical Problems

Technical factors include appropriateness of the technology, technology choice, preparation to manage water supply facilities, ability to repair water supply system without external help, access to spare parts and role of the private sector in local manufacturing of spare parts. The common technical problems seen in the study area were poor construction quality or the use of low grade materials which might lead to the collapse of the water system before its life cycle.

The problem associated with HDWs was that in some Gotts water points were constructed without in-depth study of the construction area, as a result problem faced by the communities for drinking water was sand intrusion, insufficient discharge, high turbidity and foul taste especially in rainy season and during seasonal variation of water supply. In case of deformation and cracks of platform or slab, absence of drainage facilities and container built for the livestock and washing clothes near to the water points lead to the water stagnation. Similarly problems seen in spring wells were leakages in the spring tapping and box structure, insufficient spring protection which lead to the entry of insects and algae in water supply, lack of drainage facilities and decrease in yield due to spring flow direction change.

4.6.2 Institutional Problems

There has to be strong institution support prior and after the construction of water supply system to be more sustainable. Nevertheless, weak institution support was seen in some of the study area, for instance in Guangua Woreda due to lack of trained person in the area. Therefore, institutional capacity has to be increased to get the optimal output. The poor implementation of water policies, lack of community level organization (especially between WASHCOs and beneficiaries in some communities), lack of coordination between WUGs and WWT, and lack of capacity to keep system running after project completion are some institutional problems seen in the studied woredas.

4.6.3 Social Problems

The social issues are another factor for the sustainability of rural water supply which is dependable on the willingness of the WUGs to make available time, money, labour and raw materials from pre-construction to post construction phase. The communities in the study area were very poor. It is believed that where there is poverty, there are a lot of

conflicts even over negligible issues. Therefore, income level and willingness of villagers to work together determine the level of participation for the construction of water points. For example, in one community of Farta Woreda, people were unhappy about election of WASHCOs which were chosen by local leaders for SWs. They did not have regular meeting nor had they collected water fee for operation and maintenance.

On the other hand, in some communities of East Estie, local people were very much influenced by service provided to them, hence they were willing to pay more for the maintenance of system and they perceived more sense of ownership. Though there were lot of positive impacts of the project to the rural people, some problems related to social aspects observed were difference in thinking within WASHCOs members. In some water points, people had to wait in a long queue to collect water, in scattered community they had to walk long distance, sometimes people who collected water at last did not get water due to inadequate water in the HDWs which lead to conflict among the WUGs. This showed that people were still unaware about the benefits of improved water supply and sanitation.

4.6.4 Environmental Problems

There are few environmental issues that have to be taken into consideration before the construction of water points. The low environmental risks can be avoided with careful planning and design. Some of the environmental problems seen in the study area were possibilities of landslides and soil erosion from gravity schemes, drainage problem around HDWs, pollution of aquifers due to low quality wellhead construction, dumping of domestic waste and construction of latrines (observed in some communities) nearer than 50 meter from the water points, stagnation of water near water points which provided favourable environment for mosquitoes to breed and eventually water-borne diseases. To mitigate/avoid the pollution, wells and protected springs should be constructed away from the sources of pollution like latrines, sewer pipes, waste dumps and densely populated areas (ADF 2005).

4.7 SWOT Analysis

The SWOT analysis was developed in the 1960s but it is widely used as logical tool to support the preparation of strategic development nowadays. It is mainly used to establish a framework which shows the key internal and external factors that should be tackled during the strategic planning process. It forms the foundation which is implemented by policy makers in developing approaches that ensure a good fit between internal and external factors (Kurttila et al. 2000). Though SWOT analysis is very effective technique for the strategic development process, it doesn't reflect the actual information about the significance of the factors determined. The SWOT analysis was built in order to recognize strengths and weaknesses in study area of rural water supply

(as internal factors) and opportunities and threats (as external factors) which are mentioned below:

4.7.1 Strengths

- Increased capacities of communities to manage water supply system, minor technical improvements to water supply systems.
- Improved community management of water systems, the development of mechanisms for negotiation and decision making including rules and regulation systems.
- Direct community level procurement reduced project costs.
- Gender equality status improved due to equally shared responsibilities and continuous gender sensitization.
- Provided strong capacity building for communities; user's capacity to implement and manage the project activities.
- Improvement in health status of the beneficiaries due to hygiene and sanitation awareness raising.
- Commitment for covering operation and management and cost recovery.
- High budget utilization.
- Emergency funding was available in microfinance for operation and maintenance in case of minor breakdown of water points.
- There was system for payment of fees for water supply systems in some communities.
- Donor's interests in providing support to the water supply in rural areas increased.
- Existing communities system of control for the use and protection of water systems was increased.

4.7.2 Weaknesses

- Too much of paper works at Woreda water office.
- No local spare parts suppliers and construction materials (cement, reinforcement bars) in remote communities.
- Inadequate monitoring of water quality.
- Longer maintenance time. The deterioration of water infrastructure was ongoing due to lack of necessary support and maintenance and unavailability of workers.
- Weak WASHCOs in some community.
- Shortage of water in dry season in water points.
- Not efficient monitoring after construction of water points.
- Lack of effective coordination between WUGs and WWTs.
- Though funds were available in microfinance for operation and maintenance, it would not cover the cost if there was major breakdown of water points.

- Institutional capacity in woredas was also severely affected due to lack of office equipment, logistic constraints and budgetary constraints.
- Needed more knowledge for WUGs of funding sources and on how they worked.
- Lack of computerized mapping of water inventory data, their status and conditions and information.
- Reform efforts in water supply sector did not meet expectation at the high level of the government and of the water consumers in the field.
- Low levels of wages for artesian and pump attendants and lack of skilled professionals in Woreda office and lack of accurate water measurement (discharge of water in pump).

4.7.3 Opportunities

- Employment opportunities for the youth and private sectors.
- Opportunities for women to take part in development activities.
- CMP approach can be used in other development activities like micro-irrigation, road construction, watershed management, community forestry and so on.
- Opportunities for other donor mainstreaming the CMP approach for One WASH program to achieve UAP.
- Strengthen relation with surrounding Woreda and regional systems.
- Look for additional water sources.
- Community's economic development.
- Donor will to fund projects focused on rural water supply system and poverty reduction.
- Pro-active civil society that is aware of the importance of an efficient water resources management.
- Decentralization of political powers.

4.7.4 Threats

- High turnover of staffs in Woreda water offices which might create lack of continuity and leadership.
- Private sector spares parts are not growing as was anticipated.
- Increased price of the spare parts.
- Over exploitation of groundwater.
- Existing infrastructure was not adequate for major or fast growing development.
- Experts or specialists retirement of key personnel would create void and brain drain if not handled properly.
- Inability of donor agencies to cover expenses on water supply, corruption in relations between water management organization, insufficient involvement of the civil societies, private sector and international organizations.

4.8 Self-Evaluation

The objective of self evaluation is to increase the insight into the one's research work. A self-evaluation provides an opportunity to reveal the research process whether the research conducted has been able to meet the missions and objectives or there need some areas for improvements in the future by providing relevant recommendations. (Bodewea et al. 2009)

A few researches have already been carried out in Amhara region previously regarding the rural water supply by different researcher and international organizations. Every time a research is done, it brings out new challenges and opportunities in front of researcher and adds the new dimension to overcome the challenges by providing further recommendation in the future. My research is based on the research done previously, as I have carried out exhaustive literature reviews and deployed my own thinking using different methodological tools as I have mentioned above in my methodology section.

There has been significant change in the approach since the project was first implemented in Amhara region by Ministry of Foreign Affairs of Finland till date. In my research I am only evaluating the impact of rural water after the implementation of CMP approach. However, the pre-CMP phase can provide reference for why there was need of CMP approach and what achievements were made under CMP approach.

The CMP approach has helped to increase the rural water supply in study area in Amhara region where the implementation and functionality rate has increased over the years after introduction of CMP approach as shown in Table 4.4 and 4.5. The problem of accelerated population growth in rural areas is also limiting the water coverage in terms of population density. Therefore, making study area as reference for water coverage percentage, it undoubtedly seems that the target to reach the MDGs by 2015 is a stiff task in Ethiopia.

This research can be considered important from the practical point of view as the study area remains unstudied after the implementation of CMP approach in the study area. Though there has been several draft reports published by Ministry of Foreign Affairs of Finland and CoWASH Ethiopia, they are taken from the regional and Woreda level water office bureaus which do not actually provide the insight view of the deep rooted local communities and their conditions. For instance, the water interventions have provided access to improved drinking water to substantial household number where the quality of drinking water is good enough to satisfy local communities though they are not up to the standard as prescribed by WHO. Another aspect is that the CMP approach is striving to increase the coverage of rural water supply but it seems that less attention has been given to infrastructure maintenance, repair and rehabilitation at the current situation. Therefore, local communities have to be more persuaded by the water officials making them realize the sustainability of water points in long run.

The methodology of the research is based on both quantitative and qualitative approach. It was difficult to find computerized version of data from the respective woredas office in the study area, therefore the available data were hand written by local officials which can be taken as authentic data. There might be some biasness in the qualitative writing since the information extracted were mostly taken by surveying local communities and personnel observation to some extent. Apart from that, the research has been carried out by interviewing the water officials to know their views and opinions regarding the CMP approach which were included in the result. The main highlight of the methodology was SWOT analysis.

Some readers might find my result irrelevant and might criticize the fact that sanitation is not included in my research. When we are talking about CoWASH, it includes both sanitation and hygiene sector but in my research I concentrated only in water. In my personnel view, the sanitation data available at the health offices were exaggerated because available data in the study area showed that the sanitation coverage in respective woredas (Farta, Fogera, East Estie and Guangua) were more than 95%, but during my field study I observed that the standard of sanitation is far below the available data in health offices. Though water, sanitation and hygiene are inter-related components, I believe that there has to be separate sanitation and hygiene assessment done in-depth in the communities to represent the detailed view of the actual situation and findings.

5 CONCLUSIONS

The study was carried out on five woredas of South Gondar region of ANRS which tried to explore the current status of CMP approach in the implemented communities, to determine the nature and level of community participation in rural water development and to analyze whether community managed projects are more efficient to meet the demand of the communities.

The community managed project is demand-driven which decreases the dependency of rural communities on government; and if there is good involvement of community, then many people are provided with safe water. In the study, it was seen that the implementation of CMP approach in rural areas of ANRS is highly effective which can be observed by high community participation and mobilization from the period of planning phase to the post-construction of water supply systems. Community management has potential and progress can be made if local people are made aware about the importance of safe drinking water. Most of the communities know the importance of drinking water in CMP woredas because they have learnt from their past experiences having no access to safe drinking water and from its consequences, but it is necessary to create awareness and behavioral change among the community since people in community can be easily influenced by the local leaders if awareness is not created.

There is potential groundwater in the study area but the problem is that they are not accessed to communities as per their water demand. As I have mentioned in the result and discussion, the per person water availability is about 10 liter per day which is below the guideline made by government. Therefore, increase in number of water points will definitely increase the people with access to safe drinking water. Besides providing enough quantity of water, providers need to change this behavior through education. Though the implementation rate of the water points has increased substantially after the implementation of CMP approach since 2004 in the study area, it is still not able to meet the water demand of rural communities as expected, and the main reason behind it is rapid population growth.

WASHCOs are more likely to function in communities as they already have higher levels of social respect in the communities. The WUGs had elected WASHCOs for managing facilities and they have shown their capabilities in terms of their administrative, financial and technical capacity. Not only the WASHCOs but also all WUGs know their responsibilities during planning, implementation, management and sustainability of water points. This commitment of the community has created ownership on the water points. The communities that manage to establish a functioning

WASHCOs benefit from the WASHCOs activities. Apart from some communities which had some conflicts with WASHCOs, there has been higher involvement of WASHCOs to encourage households to use safe drinking water and pay water fee on monthly basis for operation and maintenance or for the guards in CMP communities. WASHCOs are key persons who act as the bridge for addressing community problem with drinking water and facilities to Woreda office.

In the study area, 95% of the respondents have sense of ownership of the project which indicates that they are highly dedicated to the service provided by the CMP approach to upgrade the quality of living. Furthermore, communities are involved in decision making process for the project initiation, site selection and technology type with the WWTs. People are keen to pay for the water schemes in the initiation of the project according to the policy which is 15% in terms of cash, labor, raw materials or in kind. They deposit certain amount of cash in micro-finance institution for operation and maintenance if there is failure/breakdown in the scheme in future. However, it was seen that only in few communities, they have system for collecting water fee for operation and maintenance. Additionally, most of the communities collect money to pay salary to the guard/caretaker.

The functionality rate of the water schemes in the study woredas were 98.6 % which reflects that the efficiency of CMP approach has spread deep root in the rural communities and communities are willing to pay and has sense of ownership for the water supply. On the other hand, the water point constructed by CMP approach has been only for a few years. Thus, most of the schemes are functioning well apart from minor failure and unavailability of water in dry seasons in some of the water points. It has to be analyzed in long run weather water schemes constructed by implementing CMP approach are sustainable or not. The lack of effective operation and maintenance practice may lead to higher chance of non-functioning of water points. If the water points are to be made sustainable, village level trainees and WUGs capacity has to be increased by providing additional training because most of the respondents who were WUGs are unaware even if there is even minor failure in the system. Private sectors involvement was not seen for the supply of spares parts in the study area.

The focus has to be on strengthening community capacity building and improving institutional capacity. Most of the WUGs were satisfied with the training provided to them in sort span of time. But they need additional training to enhance their capability which can be conducted annually for upgrading their technical and managerial skills and to motivate the people from other communities as well. Training to WASHCOs, pump attendants and caretakers on the operation, maintenance and management of water and sanitation facilities and ensuring the availability of spare parts and tools is very necessary to build up community capacity level. There is necessity to place good personnel for proper capacity building work and number of manpower has to be increased sufficiently. Lack of coordination between WUGs and WWT and lack of

capacity to keep system running after project completion are some institutional problems seen in the studied woredas.

This study was carried out to analyze whether community managed projects are more efficient to meet the demand of the communities or not. For this reason, I had chosen Levo Kem Kem as the reference Woreda which is non-CMP Woreda. It was observed that recently most of the water points constructed under non-CMP Woreda also follow the same process as CMP approach does with demand driven approach and promote community participation. The major difference seen between CMP and non-CMP approach was during the procurement phase. From the above result and discussion, it can be concluded that the CMP approach has effective community participation and mobilization in all project development phases than non-CMP approach where local communities are given full responsibilities for the planning, decision making, implementing and financial managements. Thus, it can be said that CMP approach can be very efficient to address the need of safe drinking water supply in the rural areas of Ethiopia and improving the quality of life of people but only challenge is that whether the local communities will be self sustainable or not once project run by Government of Finland withdraws its funding for rural water supply areas of Ethiopia.

6 RECOMMENDATIONS

This chapter includes the recommendations based on the study made on the field visit to five woredas in South Gondar region of ANRS, interview with the key informants and personal observation. The suggested recommendations for consideration are as follows:

- The involvement of micro-entrepreneur and small scale traders can be linked closer for the sustainable implementation and management of water facilities.
- Co-operation among the stakeholders is important especially among the WASHCOs and WUGs, as well as technical experts at Kebeles, Woredas and Zonal level.
- There has to be good integration between health and water sectors for development of Rural WASH program. The number of Health extension workers and community facilitators has to be increased in some quantity for effective outcome.
- There has to be effective coordination woredas health professional and WUGs. The training day for WASHCOs has to be increased for the improvement of their facilitation skills. Furthermore, a different review meeting has to be designed in order to improve WASHCOs understanding on rural water supply and community facilitation.
- Women affairs sectors should me more actively involved for gender equality and empowering women.
- There has to be detail feasibility study of the groundwater in the areas where water points are planned to be constructed.
- The responsible organizations/agencies should select alternative water source besides HDWs and SWs if practicable. The implementation agencies should focus on sustainability of the water points by making spare parts available for maintenance with involvement of private sectors.
- There has to be equitable distribution of water points among the communities during implementation based on the priority.
- The comprehensible mechanism or strategy has to be made for collecting, combining and analyzing communities' water supply data.
- There is necessity of additional training and education on cross-cutting issues so that benefit reaches the poor and vulnerable group in a community.
- In rural areas where socio-economic abilities of communities are poor, the project has to promote productive uses of water to improve lives and reduce operation and

management costs by creating awareness of wise use of water points and protecting it from external damage and misutilization.

- The effective mechanism has to be undertaken to strengthen the institutional capacity of Woreda water office to ensure it to efficiently manage rural water supply.
- Woreda water staff had complained about excessive paper work and work load for CMP process. Therefore, there has to be division of work among WWTs and it would be better to involve private sectors.
- The water fee collection in rural communities has to be explored and investigated to find out how communities are raising funds for operation and management by improving its effectiveness in order to sustain their water supply facilities.
- There is need of determined efforts involving community empowerment, high community participation and mobilization of all stakeholders in holistic approach focusing on adequate rural water supply as a key point to water development.
- It is essential to carry out further research to investigate the proper ways of implementing the partnership approach with other international donors/agencies, local government, NGOs, CBOs and private sectors to integrate and find out the logical steps to execute most effective approach in the management of rural water supply.
- The prevention strategies have to be developed to cope with the natural calamities by adopting preventive measures and mitigation factors. The Disaster Risk Assessment has to be conducted in the project areas.
- The rehabilitation of damage water points has to be given emphasize along with the construction of new water points, because local people complain that the damage water points are rehabilitated very late when the message is conveyed to Woreda water office.

In developing countries, it can be observed that there is strong correlation between water and poverty, thus, lack of water services cause and trap people in poverty. In addition, poverty makes it more difficult to access safe water supply due to socio-economic factors. Therefore, Base of Pyramid (BoP) approach can be implemented for poverty alleviation as an integral part of sustainable development of rural water supply system by integrating BoP into corporate social responsibility thinking.

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