EVALUATION FOR MWETENI WATSAN SUPPLY PROJECT
HEIKEYU WATER SUPPLY SCHEME PHASE II
[S12024]
KILIMANJARO REGION
SAME DISTRICT, TANZANIA

OCTOBER 2016

Client: Aqua 4 All, Netherlands

Implemented by: Linda J.S. Baas
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<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4A</td>
<td>Aqua 4 all</td>
</tr>
<tr>
<td>COMWE</td>
<td>Community Owned Mweteni Water Supply and Sanitation Organization</td>
</tr>
<tr>
<td>l/s</td>
<td>litre per second</td>
</tr>
<tr>
<td>m3</td>
<td>1,000 litre</td>
</tr>
<tr>
<td>masl</td>
<td>meters above sea level</td>
</tr>
<tr>
<td>MSM</td>
<td>Marie Stella Maris</td>
</tr>
<tr>
<td>O &amp; M</td>
<td>Operation and Maintenance</td>
</tr>
<tr>
<td>PHAST</td>
<td>Participatory Health and Sanitation Transformation</td>
</tr>
<tr>
<td>TWG</td>
<td>Tegemeo Women’s Group</td>
</tr>
<tr>
<td>TWG-M</td>
<td>Tegemeo Women’s Group – Ntambwe Branch</td>
</tr>
<tr>
<td>TZS</td>
<td>Tanzanian Shillings approximately 2400 TZS for 1 Euro</td>
</tr>
<tr>
<td>WfWP</td>
<td>Women for Water Partnership</td>
</tr>
<tr>
<td>WP</td>
<td>Water Point</td>
</tr>
</tbody>
</table>
ACKNOWLEDGMENT

SAWA consult would like to take the opportunity to give a special thank you to those that contributed their time, insights and assistance to the team during the evaluation. First to our hosts Mrs. Resti Gerard, Chairperson of the TWG and her husband Gerard Petro the Chairperson of COMWE. Not only they host the team at their special home, but provide valuable input and information about the community as a whole and the specifically the history of development of the Heikeyu Water supply Schemes.

We would also express our gratitude towards to Chairman of Mweteni, the operators of the Heikeyu water scheme and all members of the Tegemeo Women Group, the members of the Ntambwe Women Group, the members of COMWE and the members of PHAST community. Thank you for your time, patience and inputs delivered.
EXECUTIVE SUMMARY

The evaluation of Mweteni WatSan supply project in Tanzania has been executed by SAWA Consult on request of Aqua for All. It has been done in the month of September 2016.

The aim of the evaluation was to rate the project on sustainability according to the FIETS criteria.

The project scored high on the elements of institutional, environmental and social criterion. The main reason for this is that it was a community demand driven initiative, supported by Women for Water Partnership. On the financial aspect ground breaking work has been achieved by the actual paying of water fees which is not custom in the rural areas of Tanzania.

On the water component the technical sustainability is good. On the sanitation component enhancement could make the project even better.

Looking at the four project objectives:

- To create access to safe and sustainable drinking water for 1900 people. The total beneficiaries of Mweteni WatSan supply project as a whole, is 1900 people. The actual number of beneficiaries of the Heikeyu Phase II water component covers 573 persons. However, the total of beneficiaries of the Heikeyu project as a whole can be added 230 schools through safe sanitation facilities. Another 24 for the TWG office toilet facilities and 30 PHAST trained persons from the community.
- To stimulate local economic development especially for women. By the time reduction for collecting water for household use the women actually have more time available for small scale agriculture activities like the production of ginger. However must be noted that entrepreneurship in the isolated areas of Pare mountains is limited.
- To improve overall community health by increasing awareness on hygiene and safe sanitation. According to the focus group discussions and data from the local dispensaries no cholera outbreak has occurred since the last three years. Through the training of 30 community volunteers on PHAST an enormous boost on basic hygiene knowledge to the communities has been given. With the possible continuation of the program with strong focus on the actual implementation of toilet construction will lead to more solid health improvement.
- To strengthen local capacity of the water user committees. This part has been strongly developed with all stakeholders actively involved.

The project gets its strength through the demand driven character and the absolute willingness of the community.

If the donors are considering consolidation and continuation of the Mweteni WatSan project, SAWA consult would positively recommend a continuation of involvement in the Mweteni Watsan supply project. This would not necessarily imply a financial input, but of a back stopping, advisory role from different stakeholders, like local government, role of the offices in the Netherlands e.g. Women for Water Partnership. For the latter mentioned
partner there is a role for follow up on monitoring and yearly evaluation on the development of strategies in order to improve the livelihoods in the area.
1 INTRODUCTION

1.1 Background
Aqua 4 All (NL) commissioned SAWA Limited to undertake the evaluation of the Mweteni Watsan Supply Project [S12024] also referred to as Heikeyu Water Supply Scheme Phase II using the FIETS evaluation criteria. The evaluation was done in the month of September 2016.

The key project interventions were:
- Two water storage tanks
- Eight water points
- Sanitation components that include demonstration toilets
- Training of six local artisans in eco sanitation.

The Mweteni Water Supply and Sanitation project is an integrated, community based development project, initiated by the Tegemeo Women Group (TWG) for Mweteni village and Women for Water Partnership.

The implementation of the project has been divided into three phases. This evaluation focuses on Phase II which has received funds from Marie Stella Maris as principle donor. Other contributions (finance as well as in kind) have been received from Women for Water Partnership (WfWP), the Government of Tanzania (Same District), and the local community.

1.2 Methodology used for the evaluation
The study was divided into the following activities:
1) Desk review and situational analysis – including literature search, review and relevant data analysis
2) Fieldwork– Rapid assessment of the conditions of the facilities, as well as collection of available data.
3) Stakeholder engagement – including consultation meetings with stakeholders and interviews of trained members and beneficiaries.
4) Field Data Analysis and report write up
5) Focal Group Discussion with the Tegemeo Women’s Group
6) Focal Group Discussion with Community Owned Mweteni Water Supply and Sanitation Organization (COMWE)
7) Focal Group Discussion with PHAST (Participatory Hygiene and Sanitation Transformation)

Complete details of the methodology can be found in Appendix.

1.3 Location
The project is in the administrative area of Kilimanjaro Region, Same District in Bwambo Ward. Mweteni Village is one of three villages in Bwambo Ward, situated in the highlands of the south Pare Mountains. See Map below.
Mweteni Village has four sub villages: Mturo, Kwamshitu, Kwanatema and Ntambwe. Most of the Heikeyu Water Scheme serves areas within the sub village of Ntambwe. It should also be noted that other areas within Ntambwe Sub Village are being supplied with water from the Kidingidingi Water Supply Scheme.

1.4 Demographics of Area

The 2012 Tanzanian census reports a population of 9,499 (4,705 males and 4,774 females) in Bwambo Ward; with an average household size of 4.7. Mweteni village has a population of 3312 and according to the Chairman, Mweteni Village has a current (2016) 763 households. Population statistics for Mweteni sub villages could not be obtained.

1.5 Land Use and Livelihoods

The rural communities here are relatively and culturally homogenous, most coming from the Pare tribe. People farm and keep livestock.

**Irrigation Farming:** Due to the availability of surface water, there are hand dug irrigation channels that flow through the lower valley areas of the village. People dam up flowing water in the upper catchment areas, and often use pipelines to bring irrigation water to more specific areas downstream; place where the dug up irrigation trenches do not reach. Irrigation farming includes crops such as vegetables (spinaches, tomatoes, etc.) and sugar cane.

**Rain Fed Farming:** On the higher slopes of hills, rain fed farming is predominant with crops such as maize and beans being planted. Some contouring farming was observed. Bananas are also cultivated.
Livestock: Most of the livestock in the village are zero grazing milk cows and goats. There are not large herds of cattle. Chickens are also kept for meat and eggs.

Fish farming, in small ponds fed by the lower Heikeyu Dam is a relatively new practice being funded by World vision and another NGO.

The local economy is of a subsistence based market with no apparent external market demands. Due to the poor roads, most of what is farmed and harvested in the village is sold within the village, with some products being taken to nearby markets such as Hedaru and Same Town.

1.6 Natural Resources

1.6.1 Surface Water

The village has six (6) springs of unsubstantiated yields; Hemvera, Hemigi, Sunga, Heikeyu, Kidingidingi and Kwakibulu. In addition there are small tributary streams of unconfirmed seasonality; of note were Hemcheno, Kwasentembo and Hendabu Stream which are used for irrigation.

1.6.2 Forest Catchment Area

On the eastern boundaries of Mweteni Village is the Kwamwenda Forest Reserve. Forests are an important habitat that is under threat in the Eastern Pare mountains; South Pare mountain is considered part of the eastern Pare mountain. The spring that supplies the water for Heikeyu spring in swell within this forest area.
2 PROJECT DESCRIPTION

2.1 Situation before Project

The information has been gathered by verbal conversations with the beneficiaries. No baseline report was found at the project level.

**Labour intensive and time consuming water fetching for Women:** Walking to nearest stream, often kilometres away.

**Unprotected and often polluted water:** Sharing irrigation with domestic pipelines. Unprotected sources that flow through village (pesticides, suspended solids etc). Outbreaks of cholera during rainy season.

**Shallow unreinforced pit and non ventilated latrines:** Most households have traditional unimproved latrines. They are not safe, constructually unsound and undignified.

**Limited knowledge of good WaSH practices:** The relationship between good wash practice and health is not commonly understood by local households. There are frequent outbreaks of Cholera especially during rainy season, due to the overflow of the shallow pit latrines.

2.2 Project Objectives

The main aim of the project is to provide equitable access to potable drinking water to the Mweteni community as well as to improve the sanitation condition and hygiene especially to prevent water borne diseases. The project’s aim is to achieve empowerment of the community, especially women within the villages who are the most affected by the lack of potable water at reasonable proximity. (Women for Water Partnership Final report for Heikeyu Scheme Phase II December 2014)

2.3 Project Stakeholders

Those benefiting directly from the Heikeyu Water supply system estimated to be approximately 573 people within Ntambwe Sub Village and in particular some women in the Tegemeo Women’s Group – Ntambwe Branch. Special attention has been given to vulnerable individuals (elderly and disabled) who are registered with COMWE but are given exemption from paying for water. The overall beneficiaries from the programme are estimated at 1900.

Focus group discussions and interviews were undertaken as part of the evaluation, as detailed in the following section.

2.3.1 **Tegemeo Women’s Group (TWG)**

The TWG based in Mweteni Village initiated this community based and user driven water development project together with Women for Water Partnership. The group consists of 24 members with their own council; chairman, treasurer and secretary. The main aim of the group is to empower women enabling them to improve their livelihood and life in Mweteni Village. The group has a micro finance program in which members can get rotating fund to assist with various issues that the women face; for example, starting small businesses, improving the home and financing the education of their children. TWG was the key actor for the implementation of the Phase II project. A focus group discussion was undertaken with the group during the evaluation.
With the success of TWG, two additional women's group, branches of TWG have been established, the Kwanatema (with 30 members) and the Ntambwe (with 21 members). Of note, the latter branch (Heikeyu scheme), established in July 2016 represents households in the area of the Phase II project. This group was interviewed during the evaluation and results of the interview are in Appendix table 0-3.

2.3.2 COMWE

COMWE, established in March 2014, was set up to manage and maintain all of the four water supply schemes in the village. Their main duties are:

- To oversee the day to day O & M of the schemes; determine the schedule of water delivery to each branch
- To collect and record revenue
- To plan and budget for the future of the schemes.

The team met with the two operators (Ombeal Zakayo and Naziki Nimzihiza) that oversee the daily O & M of the Heikeyu scheme.

2.3.3 PHAST – Participatory Hygiene and Sanitation transformation

Mweteni community PHAST was established in 2014, and currently consists of 30 members that received PHAST training within the MSM/A4A project and undertook the community (Household) outreach program. 50% of PHAST members are women. See Appendix for list of those members of PHAST. Every PHAST member has a fixed number of households whom they are in contact with to raise awareness of WaSH related issues. A focus group discussion was undertaken during the evaluation. Community PHAST can be seen as the software component of the COMWE. To date, it is reported, by PHAST members that almost 400 Households have been visited by a PHAST group members. They have visited all 400 households over a period of 8 months with at least 1 visit per month in order to perform a close monitoring on the household developments.

2.3.4 Mweteni Village government

The team consulted with the following members of the village government:

- Village Chairman
- Sub Village Chairman of Ntambwe, Ombeni Yonaza

The village was committed and facilitated all the logistical activities and WP visits for the evaluation team.

2.3.5 Same District Water Department

The district remains to be very active in an advisory role to the village, including the water development project. This was very evident during the evaluation, in that both the District engineer was overseeing the current construction of the next toilet block at Ntambwe Primary school as well as the Community Development Officer advising many community related Developments, especially the Heikeyu Water project.

Consultation meetings were held with Musa Msangi, the District Water Engineer (DWE), Mr. Wilson Kaibura, Technical Sanitation Advisor from Same District and Mr. Kennedy Mahega, the Community Development Officer (CDO).
2.4 Project Infrastructure

The Phase II infrastructure included:
- Spring intake with division box
- Two storage tanks: one with 10,000 liter capacity and one with 5,000 liter capacity.
- Pipeline (about 4.5 km) divided into 3 main branches: Korinto, Dispensary/Mzirembe and Kidunda
- 12 water points (WP) one couple and break pressure tank (Kwang’onji)
- 1 break pressure tank (after Betel B)

The design of the schemes was provided by the Same District Water Department and is owned by Mweteni Village. Photos of each component is shown in Plate 2-1 and Plate 2-2. GPS location of the various components (intake, tanks and WP) of the water scheme are in the Appendix. The general locations of these components are shown in the following map.
No hydrological data was available.
Plate 2-1 Heikeyu Water Scheme – Water Points – Korinto and Kidunda Branch

KORINTO WP

HEKAGOYA WP

BETEL A WP

BETEL B WP

COMWE member, Operation Crew, Mtambwe Sub Village Chairman

HEKADIA A WP

HEKADIA B WP

Korang’oni WP Break Pressure

Some erosion at over flow

KIDUNDA WP

Some erosion around WP foundation due to over flow
Plate 2-2 Heikeyu Water Scheme – Water Points Dispensary Branch, storage tanks and Intake

<table>
<thead>
<tr>
<th>Break Pressure Tank and division Box</th>
<th>KWA KIAGO WP</th>
<th>NKUNZA WP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Splits Dispensary, Mitrembe and Kidunda Branches</td>
<td>With gate valve and water meter box</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HEIKEYU SPRING INTAKE</th>
<th>10,000 Liter Storage Tank</th>
<th>5,000 Liter Storage Tank</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMWE and Village Government with SAWA Evaluation Team</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.4.1 Project Management and Services

Change of water delivery times: The water meter system is no longer in use. The reason behind the abolishment of the water meter system was that this was too much micro management for COMWE to actually keep track of the amounts used per household. Instead, a water delivery schedule was instituted and is well received by the water users, just like for irrigation. Water delivery to each branch and its WP follows a daily schedule as indicated in the table below.

Table 2-1 Heikeyu Water Scheme Daily Water Delivery Schedule

<table>
<thead>
<tr>
<th>Pipeline Branch</th>
<th>Water Delivery Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korinto Branch</td>
<td>3 pm to 7 pm</td>
</tr>
<tr>
<td>Dispensary Branch</td>
<td>3 pm to 7 pm</td>
</tr>
<tr>
<td>Mzirembe Branch</td>
<td>6 am to 11 am</td>
</tr>
<tr>
<td>Kidunda Branch</td>
<td>6 am to 11 am</td>
</tr>
</tbody>
</table>
3 FIETS EVALUATION

The success of the project, to date can be attributed to how it fit well into the local lifestyle for many reasons:

- **Plenty of water**: There is good surface water availability from Heikeyu Spring.
- **Shared Water Delivery**: Historic irrigation water has followed a scheduled water sharing system, the familiarity of ‘sharing water’ worked well with regard to domestic water supply as well.
- **Local Motivation**: Existing group, especially Tegemeo Women’s Group to launch and benefit, direct involvement in the project from design, construction and operations.
- **Immediate establishment of COMWE** - Community Mweteni Owned Water Supply and Sanitation Organization to address O & M (repairs) and revenue collection instituting ‘good habits’ of water supply management from the beginning. (not wailing for the donor to come back to solve O & M issues. COMWE has the basic capacity to solve typical project related issues.
- **Good Backstopping** from local village government to Same District Water department.
- **Demand driven project**: This project from the beginning has been user driven and not donor driven. Women for Water Partnership played a big role that the project remained user driven.

3.1 Financial Sustainability

3.1.1 Successes

**Changing attitudes about paying for Water**: GROUNDBREAKING THAT PEOPLE ARE AGREEING TO PAY FOR WATER, AS HISTORICALLY WATER SUPPLY WAS SEEN AS A ‘FREE RIGHT’; NOT PAYING FOR IT. The monthly rate per household is 1,000 TZS. With an average water use of 24.7 litres per person per day\(^1\) (1.24 buckets) and with 573 people taking water from the scheme

- 573 persons served (122 Households)
- 181 days of service (January to June 2016)
- Estimated 128,183 buckets (20 litres)
- Forecasted Budget at 681,000 TZS means 5.3 TZS per bucket
- Actual revenue collection of 269,000 TZS means that the actual price per bucket is 2.1 TZS.

Through the interviews with the beneficiaries data was obtained that 90% of the households have the same water collection pattern. All households are homogeneous is the number of members and household animals.

**Good Basic Bookkeeping**: COMWE has a basic bookkeeping system that records monthly payments received by households using the various water points.

A **bank account** was opened in Same Town in which revenue collected is deposited.

Reviews of the COMWE revenue collection accounts indicted the following:

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\(^1\)As per interview of the 21 member of TWG Mtambwe Branch
67 water points are being managed by COMWE, of which 12 water points were part of the Heikeyu Water Supply Scheme Phase II. See Plate 2-1 and Plate 2-2 as well as Table 0-1 in Appendix.

395 households have registered for payment with COMWE, an estimated 1856 persons benefit from the 67 water points, of which 122 households were part of the Heikeyu Water Supply Schemes Phase II an estimated 573 persons benefit from this scheme.

About 6.3% of those using the 67 WP are considered vulnerable and given exemption to paying monthly (the elderly and disabled)

From January to June 2016, revenue collection associated with the Heikeyu Water Supply Scheme Phase II 39.5% of WP users paid their monthly water bill. See Table 0-4 in Appendix for more details.

The tariff was set by COMWE and agreed by the households involved. Some households are exempted with the consensus of neighboring families due to old age or disabilities. Firm follow up is now core for COMWE for those families who can afford but not contributing (yet).

No Issues thus far with O & M: Major repairs have not been needed to date, only regular operation of scheme.

3.1.2 Challenges

Revenue insufficient to cover expenses: Current revenue collection cannot cover expenses such as salaries for the operators. COMWE needs to start paying O & M operators but revenue collection is not enough to do this. To date, no one is being paid even though there are two water supply attendants and administrative persons (treasurer etc.) This is not sustainable as ‘volunteer worker fatigue’ is inevitable. Small repairs and the purchase of taps when needed are covered by the revenue budget.

Paying per month not per bucket: the meters system did not work and a 24 hour delivery service was deemed unnecessary, especially since the system is operated by volunteers. A new system of paying a monthly fee has worked better and provided a more transparent method of determining who is paying and who is not.

Revenue from Non Domestic Water use: Revenue does not take into account other non domestic use such as livestock and gardening.

3.2 Institutional Sustainability

3.2.1 Successes

Early establishment of a governing water body, COMWE, at the onset of the project has proven to be advantageous. They are trained and have the capacity to manage the routine O & M of the system because it is new and no water conflict between users has arisen.

Capacity to resolve O & M and revenue collection Issues: COMWE to date has been able to identify, address and resolve issues that have arisen. In particular, the need to i) reassess the revenue collection procedures and ii) institute water delivery schedules for each branch,

Good collaboration between village and district government that has resulted in additional construction of four additional water points. The roles and responsibilities between the
owner (Mweteni Village), the management (COMWE) and the advisor (Same District) are clear and to date very cohesive. There is good adhesion between the village government, TWG, COMWE and PHAST as many individuals are members of the various groups.

**Tegemeo Women’s Group Vital Involvement was crucial for the project.** There was an established women’s group in which they fostered a new branch at Ntambwe Sub village that benefited directly.

**PHAST has been successful on a grass root level to create basic community WaSH awareness.** PHAST trainers have ‘done their job’ and are prepared and eager to do more.

### 3.2.2 Challenges

**By Laws:** To date there are no by-laws specific to the O & M and revenue collection for the schemes.

**Capacity building to take the project to the next step:** Need for strategic planning and management in the organization which can address major issues and expansion in to the hygiene and sanitation components.

### 3.3 Environmental Sustainability

#### 3.3.1 Successes

**Water sources are relatively abundant:** The village has many water sources in which there are multiple networks of traditional irrigation schemes and flowing water in some areas in the village. To date there are no reported water user conflicts.

**Protected source means protected Water:** The spring intake is protected because it is in the Kwamwenda Forest reserve, and is effectively in a protected catchment. This means there is no upstream land use that would contribute to significant water borne contamination due to human activities. Wild animals are not being found in the protection area and domestic animals are not allowed. There are strict by-laws set by the village government and community and violation will be fined. According to the operators and neighbours in the area interviewed domestic animals are never to be found in the restricted catchment area.

**Water source of schemes is well protected:** The water quality of the source is relatively pristine and not exposed to human contamination. COMWE reports that the storage tanks are sometimes treated with chorine. If the spring is kept protected and tanks periodically treated, especially during the rainy season, it is less likely that water borne disease or contamination will enter the system. The lines are under gravity pressure as the main tanks are well placed on the highest point of the scheme. During the 4 days in the field no leakage has been detected along the tranches of the whole project scheme. Also the two operators have replied negatively on the question of occurrence of leakages.

#### 3.3.2 Challenges

**WP cleanliness:** All WP look clean and well maintained. Some water logging around WP foundation leading to minor erosion, but people have filled the erosion with rocks. Overflow from WP can lead to water stagnation and water borne disease. See Plate 2-1 Kwang’onji and Kidunda WP photo.

**Unconfirmed base flow yield of spring:** Hydrological flow data was not available. Observed flow at the spring was estimated at 2 l/s. If water demand exceeds the natural flow regime
of the spring it can create future ‘wars’ over water expansion and use. It should not be assumed that 100% of the spring water can be used for the village, conservation for habitat forest to use water and irrigation purposes as well. Is there enough water in the future for any WP expansions?

3.4 Technological Sustainability

3.4.1 Successes

**Good sound construction:** The infrastructure exists and is in good working order; facets intact and pipelines with no reported leaks. Gate valves for control of pressure that functions as a maintenance device and pressure control. For the regulation of the water flow to the different water points opening and closing taps are being used who are situated on the secondary pipelines. They were all in good order and being operated and supervised by the two operators.

**Basic skills of O & M are available:** The village has a history of O & M with irrigation schemes and thus have the skills for basic repairs of pipelines. And for more complicated issues with O & M, thus far, they have had active involvement from the Same District Water Department. They have provided training for the operators and training on the replacement of taps.

**No incidents of theft, vandalism or malfunction of water taps or pipelines.** This was reported by COMWE and the physical inspection by the evaluation team confirmed this. This is uncommon as very often water programs experience problem regarding this.

3.4.2 Challenges

**Water quality in pipeline system:** When pipelines are open and repaired there is a possibility of contamination, mostly from soil entering the pipelines.

**Water quality from WP to Home:** There is likelihood, more so than at the source and in the pipeline system, of water being contaminated from use of dirty buckets or poor handling and dispensing at the home. Even when water is boiled, the container or persons handling it could still be a source of contamination.

**Untested system repair:** The capacity and efficiency of the maintenance program could not be assessed, as there has been little need of any maintenance of the line since it is very new. There are existing challenges with pipeline repair supplies due to transport and long distances to procure the needed supply which is in Same Town, more than two hours away on a very bad road.

**Lifespan and sturdiness of Plastic Tanks:** PVC tank is well protected by fence and concrete foundation. See Plate 2-2. However, tank lifespan is questionable being that is it made of plastic. A concrete tank would have been better suited because when tank breaks it is hard to fix the plastic (PVC). The tank is small for the water available and the water demand.

3.5 Social Sustainability

3.5.1 Successes

**Affordable and user friendly water supply:** Water users have been involved and accept the payment schemes set out by COMWE. The WP is simple and easy to use. And vulnerable
groups such as the elderly and disabled are exempted from paying. The general consensus on paying for water is a success.

**Additional WP constructed:** Phase II included the additional motivation of the community and Same District to add more WP to the scheme: from 8 WP originally to 12 WP.

**Water Hygiene Awareness:** PHAST training given by District Health Officer so this was a great collaboration with communities and government. PHAST members report that community members are very receptive to the outreach program. It was noted that school age children are very receptive to learning and understanding good hygiene practices.

**More time in the day for women and children:** The location of the WP being closer to households reduces the labour intensity and time consuming associated with water fetching from further distances and extreme slopes. Children have more hours for education at school.

**Decrease incidents of water borne diseases outbreak:** Cholera or water borne disease outbreaks have decreased significantly in the past 3 year. Verbal information has been provided by the local dispensary and the community. No written documentation was available.

3.5.2 **Challenges**

**Drinking Water treatment:** There is an abundance of firewood for boiling drinking water however wood burning usually occurs in the poorly ventilated homes and is a known source of respiratory disease, burning incidents (open flame and hot liquid) and an additional time consuming activity for women. Therefore boiling is not recommended. Use of bio sand filters like in the KWDT programme in Uganda could be considered.

**Follow up on the payment for water:** consensus on paying for water has been communal decided and accepted. This is step one (and a huge one). Step two is in place, the administration of every household within the water point system. Step three should be focussed on now and that is the actual collection of water fees of each individual household.

3.6 **Sanitation Component, Demonstration Toilets**

**Before Project:** Traditional toilets are commonly made of local bricks or mud and sticks with pit directly below. The pits are not reinforced and prone to collapse especially during rains. PHAST reports that even people building ‘nice’ houses forget to build a proper toilet. Most households had a kind of toilet facility before the project started. Sanitation was just a temporarily shallow pit with a wooden cover.

**During the project:** Two Demonstration VIP with a pour flush toilets were built at i) Tegemeo Women’s Group office and ii) Mturo Primary School. The TWG toilet consists of a combined unit, one for men and one for women. The Mturo Primary School consist of 6 toilet units for girls. Within the project no toilet facilities were constructed for the boys. During the field visit it was observed that new construction on a primary school within the area was ongoing for toilets for both girls and boys. Both toilet blocks have the pit separate and behind the main building and the pit walls are reinforced.

The issues observed with the toilet are presented in the table below.
### Table 3-1 demonstration toilet Issues

<table>
<thead>
<tr>
<th>Issue</th>
<th>Impact of Issue</th>
<th>Solution to Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vent Pipe slanted</td>
<td>Children can break by hanging on it</td>
<td>Anchor to the wall</td>
</tr>
<tr>
<td></td>
<td>Expensive elbow</td>
<td>Make pipe less expensive in future</td>
</tr>
<tr>
<td>Vent pipe too short</td>
<td>Odour issue</td>
<td>Make terminal of vent pipe above roof profile</td>
</tr>
<tr>
<td>Hand wash basin inside at very back of</td>
<td>Only one sink, and dark area</td>
<td>Hand wash concrete counter outside of building at entrance. Teachers can</td>
</tr>
<tr>
<td>building</td>
<td></td>
<td>supervise and see that children wash their hands and if facet is left open;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>water loss.</td>
</tr>
<tr>
<td>Unsealed pit</td>
<td>Groundwater contamination, long term negative effects</td>
<td>Eco sanitation toilets for future</td>
</tr>
<tr>
<td>Corridor wall blocks sunlight and decreases</td>
<td>Children are scared to enter dark area, hard to see and</td>
<td>Lower the wall or add vent block to allow more sunlight and ventilation. School</td>
</tr>
<tr>
<td>ventilation</td>
<td>less ventilation</td>
<td>sanitation blocks should be inside very visible and airy</td>
</tr>
</tbody>
</table>

Sanitation priority will never prevail above the need for water. However for a healthy community safe, sound and dignified sanitation is a must. Intensive awareness works have been done through the project on having a safe, sound and dignified sanitation facility at every household. The next step is the actual construction (through revolving fund option) in order to increase the safe and sound sanitation facilities within the project area.

As a sample demonstration toilets have been constructed at the TWG office and at the Mturo primary school. However there is a need to re design the sanitation structures in terms of visibility, airiness and child friendliness, especially at the schools.

Having a hand wash facility at the toilet is not common. Only 28% of a facility, tippy tap has been found at household level. However people do wash their hands after toilet visit but that is done near the house hold water point, mostly in the vicinity of the kitchen. More emphasis on washing hands with soap at the toilet location is needed.

Safe, sound and dignified school sanitation is essential in the adaptation and behaviour change on WaSH. Children are early adapters and will take the knowledge on WaSH home. They are key in the transformation of knowledge.

The relative expensive elbow in the vent pipe is not needed. In fact the vent pipe should be absolute vertical in order to attract the flies and create to wind stream to dispose the odours from the pit.
Plate 3-1 Tegemeo Women’s Group Office Demonstration toilet

The cistern is actually not needed as with the pour flush system 0.5 litre of water is sufficient. Tiling has been opted and done because of the Tegemeo women group office function. In reality for household use the cistern and tiling are extra costs and not of vital importance.

Plate 3-2 Mturo Primary School Demonstration Toilet
Fortunately, the Same District Sanitation Engineer, currently overseeing the construction of the toilet facility at Ntambwe Primary school, was present and these issues were discussed with him. He committed to make these modifications to the toilet under construction at Ntambwe Primary School. See Plate below.

Plate 3-3 Ntambwe Primary School Toilet Block Under construction
4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusion

4.1.1 Main Conclusions

- **Mweteni Village is a resource rich village**: there is plenty of surface water, springs and forest available. Project water components and investment are therefore likely to have a long life span and being sustainable. Cash however due to the relative isolated area is scarce as most households are self subsistent. This could hamper the investment on the sanitation component of the overall programme.

- **Shared Water Delivery**, water users get sufficient amounts of water for household use in a set time span per day. The system was already known in the area as the irrigation scheme functions similar. No new concept of receiving water on a regular time a day.

- **Local Motivation**, users are very committed and receptive and willing to take part in the involvement in upgrading their livelihoods. As basic needs are foreseen there is enthusiasm and eagerness in further development of the community on WaSH.

- **Immediate establishment of COMWE**, to secure projects investments is of utmost importance that there is a formal body present to supervise and coordinate the WaSH related facilities. The formulation and establishment of COMWE shows that the beneficiaries are taken the project and its inputs/ investment as important.

- **Good Backstopping** from local village government to Same District Water department. This is not often found that CBO’s initiatives are technically and supervisory being supported by the local government bodies. With this project the Same district was involved from the early beginnings and still is in their advisory role on a monthly basis.

- **Demand driven project**: This project from the beginning has been user driven and not donor driven, thanks also to Women for Water Partnership who played a big role to keep it user driven. The origin of the Tegemeo women group and its activities of WaSH where from within with a supervisory and supporting role from Mweteni women living in the Netherlands. Plenty of activities through the Tegemeo group were already being doing and established. The project proposal came from within with support from the Same department.

4.1.2 Financial Sustainability

- Changing attitudes about paying for water: groundbreaking that people are agreeing to pay for water, as historically water supply was seen as a ‘free right’; not paying for it.

- Good Basic Bookkeeping

- Bank account set up

- No Issues thus far with O & M

4.1.3 Institutional Sustainability

- Early establishment of a governing water body, COMWE

- Capacity to resolve O & M and revenue collection Issues

- Good collaboration between village and district government

- Tegemeo Women’s Group Vital Involvement
4.1.4 Environmental Sustainability

- PHAST has been successful on a grass root level to create basic community WaSH awareness
- Water sources are relatively abundant and providing ample water quantities
- Protected source means protected Water quality, upkeep and enforcing of the government and community by-laws
- Water source of schemes is well protected

4.1.5 Technical Sustainability

- Good sound construction of the water component. Re design and attention needed on the sanitation component
- Basic skills of O & M are available
- No incidents of theft, vandalism or malfunction of water taps or pipelines

4.1.6 Social Sustainability

- Affordable and user friendly water supply. Focus on the actual payment of those not paying yet while affordable for them.
- Additional WP constructed
- Water Hygiene Awareness from the water tap point to the house and within the household vicinity
- More time in the day for women and children
- Decrease in incidents of water borne diseases outbreak

4.2 RECOMMENDATIONS

4.2.1 Financial Recommendations

Increase % of Revenue Collected by setting revenue targets for each WP: COMWE to work with WP neighbourhoods (households associated with each WP) to meet their various targets for paying.

User Pays for Non Domestic Water Use: Consider instituting monthly water payment for each head of zero grazing livestock (animals in stable) and gardening.

Consider Paying O & M operators: With increased revenue, it could be viable to start paying for operators.

Consult with Household and evaluate future increase in Monthly Rate: Not viable at the current rate of 2.1 TZ per bucket. But at this juncture in the project stage, social sustainability, the agreement to pay for water is more of a priority. However, in the very near future the financial priority of sustainability will need to occur in order to pay for future costs on O & M.

Build capacity for COMWE to improve on planning and budgeting: Improve the financial and management system to cover recurrent costs of the investments made (including costs for operations and maintenance, monitoring and rehabilitation)
Current bookkeeping is a good start, but there is need for more administration training on budget and (electronic) recordkeeping. This to be used as a tool for future planning and budgeting capacity. To generate in partnership actual estimates on the maintenance costs based on same department experiences. This will also lead to actual facts in the upcoming meetings on the final setting of the water fee.

4.2.2 Institutional Recommendations

Design of user driven By laws for WaSH related issues: For example WP protection (Distance from livestock, laundry, toilets etc.), each household has safe, sound and dignified toilet facility with hand wash facilities (Tippy tap)

Capacity skill training for COMWE, PHAST and TWG-Ntambwe branch. Strategic planning, follow up training in WaSH and capacity to monitor investments. The training provided through the project was an important start but needs to be continued in order not to lose momentum and stabilization in beneficiary’s awareness.

Consolidating donor commitment to this program, the next step is input on support and back stopping using external local body back up is recommended in order for different organizations (COMWE, PHAST and, TWG) to continue to develop their existing skills.

PHAST has capacity to undertake the next step, which is WaSH related activities (improve toilets on household level, introduce the big five system. See Social Recommendations Section 4.2.5.

4.2.3 Environmental Recommendations

Consider drafting Environmental By laws for use of WP:

- Commit to a % of spring abstraction leaving the remaining flow for the natural habitat and wildlife in the forest.
- Distance of toilets from WP,
- Distance of livestock from WP,
- Distance of doing laundry from WP

Measure Spring Water Flow: Natural water resource is not guaranteed and is subject to climate change and degradation of forest catchment area. (Upper Catchment). Monitor water flows at intake and use as a tool to determine future water supply scheme expansion or new connections.

4.2.4 Technical Recommendations

Water contamination prevention: Develop and institute best management practices when fixing pipelines to prevent contamination. Water quality can never be 100% guaranteed with the system, however the system, if maintained and periodically treated (flushing of system with chlorine) is a good source for potable water.

Water quality testing at WP: If water testing is to be effective and used as a tool to guarantee safe drinking water then COMWE would need the institutional capacity and the actual testing tool kit to monitor and ensure the quality at each WP. This is still not a guarantee of safe drinking water delivery from the WP to the household. One test result only reflects that moment in time of the water quality. It should be assumed that water treatment at household level is the only means to ensure safe drinking water. Therefore it is recommended to focus more on the actual drinking water treatment on household level.
Water treatment at Household level: The main source of potential contamination will be at household level which is the end of the chain. To guarantee safe drinking water, water treatment must be done at the household level; by either boiling, filtering or chorine treatment. Boiling could be only considered for those households who have not (yet) have other options. In case of continuation of the project and its support main attention should be given to the development of alternative methods in order to obtain safe drinking water.

Concrete Tanks: Consider for future projects to build concrete water tanks for their longer lifespan, ease of repair and maintenance. The dimensions of such concrete tanks have to be calculated with the number of consumers and daily average consumption. Instead of future projects TWG and partners in Tanzania recommend to replace the PVC tanks in concrete tanks in short term. It is to ensure the sustainability of the whole system. See lifespan and sturdiness of PVC tanks in 3.4.2.

4.2.5 Social Recommendations

- **Water Treatment Alternatives:** It is recommended that COMWE considers promoting water filter treatment at household level. Filters provided multiple benefits such as i) zero issues with respiratory disease, ii) reduced time for boiling water, iii) reduced time for collecting wood., iv) zero related incident of burns.

- **TWG to initiate a rotating fund for filters** at household level. Estimated cost is about 40 euro.

4.2.6 Toilet Design Recommendations

Affordable safe and dignified toilet facilities. This means the need for the minimum requirement of toilet specifications on household level. Below are the suggested requirements:

- Slab with stopper
- Separate pit with good support to reduce collapse
- 4” pipe to connect as water is available for minimal pour flush systems
- Ventilation pipe should reach above the roof
- Optional: type of cover building
- Tippy tap within 1 meter of toilet.
- Bucket of water for flushing

Redesign of existing drawing for School Sanitation facilities

Introduction of EcoSan Sanitation Option with a close system: This type of toilet would fit well with the agricultural based activities in the village. As it has worked very well in the similar surroundings of KWDT project area, provided with technical training support from the Same department, this can be introduced the Mweteni area.

Improving toilets via TWG Micro Loan system: There is good potential to improve toilets via the TWG micro finance options to improve toilets. Where slab, pit stopper, vent, and separate pit, with is built above is the owners choice.
4.2.7 Cross Cutting Recommendations

4.2.7.1 Focus on Sanitation

To extend on the success of the water infrastructure and software (training and Awareness) of the project, the next step must be the **realization of sanitation infrastructure**. Currently it is the right time to start implementation, as water is available. However, there is a challenge for households to finance, up front, toilet facilities. With our interview of the focus group, it was thought that with the micro finance component (rotating funding) of the women’ group might be a good credit facility for people to construct or improve their toilets. For this, it is recommended to improve the training of PHAST members in basic VIP toilet construction and work closely with TWG for developing this program.

4.2.7.2 Visibility

The team notices that there is NO visibility of the project in the manner of sign posts, billboards, awareness material etc. in the project area. Experience learned that high visibility of a project and its messages has an enormous impact on community identity associated with the project aims. There is a need for the formulation of a **visibility strategy** to enhance the existing infrastructure from Phase II and the success of the project. The intention of the **visibility action plan** is to reach the beyond the current communities of Mweteni. For the local government of Same district the Mweteni scheme serves as an example on how communities in the mountain area’s can upscale their development. Visibility will assist in the programme as being a show case example within the region.

4.2.7.3 Big 5 Stars

Through our consultation with PHAST they are ready and willing to take up new challenges for continued WaSH awareness. What is lacking is their tool to motivate more WaSH related activities at Household level. Hereby, the **Big 5 Star methodology** could be of use. The Big 5 Star means each household commit to install and maintain the following:

1. VIP Toilet: with stopper and detached reinforced pit.
2. Tippy Tap (Kibyu Chizizi) must be next to toilet
3. Water filter
4. Dish Drying rack (Kichanja)
5. Solid waste pit for burning household garbage and one for organic waste which can serve as a compost pit.

Once a household has these five elements they are given a certificate of completion and visible signpost at the door. Experience shows that this very simple method is successful in instituting good household sanitation practices leading to overall improved health of the household members.

4.2.7.4 LEO – Learning from Each Other

Aqua 4 All and MSM have several concurring WaSH programs in Africa and Asia. After our evaluation of the program in Uganda (Katosi Women’s Group) and in Tanzania (Tegemeo Women’s Group) there are many best practice aspects of each program that either group could learn from each other. For example, the potential success of the filter program in Uganda could be replicated by TWG. It is recommended to connect the ‘dots’ between
these two women’s group through a visiting exchange program; whereby women share best practices and success points.
APPENDIX

Methodology and Approach for Evaluation of Mweteni Watsan Supply Project [S12024]

The study was divided into four activities:

8) Desk review and situational analysis — including literature search, review and relevant data analysis resulting in:
   a) Mapping of facilities
   b) Preparation of questionnaire (See Appendix) with the following focus;
      i) Financial: Determine the status of the Heikeyu Water Supply scheme
      ii) Institutional: Comment on the interaction with all the stakeholders (Tegemeo Women’s Group, COMWE, DWE-Same District and Mweteni Village and Sub village governments).
      iii) Environmental: Comment on the health and hygiene aspect the program as well as the catchment area protection and climate change issues of Heikeyu Spring (Scheme water source).
      iv) Technical: Comment on the technical issues encountered including water quality, capacity for maintenance and operation of the scheme.
      v) Social: Comment on the social interactions and abilities of the members, including population served, facility user friendly aspects and affordability.

9) Fieldwork – Rapid assessment of the conditions of the facilities, as well as collection of available data.
   a) Obtaining financial records and design of facilities
   b) Recording of GPS location of each facility
   c) Taking pictures of each facility documenting its condition

10) Stakeholder engagement – including consultation meetings with stakeholders and interviews of trained members and beneficiaries.
    a) Filling in of questionnaires
    b) Receiving feedback of their experience with the program
    c) Focal group discussions (Tegemeo Women’s Group, COMWE, PHAST, District and Village Government)

11) Field Data Analysis and report write up
    a) Compilation and explanation of questionnaire results following the FIETS criteria guidelines
    b) Gap analysis of current water scheme
    c) Recommendations for program

12) Focal Group Discussion with the Tegemeo Women’s Group
    Consultation and Feedback focused on the following themes:
    a) Organizational setting
    b) Activities
    c) Communication with stakeholders
    d) Revolving funds
    e) Successes and challenges

13) Focal Group Discussion with Community Owned Mweteni Water Supply and Sanitation Organization (COMWE)
    Consultation and Feedback focused on the following themes:
    a) Organizational setting
    b) Collection of water fees
    c) Technical setting and challenges
    d) Integration of sanitation component
    e) Communication with stakeholders

14) Focal Group Discussion with PHAST
    Consultation and Feedback focused on the following themes:
    a) Organizational setting
    b) Training received
    c) Feedback from their household visits to educate on basic health and sanitation techniques (hand washing, drying racks, toilets, etc.)
    d) Discussion on challenges and future plans for PHAST
# Table 0-1 Location of Heikeyu Water Supply Scheme Infrastructure

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Infrastructure</th>
<th>Pipeline Branch</th>
<th>Name</th>
<th>Location UTM Grid</th>
<th>East</th>
<th>South</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spring Intake and distribution box</td>
<td>In Kwamwenda</td>
<td>Hekagoya area</td>
<td>37</td>
<td>382226.5</td>
<td>9509446.4</td>
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<tr>
<td></td>
<td></td>
<td>Reserve</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storage Tank 10,000 litre</td>
<td></td>
<td></td>
<td>37</td>
<td>381854.3</td>
<td>9510181.1</td>
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<td></td>
<td></td>
<td></td>
<td>Above Dispensary</td>
<td>37</td>
<td>381274.4</td>
<td>9510559.6</td>
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<tr>
<td></td>
<td>Break Pressure Tank</td>
<td>Splits</td>
<td>Dispensary, Mzirembe and Kidunda</td>
<td>37</td>
<td>381358.1</td>
<td>9510286.1</td>
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<td>WP1</td>
<td>Water Point</td>
<td>Korinto</td>
<td>Korinto 1</td>
<td>37</td>
<td>381596.0</td>
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<td>WP2</td>
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<td>Kidunda</td>
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<td>WP3</td>
<td>Water Point</td>
<td>Dispensary</td>
<td>Betel A</td>
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<td>WP5</td>
<td>Water Point</td>
<td>Kidunda</td>
<td>Hekadia A</td>
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<td>Hekadia B</td>
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<td>WP7</td>
<td>Water Point and Break Pressure Tank</td>
<td>Kidunda</td>
<td>Kwang’onji</td>
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<td>WP8</td>
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<td>WP9</td>
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<td>Dispensary</td>
<td>Kwa Kiago</td>
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<td>Nkunza</td>
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<td>Demo Toilet</td>
<td>Tegemeo Office</td>
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<td>37</td>
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**Table 0-2 PHAST Member List**

<table>
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<tr>
<th>No.</th>
<th>Jina</th>
<th>Jinia</th>
<th>Mahali Unapotoka</th>
<th>Cheo</th>
<th>Sahihi</th>
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<tr>
<td>01</td>
<td>SAHANGWELE CHEKERE</td>
<td>ME</td>
<td>MURU</td>
<td>MURU</td>
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<tr>
<td>02</td>
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<tr>
<td>03</td>
<td>ESTER ARAVNI</td>
<td>KE</td>
<td>MURU</td>
<td>MURU</td>
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<tr>
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<td>KE</td>
<td>MURU</td>
<td>MURU</td>
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<td>06</td>
<td>DANIRI MARSHI</td>
<td>ME</td>
<td>MURU</td>
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<td>10</td>
<td>ALASKI DAVID</td>
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Jina na Sahihi ya Mregebishaji

(DIU F DONVICO)
## Table 0-3

### Questionnaire Results for Tegemeo Women's Group - Mtambwe Branch - Consultation

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### Questionnaire Key

**Time:** Time water is allocated to that WP

**HH #:** Number of people living in your household

**Bucket:** Number of buckets per day used in household

**Pay:** Do you pay your monthly WP water fee

**Treat:** Do you treat your drinking water

**Use:** What are the other uses of water

**Line:** Do you have a laundry line

**Soap:** Do you use soap when washing hands

**Tippi Tap:** Do you have a hand washing station near toilet

**Toilet:** Do you have a toilet

**Toilet type:** What type of toilet

**Condition:** In what condition is the toilet

**Challenge:** What are the challenges you still face at household level

**Budget:** What amount of money would be set aside to improve toilet

**Appendix Page 4**
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<th>People in HH</th>
<th>No. of exempted Members</th>
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* Mzirembe A had not water supply Jan to March
** Mzirembe B New scheme no data
Appendix

References
URT, 2012 Census

TegemeoWomen’s Group, Water and Sanitation Project in Mweteni Village: Annual follow-up Report for Heikeyu Scheme Phase 2, December 2014 Women for Water Partnership

Project Form, Aqua 4 All of the Heikeyu Water Supply Phase II

Women for Water Partnership, Project Summary No. MO/AF/TZ/2013-001