
**SUSTAINABILITY OF RURAL WATER SERVICES
IMPLEMENTED USING COMMUNITY-MANAGED
PROJECT APPROACH IN AMHARA REGION OF
ETHIOPIA**



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ABSTRACT

Sustainability of rural water supply of Africa does not work as it was intended. Between 20% and 70% of installed hand pumps in Africa are not functioning (UNICEF Zambia 2007), where 35% of Ethiopia's are in the same situation

The main aim behind this thesis research was to test the sustainability of rural water services using Community Managed Project (CMP) approach of Amhara National Region State (ANRS) of Ethiopia.

This thesis research was conducted in five woredas (districts) in South Gondar region of ANRS.

It deemed important to Community-led accelerated WaSH (COWASH) of Ethiopia to check the sustainability of water services implemented in rural areas of Amhara region of Ethiopia using the Community Managed project Approach (CMP). It was also important to underline major issues influencing the sustainability of this area.

Both secondary and primary (source) data collection were utilized in order to obtain the needed and necessary data. To find necessary primary data, different set of questionnaires were prepared for different stakeholders and local beneficiaries. Officials from local water offices and regional level offices were met to get the secondary data collection.

Reliable results came out in terms of functionality rate of schemes, sense of ownership and high community participation in all level of scheme management from planning to financial management.

Keywords Water, Rural water supply, Sustainability, Ethiopia.

Pages 41 p. + appendices XX p.

Abbreviations

| | |
|--------|--|
| ANRS | Amhara National Regional State |
| CMP | Community Managed Project |
| WASH | Water, Sanitation & Hygiene |
| COWASH | Community-led accelerated WaSH |
| MOWE | Ministry of Water & Energy |
| MVTT | Maa ja vesi-tekniikka tuki ry |
| TUT | Tampere University of Technology |
| ReCMP | Research on CMP |
| CSA | Central Statistical Agency |
| WSSCC | Water Supply and Sanitation Collaborative Council |
| UAP | Universal Access Plan |
| JMP | Joint Management Program |
| AMCOW | African Ministerial Conference on Water |
| CSO | Country Status Overview |
| CDF | Community Development Fund |
| RWSEP | Rural Water Supply & Environmental Program |
| EFY | Ethiopian Fiscal Year |
| WASHCO | Water, Sanitation & Hygiene Committee |
| UNICEF | United Nation Children's Fund |
| WUC | Water User's Committee |
| WWG | Woreda Water Group |
| WWT | Woreda Water Team |
| O & M | Operation and Maintenance |
| RWSN | Rural Water Supply Network |
| GOE | Government of Ethiopia |
| GOF | Government of Finland |
| HDW | Hand Dug Well |
| SPD | Spring Development |
| ACSI | Amhara Credential and Saving Institutions |
| FTC | Farmer's Training Center' |
| 1Euro | 24.00 ETB (Ethiopian Birr) |
| 1USD | 18.24 ETB (Ethiopian Birr) (Exchange rate on 18.12.2012) |

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Appendix 1 Background of respondents

1 Introduction

This B.Sc. thesis is done as a part of research called ReCMP. ReCMP project investigates the effectiveness of Community Managed Project (CMP) approach in rural water supply development in Ethiopia. In addition to this thesis, ReCMP will produce three M.Sc. theses and one doctoral dissertation. This thesis project will deal with the sustainability part of the ReCMP project as stated in the title above of this thesis. ReCMP project is implemented by Tampere University of Technology (TUT) in Finland in close co-operation with Community-Led Accelerated WaSH (water supply, sanitation and hygiene) development in Ethiopia (COWASH) project. The ReCMP project is financed by a Finnish association called Maa- ja vesitekniiikan tuki ry (MVTT).

This thesis research is conducted in five districts (woredas) in Amhara region of Ethiopia, which were chosen randomly and was kicked off early months of the year 2012 and will last long till March 2013.

One of the prime aims of this work is to investigate whether the sustainability of water schemes implemented under CMP approach is over 90%.

1.1 Background

Ethiopia is located in the Horn of Africa. Based on the national census of the year 2007, Ethiopia had a population of 73,918,505 with an estimated growth rate of 3.2%, for a current population estimation of 86 million, in which 17 % live in urban areas. Ethiopia covers an area of 1.14 million square kilometers.

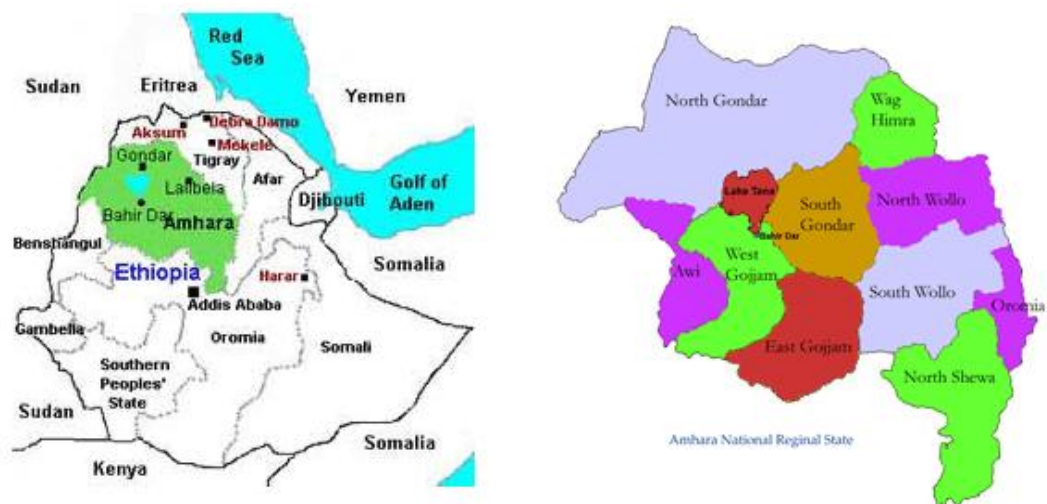


Figure 1: Map of Amhara National Regional State (ANRS), (www.amharabofed.gov.et)

As seen on the map above Ethiopia has borders with Sudan and South Sudan to the west; Eritrea to the north and north-east; Djibouti to the east; Somalia to the east and south-east and Kenya to the South. Ethiopia has nine regional states under its federal administration system. Amhara National Regional State (ANRS) is one of these regional states. ANRS locates in the west of the country and shares borders with Tigray to the North; Afar to the East; Oromia to the south; Benishangul/Gumuz to the southwest and

the Republic of Sudan to the west. ANRS had a total population of 20 million, making it the second mostly populated region in Ethiopia, (CSA Ethiopia, 2012).

Water is one of the basic needs of human beings. Still, achieving sustainable water supply remains one of the milestones of Third World countries. About 900 million people get water from unimproved sources, which is a threat to their health and productivity and majority of them are from rural areas. In Africa, the best way to get clean water is by using boreholes, but there is a big question mark on their functionality as the non-functionality rate of these boreholes is very high.

System sustainability may be affected by inappropriate technology like poor construction, unavailability or high cost spare-parts, missing professional support services, drying-up of the source or the theft. In addition, there are some other factors affecting the sustainability, like social and institutional ones such as community participation and sense of ownership (WSSCC, 2012)

Ethiopia is poor, populous and vastly growing country and still appropriate actions were not taken to improve the community's access to improved drinking water. Despite Ethiopia's goal of achieving full coverage of Water, Sanitation and Hygiene (WASH) through its Universal Action Plan (UAP), there is a long way ahead to get a fully functional and sustainable water service system. In 2008, only 26% of the total rural population have access to improved drinking water sources as shown in the figure below (AMCOW CSO2, 2009/10).

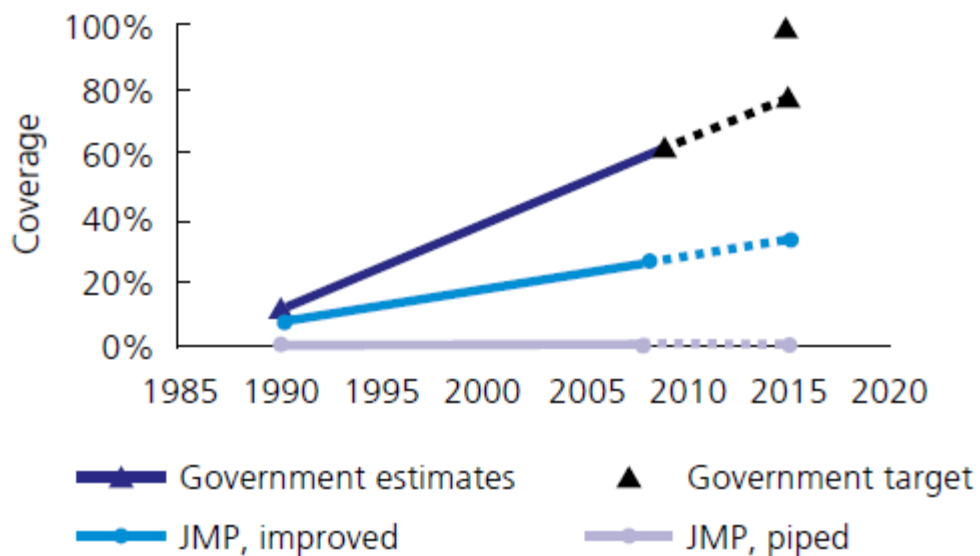


Figure 2: Estimations of Government of Ethiopia & JMP in rural water supply coverage (AMCOW CSO2 2009/10)

According to the Central Statistical Agency (CSA) of Ethiopia, Ethiopia's rural access to clean water supply was 53% between years of 2007 and 2008. It is understood that slightly less than half of the residents in the countryside use unclean water for drinking or other purposes. Therefore, this could be a big threat to the health of locals and the sanitation of the system in general.

Ethiopia's Amhara region have WaSH project for almost the past two decades. This project is financed jointly by governments of Ethiopia and Finland. A study was made

before the implementation phase of the project started to evaluate, plan and design the project.

After the implementation phase, water supply coverage has risen tremendously and studies showed assuring results, according to some controversial statistics from the Ethiopian government of 19% to 66%, between the early 1990s to late 2000s. Though Joint Management Program (JMP) figures vary between 8-26%, the Ethiopian government insists its claim of water coverage growth of up to 66%. Referring to Figure 2 above it is agreed that good results were achieved so far. Both results highlights considerable step forward to beneficiaries and donors of the project. This also enabled further investments on the project (AMCOW CSO2, 2009/10).

In 1994, the Rural Water Supply and Environmental Program (RWSEP) started to carry out WaSH rural water supply activities in the Amhara region. It was financed by the governments of Finland and Ethiopia. CMP was introduced in 2003 under the former name of Community Development Fund (CDF) to manage WaSH projects by participating local communities or beneficiaries in the project. Early results of this approach showed positive results, because majority of the activities and management of the schemes were transferred down to the beneficiaries. By 2005, CMP modality was operational in all RWSEP woredas. These woredas were renamed as RWSEP-CDF and now RWSEP-CMP, since they were functioning in CDF modality. After many fruitful results, including high functionality rate and high community ownership feeling, CMP attracted the eyes of Ethiopian government to make use this approach for its national WaSH strategy to achieve its Universal Access Plan.

It became important to make research on CMP to scientifically check that CMP is the best solution for achieving full sustainable and coverage of the rural water supply. This bachelor thesis especially deals with the sustainability of CMP water schemes. This thesis work also ensures whether the sustainability of these CMP water points is over 90%, one of the key objectives.

As discussed earlier, in September 1994 RWSEP was established and supported technically and financially by governments of Ethiopia and Finland in the two zones of East Gojjam and South Gondar in Amhara regional state. RWSEP went through four consecutive phases. The first phase ran between September 1994 and June 1998. The operational target of the first phase has been reached by 100% making phase 1 successful and productive (RWSEP, 1999).

Phase II continued between July 1998 and December 2002. The overall program objective was the achievement of sustainable human and physical development for communities to take responsibility for their own development; this means increasing communities' sanitation and hygiene as well as the improvement of infrastructure and self-sufficiency. Other program purposes included increasing gender equity, afforestation and enhancing livestock health.

The involvement of RWSEP increased up to 18 woredas in the four zones of South Gondar, East Gojjam, West Gojjam and Awi zone. By the end of Phase II, the kebele level rural water supply coverage increased from 23-75%. A total of 1434 of community and institutional water points were constructed during this phase, out of which 96% were functional by the end of Phase II (RWSEP, 2002).

RWSEP phase III continued between January 2003 and June 2007 (1995-1999 EFY). In this phase, RWSEP continued the decentralized trend down to the community level. The overall objective of the phase was that the community's implementation of their own plan for sustainable development and to have the ability and capacity to define and manage this development. The main purposes included strengthening community's capacity of initiation, planning, implementation and management of the water supply and sanitation, environment and related water schemes and processes. The significant change in this phase was the establishment and adoption of CMP approach under the CDF in early 1995 EFY to facilitate and encourage efficient financial management and the development of financial mechanisms that allowed the communities take responsibility for re-investment in the schemes thus ensuring sustainability. Furthermore CDF encourages using the optimal utilization of available financial and human resources

CDF first started in two RWSEP woredas at the beginning of 1996 EFY from zones of West Gojjam and Awi. By 1998, the CDF approach spread to five more woredas from zones of South Gondar, West Gojjam, South Gojjam and Awi and finally took over the two remaining program woredas of East and West Gojjam zones.

At the end of this phase, total number of 1848 water points out of which 1275 were working in CMP (formerly CDF) modality was implemented. Good results were achieved towards the targets of the phase: there was a significant increase of water supply access and was better and faster than previous phases. Sustainability of water points also increased and sanitation and gender equality improved significantly (RWSEP, 2007).

By 2005 all RWSEP water points were functional under CMP and took the name of RWSEP-CMP. This CMP modality differs from other approaches as it mobilizes the beneficiaries to participate all the scheme activities. Beneficiaries and Water, Sanitation and Hygiene Committee (WaSHCOs) are in charge starting from the early stages of planning up to the overall management of the scheme including financial management, implementation and maintenance. In addition to that a minimum of 15% of community contribution either in cash or kind is required for the scheme implementation. Therefore CMP has high community participation and mobilization than other approaches, (COWASH, 2011)

Finally, RWSEP phase IV started in 2007 and continued up to December 2011. The main objective of this phase was achieving Universal Access Plan (UAP) goals by using CDF (now CMP)) and scaling-up the CDF approach replication and institutionalizing the best practices, (RWSEP, 2011).

In May 2011, community-led WaSH (COWASH) was established in order to assist Government of Ethiopia (GE) in scaling up CMP approach implementations and to help the government of establishing one national WaSH in the country-wide. After RWSEP was phased out in September 2011, COWASH worked as a substitute of RWSEP and commenced its task in Amhara region in the second quarter of 2004 EFY in order to scale-up CMP implementation modality in Amhara region. By 2011 the CMP approach implementation spread through new regions of Oromia, Tigray and Southern Nations, Nationalities and People's Region (SNNPR), (COWASH, 2012)

In brief:-

| | |
|------------------------------|---|
| Phase I 1994 - 1998 | (Ethiopian Fiscal Years 1985-88) |
| Phase II 1998 - 2002 | (Ethiopian Fiscal Years 1989-92) |
| Phase III 2003 - 2007 | (Ethiopian Fiscal Years 1993-99) |
| Phase IV 2007 – 2011 | (Ethiopian Fiscal Years 2000-03) |

Table 1: RWSEP's invested fund, constructed number of water points, amount of beneficiaries and sanitation level between phases 1 and 4 (RWSEP 2011 closure presentation)

| Phase | Costs (M Euros) | WPs | Beneficiaries (water) | Sanitation and hygiene |
|--------------|-----------------------------|------------|----------------------------------|---------------------------------|
| I | 5,51 | 534 | 126,592 | Access for 6.5 % of population |
| II | 5,99 | 902 | 213,882 | Access for 17.1 % of population |
| III | 7,97 | 1,848 | 438,198 | Access for 35.9 % of population |
| IV | 11,12 (end of June 2011) | 3,240 | 768,268 | Access for 93 % of population |
| Total | 30.58 | 6,524 | 1,546,940 | |

Starting from phase 1 under the name of RWSEP up to phase 4 of CMP, the success and productivity of each phase has been going on expeditiously. For example as shown in the table 1 above, the sanitation and hygiene coverage of the population in those areas vastly improved, especially between the third and fourth phases, from 35.9% to 93%. It might be possible to take local people to fetch unsanitary water from remote areas, but after implementing water schemes it is possible to save time used to spend on getting

water as well as save lives, which were infected due to low water sanitation and sanitation.

1.2 Statement of the problem

According to UNICEF Zambia and the Rural Water Supply Network (RWSN), in Sub-Saharan Africa between 20% and 70% of installed hand pumps are not functioning, and in Ethiopia about 35% of its rural installed hand pumps are not functioning. This is due to low sustainability of the water point. Sustainability is the backbone of CMP approach. This thesis work is supposed to find techniques, mechanisms and strategies to improve the sustainability of CMP water points and also to identify the existing problems which are threatening the sustainability of CMP water schemes.

1.3 Objectives and research questions

The study has the following main objectives and specific objectives

Main Objectives

- To examine the sustainability of rural water services using the CMP approach.
- To observe factors and issues affecting and undermining sustainability
- To find solutions for those factors threatening sustainability

Specific Objectives

- To ensure whether sustainability of CMP approach is above 90 % as stated in previous RWESP reports.
- To find strategies to improve sustainability of water schemes

Research Questions

1. Is sustainability of CMP in the water service system really above 90%? If yes, what is the reason? If not, what went wrong in previous findings?
2. How CMP approach affect sustainability of water services in rural areas? And what kind of effects does sustainability have on beneficiaries?
3. What are the mechanisms and strategies needed to improve the sustainability of rural water schemes implemented using the CMP approach?

2 Methodology

Five districts (woredas) were chosen purposely from the two zones of South Gondar and Awi after a long discussion with COWASH Amhara region zone advisor Mr. Abraham Kebede. The five woredas selected were Fogera, Farta, East Estie and Libo kemkem from South Gondar zone, where Guangua Woreda was selected from Awi zone. Those woredas were picked on the basis of their being CMP and non-CMP woredas.

For this study, qualitative, quantitative, data collection and data analysis methodologies were utilized, for their being necessary for the conduction of the study. A set of questionnaire were prepared for the different respondents. Then obtained data was put into an order and analyzed.

Table 2: Brief information about the failed water points in research conducted area.

| <i>District (woreda)</i> | <i>Age of the water scheme in (years)</i> | <i>Reason of failure</i> | <i>Implemented by</i> | <i>Modality</i> | <i>Period of failure</i> |
|--------------------------|---|--|-------------------------------|-----------------|--------------------------|
| <i>Fogera</i> | <i>-</i> | <i>Water Shortage</i> | <i>GOF</i> | <i>CMP</i> | <i>~1 year</i> |
| <i>Guangua</i> | <i>6</i> | <i>Technical fault</i> | <i>GOF</i> | <i>CMP</i> | <i>1 week</i> |
| <i>Guangua</i> | <i>5</i> | <i>Technical fault</i> | <i>GOF</i> | <i>CMP</i> | <i>2 months</i> |
| <i>Farta</i> | <i>4</i> | <i>Technical fault</i> | <i>GOF</i> | <i>CMP</i> | <i>1 year</i> |
| <i>East Estie</i> | <i>15</i> | <i>Technical fault + negligence</i> | <i>Government of Ethiopia</i> | <i>Non-CMP</i> | <i>5 years</i> |
| <i>East Estie</i> | <i>16</i> | <i>Technical fault + shortage of water</i> | <i>RWSEP</i> | <i>Non-CMP</i> | <i>14 years</i> |
| <i>East Estie</i> | <i>20</i> | <i>Water shortage</i> | <i>RWSEP</i> | <i>Non-CMP</i> | <i>13-14 years</i> |
| <i>Libokemkem</i> | <i>5</i> | <i>Theft of instrument</i> | <i>World bank</i> | <i>Non-Cmp</i> | <i>1 year</i> |

As stated in table 2 total, 33 water schemes containing 16 CMP (4 non-functional) and 17 non-CMP (4 non-functional) were chosen randomly and 98 respondents from roughly 1650 households comprising all community parts including beneficiaries, Water Users Committee (WUC) or WaSHCO, local contractors (artisans), local spare part suppliers, Woreda WaSH Team (WWT) and Woreda Water Office (WWO) were interviewed. One could argue all the non-CMP not functioning water points are relatively older than those in CMP and that is why CMP water points have higher functionality than their non-CMP older counterparts. That could be good reasoning but if the period of failure is observed it is understandable that average period of failure of CMP schemes in this case is only about 6 months, where the average of non-CMPs is about 8 years. In this case, it is highly understandable that those non-CMP water points are abandoned ones where CMP failed schemes s have still good and logic opportunity to be maintained. Roughly 58% of the total respondents were; the remaining 42% were female. Fifty-nine percent of the respondents were between 21-40 years and 57% have 6-10 persons in each household.

2.1 Data Collection

In this research primarily two types of data collection have been conducted.

- Primary data collection: Collecting data needed through a prepared set of questionnaires, interviews with focus groups and personal observations.
- Secondary data collection: Collecting all other data which could not be found through interviews, such as old data and inventory data of the area.

2.2 Data Analysis

This is a process of data cleaning; refining and transformation were used to analyze the collected data. Graphs and charts were used to present the information visually.

3 Literature Review

In this literature review part several issues will be discussed including short definitions about the word “sustainability”, sustainability of former WaSH projects in different parts of the world and ways of improving sustainability in Sub-Saharan Africa.

3.1 Sustainability of a concept

As a definition sustainability might mean:-

- As a general meaning: The word sustainability is derived from the Latin word of *sustinere*, which means to hold-up (*tenere*, to hold and *sus*, up). "For humans in social systems or ecosystems, sustainability is the long-term maintenance of responsibility, which has environmental, economic, and social dimensions, and encompasses the concept of stewardship, the responsible management of resource use", (Wikipedia)
 - As Environmental Science definition: The quality of not being harmful to the environment or depleting natural resources, and thereby supporting long-term ecological balance, (Dictionary)
- As a water service definition: This would mean that water continues to be available for the period for which it was designed in the same quantity and at the same quality as it was designed, (Abrams, L. 1998)

As defined Brundtland Commission of United Nations, sustainability is fulfilling the needs of the current generation and preparing the future generation all the possibilities to achieve their own needs. However, many people argue that this is not right enough to take as a Brundtland Commission, (1987,definition)

The Three Spheres of Sustainability



Figure 3: Components and major players of sustainability (University of Michigan)

As shown above, sustainability was classified into three major areas as shown in the three spheres diagram shown above and was first adapted by University of Michigan, but was discussed in the report of Vanderbilt University. Environmental, social and economic factors are the main three player in the sustainability. Therefore harming one of them do not mean harming that factor alone but jeopardizing the sustainability as well.

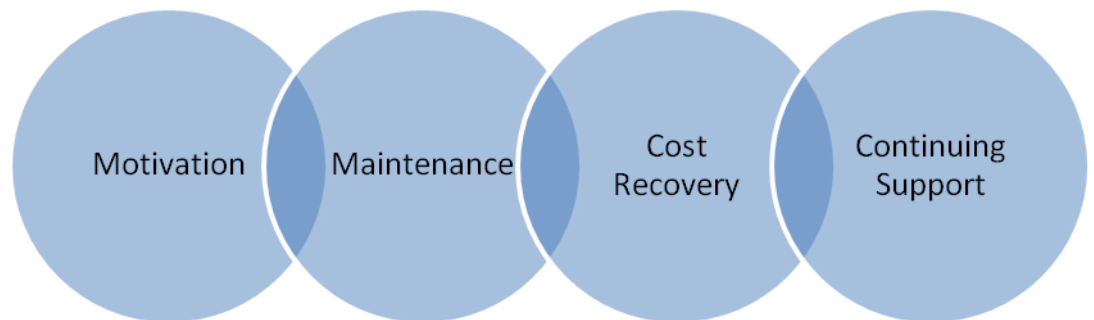


Figure 4: the sustainability chain, Carter et al 1999

Apart from those different definitions, there are driving mechanisms of sustainability of a project. Figure 4 briefly explains the concept of sustainability:

- ✓ Motivation: This means the motivation of beneficiaries in taking part in pre and post construction of the project.
- ✓ Maintenance: This means having all capabilities and techniques to main the system constructed and preparing all necessary maintenance materials.
- ✓ Cost Recovery: This means contribution of user groups for future new scheme construction if major break down or failure happens.
- ✓ Continuing Support: This means beneficiaries' full support everlastingly.

3.2 Sustainability in former WaSH projects

From the beginning of the WaSH campaign, sustainability was very crucial in every project concerning the policy of water, sanitation and hygiene (WaSH). Sustainability in WaSH varies from project to project and area to area. Below here are taken some examples of sustainability in some former WaSH projects.

In Indonesian it was found that following factors undermined sustainability of CARE constructed hand pumps in that area:

- Diminished community valuation of the clean water of hand pumps, because of their dependence on alternative water sources like streams and dug wells.
- Spare parts' ready availability, though hand pumps were locally manufactured
- The informal system of management by isolated user group that was not equal to the logistical and financial complexities of maintenance and repair. (WaSH no. 94, 1994)

These following factors also undermine sustainability of a certain rural water service.

According to (Awoke 2012) *Assessment of challenges of sustainable rural water supply* conducted in Quarit Woreda in Amhara region, the following issues undermined the sustainability of rural water supply in that area:

- Low community participation and involvement in the design phase of the project like selection of site and technology. Therefore, ownership feeling of the community suffered a lot.
- Poor construction quality, meaning there was shortage of skilled man power in the area and missing of the administrative role in monitoring under construction schemes.
- No demand-driven or demand-responsiveness and this caused community dissatisfaction and later resulted in low ownership feeling.

In Uganda, , sustainability of rural areas is undermined by technical issues (spare parts supply, mechanics) and social ones (users' role). (Mommen & Nekesa 2010)

3.3 Ways of improving sustainability in Sub-Sahara Africa

Sustainability can be improved by an adapting an integrated approach of planning, design and construction in the scheme implementation phase, plus Operation and Maintenance (O&M) with inputs from constructors and their suppliers.

Water schemes must be regarded as common assets and should be taken care in a way that they can exist as long as it was designed to operate and function. As Baumann suggested in his article 'Do operation & Maintenance pay?' Two ways of collecting O&M to keep the water point sustainable:

- Model 1: *Community management*, in this model the local community covers the O&M fees and performs minor repairs and faults with little technical assistance. This model has a negative effect on sustained maintenance; moreover, the community faces problems of not getting spare parts and support services that are out of their capacities and capabilities.
- Model 2: *Community management plus*, also in this model O&M is divided or shared by three different parties which are the local community, local authorities and the central government as detailed in the table below

Table 3: Model 2 community management plus, (Baumann 2006)

| <i>Component</i> | <i>Paid by</i> | <i>Cost (\$)</i> |
|--|----------------------|------------------|
| Minor repairs including transport of mechanic | Community | 15.00 |
| Spare parts including transport | Community | 20.00 |
| Major repairs and borehole maintenance (cost sharing) | Community 30% | 30.00 |
| | Local gov't 70% | 70.00 |
| Monitoring performance of individual facilities by the districts | Local gov't | 30.00 |
| Mechanisms for conflict and problem resolution | Local gov't | 20.00 |
| Marketing social facilitation retraining mechanics and communities | Local gov't | 20.00 |
| Monitoring performance of O&M system including supply chains | Gov't | 30.00 |
| Total cost for O&M | | 235.00 |
| The cost contributions would be shared as follows: | | |
| The community would need to collect and pay | \$65.00 per pump/yr | |
| The local government needs to budget | \$140.00 per pump/yr | |
| The central government needs to budget | \$30.00 per pump/yr | |

example, for a hand pump under community management, US\$25 per pump per year is needed for repairs and spare parts, but the community management plus hand pump requires US\$235 per pump per year, but has a life span of 10 years whereas the model 1 hand pump has five years life span.

Planners and decision-makers do not often prioritize what happens to pumps under construction or schemes in the future - in other words the life-cycle consequences of hand pumps from the investment period. Roughly 30% of Africa's installed hand pumps have started to fail. Getting the cheapest hand pumps or products is not necessarily the best option for the life-cycle of the product; good quality design can reduce maintenance costs as well as decrease the whole life-cycle costs of the water scheme (*Eric Bauman 2006; Do operation & Maintenance pay?*). As mentioned in the report published in 2010 by Rural Water Supply Network (RWSN), in Ethiopia about 35% of the installed hand pumps are non-operational because of either minor or major technical faults. As shown in the graph below, Ethiopia is at the top of the list of sub-Saharan African countries with broken hand pumps.

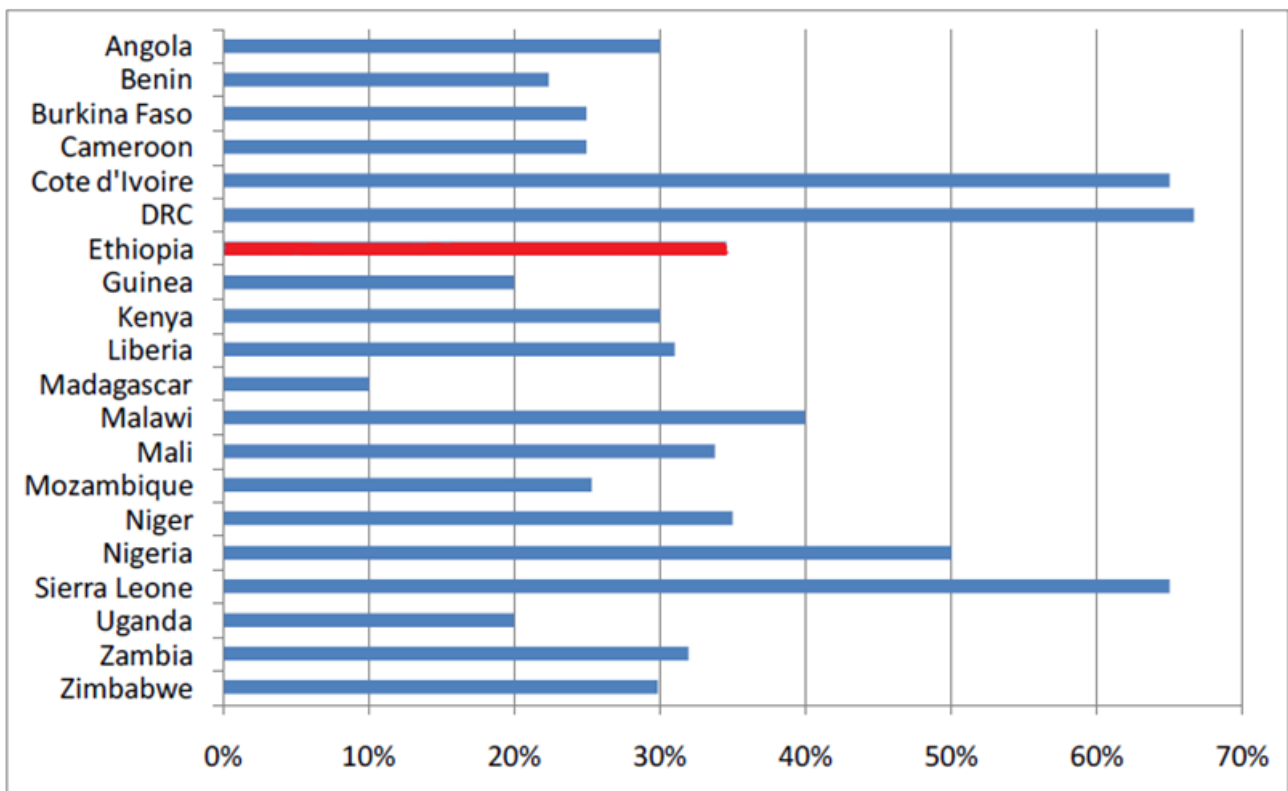


Figure 5: Estimated % of broken down hand pumps in 20 Sub-Saharan African countries, (RWSN)

Many of these failed hand pumps are believed to break down before their projected time line. One major cause of this failure is big concentration on implementations of water points and forgetting the lifetime and life-cycle of the scheme. (RWSN, 2010)

4 Findings and Discussion

Factors affecting sustainability of water services in rural areas

- Technical factors
- Social factors
- Financial elements
- Reliable gender empowerment & equity and

4.1 Technical factors

This factor primarily includes some technical issues affecting the water scheme as discussed in the following.

4.1.1 Functionality and non-functionality of schemes

Functionality refers to a condition whereby the system provides water to the users. Therefore, the scheme is said to be fully functional when the quantity and quality of the water point is sufficient that the people can fetch water from it. Though it is controversial, shortage of water or less discharge of the well can't fully satisfy the criteria of a functional and non-functional water scheme.

Table 4: Comparison of functionality rate of CMP, RWSEP-CMP and other RWSEP modalities

| | <i>RWSEP Water Points</i> | <i>RWSEP CMP Water Points</i> | <i>RWSEP Functionality %</i> | <i>RWSEP CMP Functionality %</i> | <i>Ph. 3 & 4 CMP Implemented water points</i> | <i>Ph. 3 & 4 RWSEP implemented water points</i> |
|-------------------|---------------------------|-------------------------------|------------------------------|----------------------------------|---|---|
| <i>Woreda</i> | | | | | | |
| Fogera | 491 | 350 | 87.50 | 97.7 | 281 | 116 |
| Farta | 378 | 282 | 84.00 | 98.23 | 342 | 139 |
| East Estie | 354 | 276 | 95.80 | 99.6 | 285 | 100 |
| Guangua | 474 | 443 | 97.40 | 98.9 | 438 | 20 |

Functionality is the first step to check the sustainability of a certain scheme. In Table 4, it is shown a data comparing how the functionality of RWSEP water points as well as the implementation rate has changed after adopting CMP approach. For example in Fogera woreda difference in functionality of older RWSEP water points and RWSEP-CMP is about 10%. Also the implementation rate of RWSEP and RWSEP-CMP varies between 116 and 281 respectively. Many aspects could be major reasons behind these variations, but the most

crucial issue in here is that CMP approach improved the sustainability of the water schemes in that area.

In the figure below, the functionality rate of water schemes is also shown. As mentioned earlier, CMP leads in functionality rate. Major reasons resulted these different could be high community participation, high ownership feeling, spare part availability and full technical capabilities in those areas.

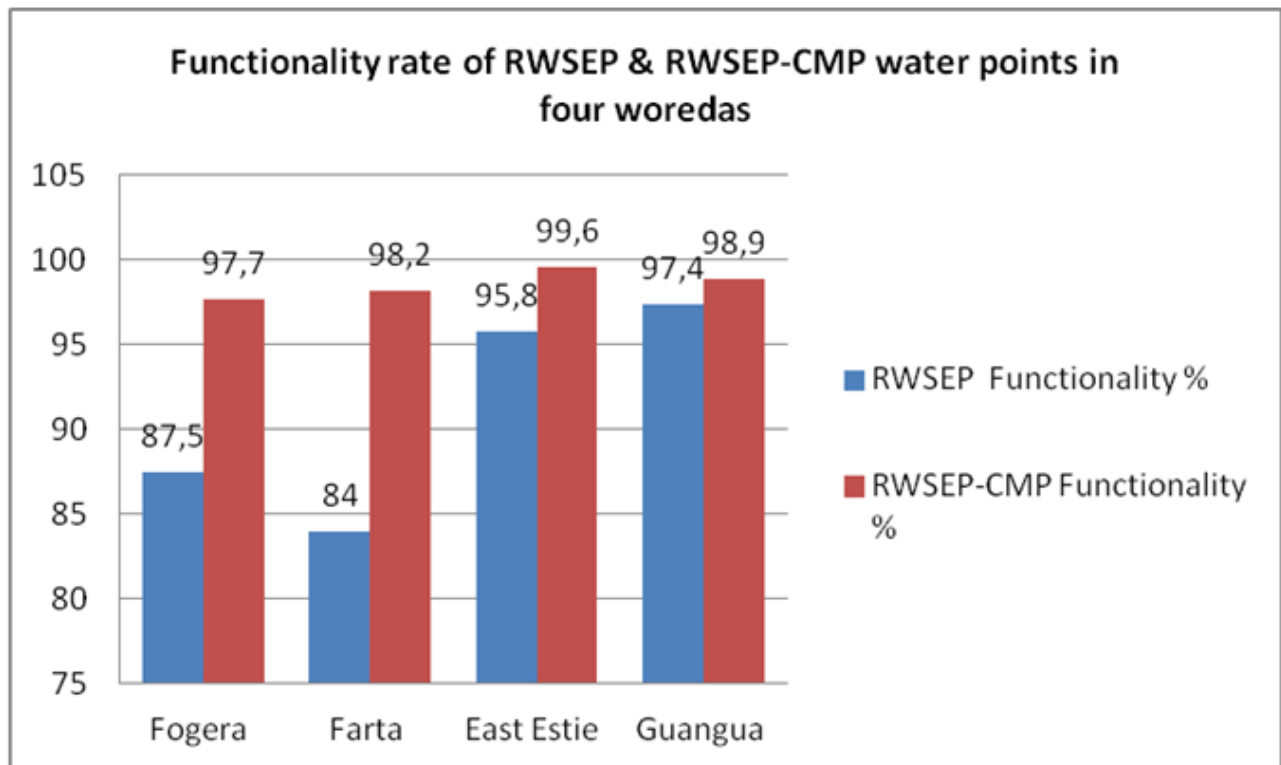


Figure 6: Comparison of functionality rate of RWSEP & RWSEP-CMP water schemes in four woredas

As shown in the graph, the minimum CMP water points functionality percentage of these four Woredas is above 97 and have an average functionality of 98.6%, where RWSEP ones have an average of about 91.2%.

In East Estie Woreda, two past schemes constructed by RWSEP and GOE completely stopped functionality due to lack of ownership feeling. According to the local community in the area, before the break down both of the water points used to open during the whole day and were eventually abandoned, but none of the four non-functional CMP water points visited have negligence problem or failed due to lack of ownership, but had minor spare parts and water shortage problems

As mentioned earlier it is somewhat premature to put the scheme in the list of non-functionality as long as it provides water. Plenty of CMP water points face water scarcity or water shortage during dry seasons, but still the discharge of the wells is enough for drinking usage. It varies from scheme to scheme: some schemes provide up to 160 liters per household per day, where others only give 20 liters per household per day.

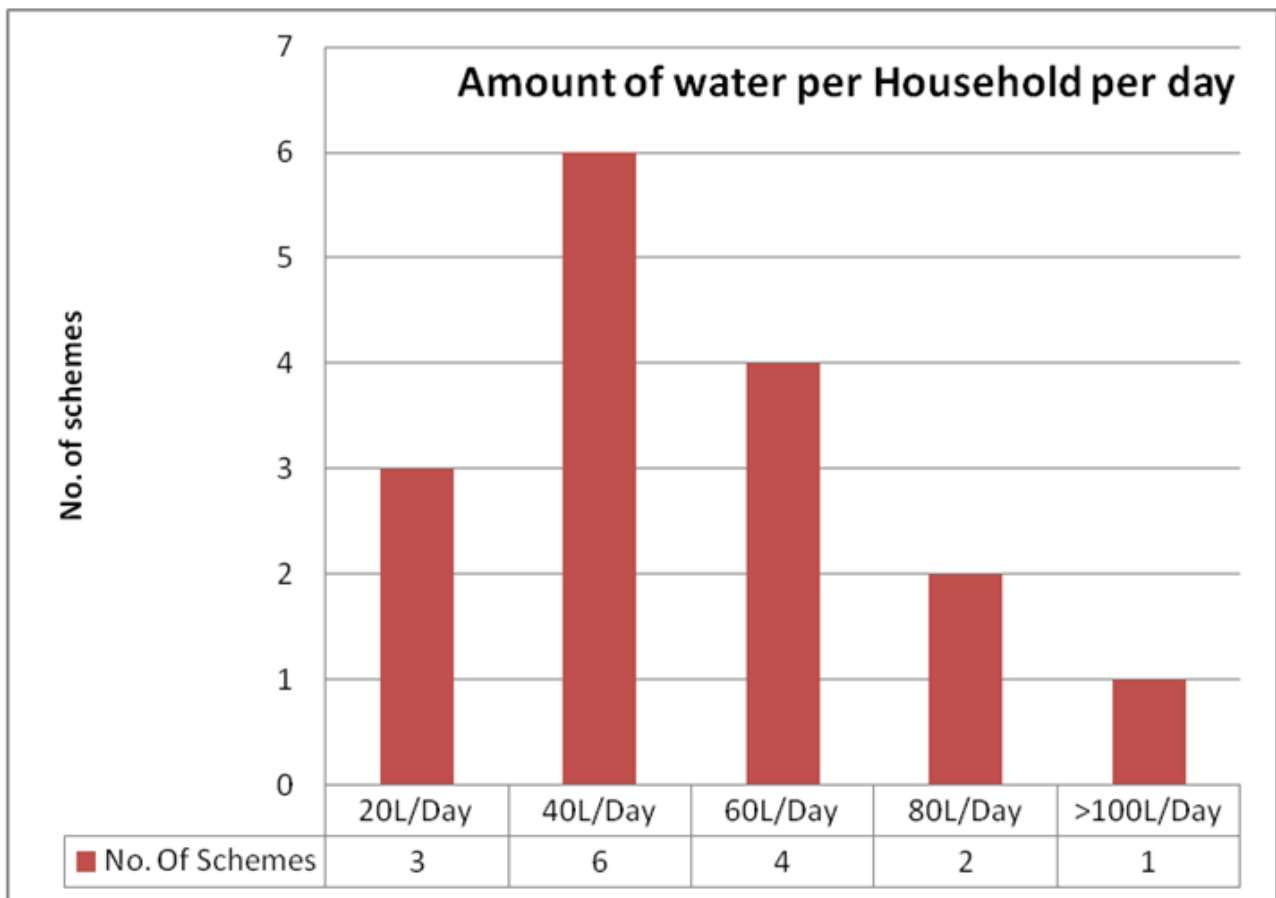


Figure 7: Amount of water users fetch per household per day in study area.

As shown in Figure 7, about 37% of the respondents fetch only 40 Liters per household per day of water. A household consisting of 10 family members must have 4 Liters per person per day, which is insufficient and well behind the rural UAP target of 15l/c/d per capita per day for service radius or distance of less than 1.5km and also that of African rural residents’ of 30 to 40l per person per day and majority of people are very much concerned about this water shortage problem (*MOWE*).

In water points with shortage of water, majority of the beneficiaries suggested getting additional water point or at least increasing the depth of well and that could be the only way they believe to ease water scarcity problems.

Non-sufficient depth drilling is what the beneficiaries believe to be the main reason for the lower discharge. In Guangua Woreda the average depth of schemes is 15m and still that’s not enough to meet the water needs of the local users, but the reasons could be different, it could be the hydrological nature of the area and this needs some geological scientific research in order to clearly identify the source of the problem.

One of kebele members in East Estie Woreda, where both CMP and non-CMP are operational, believes the reason that CMP and non-CMP schemes have different discharge is due to shallowness. He participated in some scheme constructions and pointed out how CMP water points are not shallow as that of non-CMP ones and perform better discharge. In general this is a common problem in dry seasons in both CMP and non-CMP schemes.



Figure 8: Due to shortage of water abandoned water scheme

In the rainy seasons, the shortage of water almost or completely disappears as the ground water table increases and the users' dependence on the water points decreases. According to beneficiaries, in the rainy seasons there are other alternative

Water sources like streams, rivers, water from their roofs or gutter and other surface waters. This eases the water shortage problem of the local community.

4.1.2 Technical capabilities

Sufficient technical capabilities is one of the bedrocks of sustainability. Technical capabilities is very necessary in order to guarantee functional and sustainable scheme.

After an implementation of a scheme there are trained WaSHCO volunteers who are trained for 3-5 days for the scheme management and protection.



Figure 9: WaSHCO's period of training

As seen in Figure 8, above, 47 % of WaSHCOs who met during the data collection had a training period of 5 days, where the remaining had 2-4 days of training.

A majority of WaSCHOs told that they have enough training that they are capable to manage their scheme, but did not rule out the need of extra training if it is available. Almost all of the WaSHCO members were very proud for their responsibility of scheme and their community and majority of them stated how they are respected among their societies and willing to continue this voluntary task for their communities.

4.1.3 Local contractors or artisans

In every CMP Woreda visited, there are artisans trained for the installation, construction and maintenance of schemes. They had been training for two months (in both theory and practice) until finally they were certified to construct one hand dug well (HDW) and one spring.

In some areas like East Estie and Guangua woredas, there is a shortage of artisans, according to the Woreda Water Office (WVO) officials of those areas. Consequently, other artisans are hired from neighboring woredas, but on the contrary this was objected to by the local artisans of these Woredas, and they ruled out the need of extra artisans and most of them are even jobless in majority of working days. Regardless of the situation, all are concerned about the payment decrease affecting the artisans.

According to local artisans and WVO in EFY 2004, artisan payment has been reduced almost up to a half. Some artisans are not even aware of the reason behind their payment cuts. Before the payment cut, artisans were paid based on the task done.

Artisans mainly perform masonry works, supervision of users digging wells, installing hand pumps and other technical labor, but according to COWASH

Sustainability of water services implemented using community-managed project approach in Amhara region of Ethiopia

officials, diggers have claimed they deserve to be paid for the digging task rather than the artisans, who are merely performing supervisory labor. Then the zone officials disregarded the complaints of users and decided to pay the artisans only on the basis of work done like supervision, masonry and technical works; as a result, the payment fee of the artisans even grew comparing to previous year of EFY 2003.

TABLE 5: Payment change of local contractors (artisans) according to artisans

| Type of Well | Payment (Now in Birr) | Payment (Previous in Birr) | Payment cut (Birr) | Cut in % |
|--------------|-----------------------|----------------------------|--------------------|----------|
| HDW | 2000 | 6000 | 4000 | -67 |
| SPD | 2500 | 9000 | 6500 | -72 |

As seen in Table 5, artisans have endured an average payment cut of about 70% in both HDW and SPD wells. All the artisans interviewed for this study voiced grievance with the increasing cost of daily life and decreasing payment. The most significant opposition toward these payment cuts lies in areas where there are Care International-trained artisans like East Estie, because CMP artisans reported that they used to earn more money than those in Care, but presently, Care artisans' pay outstrips that of their counterparts, since payment cuts only influenced CMP artisans.

Table 6: Payment change of local contractors (artisans) according to COWASH

| No. | Description of activity | 2003 EFY (old payment amount) | 2004 EFY (new payment amount) |
|-----|---|-------------------------------|-------------------------------|
| 1 | Well digging to depth of 15 meters including dewatering | 1361 | 560 |
| 2 | Cylinder production and installation | 1364 | 1920 |
| 3 | Well head construction | 851.24 | 1243.2 |
| | Total | 3576.2 | 3723.2 |
| | | Before | Now |

As shown in the figure above, according to COWASH officials, this payment increased by 2%. There remain some contradictions between the two sides.

4.1.4 Maintenance and spare parts availability

There seems to be no problem in spare part supplies in almost all of the five Woredas. In Woredas like Farta and East Estie, there are RWSEP furnished spare part stores, where the entire scheme spare parts are available.

These stores were furnished by RWSEP via a revolving fund. This means RWSEP bought all the spare parts by itself and then sells to the beneficiaries in low cost price comparing to local private spare part suppliers. This is a non-profitable system adopted to assist users and to get good quality parts with affordable price.

These stores are furnished once per year or once in two years, whenever there is a shortage of some special parts.

Though these stores eased spare part supply problems in these areas, still there is a short-term problem, which is the increasing inflation rate in supply markets.

According to one local storekeeper, prices which materials are sold do not sometimes buy the same amount of equipments, since stores using non-profitable policy and this could be a drawback to the future existence of stores. Some spare part stores suffer smaller storage space for spare parts, because some stores are used for multi-spare part storage like agricultural spare parts and other construction parts.

In East Estie Woreda, RWSEP store operates for both CMP and non-CMP customers, where it provides spare parts to both beneficiaries. This represents a good example of the mutually beneficial relationship between CMP and non-CMP stakeholders.

In Woredas (like Fogera) where there is no RWSEP owned spare part suppliers, there are private owned local suppliers. The employees of these local suppliers were trained for 1-3 days by the Woreda Water Office (WVO) in order to upgrade their spare part material knowledge and to be aware of supplying low or poor quality equipment, which might impair the scheme sustainability. Therefore, this short period training could play a vital role in achieving sustainable water scheme.

Local private stores sell spare parts bit more expensive than RWSEP furnished stores and still they have their own market and customers. Although there is no systematic data, in the figure below are shown materials which are mostly sold by customers and the differences in prices of RWSEP spare parts suppliers over four years.

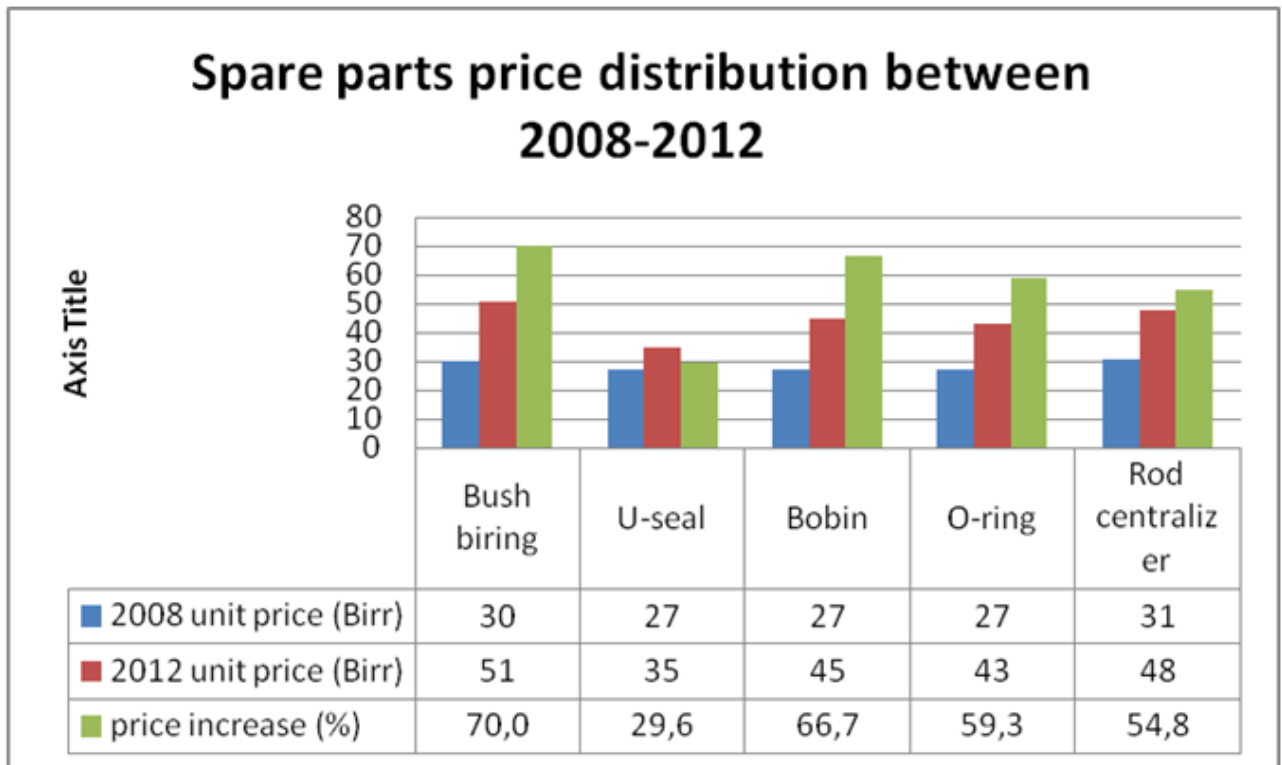


Figure 10: Afridev hand pump spare parts price change between 2008-2012, according to average price of suppliers

One significant problem is the inflation rate of spare parts. As shown in the figure above in a period of four years the unit price of each fitting grew substantially that much. There is an average 56% of unit price change of these fitting spare parts in these four years. The Operation and Maintenance (O & M) fee was supposed to grow to cope with this dynamic price, but there is no one encouraging beneficiaries to do so. In long run this could be a major problem in the affordability of users to buy spare parts from their O & M money and this is threatening the sustainability of the scheme in general.

4.2 Social issues

Although social issues affecting sustainability are more and complex, under this title three main issues will be discussed and they are community participation, ownership feeling and willingness to pay.

4.2.1 Community participation

Community participation in all aspects of the project starting from planning, implementation up to the post construction is one key issue of the sustainability of certain community project. CMP, as declared in its name have more community participation than any other such type of project. Ninety-two percent of the total CMP respondents contributed in the implementation phase of their in different ways as seen in the graph shown below.

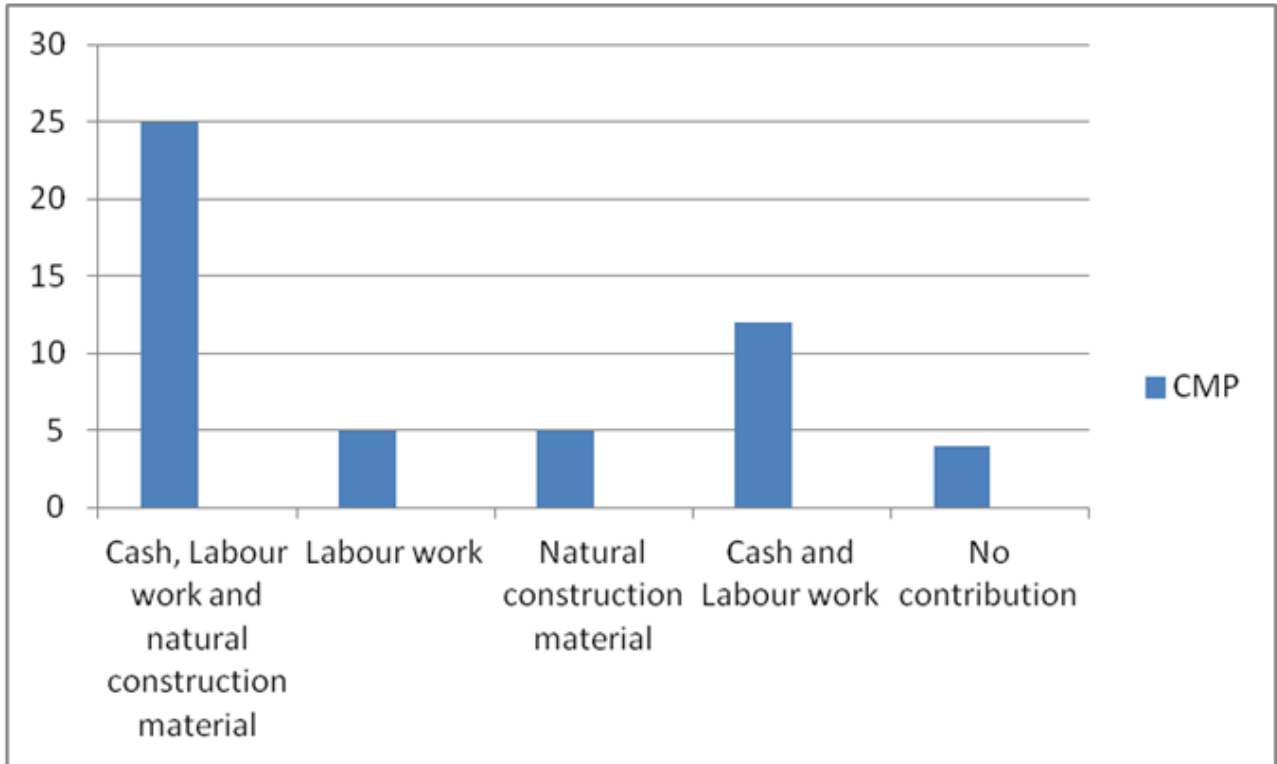


Figure 11: Number of beneficiaries' different contribution in scheme implementation.

Above is the contribution graph of the different beneficiaries. About 50% of the respondents contributed in cash, labour work and collecting natural construction material, where other 50% contributed another way. Basically those who cannot afford to pay in cash can contribute in labour work or providing natural construction material like gravel, sand and other related materials.



Figure 12: Local beneficiaries participating the construction of a spring scheme

In Fogera woreda, as shown above, in one CMP spring scheme under construction, community participation in its construction was strong. Women, children and men were all taking part the construction work, plus all 50 household beneficiaries had already had their ideas of site selection in the planning phase of the scheme and their 20 Birr contribution fee for the implementation of the new water point. Their mood was high that they were planning to organize opening party for the scheme after construction finishes.

That was a telling example of how people are eager to be involved even in the planning and implementation phases rather than only in post construction. Others not involved included majority people moved from other places, old age people and sick people.

4.2.2 Ownership feeling

Ownership feeling is directly or indirectly related to community participation. Real ownership feeling means the feeling that one feels property as his own asset or property. It has been a long standing hardship to persuade users that schemes are theirs, but all the CMP respondents interviewed insisted that schemes belong to them and that it is their own responsibility to protect, fence and sustain it. In addition, it is obligatory for each and every member of them to take his part of scheme responsibility.

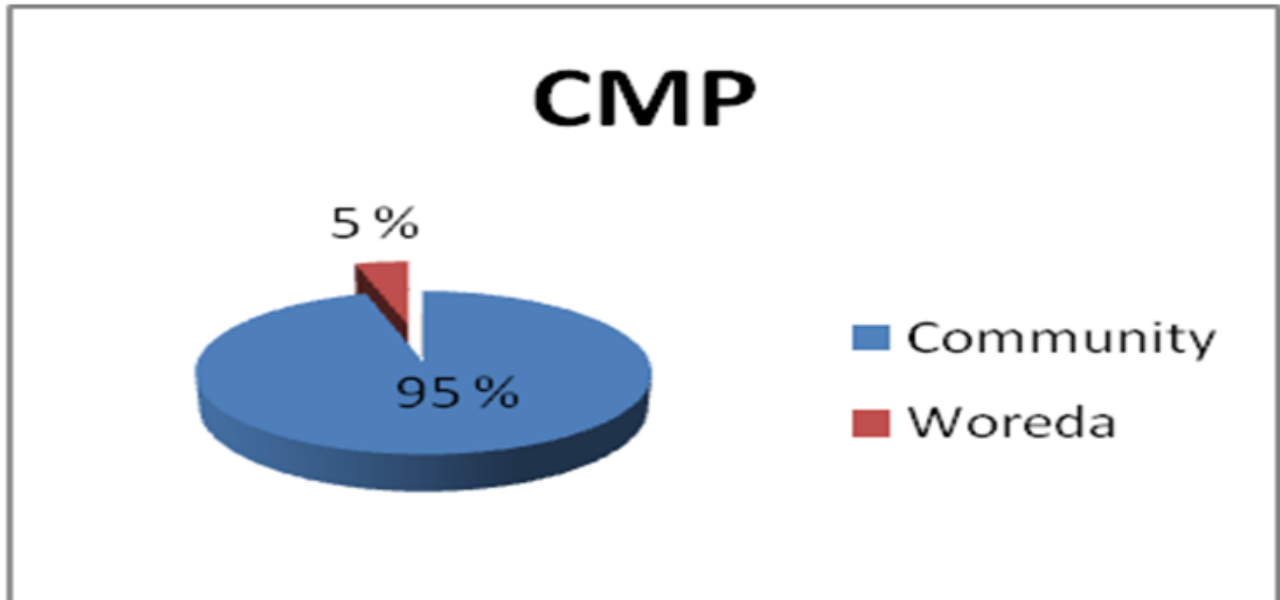


Figure 13: Who owns the water scheme?

Looking the figure above, 95% of the total respondents clearly declared that schemes are the assets of the society and this cancels out an earlier ideology of regarding schemes as international NGOs gift to the community, which finally caused many schemes to fail.

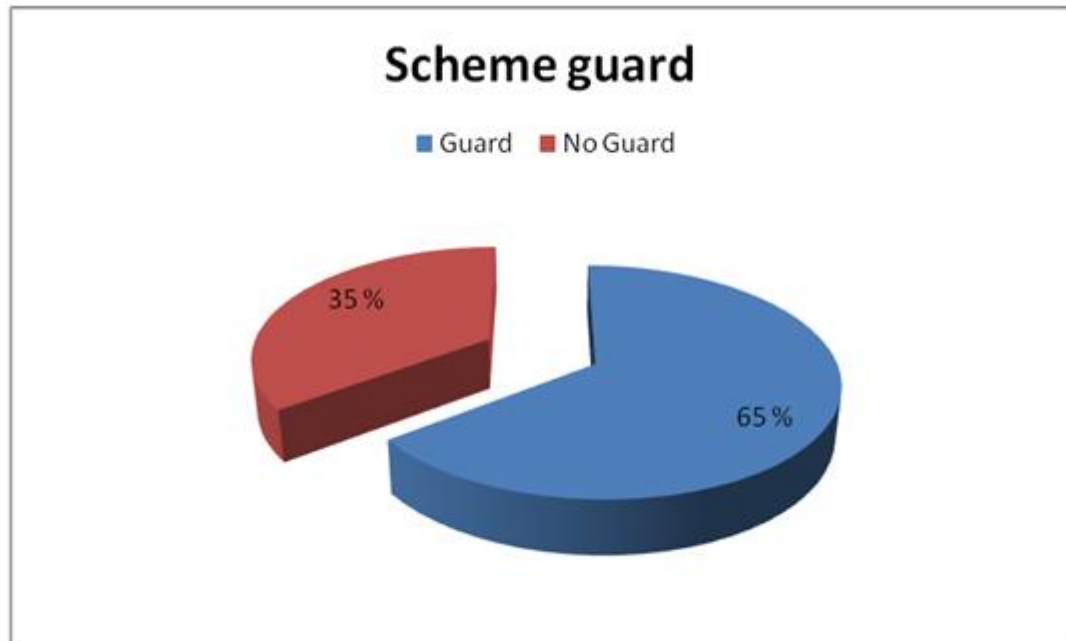


Figure 14: Number of schemes having a guard in %

As shown above, two-thirds of the CMP schemes visited had guards to protect, either paid or not paid. The majority of those guards are paid monthly by beneficiaries, where non-paid guards do this guarding work in turns or shifts, meaning every house hold take the guarding responsibility of scheme for certain period of time.

In some schemes, small houses or cottages were built beside the water point for the shelter of the guards during guarding time. Some of the remaining un-guarded schemes have neighboring houses nearby.

4.2.3 Willingness to pay

Willingness to pay the water tariffs reflects user's ownership feeling. Many are reluctant to pay for such a natural, essential resource. As seen below, the willingness to pay is high in CMP and is over 90%. In this chart below it is understood how eager the community is to pay the small service fee for O&M, another good sign of achieving a sustainable scheme. Same people from same area and at the same time have different attitude of paying water tariffs. This could be because of dissatisfaction of beneficiaries with the scheme itself or the committee managing the scheme or some other hidden issues.

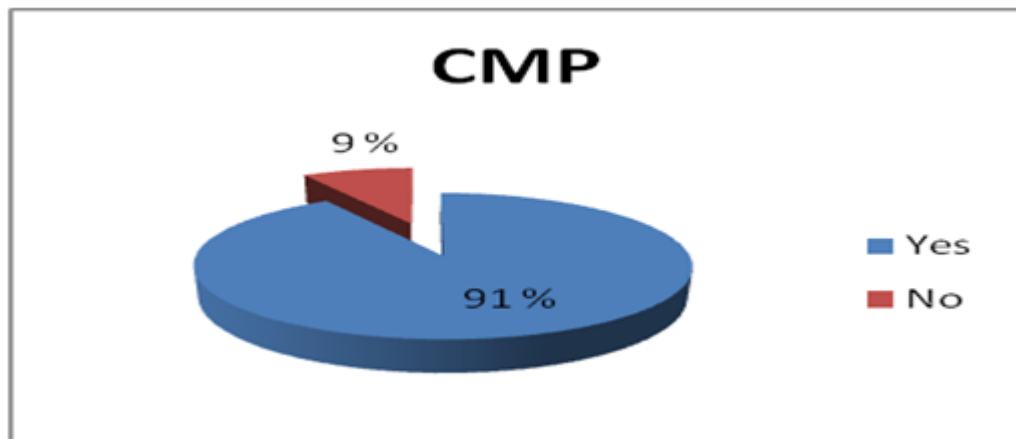


Figure 15: Respondents' willingness to pay water tariffs of the scheme

Other members of the community may not understand why to pay and the overall objective behind water tariffs and this is in a way more or less related to the literacy and ignorance of the community. In this case, strong social awareness is needed to boost understanding.

4.3 Gender Equity

This is a major issue of developing countries to establish a system based on same rights of both genders in social management tasks.

4.3.1 Women empowerment

In CMP, women's role is one of the cornerstones of the approach, unlike other NGOs. Women play strongly in scheme management. A majority of WaSHCO committees in these areas are dominated by women. WaSHCOs have a gender combination of three females and two males, plus the chairperson in majority of CMP water schemes are women. Therefore, this is a forward step in women's empowering strategy in rural areas.

In the primary data collection of this research, it's identified that women have a solid role in decision making in water point management and have the support of their fellow local society. They also play a significant role in managing the system's finances.

Women do not only participate in decision making and management of the scheme, but they also take part scheme protection, sanitation and hygiene. During this research it was found that people doing cleaning and sanitation works in the water schemes are women.



Figure 16: WaSHCO chairwoman being interviewed during this thesis research

In CMP, women also have their share in technical works like having their members in local artisans' organization. CMP trained number of women as artisans in woredas such as East Estie, Farta, Fogera and Guangua. In Guangua woreda 11 out of the total 36 CMP trained artisans are females that make them about 30% of whole artisans in the Woreda. Also in East Estie woreda about 13% of the Woreda artisans are women, where Care International who is also a potential donor in scheme implementations in that area has no female artisans out of their 39 trained artisans. Therefore this evidences how CMP is a leading approach in improving women empowerment, and also creating job opportunities for females.

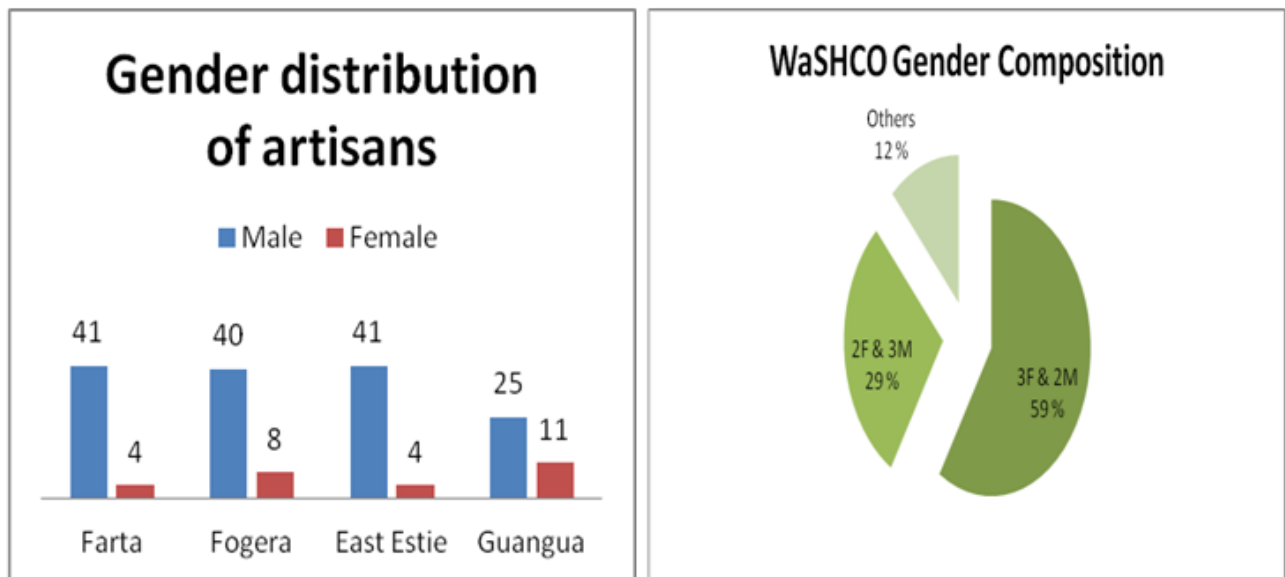


Figure 17: WaSHCO & Artisans gender combination

Since women are leading in gender composition of WaSHCO, there were no major signs identified during this research of male opposition against women's role in WaSHCO combination.

In some areas like Awi zone, women involvement in scheme management seems to be less than that in South Gondar zone. In some schemes of Awi zone there are educational pre-requisites for females joining the WaSHCO members like having only literate females as a WaSHCO member and some few respondents believe that it is not possible to see better women performance than men.

In figure 14 above: "12 %" others is sometimes gender ratio combination of 3 males only or 4 males and 1 female. Also in the left figure is shown number of female artisans. Though this is a technical work and is dominated by males, still women's role is visible and makes 16% of the local artisans in those areas.

4.4 Financial Element

The financial element is one of the most important and critical points of achieving sustainable water scheme. People have different views and attitudes towards paying water services as every one of us believes that he/she have a right to get water. Maybe a view of us also believe that it is right to pay to our water services in order to keep it sustainable for the next generation. This part will discuss the overall financial contribution and management of water schemes in CMP.

4.4.1 Operation and maintenance (O &M) fees

In almost every CMP water point, money is collected every month or year for operation and maintenance of the scheme. Beneficiaries pay 1 birr per household per month (1Birr/HH/M) or 12 Birr per household per year (12Birr/HH/Y)

as a service fee. Over 99% of the users met during this study pay this money and there seems to be no problem in tariff payment of the beneficiaries, even some of them suggested to increase this fee and justified as it is very low and affordable to them.

Basically, each water point is shared by 50 households and that means an amount of money of 600 Birr is collected in each year for O & M. Then that money is saved in Amhara Credential and Saving Institutions (ACSI). This money is used for maintenance of the scheme in terms of breakdowns, guarding, fencing and other necessary issues for the scheme.

Few members of two water points out of the 16 CMP water points visited did not pay water tariffs. Some claim that they cannot afford service fee, though WaSHCO members dismissed that claim; still they use water with other beneficiaries. In some schemes an amount of money of up to 2000 Birr is saved and that is big bonus for them that they even can establish an additional scheme in the future if they keep paying water tariffs.

This money does not always come from the water tariffs paid by the users but also selling grasses grown in communal lands or getting compensation money from roads constructed in their living areas. The federal government compensates for the local communities when new roads are constructed and this money is given as a community, then community uses this money for scheme management and development.

The majority of the schemes receive some kind of compensation money do not pay water fees, since they already saved enough money. This could be a problem in the future if tariff fee is needed to re-collect after the saved money runs out. There are also some schemes already got compensation money and at the same time pay service fee.

CMP's policy of user's full responsibility in terms of maintenance and operation has worked well; this is also one reason of scheme functionality. If a minor failure happens, it is easier to fix, since they have saved enough money.

Every respondent was happy with WaSHCO's money collection and saving process and they admitted that everything was transparent since money is in the hands of a third party (ACSI). WaSHCO have their own account in ACSI and they have auditing task in every three months.

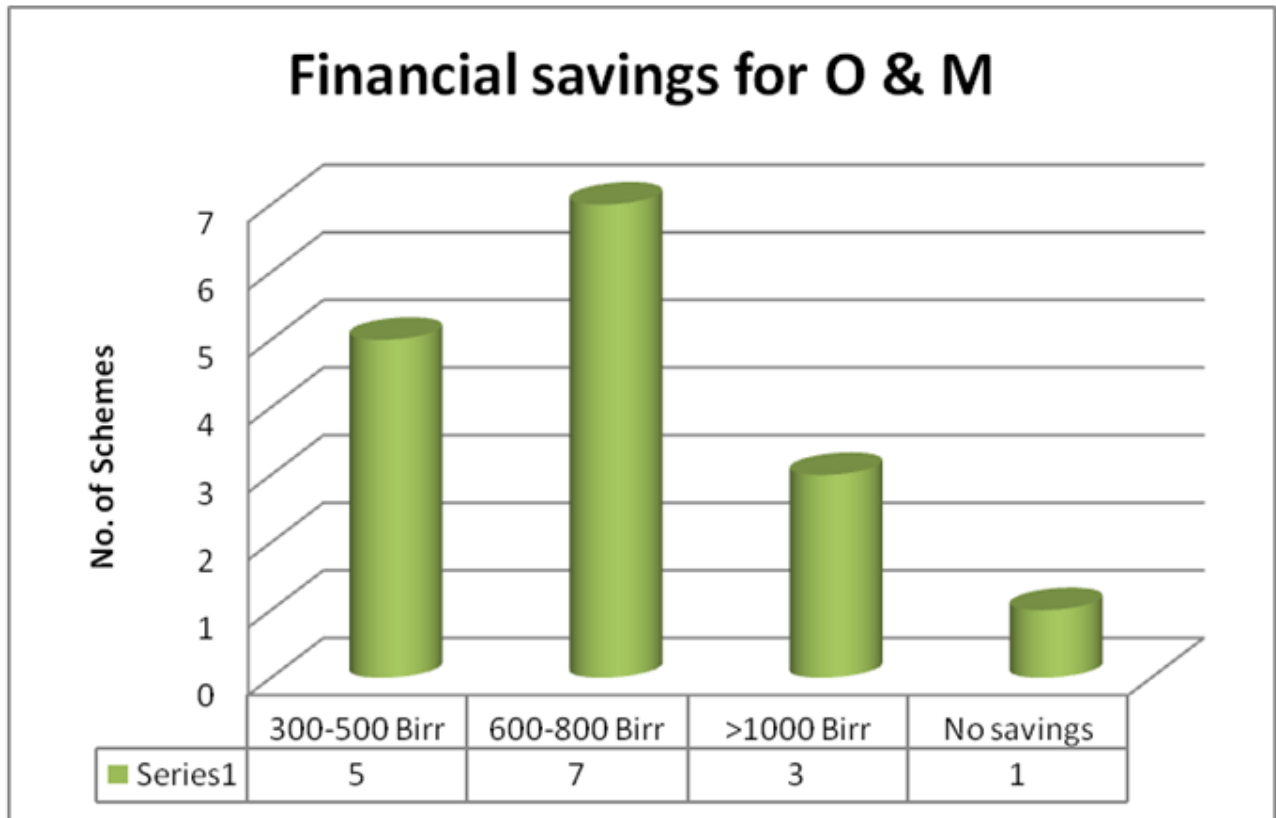


Figure 18: Number of schemes and amount of financial savings for O & M

As shown in this graph, roughly majority of CMP schemes save for O & M an amount of money of about 300-800 Birr. Comparing this to the yearly increasing cost of spare parts will not help. Therefore, one solution could be increasing water tariffs in order to avoid devaluation of money, but there are no signs showing local users' future plan of increasing service fee.

As seen in the graph majority of the schemes pay service fee except one scheme which is belong to Farmers Training Center (FTC), but nowadays used by local community. Though its protection was not as good as others, the users were ready to take its responsibility if it is handed over to them. It could be good idea if users are organized and encouraged to pay water tariffs and handed over to them instead of depending on FTC.

4.4.2 Sustainability and Cost recovery

Cost recovery is a tool for the long-term scheme sustainability. Still the mentality of beneficiaries of getting new scheme after major scheme failure happens is very strong and if this ideology is not crossed out there will not be full sustainability in the rural water service system.

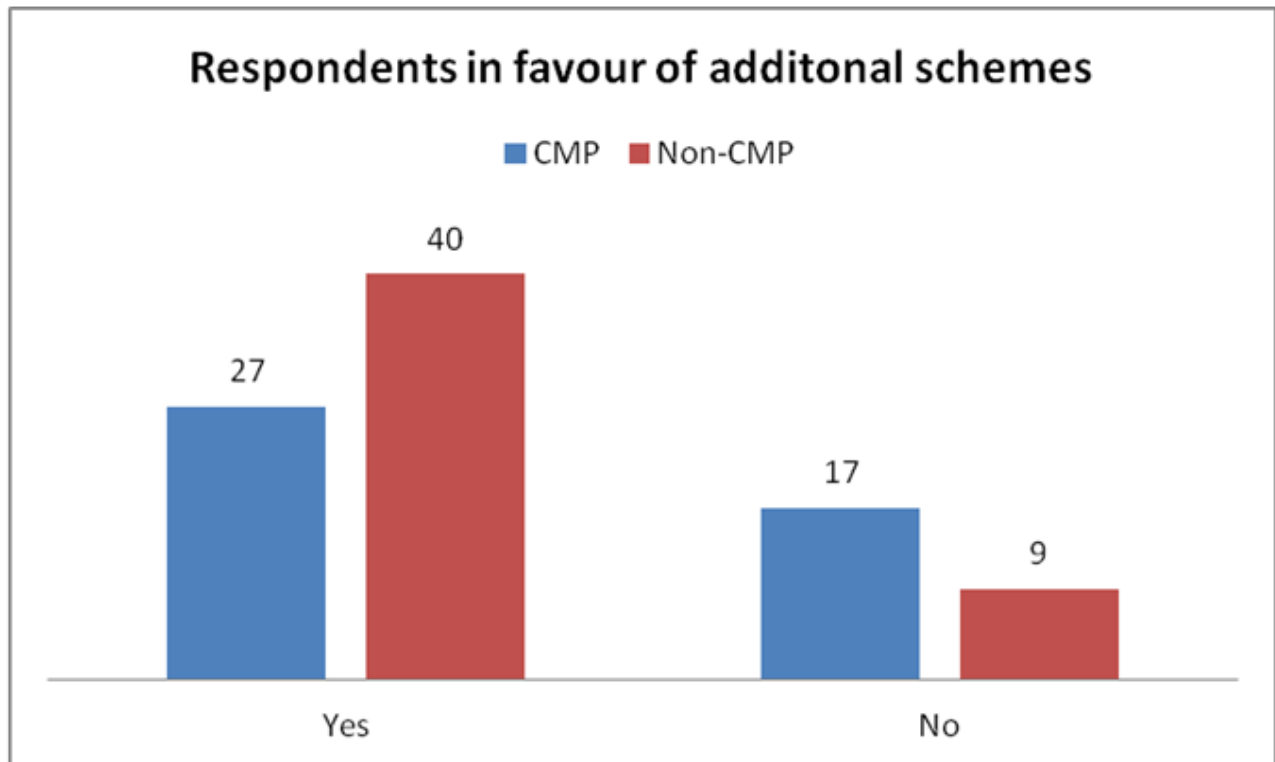


Figure 19: Respondents of both CMP & non-CMP modalities in favor of getting extra water scheme

One way to tackle this problem could be encouraging people to save some separate fee as a cost recovery. It is possible that each household makes a contribution of 50 birr per year after farmers do harvesting and sell their crops and the economic situation of the family is better than any other period of the year. In four years' time, there is a possibility that one water scheme collects roughly 10 000 Birr and could rehabilitate and change the water scheme as major failures occur.

There were no signs of any kind of cost recovery encouragements, either from the community or administration. Adopting this policy of cost recovery could be a good way of sustaining schemes as well as the scheme existence in the long run.

Getting additional water points in water shortage period is what people mostly suggest when asked "From whom are you expecting this additional water point," simply they will say "From donor NGOs or from government." Therefore if this strategy of cost recovery would be encouraged, it would decrease beneficiary's dependence on donors only to rehabilitate schemes or implement newer ones.

5 Comparison of CMP & non-CMP

The following data do not reflect entirely the two modalities in the whole Amhara region, but are only based on the areas where this research was conducted. Amhara region

have more than hundred districts or woredas. Therefore data collected from five woredas cannot represent the entire Amhara region, but could be good hints for the other woredas in the region.

5.1 Contribution of beneficiaries to the scheme implementation

As a matter of fact, both CMP and non-CMP beneficiaries participated the contribution of schemes through different ways and their rate of contribution was high.

The means of contribution of each differs. In CMP beneficiaries, they mostly contributed by cash or cash and labour together, but in non-CMP contributing, labor is more prevalent, and that could be the reason why the majority of the beneficiaries contributed by labour.

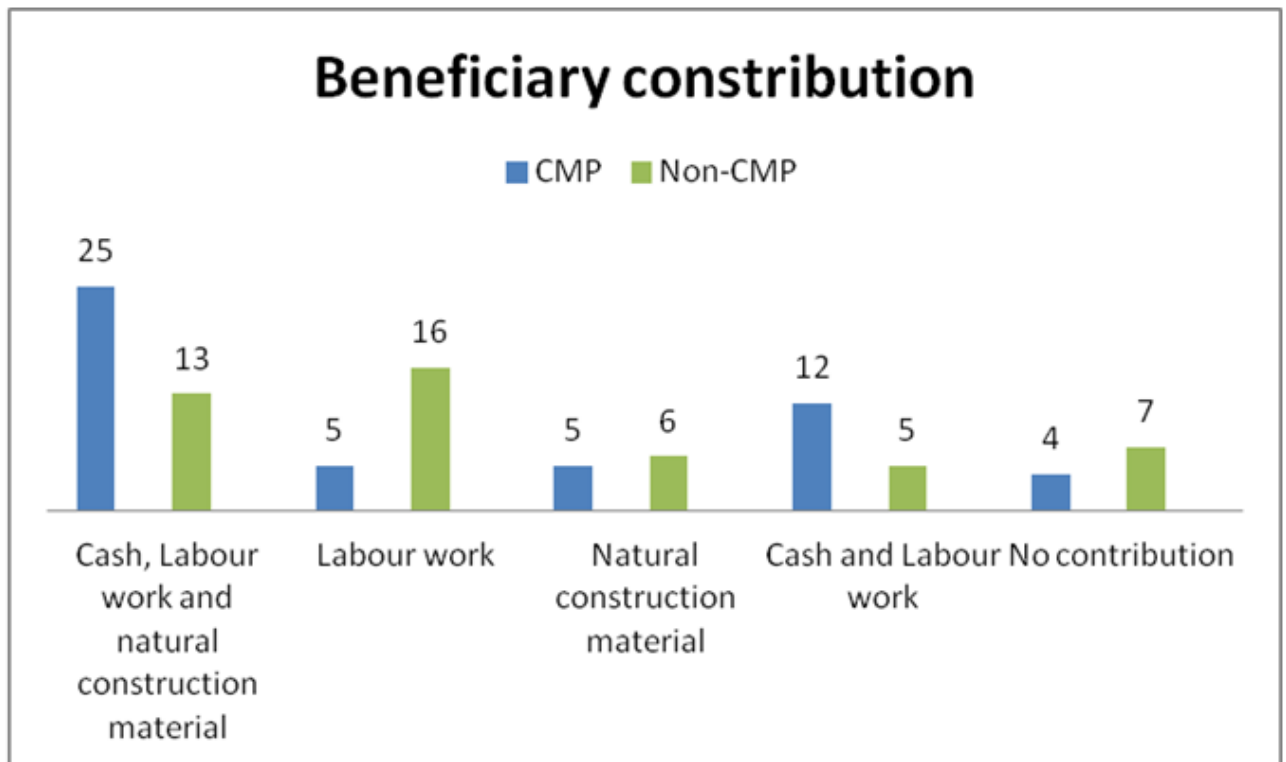


Figure 20: CMP & non-CMP beneficiaries' contribution in scheme development

CMP contribution shows higher than that of non-CMP, i.e. 92% of CMP beneficiaries contributed either by cash, kind, natural construction material or other ways of contribution in scheme implementation, whereas 85% of non-CMP contributed the same. Therefore, this indicates how community participation of CMP schemes is well ahead of those in non-CMP. One Care International officer in Farta Woreda who was interviewed confessed that CMP's best kept secret is users' high mobilization, which is why CMP has a high scheme functionality rate comparing to any other non-CMP schemes. "One day all non-CMP NGOs like Care International and others will take the CMP approach tool," he added.

If the community involvement is high, it has an impact on the ownership feeling of beneficiaries. In all water points constructed by CMP had community participation share of up to 1000 Ethiopian Birr plus labor and raw material contribution, where other non-CMP, kind and raw material were the major contribution of the beneficiaries.

Both CMP and non-CMP WaSHCO committees are very committed to continue their responsibility to their local society, though they are not paid for it. The majority of them even believe that the responsibility of being part of the WaSHCO committee gave them a reputation and respect among their local communities since they work voluntarily.



Figure 21: Children watering their cow in Red Cross built scheme

In one Care International scheme, children are forbidden from using the hand pump or even to fetch water. This is done for the sake of the protection of the scheme. If this policy would be applied in all other CMP and non-CMP schemes it would lower scheme breakdowns, since many respondents stated that minor failures of schemes are due to children's hand pump misuse.

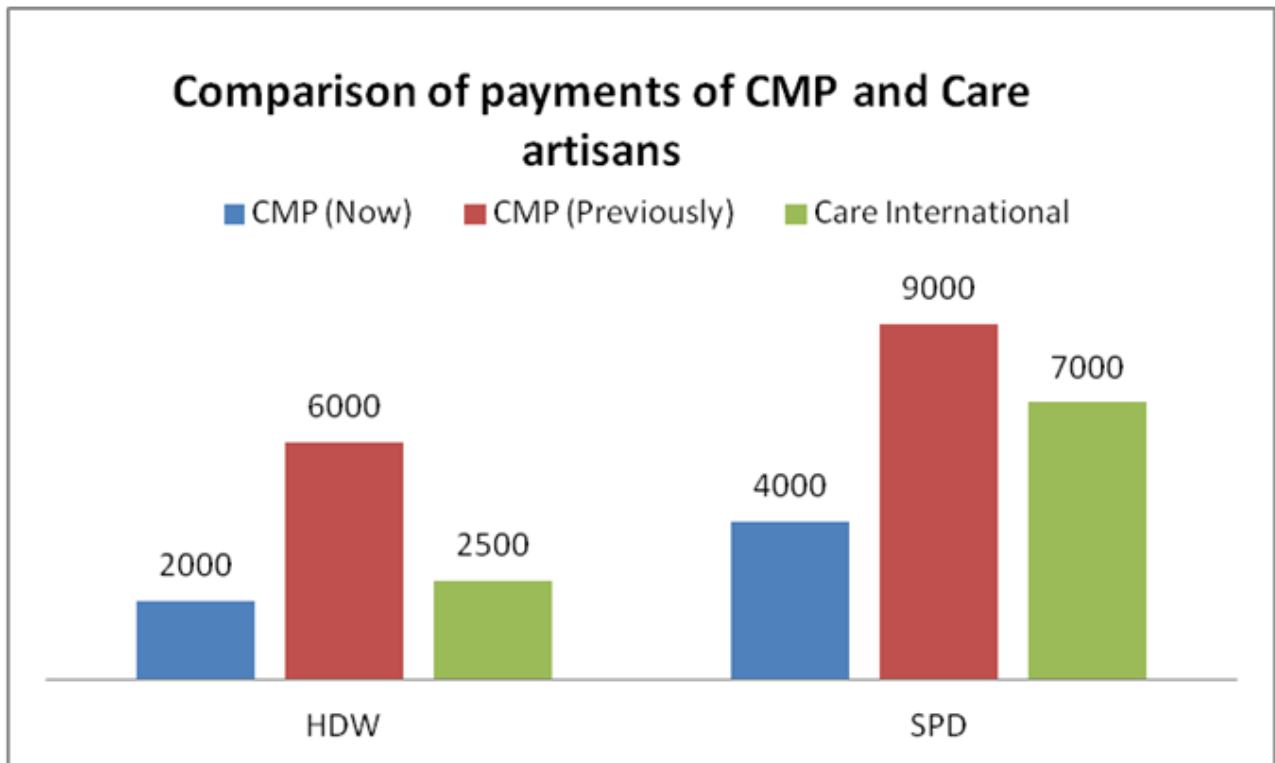


Figure 22: Comparison of payments of current CMP artisan's payment with their previous payments as well as with Care International artisans

As seen in the figure above, there has been a huge cut in payments. This is how CMP artisans compare themselves to that of Care International. They believe that it is not fair to earn a lower payment while Care artisan earns a bigger sum of money while performing same job.

A majority of non-CMP women interviewed showed their willingness to alter gender makeup. It was difficult for them to say straight away "we are not happy with WaSHCO gender combination", but while they were asked in a bit tricky way like "Would you like to see women having better share in WaSHCO gender combination than now?". They All replied "Yes".

This study compared the community participation of both CMP and non-CMP schemes in terms of planning, contribution, site selection as well as implementation phases of scheme construction. In non-CMP water points like Care constructed water points, users pay only 0.5 Birr/HH/M. This money is collected and saved by a cashier, who is a member of WaSHCO. Though they did not report any kind of financial mismanagement or misuse made by the cashier, still there is a risk of corruption. In some other non-CMP schemes there are no service fee and they only collect money for a guard, if there is a guard.

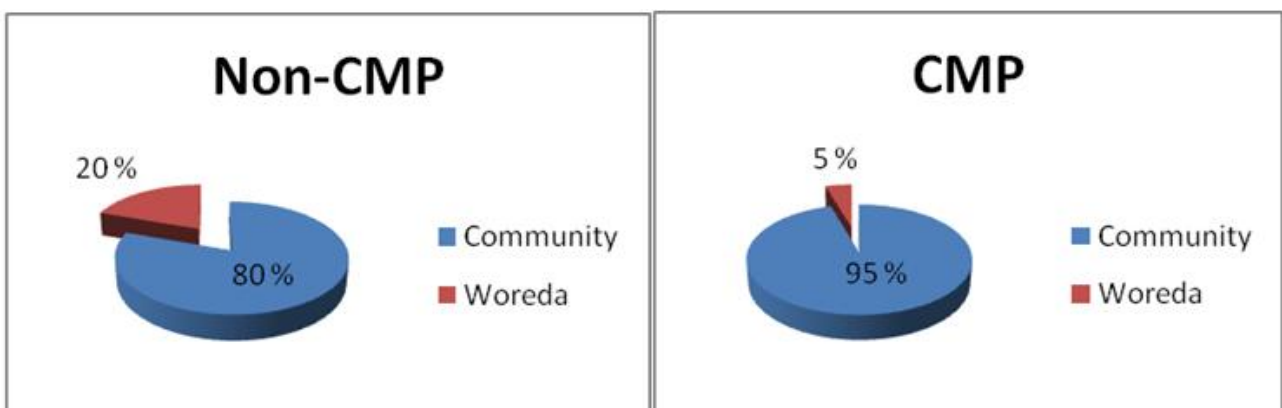


Figure 23: Who owns the scheme? question asked to CMP & non-CMP beneficiaries

In non-CMP schemes where only 0.5 Birr is paid per month, it is very difficult to cover O & M costs, which is why many users believed non-CMP schemes remain unmaintained for long period or even abandoned because of minor failure.

Both beneficiaries of CMP and non-CMP modalities were eager to pay for their water services. At least every one of the community knew why to pay and benefits of paying water tariffs.

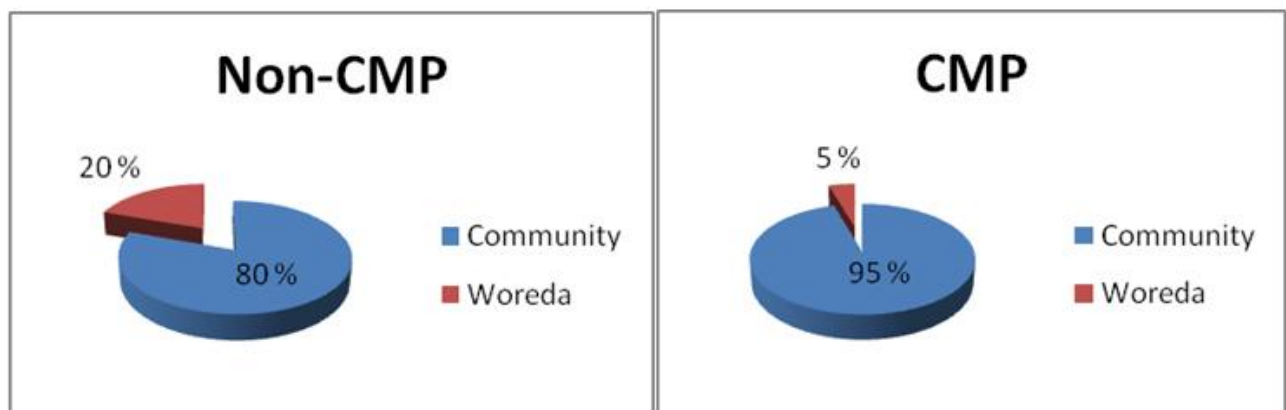


Figure 24: CMP & non-CMP beneficiaries' willingness to pay service fee

Paying a service fee varies from scheme to scheme and modality to modality. As show in the figure above 91 % of the total CMP beneficiaries were willing to pay water tariffs whereas 83% of non-CMP also had same view. Non-CMP beneficiaries pay half of the service fees of that of CMP and still CMP participants exhibit more willingness to pay.

6 Conclusion & Recommendations

The general conclusion demonstrates good results in both modalities, but CMP seems to be performing better in terms of factors affecting sustainability like financial elements, community mobilization or participation as well as functionality rate of the schemes. Data collected from only 33 water points cannot reflect the overall schemes of Amhara region, but this gives only a brief information about common obstacles face the sustainability of water points in the region as well as the countrywide. Certain recommendations are offered to solve current existing problems as well as improving the overall sustainability.

6.1 Conclusion

CMP encourages the community's full participation in every stage of the project from planning to post-construction. During this study, high community participation and ownership feeling was observed. Almost all of the beneficiaries reported that they participate WaSHCO meetings.

The following evidence could suggest a sustainability of over 90%:

- Having an average functionality rate of over 98.6%.
- Having ownership feeling of 95%.
- Having a community contribution of 92%.
- Willingness to pay of 91%.
- Participation in the planning (site selection & technology type) of 87%
- Having saved money for O & M for schemes under the control of beneficiaries of 100%.
- Having gender balance in scheme management of 59% of females in WaSHCO committee and 16 % of females in local contractors (artisans).

However, there remain challenges that need to be eliminated to keep these functioning systems sustainable.

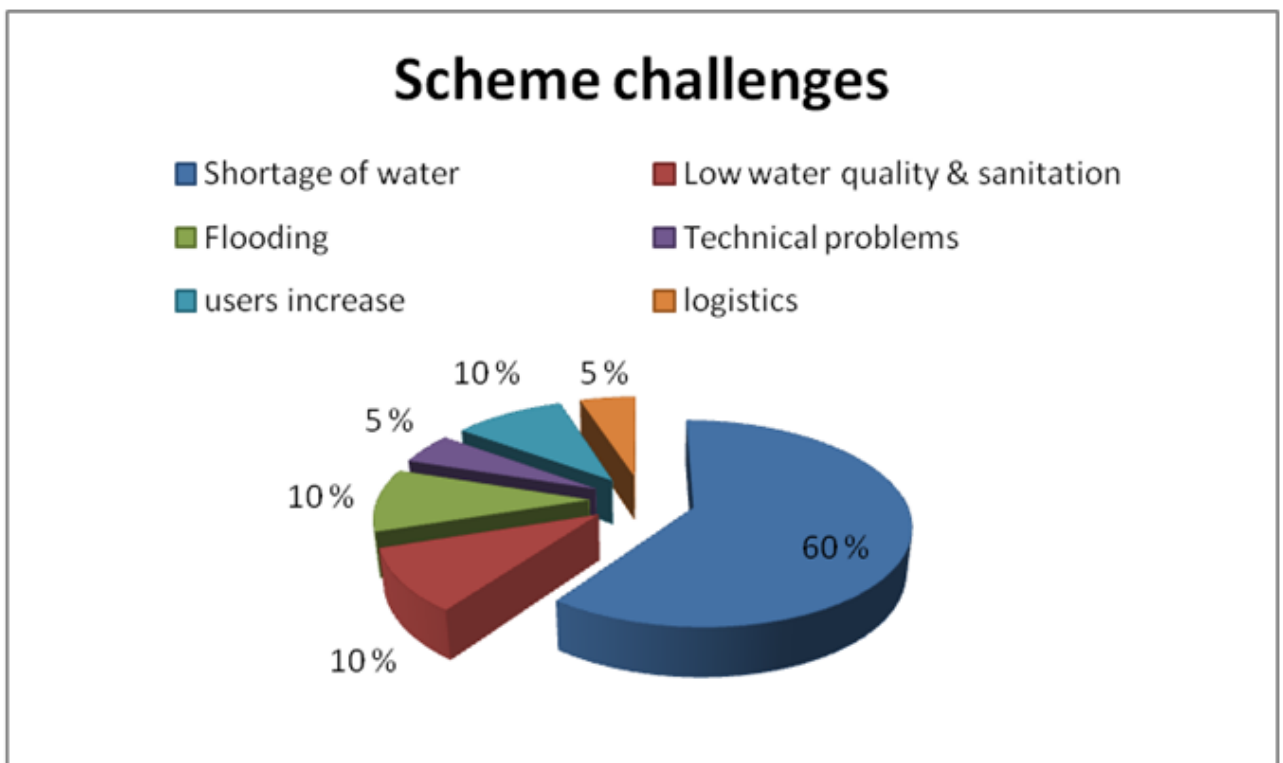


Figure 25: Most challenges facing the wellbeing of the scheme

As shown in figure 25, these are the challenges of the schemes. Majority of the people or 60% of the people suffered shortage of water, where lower water quality and environmental problems like flooding are another challenges. CARE international cares out water quality check studies and this is good step for following and improving water quality.

6.2 Recommendations

- There should be well organized systematic data saving in all levels: starting from kebele and woreda. Majority of woreda offices have no reliable inventory data.
- Solving local contractors (artisans) payment cuts complaints: Though Amhara zone advisor justified payment cuts, they are not happy with that and if this is not solved this would be a major threat in scheme maintenances and implementation of new schemes as well since some of them already shifted to different work places for better payment.
- Encouraging foreign spare part factories to open local branches in order to cope with growing needs and costs of spare parts.
- To upgrade and enhance technical and capacity building trainings of WaSHCOs and local contractors (artisans): Some artisans lack sufficient knowledge in construction and maintenance and ask other artisans for assistance and giving trainings to WaSHCOs to learn how to preserve environmental sustainability, like flooding prevention.
- Dynamic water tariff rate to cope with the dynamic price of spare parts to prevent devaluation of money.
- Improving co-operations and experience sharing between schemes: There is no idea or experience sharing between WaSHCOs and beneficiaries of different schemes
- Encouraging cost recovery strategies among scheme beneficiaries to lower their dependence on foreign assistance, if major scheme failures happen.
- Encouraging water tariffs payment for all scheme beneficiaries in order to prevent other beneficiaries discourage: Some schemes already saved money and stopped paying service fee. This could be a problem if service fees are needed to collect once again. This also could discourage other beneficiaries of other schemes as well.
- Improving social awareness of beneficiaries: Some do not know about CMP, while others still stick to older NGO names like Finnida and CDF.
- Increasing the number of Woreda WaSH Teams (WWT): In some woredas, it is difficult to meet with WWT. In some schemes they are rarely seen. One major reason is their small number of members of seven and the sizable tasks under way of receiving application forms from users applying new water schemes and planning newer water points.
- Carrying out water quality check studies like CARE international to follow the water quality.

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BACKGROUND OF RESPONDENTS

Background of the respondent

| | |
|-----------------------|---|
| Respondent background | Male 57 Female 41 |
| Age | 10-20 8 21-30 28 31-40 30 41-50 18 >50 14 |
| Marital Status | Married 81 Unmarried 12 Divorced 4 Widow 1 |
| Education | Never been to School 53 Primary 29 Secondary 6 Adult education 8 University 2 |
| Household Size | <5 39 5-10 56 >10 3 |
| Occupation | Farmer 80 Business 6 Labors 9 Private workers or Government employee 3 |

There is no numbering on the Appendix pages.