

An Assessment for Sustainable Spare parts supply and Maintenance Arrangements (Supply Chain) for Rural Community Water Supply Schemes in Amhara Region COWASH Zones and Woredas

2nd draft

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1. Introduction

1.1 Back Ground

The purpose of this document is to provide input for the development of the supply of spare part system and maintenance arrangement of water supply schemes in rural community of Amhara Region.

The availability of spare parts is a recurring problem for hand pump fitted schemes and developed springs in the region as the increase of Hand Dug wells (HDWs) and Developed Springs (SPDs) is progressing from year to year in the rural areas of the region, in order to achieve the national universal access plan (UAP II) for water supply that is 100% access within the radices of 1.5 Km by 2015 in rural community. With the progressing of construction of new water points side by side as the UAP the non-functionality of schemes in Amhara region is expected to be reduced from the current 18% to 10% by 2015. To achieve these targets, the need to strengthen a supply chain management of spare parts and maintenance arrangement is well recognized in the region.

As in any chain, shortage on any part of the supply chain system can induce the increase of the non functionality of water points. For Hand pump fitted water points at the village or user group level, training of local caretaker/Pump attendants/Mechanics and backup support for major repairs is Key sustainability requirements. Communities which are difficult to reach or have poor access to spares and maintenance need special consideration. Communities also need to budget for ongoing/ preventive maintenance and keep a reserve of funds for corrective maintenance. A reliable delivery system for spare parts and price stability are crucial. To achieve this, the product must meet the aspirations of the customer in terms of availability, quality in an appropriate time. Hence the main focus of this study is to assess what is on the ground regarding supply of spare parts and maintenance arrangements then is to propose how to arrange, strengthen and qualify the availability of the spare parts and the maintenance of water schemes in rural Amhara in order to sustain their service.

1.2 Objective:

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To assess, identify the gap and the current condition of the supply system of spare parts and maintenance arrangements of rural water points (Hand Dug wells, Hand Pump fitted deep and shallow well Water points and Protected Springs in six zones of Amhara Region, CMP woredas within these zones. Then the assessment is to propose the supply system of spare parts and maintenance arrangement in Amhara Region.

1.3 Significance of the study:

The assessment is very important for organizations who are working in the rural WaSH sector to understand the current spare part supply system and maintenance gap on the ground in Rural Amhara Region so that to induce guide line and design a system for Operation and Maintenance (O&M).

1.4 Methodology:

➤ The study site & population

The assessment has been conducted purposively in six COWASH, Amhara Zones and within these zones in ten former RWSEP, the present COWASH woredas and in six none RWSEP COWASH woredas that is *in six zone water resources development departments and sixteen woredas of these zones, thirty two WASHCOs, thirty two Pump attendants and sixteen private suppliers.*

➤ Techniques and tools:

The assessment is based on primary data as its principal source of facts and ideas. Descriptive, qualitative research method is used to investigate and describe the existing spare part supply system and maintenance arrangement of rural water supply schemes and gaps. This method is selected because of its suitability to reflect the current capacity gaps for rural community water point spare parts supply and maintenance arrangements. For the purpose of the assessment structured open ended Questioner for primary data source has been used that is data has been collected by using pre prepared data collecting format through the concerned Zonal advisors for each zone and woredas in these zones. Literatures have been also reviewed to get secondary information in order to qualify the assessment.

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1.5 The Scope of the Study:

The current project COWASH-CMP in Amhara region is practiced in seven Zones and in 35 woredas of within these zones financed by the government of Ethiopia (GOE), Finland (GOF) and UNICEF. To manage the assessment in these all woredas is wide in terms of time, personnel and other resources limitation. Hence the assessment has been conducted purposely in six COWASH zones and in 16 CMP woredas of these zones financed by GOE and GOF.

1.6. Limitation of the Assessment:

The data collection had taken unexpected lengthy time. In some woredas and zones even the questionnaire was not treated as intended and from the six zone Water Resource Departments two (South Gondar & North Wollo) didn't respond at all.

2. Literature Review:

Here under is literature review of Spare part supply systems and maintenance Arrangements of different organizations. **(References listed in Annex 1)**

2.1 Experience of Rural Water Supply & Environmental protection Program (RWSEP), Amhara Region.

The Rural Water Supply and Environmental Program in Amhara Region (RWSEP) was a joint regional rural development program of government of Ethiopia and Finland. The program which was launched in 1994 in four phases. Phase I (1994-1998) of the program focused on capacity Building at regional level, while phase II (1998-2002) shifted the focus to zone and woreda level, Phase III and IV of the program had envisioned continuing the decentralization trend.

The Rural Water schemes constructed with in the support of RWSEP are Hand dug Wells with hand pumps and protected and developed springs. With support of RWSEP 6,524 Water points have been constructed and total beneficiary community members are 1,546,940.

RWSEP had been studied various options for spare parts procurement and distribution in its program woredas. The drinking water supply policy of Federal Democratic Republic of Ethiopia (FDRE) requires that rural tariff settings are based on the objective of covering operation and

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maintenance costs. User communities in rural areas shall take the responsibility to fully cover the operation and maintenance (O&M) costs.

The options proposed at the time were:

1. **Supply Chain wholly managed by the private sector.** This Option was considered the best and sustainable long term solution.
2. **Supply chain managed by the Regional water supply Equipment Maintenance Enterprise** at the top and where the private sector participator's consignment arrangements.
3. **Supply Chain Managed by the Central Workshop Service.** In this option it was recommended that the central workshop service in Bahir-Dar be upgraded to a regional water supply equipment Enterprise and be responsible for managing the spare part supply through revolving fund arrangement.
4. **Government (Woreda) spare parts supply chain:** this is an option that basically replicates the government supply chain for veterinary medicines at worda level.

After lengthy consultations with concerned regional and federal government bodies, an arrangement to option 4 was approved.

Implementation of option 4 started in 2004 when RWSEP provided different slow and fast wearing spare parts to the intervention woredas. The quantity of spare parts was determined on the basis of the average age of water points and the total number of water points in the woreda.

The initial stock of spare parts was purchased by RWSEP through competitive bidding process and distributed to the program woredas. The woreda water resources development was made custodian of the spare parts providing the storage facility. Woreda Finance and Economic Development opened a special Bank Account to deposit the sales, which will be accountable to replenish the initial fund made when the spare parts depleted, thereby setting a revolving fund in motion. RWSEP has prepared and distributed spare parts storage, selling and accounting procedures for the revolving fund. This revolving mechanism started in 18 woredas (Guangua, Anksha, Bahirdar-Zurea, Dega-Damot, Quarit, Bibugn, Yilmana-Denssa, Hullet-Eju Ennessie Sar Sarmider, Enarge Enawuga, Bichena Shebel Berenta a Dejen, Dera, Fogera, Farta, Estie and Gncha Siso Ennessie) of Amhara in 2003/04, which is currently operational only in few woredas of these. The initial optimism that it will be taken up and adopted as regular government system for spare part distribution to woredas as is true in the case of veterinary medicines didn't materialize anywhere. RWSEP however designed and introduced the revolving fund approach fully aware that it can only serve as temporary solution and that it cannot be sustainable without being mainstreamed in the government system. RWSEP also recognizes that

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promoting the private sector is the most sustainable and long term solution to spare part access problems.

RWSEP had developed Guide line submitted to all actors in which the procedures are detailed out. In this guide line the following bodies are identified as main stakeholders responsible for rural water supply schemes in the above mentioned intervention woredas.

- The water Resources Development Bureau
- Zonal water resources development Office
- Woreda Water Resources development Office
- User communities and,
- The Private Sector

The Guide line signifies that the key for sustainability for Rural Water Resource System (RWS) is to perform Preventive maintenance, as systematized and periodic maintenance procedure applied to the components of a water supply system in order to minimize breakdowns, ensure their efficient working and to prolong their service time.

In the case of Hand Pumps, preventive maintenance involves a regular check up at fixed time interval and changing of spare parts before fully worn out. Corrective maintenance on other hand takes place to repair or replace system components procedure applied to the components after break downs of water supply system in order to minimize break downs has occurred. It is not a planned procedure but rather a response to an operational failure.

The Preventive maintenance starting point is the community logbook which the WASHCOs has to check from time to time decide when and which spare parts are to be replaced and also whether they are available in the community store. If spare parts are not available, they should be acquired from the woreda spare part selling center (Woreda Water Office) or other outlets.

Once the required spare parts are secured, the WASHCOs ensure that the preventive maintenance is carried out by the pump attendant or if he/she is not available or an able to carry out the preventive maintenance, they seek external support from pump attendant in a nearby kebele or a trained artisan at woreda level.

If neither of the above is available, the WASHCO shall report to the woreda Water Resources Development Office and the Office shall organize the preventive maintenance. After the maintenance has been conducted the data and the spare parts replaced shall recorded in the community logbook.

When the water supply scheme becomes none functional corrective maintenance shall be conducted. If the scheme is not maintained by pump attendant the WASHCO Shall reports the situation to the Woreda water resources development office. The Office shall arrange the corrective

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maintenance through artisans or pump attendants in the woreda water office. The corrective maintenance undertaken shall also be recorded in the community logbook.

2.2 **Experience of Spare part supply service and Maintenance Arrangement in SNNPR:**

The SNNRP Water Resource Development Bureau (WRDB) and JICA are jointly implementing a water and sanitation capacity, building program (WAS-CAP). One of the project components is the establishment of spare part supply chain. The WRDB and WAS-CAP have jointly planned to test four models for spare part supply in the Region.

Model 1: Spare Part Shop Operated by Zonal Water Resources Development Offices ZWRDOs).

Under this Model, WAS-CAP, In collaboration with WRDB and other Donors, will provide the initial stock or seed spare parts to selected WWRDO/ZWRDO and establish a revolving fund for sustainable restocking of spare parts. WWRDO/ ZWRDO will keep the sales of spare parts in a bank account exclusively used for this project and purchase new spare parts using the sales.

The staff required to run the shop are a spare part manager, manager/ treasurer and store keeper and store keep.

Based on agreement reached to test the model in silti zone where there are about 100 Hand Pump fitted wells has been practiced. The initial stock of spare parts for Afridev and Indian mark II Hand Pumps is estimate on the basis of certain parameters derived from the survey. The seed spare parts sufficient to meet demand in the pilot project area for six months are thus estimated to cost 40,000- 50,000 Birr.

As operation a spare part shop on revolving fund arrangement is a new experience, training is vital for success. Accordingly WAS-Cap and WRDB will train staff of Silti ZWRDO. In the following areas:

- Storing and selling of spare parts
- Recorded Keeping
- Reporting
- Purchasing of new stock
- Pricing

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Model 2: Spare part shop operated by town water supply, agriculture cooperatives, private companies and similar organizations.

JICA has selected one private supplier in Arba Minch prone to be competent for this task, and hoped to sign contract with him and start the application. Sodo Town water supply was the other organization intended with to work under this model.

Model 3: This Model envisions working with Hand Pump Users' cooperatives to establish spare part shops.

Cooperative NGOs are approached in Dawro zone, and WASHCOs in Yirga chefe and Gedeo are organized for this purpose.

Model 4: In this Model Hand Pump repairers or local artisans will be organized to run the shop

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While the entire 4 models exhibit certain distinct features, all they have the following common aspects

- Seed spare part will be provided by WRDB, WAS-Cap, Donors
- Training and technical assistance will be provided by WRDB and WAS-CAP
- The shops sell spare Parts, Keep sale, and restock spare part sustainably.

Model 1 and Model 2 have similarity in that existing organizations will operate the spare part shops, i.e. government organizations in the case of model1 and private origination in the case of model 2.

Model 3 and model 4, on the other hand, rely on establishment of new organization to operate the shops

2.3. Experience of spare part distribution and Maintenance Arrangement of water supply Schemes in Tigry Region:

As mentioned at experience sharing hosted in Amhara Region, in Tigry Region the spare part supply system is formally structured from region to Woreda level by Proclamation; it is institutionalized as one of the government sectors. As it has been mentioned from Participants of

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Tigry, in Experience Sharing Visit and Meeting held in Bahir-Dar, Amhara Water Resources Development Bureau Hall from June 19 – 20/2013, the Tigry regional government has already allotted revolving fund for this organization and the organization at region level procures and distribute the spare parts to the woredas. The woreda distributes the spare parts to WASHCOS based on demand with adjusted latest market price that is with marginal profit. The money collected on sale of spare parts is send back to the regional organization for another round procurement, stock and the process is continued. That is the fund is revolving.

In Tgriy region tariff has also been set for users of potable water in the rural community that is each user is paying monthly a minimum of 3 birr per month. This money is going to be used for operation and Maintenance (O&M) of community water points.

3. Current Spare part supply Practices in six CMP zones and CMP wordas with in these zones of Amhara.

3.1 North Gondar Zone:

In North Gondar zone there is no government system of Supply chain at zone level. Since there is no approved position in Zone Water Resources Department for spare parts supply to assign experts, there are no personnel who are responsible for spare part supply and maintenance arrangement.

There are six private spare parts supply shops in Gondar town that are selling spare parts on top of other construction materials for WASHCOs. These private suppliers are profit makers that didn't get any support such as technical advice and trainings from zone WASH organizations, (GOs and NGOs).

As one of zone personnel, to have sustainable supply of spare parts, experts responsible for O&MM should be assigned at zone level. These experts should motivate, orient & train private suppliers of spare parts for Water schemes. Developing mechanism of revolving fund of spare parts is also need to be considered.

There should be periodical refreshment trainings by woredas for pump attendants and care takers of water points in the zone.

3.1.1. Chilega Woreda:

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In Chilga woreda there is no any kind of private spare parts supplier for water points, no revolving fund in woreda for rural community water supply schemes, and there are no NGOs working in relation to spare part supply.

There are no trained pump attendants or care takers/mechanics for each water point in the woreda except water points constructed by CMP approach since 2004 EFY.

The WASHCOs of pre CMP doesn't get any support regarding corrective and preventive maintenance of Water points. They have no savings for Operation and Maintenance (O&M) of their water points.

However since 2004 EFY Community managed projects (CMP) have been started in the woreda, supported by governments of Finland and Ethiopia, care taker/pump attendants for new water points are trained and the users have savings for Operation and Maintenance at ACSI.

There are also woreda managed projects of water schemes supported by African Development Bank (ADB) and Government of Ethiopia (GOE) that have pump attendant in the zone.

There are no personnel in the woreda water office that are assigned for supply of spare parts and operation and maintenance.

Most frequently demanded (requested) spare parts by the users (WASHCOs) in the woreda are U-seal, Bush-Bearing and O-seal.

As the woreda personnel and WASHCOs, there should be supplier of spare parts of water points at least in the woreda capital town in order to use water points sustainably.

3.1.2 Dembiya woreda:

In Dembiya woreda spare parts for Hand dug wells had only supplied once that is in non regular manner from organizations (World Vision Ethiopia and ORDA), such as Foot Valves, O-ring, Useal are supplied in full set. These Spare parts are distributed to WASHCOs on demand bases. However there is no private or Government or NGO regular supplier in the woreda. Even if there is no supplier in the woreda spare parts like O-ring, Foot valve, Bush bearing, fulcrum pin, road hanger pin are some of spare parts that are highly and frequently demanded by the woreda's community. Hence WASHCOs are obliged to go to Gondar town to buy these highly demanded spare parts of water points

Some of the users of the water points have contributions per month birr 2 from each house hold to be used for payment of guards and for operation and maintenance of water points. It is deposited in saving account at ACSI. But since there are no suppliers of spare parts of water points nearby in the woredas capital town, the WASHCOs are in problem.

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Even if there are two trained pump attendants for each water point in the woreda refreshment trainings are not given to these pump attendants. Sometimes WASHCOs are requesting technical support from Woreda water resources development for maintenance of their water points. However there are personnel that work for maintenance of water schemes in the woreda Water Resource Development Office.

In order to improve the supply of spare parts of water points the Woreda Water office is technically supporting WASHCOs to have regular monthly contribution in their saving accounts at Amhara Credit and Saving Institute (ACSI).

In Dembea Woreda as Mangie kebele WASHCOs of water points Senksar Number 1 and Number 2, they are getting maintenance support for their water points from the woreda Water office. They collect spare parts from the woreda water office and sometimes from Gondar town private suppliers. The spare parts that are frequently needed for the maintenance of water points in the village are O-Ring, U-Seal, Foot valve, Bush-bearing, Fulcrum pin and rod-hanger pin. However getting in time in enough amount and quality of spare parts is highly problematic. Some water points are stopping giving service because of lack of timely preventive & corrective maintenance.

As WASHCOs of Senksar number 1 and 2 water points, to use schemes sustainably there shall be enough spare part in type and number. Also training for pump attendants and care takers (Mechanics) should be given in regular manner.

As pump attendants /Care takers/ of water points Senksar number 1 and 2, they have agreement to do preventive maintenance and corrective maintenance of water points. However to do maintenances as intended there should be supply of spare parts in time. When the problem is beyond pump Attendants capacity WASHCOs are supported by pump attendants at the woreda Water office. There are no Private suppliers of spare parts for water points in the woreda. As WASHCOs, they are getting support from the woreda water office such as some spare parts, technical advice and corrective maintenance service.

3.1.3 Alefa Woreda:

In Alefa woreda there is no governmental supply system of spare parts of water points. As the woreda water office head, and CMP supervisor, there is only a person in the woreda water office who is especially responsible for supply of spare parts for rural water schemes.

There are spare part suppliers in the zone capital (Gondar town) and one additional private supplier in the woreda capital town. This private supplier

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supplies O- ring, U-seal, Foot valves, Rod hanger pin, fulcrum pin, Bush Bearing, Rod centralizer, puck centralize, puck rode. However, since the spare parts demanded by the community (WASHCOs) are not limited to the above mentioned the users demand is not satisfied. The spare parts O-ring, U-seal, Plunger, Bush bearing in and out, 17x19 dado with bolt & nut, foot valve Bobbin, cement solvent, PVC mastish (gum) are the spare parts frequently requested (demanded) by the user community.

There are no any NGOs who are working on supply of spare parts in the woreda. There are no care takers/ pump attendants for each water point in the woreda.

However new CMP water points (since 2004 EFY) have Pump attendants/care takers supporting them in giving preventive and corrective maintenance. Corrective maintenances are done by the woreda pump attendants. WASHCOs get spare parts from private suppliers at the woreda town Shahura. The spare parts that are frequently needed for maintenance of water points are O-ring, U-seal, Foot-Valve, Plunger, Rod hanger pine, Bush bearing, PVC -Mastish, pump cylinder with suction pipe. However these frequently demanded spare parts are not found in enough amounts per the demand of the WASHCOs in the private suppliers shop.

Before the start of construction of new water point the user community of the water points is contributing 3% of the total cost of the water point construction for operation and maintenance in their saving account at ACSI.

As WASHCOs of Chench-Ber/Gama ber in Alefa woreda the demand of spare parts for water points can be full filled by establishing private suppliers in enough number in the woreda. To make the water points' sustainably functional trained Care takers/pump attendants should be there in each water point and there should be person in the woreda water office who is responsible in supporting such trainings for new Pump attendants/care takers and refresh trainings for old care takers/pump attendants and the establishment of private suppliers in the woreda.

As Ferede Mengestu, Gama Water point care taker/pump attendant, he has an agreement to maintain the water point and to report and get support from Woreda Water Office when it is beyond his capacity.

It is from the private suppliers spare parts are supplied for the water points while needed. Strengthen the private suppliers both in number and efficiency is the means for sustainable supply of spare parts.

As the private supplier, Mulugata Admassu, they are collecting spare parts from Bahir-Dar and Gondar and then sell to WASHCOs based on demand. Most of the spare parts supplied by the private suppliers are U-Seal, O-rings, Foot valves, plunger, and Cement solvent.

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The woreda personnel support in advising about the spare parts quality and quantity.

To support the private suppliers and training of Pump Attendants/Care takers that are equivalent to the water points in the woreda is very important for sustainable supply of spare parts for water points.

3.2 Awi zone:

In Awi zone there is no governmental structured system of O&MM at zone level. However there are 10 private suppliers of spare parts for Hand Dug well water points in Enjibara (Capital town of Awi) that are supplying as additional to selling of construction materials. Support of private suppliers in orienting, Motivating and training is very important to have sustainable supply of spare parts of Water points.

3.2.1 Guagussa Shikudad Woreda:

In Guagussa Shikudad there are no private suppliers in Tilili town (capital town of the woreda). Previously the demand for spare parts in woreda was also minimal that is the water points in the woreda were small in number. But from time to time the water points have increased in number and the need for supply of spare parts is relatively increasing.

There are no personnel responsible for supply of spare parts in the woreda Water Resources Development Office.

The spare parts that are frequently demanded by WASHCOS are U-seal, plunger, Foot valve, O-ring, road centralizer, PVC and Bush-Bearing. There is no Organization /NGO, Private, GO/ that supplies spare parts for schemes in the woreda.

In the woreda each water point has one or two Caretaker/Pump Attendant who is doing preventive corrective maintenance.

As WASHCOs, there should be the private suppliers in Tilili town who can be supported in training to increase their efficiency by the Woreda Water Office. The care takers/pump attendants/ are doing simple maintenances in the woreda. The WASHCOs are getting the spare parts from private suppliers of Dangila, Bahir-Dar, Bure and Gimjabet towns. Mostly demanded spare parts for water points are U-seal. To get spare parts in time, WASHCOs should pre inform to the private suppliers. The users are regularly contributing reserve money (water fee) for operation & maintenance of their water points deposited at ACSI.

The private suppliers should get support from the Woreda Water Office such as trainings in order to have spare parts regularly.

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AS the care taker/pump attendant, Tamir Aynalem, in kabele Agina, he is regularly supervising the water point. He is supporting the users in making simple maintenances and by identifying the spare parts needed for maintenance and informing the WASHCOs.

The care Takers are serving the community by doing regular supervision of functionality of water points and doing preventive maintenances.

The WASHCOs and Care takers/ pump attendants are getting supports from woreda Water Resource Development Office such as trainings and support in maintenances of water points.

3.2.2 Guangua Woreda:

In the woreda there are 3 private shops (suppliers) for rural water schemes (HDW, SPD, shallow wells fitted with hand pumps, rope pumps). These suppliers are supplying spare parts of water points on top of other jobs, that is the profit they make from sale of spare parts of water points is not enough for their living. WASHCOs are buying the spare parts from these private suppliers and from the woreda water office when there is a need. The woreda has a revolving fund established by former RWSEP for spare parts of water schemes (HDW, SPD shallow wells fitted with hand pumps) in the woreda finance office. The woreda Finance Office procure spare parts and the water office sales these spare parts to WASHCOs and send the collected money back to Finance office for another round procurement. There are personnel working for the supply of spare parts in the woreda's water office. The WASHCOs are getting support from these personnel how to operate, maintain and manage their water points to use sustainably. These personnel are also supporting private suppliers in advising to supply spare parts of water points in continuous way without interrupting. The spare parts afforded by private suppliers are o-ring, u-seal, attachment fluid, pump head fixsesion which are highly demanded by the users (WASHCOs). There are no NGOs working on supply of spare parts.

In each water point, there are pump attendants/ care takers to do preventive and corrective maintenances. If the maintenance is above their capacity they are reporting to woreda water office for support. Since there is no continues refresh training that is accessible for all pump attendants/care takers their efficiency is not updated from time to time.

As Amed Guba's water point WASHCOs (users) in Sigadi Kebelle, they are buying spare parts from private suppliers in enough amount and doing preventive maintenance by themselves

When there is a need for further support they are reporting to the woreda water office. Frequently demanded spare parts are U-seal, Bush bearing,

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Foot valve. They are depositing the users' contribution for operation & maintenance (O&M) in their saving account at ACSI. They have suggested that the private suppliers shall be more than three and there should be government revolving fund system as option at woreda water office.

As one of the care takers in Segadie kebele he is performing maintenance of the water points per the request of the users. The spare parts for maintenance are sold from Guangua woreda water office. Pump attendants/care takers get the refreshment trainings from the woreda water office.

As private supplier, Negat Construction Materials Enterprise in Chagni town, They are collecting the spare parts of water points in Addis Abeba and selling to the users. Most of the spare parts demanded by WASHCOs are U-seal, PVC Gum, Bush bearing, and Foot valve and Rod and PVC centralizer. The woreda water office is supporting them by orienting about the use of spare parts and informing the WASHCOs that the spare parts are found in private shops. Strengthening of the private suppliers in supplying of spare parts is very important for long last service of the water schemes.

In Guangua woreda there are spare parts in the woredas water office's store which has been bought by the revolving fund supplied by the former Rural Water Supply and Environmental Program (RWSEP). The types of spare parts are U-seal, O-ring, Fulcrum pin, Road hanger pin, Bush bearing, Rod, centralizer, PVC centralizer, and PVC gum. The revolving money for spare parts of schemes is managed by the woreda finance office. All demanded spare parts by the community are Procured by the woreda finance office and stored in the woredas water office. The woreda water office sells these spare parts to the users when there is shortage of spare parts from the private suppliers to fill the gap. The woreda does not allocate budget for the spare parts except the revolving fund allocated by former RWSEP.

3.2.3 Ankesha Guagussa woreda:

In Ankesha Guagussa, there is revolving fund which has been allocated by the former RWSEP for supply of spare parts of water points in the woreda. The Procurement of the spare parts for water points is done by the woreda Finance & Economic Development office and the distribution of spare parts to WASHCOs through selling on updated current market price is done by the woreda water office. The money is submitted to finance office for another round procurement. But even if there are private suppliers in the woreda, Gimjabet town, the supply is not regular. Sometimes they are not. Hence it is not in a continuous manner.

In the woreda water office there is no person that is specifically responsible for operation and maintenance (O&M) Previously there was a post of pump

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attendant and tow personnel but does not this exist anymore. The spare parts that are frequently demand are U-seal, O-ring, PVC, Bush-bearing, foot valve and plunger. Except COWASH there are no NGOs in the woreda that are working on water supply. Almost in each water point in the woreda there are pump attendants/care takers.

As the Ankesha Guagussa woreda CMP supervisor, it is important to train organize artisans and other private suppliers for the supply of spare parts.

As WASHCOs of Shumata Abesta-01 village, water point in Kebelle Sostu Jabella, preventive and corrective maintenance is made by pump attendants and users. Corrective maintenance is done by woreda experts and sometimes by artisans who are in the village. They are getting spare parts of water points, from woreda water office and in rare cases from private suppliers. As WASHCOS of Shumata Ambesta-01 the spare parts that are frequently needed are U-seal, O-Ring, Bush bearing, Bobbin and PVC.

Getting spare parts in enough amounts is difficult because the water office is not open in holy days. In other hand holy days are very important to WASHCOs to perform such kinds of communal issues.

There is shortage of spare parts in water office such as Foot Valve, and Plunger. Each user is contributing for Operation & Maintenance of water points which is deposited in the saving account at ACSI where there is a need; they are contributing additional money for major maintenance.

As WASHCOs it is good if private suppliers are participating in the supply of spare parts of water points. In addition it is good if the woreda water office has enough amounts of spare parts of water schemes. WASHCOs are getting spare parts by buying from Woreda water office.

Care takers are getting support from woreda water office interms of training and advice on the ground and in identification of the problem of the water point.

As pump Attendants/Care takers, it is better if the supply of spare parts is handled by private suppliers because the WASHCOs can get in any day & time in enough amounts as their demand. Also it is good if the WASHCOs will have spare parts frequently needed in their store as reserve. In addition to this it is important if the woreda water office has spare parts of water schemes in order to fill the gap when there is not from the private suppliers.

As Getahun Gebeyehu member of Ankesha Guagusa woreda Water Office, at the time of former RWSEP there was supply of spare parts using the revolving fund but it does not functional at this time.

When there was revolving fund money the woreda Finance Office was buying the spare parts of water points with technical support of woreda water office then it was distributed by the water office to users based on demand. The collected money was sent to woreda finance office back for another round

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procurement. The woreda didn't allocate yearly budget for spare parts because as the water policy of Ethiopia, operation and maintenance should be handled by the users.

As Getahun, Primarily the private suppliers should be strengthened to facilitate sustainable of spare parts supply and maintenance. In addition to this the revolving fund system should be revitalized, strengthened continue to fill the gap when there is no spare parts from private suppliers. The source of the revolving fund can be the woreda (Ethiopian Government fund)

3.3 East Gojjam zone:

There is no governmental structure O&M system in East Gojjam zone for supply of spare parts for hand dug wells fitted with hand pump and developed springs. In the zone water resources development department there are electricians and mechanical personnel who perform maintenance of water points based on demands of woredas. There are about three private shops in Debre-Markoss town that supply spare parts for water schemes based on demand of WASHCOs of Water points. As zone water resources development experts, there should be revolving fund for spare parts supply in each woreda for water points.

3.3.1 Hulet-Eju Enesie woreda:

In Hulet Eju woreda, (Former RWSEP woreda) there is government revolving fund for spare parts supply for water schemes. Spare parts especially for Hand dug wells are supplied by government on revolving basis. Most demanded spare parts are U-seal, Rod centralizer and PVC. There are no Personnel especially for supply of spare parts because there is no such approved occupation in the woreda water office.

There are three private suppliers in the woreda (Mota town). These private suppliers of spare parts are getting support from the woreda water office that is training has given to them. Information about spare parts of water points kind, quality and amount of spare parts was provided to them. These private suppliers mostly supply spare parts for protected springs like union and elbow. WASHCOs are getting spare parts for hand dug wells from woreda water office.

In the woreda for each water point there are two Pump attendants/care takers.

In order to maintain the Water schemes sustainable the revolving fund system shall strengthen that is the woreda finance office with the help of the

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woreda water office will buy the spare parts and sell them to WASHCOs based on the current market price.

In Hullet Eju the Pump Attendants/Care Takers are getting support from woreda water office about preventive and corrective maintenance. It is the Pump Attendant/Care takers and the community that are doing preventive maintenance. The corrective maintenance is done by woreda water office experts. The WASHCOs are buying the spare parts from the woreda water office. There are not spare parts for water schemes in the private shop spatially for hand dug wells.

The community is regularly contributing money for operation and maintenance of their water points that is 10 Birr /person/year deposited in their saving account at ACSI. The care takers/pump attendants and the users should always keep clean the water point & surrounding.

As one of the user of the water point, in Hullet Eju woreda, periodical refreshment training for care takers/pump attendants is very important to keep the water point sustainable. Training of care takers/pump attendants for new water points is yearly carried out per the number of new water points of each year but there is no refreshment training for old care takers/pump attendants.

3.3.2 Enarj-Enawga woreda:

As Enarj- Enawga woreda (former RWSEP woreda) there is government revolving fund for spare parts of water points in the woreda, Specially for Hand dug well. Also there are private suppliers in Debre Work town for developed springs. In the woreda frequently needed spare parts are Rod Centralizer, U-seal, Bush Bearing, O-ring and bobbin.

In the woreda water office there are two positions for pump attendants. These pump attendants are performing maintenances which are above the community/users and pump attendants. There are five (5) private spare part suppliers for developed springs (SPD) in the woreda. The woreda water office had arranged training for private suppliers in collaboration with East Gojjam zone water resource development department.

Spare parts that are frequently requested by the WASHCOs and supplied by private suppliers in Enarj- Enawga are: faucets, Gate valve; Union, Socket and Elbow. The private suppliers provide spare parts for Developed springs (SPDs) in required amount. The most frequently demanded spare parts by WASHCOs for Hand Dug wells are U-seal, Bush bearing and foot valve and for SPDs faucets & Socket.

Each water point in the woreda has its own pump Attendants/Care Takers. The revolving fund is not well functioning as it was intended at its start.

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Hence it is good to follow up and strengthen the system of revolving fund. Also it is good to design the way that private suppliers can supply spare parts to the WASHCOs.

As Gubra No-1 water point WASHCO's in kebele Deji-Agamina, their water point is getting preventive & corrective maintenance from WASHCOs, care takers/pump attendants, and from the woreda water office personnel. Corrective maintenance is done by the woreda experts and pump attendants. As WASHCOs they are getting spare parts for water points from the water office. The most frequently needed spare parts are U-seal, O-ring, Bush bearing and rod centralizer. The community/users are contributing ten birr (10 birr)/HH/annum.

The water point is getting care by the user community members that is there is no hired guard. The care takers are serving the community in which they are members. The Care Taker/Pump Attendant is doing simple maintenance for water points. The Care Taker/Pump Attendant get's training, advice and Hand tools for maintenance of water points from Woreda Water Office. As Pump Attendant, Mossie Getu sustainable supply of spare parts and refreshment trainings for artisans is vital for continuous functionality of water points.

As the private, supplier of spare parts of water points, Belete woretaw, In Enarje-Enawoga woreda he is collecting the spare parts from Addis Abeba whole Sellers in order to sell for WASHCOs. Most frequently demanded spare parts are faucets, gate valve, Glue/ Gum, pin and plunger pin. The Woreda Water Office supports the private suppliers by disseminating information and providing advice service. Also the Woreda water office had arranged training for private suppliers.

As Belete Woretaw, to improve the supply chain system of spare parts the private suppliers should be strengthened to supply quality spare parts in enough amounts per the demand of community/users. Also the woreda water office shall afford most frequently demanded spare parts when they are not in the private shops. The production of spare parts in the country/Ethiopia should be arranged.

Enarj-Enawga Woreda is one of the former RWSEP woredas which has been supported By the Governments of Finland and Ethiopia & has revolving fund for spare parts of Water Points managed by the Woreda Finance office & Water Office. With This revolving fund, Finance Office is procuring spare parts of water points based on the demand of the user community. The Water Office distributes these spare parts to the user rural community through selling. But the selling price is not adjusted with the current market price. Just based on the previous buying price in the time of spare parts are bought and stored. This money is sent back to Woreda Finance Office. The

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Woreda Finance office is again buying spare parts with this money to be distributed to users. The price of spare parts has been increased from time to time hence the money is not sufficient as the past to have enough amounts of spare parts. To continue with this kind of buying and distributing, there will be shortage of money. The woreda does not allocate yearly budget for spare parts of Water Points or increase/ adjust the selling price.

3.3.3 Bibugn woreda:

In Bibugn woreda (former RWSEP woreda) there is a revolving fund of spare Parts for Water Points which is managed by the wordea Finance and Water Offices. It is the Finance Office that buys spare parts to be sold to WASHCOs by the Water Office then the water office sends back the money to Finance Office for another round procurement of spare parts. Also there are private suppliers which are supplying spare parts especially for protected springs (SPDs) like faucets, pipe, and plunjer union and gate valves. These Private suppliers are trained and oriented about supply of spare parts by East-Gojam zone Water Resource development Department in collaboration with Woreda water Office. Also there is exchange and updating of information about the spare parts quality and demand of the user community. In Bibugn there are two Pump attendants for each Hand Dug Well and one Care taker for each Developed/ protected springs.

Most of the spare parts frequently requested by WASHCOs are O-ring, Bobin, U-seal Plunjer, faucet, Pipe Plug and Gate-Valve.

In order to make the supply of spare parts continuous and sustainable the private sector has to be strengthened and the woreda should have system of supplying spare parts when there is no from private suppliers to fill the gap. As WASHCOs of Adama Handag Well (HDW) in Kebele Gena Memcha, It Is the WASHCOs and the Pump Attendants that make preventive corrective maintenance. Also Pump Attendants at the Woreda Water Office and Artisans in the kebele are doing the corrective maintenance. The spare parts for maintenance are distributed from Woreda Water Office to WASHCOs on sale. For these kinds of maintenances the spare parts are supplied from woreda Water Office and Private shop keepers. The WASHCOs are getting spare parts per their demand from woreda Water office. The WASHCOS get spare parts in time without delaying. The user community have contributed and saved money for Operation and Maintenance money at ACSI. They are using this money in addition to operation costs, for buying spare parts for maintenance of the water points.

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Pump attendant Tilahun Hunegnaw, in Kebele Gena- Mecha, is one of the beneficiaries from the water point in the village. He is doing the preventive maintenance voluntarily.

As the private supplier Ato Abrham in Bibugn woreda, Digo Tsion town, he is collecting the spare parts from the whole sellers in Addis Abeba. He is supplying most frequently faucet, Pipe and Gate valves per demand of users. As Tilahun, training about the supply chain has been given to them by Zone Water Resources Development Department and Woreda Water Office. Also the Woreda Water Office is providing latest information about the demand of spare parts for the user community. But as him there is no yet enough demand, the transaction is very slow hence none attractive profit in a given time span for private suppliers.

As one of Woreda Water Office personnel, Ambelu Meselu, there are spare parts for water points in the Woreda Water Office like O-ring, U-seal, and Bush Baring. There is Revolving fund in finance Office. The finance office procures the spare parts needed and the Water Office distributes to users per their demanded on selling and deposit the collected money back to Finance Office for another round procurement of spare parts. The woreda does not allocate budget for spare parts. The Revolving money is from the former RWSEP. To improve the supply of spare parts it is good to strengthen the private suppliers instead of supplying spare parts by the government.

The WASHCO of Margano Hand Dug Well in Digo Konta Kebele Which has been constructed in 2000 EFY is not doing there management role. Hence the water point has no fence, no Pump attendant, it has no drainage ditch. the woreda Water office supports the users in chlorinating the water point only not in preventive and corrective maintenance. The Pedestal head of the water point is loosened. There is no follow up from the committee who has been elected during the construction period in 2000 EFY. The user community of Margano Hand Dug Well (HDW) has contributed for the operation maintenance of the water point only once during the construction period deposited at ACSI then it has been stopped. They didn't suggest how to improve the management of Margano HDW.

3.4 West-Gojjam zone:

In West Gojjam zone even if there are electricians and mechanical personnel in the Water Resources Development Department, their performance regarding supply of spare parts is yet not properly started. There are no private suppliers of spare parts for water points in Funot-Selam town, the new capital city of West Gojjam Zone.

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3.4.1 Yilmana-Densa woreda

In Yilmana Densa Woreda there is revolving fund from former RWSEP for spare parts of water points which is managed by the woreda Finance and water offices. This fund is used to procure spare parts per the demand of the user community that is the woreda Finance Office procures the spare parts and the woreda Water Office distributes to the community per their request by selling. Water Office submits back the money to Finance office for another round procurement of spare parts. In the woreda water office there is no personnel specifically for supply of spare parts.

Also in the woreda there are two private suppliers (shop keepers) of spare parts of water points. These private suppliers are getting support from the woreda Water Office. The Office informs the private suppliers the kind, the amount and the quality of spare parts requested by user community making market relation between the WASHCOs and private suppliers. The private suppliers sometimes fail in full filling the demand of the WASHCOs that is they may not have the requested kind and amount of spare parts. Hence the WASHCOs submit their claims to Water office and the office sales spare parts per request that is the Water Office is serving in filling the gap.

In the woreda each water point has pump Attendants/Care takers that is if it is HDW there are two Pump Attendants per one water point, when it is SPD it will have one Care taker per SPD.

To improve supply system of the spare parts in the woreda: In the 1st hand the private suppliers should be strengthened, trained get reasonable profit that can attract them so that they can sustain in the market. Also the revolving fund for spare parts should be updated with the current market and strengthened in order to fill the gap between the private suppliers and the demand of WASHCOs that is until the private suppliers are able to full fill the demanded of community and sustain.

As Cheger water point WASHCO, in kebele Semarega the preventive and corrective maintenance is done by Water Office, Artisans and Pump Attendant of their water point. Sometimes they may not get spare parts per their request in better quality and enough amounts. Each user community member of water point are contributing annually birr 12.00/annum for operation and Maintenance deposited at ACSI.

As WASHCOs of Cheger water point it is good if they get most of the spare parts from Water office because private suppliers are not punctual.

As Pump Attendant Merigeta Tadesse, he has the agreement to serve the community voluntarily. If there is the need of spare parts to maintain the water point he is supporting the WASHCOs in identifying the actual spare part needed then WASHCOs can collect and the water point can be

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maintained in time. If the maintenance is beyond his capacity the WASHCOs will report to woreda Water Office then the corrective maintenance will be managed. As Merigeta Tadesse, WASHCOs are collecting spare parts from private shop keepers and Woreda Water Office. In order to get Quality spare parts in fair price it is good all spare parts are found in Woreda Water office rather than Private Suppliers.

As private spare part supplier, Yassin Gashu, he is collecting spare parts of water points from Addis Ababa whole sellers. Most of the spare parts frequently demanded by WASHCOs are U-seal, O-seal, Foot valve, Phoset, Get valve and different pipes and fittings. The woreda water office is supporting him in giving information about the need of WASHCOs in regard of spare parts that is creating market linkage between WASHCOs and him. As him in order to make the supply of spare parts continues and sustainable, there should be whole seller of spare parts in the Woreda.

3.4.1 Gonje Kollela Woeda:

In Gonje-Kollela woreda there is revolving fund for water schemes that has been collected from sells of spare parts from store of Woreda Water Resource Development Office deposited at ACSI controlled and managed by the woreda Water Resource Development Office. In the woreda there is no private supplier of spare parts for water points. This is because the transaction of spare parts in the woreda is very slow. The private suppliers are not attracted by its profit. The spare parts that are frequently demanded by WASHCOs are O-Ring, U-seal, Foot valve, Rod-Centralizer and faucet. In the woreda each water point has pump attendants/ care takers trained by woreda water office.

As the woreda Water Office, in order to improve the supply of spare parts in the woreda private suppliers should be motivated and trained about spare parts of water points. In the 2nd hand the revolving fund should be strengthened in budget so that they can afford enough per the demand of WASHCOs in time.

As WASHCOs of Lay-Keteb No3 in kebele Alalem, it is the Pump Attendant/Care taker who are doing the preventive maintenance of their water point. The artisans of water points in the kebele and pump attendants in the woreda water office are supporting them in maintenance of water points when it is beyond their capacity.

WASHCOs get most of the spare parts in water Office. They get some spare parts free like Fulcrum Pine, planger, Rod, and section pump and the others in reasonable amount of money. Frequently needed spare parts by WASHCOs for maintenance of water points are O-Ring, Valve-bobin, U-seal,

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Foot valve, Bush Bearing Rod Centralizer for Developed springs (SPDs) accessories. WASHCOs do not get spare parts per their demand because there are no private suppliers in the woreda. In each water point in the woreda the users are contributing money for maintenance of their water points per annum and others per month saved in ACSI.

As WASHCOs in order to improve the supply system of the woreda, Private sector suppliers should be aware and motivated.

As pump Attendant Mola Mersha, he is supporting the WASHCO by performing preventive maintenance per their demand. Some of the spare parts are available in Water Resource Development office and the rest which are not in Water Office are brought from Yilmana Denssa (Adeit Town.) Per shop keeper Mersha, he gets support from Woreda Water Office trainings regarding Maintenance of water points. To improve the supply of spare parts in the woreda the private sector suppliers should be trained and motivated.

The revolving fund of spare parts in the woreda was from the former RWSEP. Also there were spare parts like U-seal, O-Ring, Foot-valve, Rod Centralizer and accessories for SPDs supplied by RWSEP. The money used as revolving fund for water point spare parts is there in the woreda but it is not enough to full filling the demand of the users. The worda did not allocate yearly budget for spare parts of water points hence there is shortage of availability of spare parts of water points.

3.4.2 Bahir-Dar zurea woreda:

In Bahir-Dar Zurea there is the revolving fund allotted from former RWSEP for spare parts of water points.

There are private suppliers in Bahir-Dar town that can be not only for Bahir-Dar Zurea woreda but also for other woredas that are nearby.

There are no personnel who are working for the supply of spare parts in water office. The most frequently demanded spare parts by WASHCOs are O-Ring, U-Seal, Foot-Valve, Bush bearing and Fulcrum –Pin.

There are other organizations working for spare parts of the water points in the woreda like World Vision and ORDA.

Each water point in the woreda has Pump Attendants/care takers. These Pump Attendants/Care Takers are serving the community voluntarily by When it is beyond the capacity of Pump Attendants personnel in the woreda water office are doing the corrective maintenance. Each water point has savings in their saving account in ACSI contributed periodically from each water user for Operation & Maintenance (O&M)

3.5 South Gondar zone:

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In South Gondar zone there is no government supported spare part supply system at zone level.

3.5.1 Farta Woreda:

In Farta woreda there are some spare parts in woreda water office arranged by the former RWSEP that are still used for maintenance of water pointes.

In the woreda Water office there were two persons working for spare parts supply of water points. These persons are working on water supply like other workers in the office. There are no private suppliers in the woreda because the transaction of spare parts of water points is very slow so that they do not get the intended profit. Hence private shop keepers did not want to participate in supply of spare parts of water points.

Training for selected shop keepers' to transfer them in to private suppliers of water points has been given by the South Gondar zone Water Resources Development Department and by Farta woreda water office. As a result there were private suppliers that have started selling of spare parts of water points like U-seal, O-ring, and bush bring, rod centralizer & bobbins. Plunger, Foot valves, pump cylinder and section pipe.

Each water point in the woreda has Pump Attendants/Care takers but these pump Attendants/ care takers need refreshment trainings in every given period of time.

In order to strengthen the supply of spare parts in the woreda the continuous motivation of selected private shop keepers should be done.

There should be revolving fund of spare parts of water points in the woreda.

As WASHCOs of Atera water point in Kebele Girbe preventive maintenance is done by the pump attendants and the corrective maintenance is done by Woreda Water Office experts. They are getting spare parts for maintenance from Woreda Water Office. But in September 2004 EFY, they have got freely O-Ring from woreda Water office. Most frequently demanded spare parts of water points are U-Seal, O-ring, and Plunger and Fulcrum pin. These spare parts are found in woreda Water Office and are given to WASHCOs per their demand. They are contributing money annually for Operation and maintenance (O&M) deposited at ACSI.

As pump Attendant Nigussie Anegagre in Kebele Embieco while he was taking training he has an agreement with WASHCO to serve the community in preventive maintenance of water point in which he is the member. When he is informed as the water point needs maintenance he identifies the problem of the water point and informs back the WASHCOs to bring the necessary spare parts and then he maintains the water point. The WASHCOs

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are buying (sometimes they may get freely) the spare parts from Woreda Water Office. The woreda water office is doing maintenances that are beyond the capacity of Pump Attendants/care takers.

In order to improve the maintenance system it is good to create conditions that WASHCOs can get spare parts from market.

As one of the concerned person, Ato Selomen Bezie, in Farta woreda in the time of RWSEP there was money in the woreda Finance Office which was serving as revolving Fund of spare parts of Water points. It was the Finance Office that was buying the spare parts and the selling to WASHCOs was done by Woreda Water Office then the money collected in such way was sent back to Woreda Financer Office for another round procurement of spare parts. But the cost of spare parts before years is not the same as of this time that is it has increased a lot, for example the market price of U-Seal at the time of RWSEP was 1.5 birr but at this time it is birr 70.00 hence it needs adjustment unless the money will be finished through the process. The woreda does not allocate yearly budget for spare parts of water points.

To make the supply of spare parts sustainable there should be private suppliers in the woreda hence promotion and training to private suppliers should be given repeatedly. There was an effort by Care in D/Tabor to train artisans, provide revolving fund and start the selling of S/Parts. This was not observed in the assessment.

3.5.2 Fogera Woreda:

In Fogera woreda (former RWSEP woreda), Woreta town there are private suppliers of spare parts of water points. Also there was revolving fund but at this time it is not functional, the remaining revolving money is saved in the government bank because it is not enough to buy spare parts of water points.

Most of the spare parts demanded by WASHCOs are U-Seal, O-Ring, and Planjer, Foot valve, Bush bearing, PVC. There are no personnel working on supply of spare parts in the Woreda Water Office. There are three private suppliers in the woreda. The woreda Water Office is supporting the private suppliers by informing and categorizing the fast moving and slow moving spare parts and giving trainings about spare parts of water points.

In the woreda there are no NGOs or other organizations working on supply of spare parts of water points.

In Fogera woreda each water point has pump attendant/Care taker to do preventive and corrective maintenance. When it is beyond Pump Attendants capacity that is for corrective maintenance the woreda personnel is supporting the WASHCOs in doing the maintenance.

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In order to improve the supply of spare parts in the woreda training for private suppliers should be frequently given.

As WASHCOs of Baragie in Kebele Quhar Micheal the preventive Maintenance of their water point is done by the artisan who is in their village and when it is beyond the Pump Attendants capacity the woreda personnel is doing corrective maintenance. The WASSCHOs are getting spare parts for maintenance from Woreda Water Office and from private suppliers in Woreta town. Most frequently demanded spare parts are U-Seal, O-Seal and Bush Bering. Since there are private suppliers in the woreda there is no shortage of spare parts, the WASHCOS are getting per their demand as much as they want. In the woreda each water point has contributed money saved at ACSI. Each user of a given water point is contributing 2 birr in a month that is 12 birr per year as minimum requirement.

As Pump Attendant Kess Tsigie in kebele Quhar Michael, He is doing preventive and corrective maintenance voluntarily as other pump attendants in the region for users in which he is the member. While he was taking training as pump attendant he knows that he will serve the community voluntarily in which he is the member.

The WASHCOS are buying spare parts from private suppliers for the maintenance of water points. When there is no spare part from private suppliers they are getting from the woreda Water office.

As pump attendant Kess Tsegie, To improve the supply of spare parts in the woreda the private suppliers should be strengthened and the revolving fund for spare parts of water points in the woreda should also strengthened because it is very important to supply spare parts when there is no in the private shops that is important to fill the gap.

As private supplier of spare parts of water points, Ato Umer Mohamed, he is collecting spare parts from Bahir-Dar and selling to WASHCOs per their demand. Most frequently demanded spare parts are U-Seal, Bush bearing, and O-Ring and gate valve. Training has been given to private suppliers by the Woreda Water Office and always there is motivation to supply spare parts for water points. As Private supplier of spare parts, Ato Mohamed, to improve the supply of spare parts of water points it is good to motivate, train and strengthen the private suppliers.

Fogera is one of the former RWSEP woredas which has revolving fund of spare parts for water points in the woreda. But the revolving fund system has been stopped because the price of spare parts at the time of beginning of revolving fund is not as the same as at present that is for example the price of O-Ring in 1998 EFY was 1.5 birr but in 2005 EFY it is 71 birr. The money is not enough to buy spare parts per the demand of the WASHCOs. Hence it is good to revise the system and update with the present condition.

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2.5.2 East –Estie woreda:

In East Estie woreda there is a revolving fund for spare parts of water points which has been started with support of former RWSEP. With this revolving fund the Woreda Finance Office procures spare parts of Water points and the Woreda Water Office sells these spare parts to WASHCOs. This money is back sent to finance office for another round procurement such is the system working till now. Most of the spare parts frequently requested by the community are Foot valve, O-ring, U-seal and solvent- cement. Also there are two private suppliers of spare part of water points in woreda. These private suppliers are getting support from woreda water office that is getting trainings identifying the spare parts that are highly needed by WASHCOs. The private suppliers mostly supply spare parts such as O-ring, U-seal, Foot valve and phoset. The spare parts that are supplied from private suppliers are satisfying the demand of WASHCOs. In the woreda in addition to the former RWSEP there is CARE (NGO) which is working on supply of spare parts. CARE handovers the spare parts to woreda water office and the woreda water office distributes the spare parts to WASHCOs per their demand.

In the woreda each water point has Pump Attendant/care taker. Pump Attendants/Care Takes are doing corrective preventive maintenances. When it is beyond their capacity. The WASHCOs are supported by Woreda Water Office in getting corrective maintenance when it is beyond the capacity of Pump Attendants/Care takers.

In order to improve the supply of spare parts of water points the private suppliers should be strengthened.

As Addis-Alem's water point WASHCO, the preventive maintenance of their water point is maintained by the Pump Attendant called Misganaw Alamene who is living with them in their village. If maintenance need is beyond The Pump Attendant capacity that is in the users' village, the Wareda Water Office Pump Attendants are supporting the community by doing corrective maintenances.

The WASHCOs are buying the spare parts of their water point from the Woreda Water Office.

The community of Addis-Alem has contributed money since the construction and is saved in their saving account in ACSI. Every user is paying 1.5 birr per month hence they have enough amount of money for operation and maintenance (O&M) for their water point.

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AS WASHCO's of Addis-Alem to sustain the supply of spare parts in the woreda it is better if it is supplied by the woreda Water Office than private suppliers.

As Pump Attendant, Tibebe Mengstie in Mekane Eyessus Kebele the community has assigned him to take training how to perform preventive & corrective maintenance. Per the assignment he had been trained as pump Attendant and since then he is doing the preventive maintenance voluntarily. When the WASHCO is informing him as the water point is in problem he is identifying and listing the kind of spare parts needed to maintain the Water point and submits to WASHCOs to be procured. When the WASHCO brings the spare parts he is doing preventive maintenance. When it is beyond his capacity the Pump Attendant in Woreda Water Office is supporting.

WASHCO is buying spare parts of water points from Woreda Water Office and from private Suppliers.

Woreda Water Office is supporting Pump Attendants in giving both practical and theoretical trainings of water point maintenance. But still it is good to have refreshment trainings for pump attendants for further strengthening of the capacity of Pump Attendants.

In order to sustain the supply of spare parts in the woreda it is good to strengthen the supply of spare parts from the Woreda Water Office. As alternative the private suppliers should also be strengthened for the supply of spare parts of Water points. Also it is good if it is supplied at Kebele level.

As Private Supplier w/ro Denberie Gebeyehu in Mekane Eyessus town, she is collecting the spare parts of water points in Addis Abeba and sell's to WASHCO's. Spare parts mostly requested by WASHCOs are faucet, Union, Socket, Nipples, plunger and $\frac{3}{4}$ pumps. However the private suppliers do not sell spare parts of Hand Dug Wells (HDW) because the spare parts of HDWs are found in the Water Office in less price and it is sold there to WASHCOs.

The Woreda Water Office supports the private suppliers in giving trainings and motivating to participate in supply of spare parts of Water Points.

As private supplier W/ro Denbere Gebeyehu in order to sustain the supply of spare parts of water points it is good to strengthen the private suppliers.

As one of the staff of Estie Woreda Water office, Ato Amsalu, there are spare parts of water points in the office store which were given by former RWSEP. These are Plastic Foot Valve, O-ring, U-seal, Plunger, cylinder and PVC.

The spare parts are sold to WASHCOs in the woreda per their demand and the money from sells of spare parts is submitted to woreda Finance Office for another round Procurement of spare parts of water points. The sell's of the spare parts is based on the current market price not back on the buying hence the money is revolving in enough amount in keeping its value.

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The woreda doesn't allocate yearly budget for spare parts. To sustain the supply of spare parts of water points the Revolving fund should be always updated with the current market and continue. The user community should not only contribute money for operation and maintenance at the time of construction of water points but there should be periodical and continuous payment for the water they use.

2.6 North Wollo zone:

In North Wollo Zone there is no government spare part supply and maintenance system at zone level. There are no private suppliers of spare parts for water points in Woldia town, the capital town of the Zone.

3.61 Meket woreda:

Meket woreda is the first woreda in Ethiopia where the woreda water office structure was in place by an NGO named SOS Sahel and the NGO had established government managed spare part supply system and also organized some artisans on the selling. The assessment could not find any track of this anymore.

In Meket there is no government spare parts supply system that is revolving fund managed by woreda Finance office and woreda Water office. But there is only one private supplier selling spare parts of water points for WASHCOs in very expensive price hence the community doesn't get the service in fair price. This private supplier is selling O-seal, O-Ring, and spare parts for SPDs per the demand of WASHCOs.

The private supplier is getting support from the woreda water office like advice and motivations. Even if the spare parts in this private suppliers shops are in enough amount in kind full filling the demand of the users they are very expensive.

Each Water point in the woreda has pump attendants/care takers to do preventive maintenances of water points in the woreda. If the maintenance is beyond their capacity the pump attendants in the woreda water office are doing the corrective maintenance.

In order to improve the supply system of the woreda private suppliers should be more than one in the woreda. There should be Revolving fund allocated and controlled by the Woreda WASH Team (WWT). There should be contribution and payment (appropriate water fee) of the users, since the construction periodically in continuous way.

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4. Conclusion:

Currently in Amhara region there is no regionally structured, approved, systematized and recognized spare part supply system at region and zone levels. As the assessment at region and zone levels there are not experts specifically assigned for supply of spare parts and maintenance arrangements of water schemes.

In the woredas of the region there are different experiences of supply of spare parts for water points.

From 10 RWSEP woredas in which the assessment has been conducted the revolving fund is working as intended only in five woredas (East Estie, Ankesha, Guangua and Hulet Eju, Yilmana-Densa) managed by the woreda Finance and Water offices. Water offices sell spare parts for WASHCOs per their demand and send the collected money from sells to finance office for another round procurement of spare parts. This system has been introduced in 18 Former RWSEP woredas as mentioned in the literature review part of the assessment. But currently it has been not continuing as intended, except in five woredas of the 10 in which the study has been conducted. Most of these woredas have sold the spare parts to WASHCOs per their demand on buying price instead of adjusted current market price. Hence this has two impacts on supply of spare parts

- The revolving money for spare parts had been decreased from time to time that it had not been possible to procure and distribute enough spare parts per the demand of WASHCOs hence it had been stopped.
- It had negative impact on the private suppliers to sell the spare parts on current price because the WASHCOs are buying spare parts by lower prices than the current market price from water office instead of buying from private shop keepers by current market price.

In only eight woreda capital towns of the region out of eighteen as mentioned above from the sample population, on the top of selling construction materials there are private suppliers of spare parts of water points fitted with hand pump (HDW) and protected and developed springs (SPD). Some of these even are not working regularly. These private suppliers are profit makers who need to be more strengthened to wait in the market and sustainably supply spare parts.

The supply of spare parts at the user's level is that in some Water points users are contributing money and save at ACSI in their account for operation and maintenance of their water points while the others does not have such system. This can be summarized in to four that is:

- Users having water points Financed by Governments of Finland and Ethiopia are contributing money since the construction for

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operation and maintenance (O&M) of their water points per month from 1 birr to 3 birr or per annum from 12 birr to 24 birr deposited at ACSI in their saving account. This money is used for maintenance of their water points when the need arises.

- There are Users of Water points who have contributed money saved at ACSI during the construction of their water points once only then stopped to continue.
- In some water points when there is case to maintain the water point the users are contributing that contribution is only to alleviate the existing problem only.
- Most Users of water points do not contribute and save money for Operation and Maintenance since the construction of water points at all.

For each water point constructed with the support of Finland & Ethiopia Governments, since the start of RWSEP (1994) to the current COWASH, two Pump attendants for each Hand Dug well and one Care taker for each developed spring are trained to serve their villagers voluntarily. This is part of the completion of the construction of a water point. However these Pump Attendants/care takers need refreshment trainings to update them with the current conditions.

But there are a lot of water points (HDW & SPDs) which do not have Pump Attendants/Care takers at water point level in the region.

In most of the woreda Water offices, there are Pump attendants/Mechanics that are supporting the WASHCOs in doing corrective maintenances when it is beyond the capacity of pump attendants/care takers at water point level.

5. Recommendations

- 5.1 At Region level under the Water Resources Development Bureau, there shall be a team that arranges and follows the system of supply of spare parts and Operation & Maintenance of water schemes, Trains mechanics at zone level and with zones that trains pump Attendants at woreda level
- 5.2 Zone Water Resource Development Departments shall have Mechanics that are responsible for the Operation and Maintenance management in the concerned zone that trains woreda Mechanics so that the woreda pump attendants/Mechanics can support WASHCOs, Pump Attendants/Care Takers at water point level in maintaining of the water points.
- 5.3 Woreda level Mechanics/Pump Attendants should be placed in each woreda of the region.

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- 5.4 The revolving fund system introduced in 18 woredas by the former RWSEP shall be updated, strengthened and replicated in each woreda of the region and Woredas should allocate budget for revolving fund.
- 5.5 Guide line how to manage the revolving fund in adjusting the current market price should be developed.
- 5.6 This revolving fund system should be used to fill the gap when the private Suppliers are not able to supply spare parts of water points in the woredas.
- 5.7 For the sustainable supply of spare parts a lot should be done to have private suppliers that are working for profit in each woreda.
- 5.8 In all water points users should have periodically contributions of money saved (water fee with appropriate water tariff) in their saving accounts for operation and maintenance.
- 5.9 For each Water Point which is in the region Pump Attendants/Care takers from the users should be trained to serve voluntarily.
- 5.10 Each water point shall have enough tools for maintenance.
- 5.11 Periodical Refreshment training should be given for old pump attendants/care takers.
- 5.12 There is too much money collected by different WASHCOs and saved at ACSI sub branch. There should be a way how the collected money can be used for supply of spare parts be it by the woreda water office, organize in water users associations' or other means. The FINN-WaSH BG programme is ready to establish such a system and it is good that the region to share this experience from BG region and see ways how it can be applied in the region may be in some model COWASH woredas.

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Annex: - 1

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Annex: - 2

Abbreviation

HDW:	Hand Dug Well
SPD:	Developed Springs
UAP:	Universal Access Plan
CMP:	Community Managed Project
O&M:	Operation and Maintenance
O&MM:	Operation & Maintenance Management
WASHCO:	Water, Sanitation & Hygiene Committee
COWASH:	Community managed Accelerated WASH
WASH:	Water Sanitation & Hygiene
RWSEP:	Rural Water Supply & Environmental Program
GOE:	Government of Ethiopia
GOF:	Government of Finland
UNICEF:	United Nations International Children Emergency Fund
FDRE:	Federal Democratic Republic of Ethiopia
RWS:	Rural Water Resource System
WAS-CAP:	Water & Sanitation Capacity Building Program
WWRDO:	Woreda Water Resource Development Office.
ZWRDO:	Zone Water Resource Development Office.
JICA:	Japan International Co-operation
SNNPR:	Southern Nations Nationalities Peoples Region
WRDB:	Water Resources Development Bureau
NGO:	None Governmental Organization
GO:	Governmental Organization
ORDA:	Organization for Relief & Development in Amhara
ACSI:	Amhara Credit & Saving Institute
WASH-BG:	Water Sanitation & Hygiene in Benishangul Gumuz