Partners for Water and Sanitation

Note on project reports

The following report has been prepared by Partners for Water and Sanitation in response to a project Terms of Reference.

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Joint Capacity Building Support to the Gamo Gofa Zone, Konso and Derashe Special Woreda Water Resources Development Office (WRDO), Southern Nations, Nationalities and Peoples Region (SNNPR), Ethiopia, on Rehabilitation of Water Supply Schemes. Partners for Water and Sanitation (PfWS) and WaterAid Ethiopia (WAE)

Report

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Joint Capacity Building Support to the Gamo Gofa Zone, Konso and Derashe Special Woreda Water Resources Development Office (WRDO), Southern Nations, Nationalities and Peoples Region (SNNPR), Ethiopia, on Rehabilitation of Water Supply Schemes.

1. Introduction

In January 2010, Partners for Water Supply and Sanitation (PfWS) and WaterAid Ethiopia (WAE) conducted a joint capacity building training, workshop and needs assessment event with the Water Resources Development Office (WRDO) in Arba Minch, Gamo Gofa Zone, SNNPR, Ethiopia. The intention of this event will mark the start of an ongoing joint programme between WAE and ORBIS Ethiopia to support the WRDO in their efforts to implement a sustainable recommissioning strategy.

PfWS's agreement with WaterAid Ethiopia is set out in the Terms of Reference prepared by WaterAid Ethiopia and ORBIS International Ethiopia and included in this report as Appendix A.

The initial event which took place between 25th and 29th January 2010 involved a series of presentations from the Gamo Gofa Zone WRDO Head and PfWS UK partners from Wessex Water Services ltd and Information Performance Services. The subjects covered were the functionality of water supply schemes in the Gamo Gofa Zone, hydrometric monitoring and electro-mechanical issues respectively. These presentations were interwoven with guided group discussion sessions involving the attendees facilitated by staff from WaterAid Ethiopia and PfWS. The event attendees were technicians from various Woredas and some from the SNNPR Gamo Gofa zonal Office.

This country visit by PfWS UK partners to SNNPR represented the 3rd visit to the region. The first two visits were to the Regional Water Resources Bureau (WRB) in Hawassa. The first visit in May 2008 included a general presentation on the strategic aspects of recommissioning to managers and administrative staff who were mostly from the regional headquarters. This presentation did include some discussion of hydrometric monitoring as a tool to drive the recommissioning strategy forward as it allows both i) an assessment of the regional status of water resources but also, importantly, ii) the performance status of individual water sources (boreholes, wells and springs). This aspect was accepted to be an area of weakness by the regional WRB and that further training was required. At the start of 2009, the WRB embarked on an extensive census of all water supply schemes in the region in order to understand the details, coverage and functionality of these schemes. This was not a direct response to the PfWS visit but PfWS UK partners were consulted over the nature of hydrometric and source data that ought to be collected during the census. It was agreed that second visit should be made by the UK partners once the census was complete and relevant staff were available for training.

The second visit was made in April 2009 to include more in depth theoretical and practical hydrometric training of Regional WRB and Zonal WR Offices heads and technicians. Once again this was well received and it was accepted that despite the many difficulties of hydrometric data collection it was vital for progress.

Independently, WaterAid Ethiopia and ORBIS Ethiopia have recognised the importance of recommissioning and of the importance of implementing the regional strategy at the local level.

Gamo Gofa Zone and Konso and Derashe Special Woredas were selected for this implementation i) because WaterAid and ORBIS were already active in the area and ii) it represents the worst area in the Region in terms of coverage and functionality. As a result of the obvious synergy between the PfWS work and the WaterAid/ORBIS initiative (assisted by the location of PfWS in the WaterAid offices in Addis Ababa), it was agreed that PfWS should try to assist WaterAid in their support for Gamo Gofa Zone and 2 special woredas in recommissioning water supply schemes. It was with this background that the Terms of Reference for the January 2010 event were drawn up.

2. Aims and Objectives

The aims and objectives of the project are as follows

This project aims to help in developing needs-based training materials and to deliver initial training packages, to support sustainable re-commissioning of water schemes in Gamo Gofa zone and in the two special woredas of SNNPR.

It also aims to provide technical and managerial support for implementing the region's water sector strategy in the Gamo Gofa zone and in the two special woredas of SNNPR , by assisting them in implementing the Partners for Water and Sanitation recommendations of the regional recommissioning support.

The initial training event was to provide training in hydrometric data collection storage and basic analysis to Woreda based Electrical and Mechanical (EM) Technicians in order for them to understand the significance of this data as a vital tool in the process of recommissioning. The event also provided some basic electrical and mechanical training on monitoring and fault finding.

3. Deliverables

The deliverables under the PfWS Terms of Reference are as follows:

The UK partners will work in conjunction with WaterAid Ethiopia and other key stakeholders such as ORBIS Ethiopia who are currently working in the area of capacity building with the Water resources bureau in general in the Gamo Gofa zone and the two special Woredas in particular, to carry out training on scheme rehabilitation.

The key activities are:

- *make an initial training scheme rehabilitation and in parallel assess for further possible areas of training on scheme rehabilitation/recommissioning.*
- *Work with other key stakeholders to assist in developing /standardising appropriate training materials (such as guidelines and manuals), making use of existing training package materials where possible*
- *Conduct initial training on scheme rehabilitation, supported by workshops where appropriate.*

Key deliverables include:

- *Report on initial training support visit that based on the regional recommissioning support assessment process and the WAE's base line survey in the areas;*
- *Identified and/or standardised materials for delivering training packages;*

- *Report on further identified training needs, based on the parallel assessment process during the training visit.*

This report represents the 1st and 3rd of the key deliverables. It summarises the training given by the UK partners to Staff from Woreda and Gamo Gofa zone Water Offices of Ethiopia's SNNPR. The training was planned and agreed by PfWS and WAE and delivered by PfWS UK Partners and Ethiopian staff between 25th and 29th January 2010.

The 2nd key deliverable was not addressed in the initial visit due to timescale. This is something that needs to be picked up and can be done so in future after discussion with WaterAid/ORBIS. It should be sought how Wessex Water Services Ltd could directly assist in this area on behalf of PfWS..

The report also makes recommendations based on the parallel assessment of training needs undertaken during the January 2010 country visit. These recommendations were discussed informally with WAE staff and the Zone Water Resoure Office by the UK Partners while in Ethiopia. They are presented formally in this report.

4. Summary of Initial Training Visit

The initial training visit took place in Arba Minch, Gamo Gofa Zone, SNNPR, Ethiopia between the 25th and 29th January 2010. The full training programme is given below in Appendix B.

The hydrometric training was delivered by Paul Stanfield, Hydrogeologist, Wessex Water Services Ltd (who had been on the previous two PfWS country visits), while the electrical – mechanical training was delivered by Mike Fray, Commissioning Engineer, Information and Performance Services.

The team was joined by Ato Tesfaye Nake, the senior EM Technician from the Regional WRB in Hawassa for the practical training day on 28th January. Ato Tesfaye's experience and ability to communicate with the Woreda based EM technicians proved a very valuable asset to the practical training.

The training programme was attended by 23 technicians from various Woredas in the Gamo Gofa Zone and the Zonal Office level. The attendee list is included in this report as Appendix C.

4.1 Gamo Gofa Zone WRDO Report on Status of Functionality

The training event was opened with an in-depth presentation on the status of functionality in the Gamo Gofa Zone by Ato Eshetu Elto, Head of Gamo Gofa Zone, WRDO. This presentation which perfectly illustrates the need for ongoing monitoring and maintenance and capacity building in this area, is included in this report as Appendix D.

The main conclusions from this presentation is that in the Gamo Gofa Zone as a whole 20.6% of the population have access to clean, potable water and that of those schemes that have been constructed to provide potable water 26% are non-functional and 2% have been abandoned. If the Federal Governments targets under the Universal Access Plan (UAP) of 98% access in rural areas and 100% access in urban areas are to be met, this represents a doubling of the population served in each of the three remaining years before 2012!

The involvement of Ato Eshetu (Figure 1) in this training programme was much appreciated by PfWS and WaterAid and it demonstrates strong support and leadership in the process of recommissioning work.

Figure 1 - Ato Eshetu Elto, WRDO Zonal Head (right) in discussion with Ato Melkamu Jaleta (PfWS Country Manager) at CB Support Training event, Arba Minch, January 2010.

4.2 Hydrometric Training

The hydrometric training took place on Tuesday 26th January. It comprised a basic introduction on the Hydrological Cycle, training on effective asset and data management and hydrometric monitoring. The hydrometric and database presentations are included in Appendix E.

The hydrometric training highlighted the importance of hydrometric monitoring for assessment of the regional water resource situation and also specific source performance assessment. Importantly it allows operators to distinguish between these two issues. So, for example, if pumping water levels in a borehole are low, ongoing water level monitoring will allow assessment as to whether this is due to lack of recharge (inadequate rainfall to refill the aquifer, i.e. drought) or whether it is due to the borehole screen and gravel pack becoming blocked and in need to rehabilitation to restore the yield. Without basic water level information and simple spring flow measurement (because spring flow is related to groundwater head) this diagnosis will not be possible.

When data is collected it must be stored in some kind of database i.e. in a paper file or computer spreadsheet. It must be recorded with date and time the measurement was made as a minimum. This allows trends and changes to be spotted. It allows cross-comparisons to be made between sites and at the same site over time. It allows the data to be used in an organised and efficient manner.

Water quality data can also be an important diagnostic tool. Basic observations by the scheme operator can give important information on source performance. Air in the water may suggest that the water level has reached pump suction level and 'cavitation' is occurring (i.e. a mixture of air and water is being pumped), turbid water may suggest inadequate borehole development,

screen failure of borehole collapse. Water quality data should be recorded with dates of observation even it is in the form of a simple description.

Hydrometric data (including field water quality observation) is vital for the process of monitoring and recommissioning. It is important that it is started in some form, no matter how limited as soon as possible at as many schemes as possible.

4.3 Electrical and Mechanical Training

The electrical – mechanical training was delivered by Mike Fray, Commissioning Engineer, Information and Performance Services and took place on Wednesday 27th January 2010. It covered details of UK experience in the area of E&M monitoring with details of target areas for maintenance to avoid expensive replacement once plant and equipment have failed. The E&M training also covered design issues to help the technicians understand the need for feedback on regular faults. The practical aspect of this training was supported by an electro - technician of the Gamo Gofa Zone WRDO. The E&M training presentations are included as Appendix F.

The training emphasised the importance of monitoring (pump flows, generator power outputs, etc) and maintenance (oil changes, filter replacements etc).

Reporting and records of maintenance are important tools in tracking service history and recording changes made. These records can be used to spot trends of problems and can be fed back to the designers to allow improved designs on replacement. Site logs (note books) should be kept at each scheme and dates and times of servicing, failures and repairs attached to each piece of data.

Effective and regular maintenance is vital to the recommissioning strategy as this will prolong scheme life.

Feedback on the training was requested and collected by PfWS and attached to this report as an Appendix G..

4.4 Group Discussion

The theoretical training sessions were interspersed with group discussions where the attendees were split into 4 groups (Figure 2) to discuss issues around monitoring, maintenance and repair. After discussion in groups the feedback was presented to the whole group for collective discussion. Although all of the attendees spoke a reasonable level of English, the discussions were conducted mostly in Amharic to ensure maximum participation of all course attendees. The UK partners were included discussion through translation by PfWS and WAE staff. It is felt that this process did provide the best way to build confidence in the conclusions reached and ensure they are accurate and provide a strong basis on which to build further support and training.

Figure 2 - Group Discussions at Arba Minch, CB Support training event – January 2010

The details of the group discussions are given in Appendix G of this report.

In summary the group discussions revealed the following;

- The trend of the percentage of non-functionality in the zone is upwards (i.e. there is an increase in non-functionality)
- There appears to be a regional decline in groundwater level (deep boreholes not producing yield and spring yields dropping and drying up)
- There is a lack of community awareness, participation and sense of ownership
- There is a lack of skilled people at appropriate levels within the water sector structure
- Woreda level EM Technicians are well trained theoretically but lack practical experience and confidence to tackle repairs.
- Maintenance and recommissioning are hampered by the lack of spare parts and tools, lack of standardisation of pumps etc and in some cases the lack of transport (there is one vehicle in the zonal water office and the 8 Woredas that are supported by the African Development Bank and the World Bank are supplied with motorcycles).
- Priorities - while spare parts are recognised as an important issue, discussion of the priorities in terms of what issues need to be addressed to solve the recommissioning issues, the following list was made in order of priority.
    - Structure of the water department from Region to Washco
    - Human resources (not enough appropriately skilled people at each level)
    - Skill (there are gaps in the EM Technicians knowledge and experience, particularly the latter)
    - Standardisation (need to reduce the number of types of pumps, generators etc to make maintenance easier)
    - Spare parts
    - Tools (Ammeters, Voltmeters, Water level meters, spanners etc)
    - Community involvement (inadequate, disinterested)
    - Transportation
    - Kebele Administrators (lack of awareness of issues, lack of support)
- There is no regular hydrometric monitoring carried out. This was identified as being due to the lack of a monitoring 'culture' within the community or the water sector structure within the zone. In addition, the lack of access for water level measuring in most boreholes and many wells, the lack of hydrometric monitoring equipment (e.g. dip tapes) and the lack of computers to store the data are given as reasons for the lack of monitoring.
- The 2009 (2001 EC) census has provided a very good, one off picture of the water resource and source situation within the zone.

- The private sector is weak and contractors inexperienced. This leads to poor quality of workmanship.

Once again the theoretical training was interspersed with group discussion.

The power point presentations of the training and outputs from the group discussion are included in Appendix H of this report.

In summary, the training and group discussions revealed the following information.

4.5 Practical Field Training

On Thursday 28th January, following the theoretical training days, a site visit was arranged to allow the participants to see demonstrations of water level measurement, mechanical & electrical issues associated with a motorised scheme and a large pumped spring source. The sites selected for this field day were the motorised borehole in Attana village, Chano Mila Kebelle, Gamo Gofa zone and the large municipal springs that serve Arba Minch Katama (town).
Ato Tesfaye Nake, the Senior EM Technician from the Regional Water Bureau in Hawassa and a Senior Electrical Technician from the Zonal Water Office joined the training team for the practical day.

Chano Mila motorised scheme comprises a deep borehole with a submersible pump driven by a generator house in a separate building. The borehole pumps to a large 50,000 litre tank via a 2 km pipeline. Water then gravitates to the community from the tank. It was reported that the tank normally takes 2 hours to fill from empty. This equates to a borehole output of approximately 7 litres/second, a good yield requiring a large submersible pump.

At Chano Mila the borehole proved to be difficult to dip because no dip tube (observation pipe) was installed. Consequently, while a static water level was taken (15.20 metres below casing flange) it was considered too risky to attempt to dip the water level when the pump was running for fear of the well tape snagging on a loose section of pump cable or other unseen obstruction in the borehole. As a result it was not possible to carry out a pumping test as had been planned. This was in some ways a useful demonstration as it illustrated the difficulties of water measurement with the present design of borehole completions. This has to change in the future.

The electro-mechanical aspects of the training were covered by the senior technicians and this gave a good opportunity for the participant technicians to go through the main features and issues involved in monitoring and servicing the generator, pump and pipeline issues (Figure 3).

The Arba Minch municipal spring, is a gravity spring from which the town takes its name (Forty springs). It issues from the base of a volcanic escarpment into a tank from where it is pumped up to the towns reservoirs to gravitate into supply. The site visit gave the participant technicians the opportunity to inspect the spring tank construction, the relift pumps and starters and the standby generator. It is a good example of a motorised spring scheme (Figure 4).

On a hydrogeological point it was noted that the springs issues below the town of Arba Minch. The town has no mains sewerage so there are very many soakaways used. There has to be a concern therefore for future water quality problems with these springs.

Figure 3 - Practical training, Chano Mila Kebele, motorised scheme

a) Chano Mila – Borehole headworks
b) Technicians inspect the generator
c) Senior EM Technician instructing on submersible pump and pipelines
d) Chano Mila borehole uncovered and showing lack of observation pipe for water level measurment

Figure 4 – Practical training at Arba Minch Municipal Springs

a) Spring collection chamber

b) Technicians inspect relift pumps with Senior electrical technician from Regional WRDB

c) Technicians inspect the relift pump starter panels

d) UK PfWS partner, Mike Fray, with technicians at a recently installed additional pump

e) Delivery pipeline from the spring to Arba Minch Town Water tanks (approximately 180 metres elevation difference)

5. Conclusions

PfWS have made two previous capacity building visits to support the SNNPR Water Resources Bureau (WRB) in the development of their recommissioning strategy for non functional community water supply schemes within their region. The reports of the visits are available from PfWS on request. In the light of their previous involvement, PfWS are keen to maintain and develop an ongoing relationship with WaterAid Ethiopia (WAE) in their support to the Gamo Gofa Zone Water Resources Development Office in the area of recommissioning.

WAE have carried out a scoping study in the Gamo Gofa zone to develop an initiative, in partnership with ORBIS Ethiopia, to support the rehabilitation of non functional community water supply schemes in the Gamo Gofa Zone (including Konso and Derashe Special Woredas). The report of the scoping study describes an extensive programme which if delivered represents a significant step(s) forward in the implementation of the Regions recommissioning strategy which PfWS have been supporting over the past 2 years. The WaterAid/ORBIS initiative is very welcome by the authors of this report and previous reports supporting the Regional WRB in recommissioning (Chambers, Stanfield, Jaleta 2008 and 2009). It identifies (as one might expect from experienced NGOs) the major issues surrounding recommissioning and lays out an impressive yet realistic programme of capacity building, provision of spare parts and equipment (including the provision of a truck and crane to the Zonal office), financial support to the zone and support of the establishment of a water supply database and monitoring system. Although PfWS was very keen to support WaterAid/ORBIS in this initiative, in line with its programme closure beyond June 30th, 2010, it is now proposed to create direct link with Wessex Water and/or other Utilities to support in the areas of capacity building and advocacy.

In initial support for WaterAid/ORBIS, PfWS UK partners made an initial capacity building event in Arba Minch (Gamo Gofa Zone capital) in January 2010. This event included training and discussion sessions with the WRDO staff which included 18 Electrical/Mechanical Technicians from various Woredas within the zone, from the 2 special woredas and 4 Zonal WRDO staff including importantly, the Head of the Zonal WRDO, Ato Eshetu Elto.

The discussion groups identified that the trend of the percentage of non-functionality, reported as 26.1% in 2009, is still increasing (i.e. the situation is getting worse). In the light of this information, the immediate priority, in terms of recommissioning strategy, is to slow down and if possible stop the rate of increase in % non-functionality. This will require exerted effort throughout the entire structure of the Water Bureau, but particularly in the short term at Washco, Kebele and Woreda level, to improve monitoring and maintenance. This is vital because otherwise, as sources are repaired so others will fall out of usage. In addition, and as highlighted in the Zonal Office report at the Arba Minch training event one non-functional source put additional pressure on adjacent sources which then may be operating outside their design capacity so increasing the risk of failure.

Once the situation is stabilised then attention shifts to repairing and recommissioning those sources that have failed. The objective is to reach a sustainable level of functionality given that it is unlikely to always maintain 0% non-functionality.

According to the Zonal Water Development Office at Arba Minch (presentation to workshop and training programme January 2010, reordered by current authors), the definition of a sustainable source is as follows:

A water supply service is sustainable if :-

- *It is functioning & being used*
- *It is able to deliver an appropriate level of benefits*
- *It continues to function over a prolonged period of time*

- *Its management is institutionalized*
- *It adopts a perspective that is sensitive to gender issues*
- *It does not affect the environment negatively*
- *The community itself manages the system*
- *Its operation, maintenance, rehabilitation, replacement & administrative costs are covered at local level.*

A key area that PfWS UK partners can influence, in partnership with WAE, is capacity building in mechanical and electrical fault finding, repair and maintenance at Woreda level. Proficient and confident Woreda technicians will be the trainers for the community operators. By this approach the last two bullet points in the above list can be improved.

The important environmental issue, which also relates to sustainable water resource management, can be addressed by training and implementation of basic field hydrometric data collection, storage and analysis. A subject which PfWS UK partners have been addressing in this visit and a previous visit to the regional Water Bureau.

It has been noted during the Arba Minch Training event that the Woreda EM Technicians are bright and enthusiastic. They appear to be adequately trained on the theoretically level. However, in terms of practical application, in general, they appear to be lacking in experience and confidence. It is recognised that this is a national issue that needs to be addressed. It is known that Arba Minch University has a specialist water technology department that is nationally recognised as a centre for all sectors of water development. It is understood that Arba Minch University has a demonstration facility on campus that can be utilised for training and that the University runs short courses out of term time. It is considered vital that WaterAid and PfWS make contact with the University, which is a major training stakeholder in the water sector.

It is understood that WaterAid Ethiopia and ORBIS Ethiopia want to engage in direct intervention on recommissioning. This will involve the contracting in of national consultants in various areas of water speciality (mechanical, electrical etc) funded by WaterAid to train Zonal and Woreda technicians in recommissioning of non-functional sources in 6 selected Kebeles. This would include the training of community operators in ongoing maintenance.

6. Recommendations

Partners for Water and Sanitation (PfWS) would like to make a series of recommendations that have been reached on the basis of engagement with Woreda level EM Technicians, Zonal level Engineers and Managers and WaterAid Ethiopia (WAE).

The recommendations are aimed at i) slowing down or stopping the trend of schemes towards non-functionality through improved monitoring and maintenance and ii) recommissioning of presently non-functional schemes though a programme of repair and rehabilitation.

The recommendations aim to provide support for the project stakeholders namely i) WaterAid/ORBIS as the implementing agencies, ii) to the Zonal and Woreda Water Resources Development Offices (WRDO) as recipients and iii) to Partners for Water and Sanitation (PfWS) or its UK partners tbc later in their desire to support this initiative.

6.1 Support for WaterAid

WAE and ORBIS Ethiopia plan to work directly on recommissioning non-functional sources using their own means of support to carry out the repair work and on the job training within selected Kebeles. This is recognised as being an important step. However, in line with the policy of creating centres of excellence at Zonal level, it is recommended that the Zonal capacity should also be strengthened so that they can take on the role of problem solving as early as possible. It is suggested that while WaterAid are preparing budgets for contracting in national consultants to work at Kebele level, that consideration be given to raise funding for capacity building at Zonal level.

Arba Minch University has been identified as a potential stakeholder. The University is understood to have a very good demonstration site on its premises in the town. It is understood that the University offers short courses to train technicians during University holidays. These courses have to be paid for to cover the lecturer's time and any training resources. It is strongly recommended that WAE, ORBIS and PfWS UK partners to be involved (if necessary) shall make contact with the Water Technology Department at Arba Minch University in order to i) make them aware of their activity if this has not already been done and ii) investigate working with the University to make best use of their existing expertise and facilities.

It is recommended that WaterAid work with the Zonal Water office to develop the sustainable supply of spare parts to the Woredas and Kebeles. The strategy should be that all common spare parts (fuel, oil, gaskets, washers etc) should be held in adequate supply at Kebele level (WashCo). Larger, less commonly required spares should be held at Woreda level and there should be no need to go higher than Zonal level for any spare parts. .

Capacity Building is clearly a priority. The discussion groups identified the lack of skilled people at the right levels within the water sector. WAE's proposals will certainly help to address these issues. In particular the EM Technicians indicated the need for practical training to fill experience gaps in their own training. This is the area that really needs to be focused on. There is a lack of confidence in these well motivated staff that can be addressed by hands-on training on demonstration equipment across the range of motorised pumps, hand pumps, springs etc.

There should be an initial emphasis on sorting out the motorised schemes. It is understood that hand pumps and springs are also a problem. However, it is recognised that JICA and others are specifically working in this area of capacity building and the option to include them in training should be considered. It is also felt by the authors of this report that the practical experience and importantly the confidence gained from being enabled to tackle relatively complex motorised systems on the on hand will greatly assist EM Technicians when dealing with the relatively lower technology of hand pumps and springs.

It is recommended that WaterAid encourage the commencement of hydrometric data in its capacity building work. It is recognised that this is not always easy and that there are often many good reasons why it is difficult but unless the process is started it will never get easier. Whilst water level and flow data are vital to the process, more anecdotal data should not be neglected. Local schools should be encouraged to monitor and record flows in their local springs and where possible water levels in their wells and boreholes. Local end users of water supply schemes should be encouraged to notice and report changes in observed water quality and source performance (e.g. the statements - "it is getting harder work to get water from this hand pump every year" or "it takes longer to fill our pots from this spring than it did last year" or "sometimes the water form the well is cloudy" – are all valuable bits of data. They should be recorded in a site log which is regularly checked by Washco technicians).

Over the past 3-4 years the PfWS Country Manager has built up a good relationship with the Regional WRB and now the Zonal WRDO. WaterAid should consider utilising this resource to assist in advocacy and governmental liaison. It is felt by these authors that the tie up between PfWS and WaterAid in-country proved a very effective combination in the organisation, execution and liaison for the January 2010 training event.

6.2 Support for WRDO Zonal Office

It was clear during the Arba Minch training event that the Zonal WRDO is well aware of the challenges that face it in terms of supporting its Woredas and Kebeles in achieving the Universal Access Plan and Millennium Development Goals. The commitment of the Zonal Office Head to the project was clear and impressive during the training event.

The Zonal WRDO needs to recognise its role as the final backstop for water supply scheme maintenance and rehabilitation. It is to be encouraged to make every effort to become a centre of excellence and best practice. The initiative being planned by WAE and ORBIS represents a significant opportunity in terms of capacity building for WRDO staff and the provision of basic equipment for recommissioning work.

The benefits of an adequately equipped demonstration site where technicians can be see the technology and get their hands on it, were seen on a previous PfWS training visit to Hawassa. This site was created by the Senior Regional EM Technician (Ato Tesfaye Nake) with limited funds using available non-operational pumps and other equipment. It is strongly recommended that this type of facility should be developed within Arba Minch. It is reiterated that such a site may already exist within the University and that liaison with this institution for some kind of shared use would be worthwhile. If this facility does not exist then the Zonal WRDO is strongly encouraged to make a start on creating one. Liaison with Ato Tesfaye Nake on this issue would be a good starting point.

The Zonal Office should work hard to recruit trained and, where possible, experienced people (though it is understood that such people are difficult to find). The emphasis should be on becoming a centre of excellence and providing leadership and training to the Woreda and Kebele technicians.

Hydrometric monitoring has been stressed by PfWS as being an important part of the process of recommissioning. The local limitations and difficulties of collecting flow and water level data are understood by PfWS. However, the value of long term, progressive data sets is immeasurable and these datasets have to start somewhere and it is important that inertia is created! **It is strongly recommended that the Zonal WRDO set a strong example in this by carrying out the following actions in the short term:**

- Identify a local borehole where access is easily available for water level measurement
- Arrange to have a dip tube installed if not already present
- Organise for a Zonal or local Woreda Technician to commence fortnightly of monthly measurement (in association with a Washco operator) of a pumped and a non pumped water level (a dipmeter is known to be available in the Zonal WRDO office)
- Maintain frequency of measurement (make it a habit, it will soon turn into a behaviour pattern and will then become a culture!)
- Plot the results on a graph the same day or soon after to show progress
- Do the same with a local on-spot spring flow measurement

It will not take long to build a trend in water levels and flow that will significantly enhance the recommissioning initiative and be a good example of best practice that can be disseminated as

part of project. The data can be used i) to indicate the recharge conditions within the aquifer (static water levels) and ii) the performance of the aquifer and the specific borehole

As part of the WaterAid/ORBIS initiative some significant equipment is proposed to be given to the Zonal WRDO. This includes a crane and a truck. The responsibility for manning this kit is with the Zonal WRDO. It is recommended that the Zone work closely with WaterAid to identify and train suitable operatives to ensure that the equipment is fully utilised in an appropriate manner for the recommissioning of community water supply schemes.

6.3 Recommendations for UK Partners in overtaking of the ongoing Partners for Water and Sanitation's Support activities

The WaterAid/ORBIS recommissioning initiative represents a significant step towards improving the functionality levels in the Gamo Gofa Zone and Konso and Derashe Special Woreda. PfWS UK Partners should support this initiative in whatever ways are possible from within PfWS UK partners.

PfWS UK Partners can support the recommissioning initiative by supplying specific, specialist and importantly, practical training for hydrometric monitoring and electrical-mechanical training of technicians. It is important that for future events any practical training is well prepared in advance so that demonstration facilities (boreholes, pumps, pipes etc) are available.

PfWS UK Partners can assist WAE in the issue of spare parts. The procurement, distribution and storage of suitable spares remains an issue that needs to be addressed in country. UK partners (logistics experts) could be available to assist in this area but it does need a concerted effort to deal with this problem.

Great interest was shown by the EM Technicians over simple, practical diagnostic techniques that can be used in the field to assess maintenance or rehabilitation needs. For example, in motorised schemes what are the important factors to look, listen and smell for! The water quality from a borehole can give the user / operator / technician clues as to what is going on within the borehole. For example, if the pumped water is cloudy and the cloudiness clears from the bottom up, the cloudiness is caused by air entrained in the water. This could mean that the water level has right down by the pump suction and cavitation is occurring. This can be due to an oversized pump. If it occurs progressively then it could mean that the borehole is clogging up and needs to be rehabilitated or it could mean that regional water levels are low. In the light of this it is recommended that PfWS UK partners attempt to put together a very simple diagnostic manual of things that can commonly go wrong from the hydrometric and the electro-mechanical aspects of the scheme. This field level training material would represent an important output from PfWS involvement. A draft of a hydrometric document will be prepared for circulation to WaterAid Ethiopia/ORBIS and PfWS Ethiopia within the next 4 – 6 weeks.

The Water Sector policy of decentralisation and delegation of the responsibility for monitoring, maintenance and rehabilitation is now beginning to be implemented. However, it is recommended that the link with the Regional WRB, that the PfWS Country Manager has worked tirelessly to develop, be retained and strengthened. There is still a strategic role for the Regional WRB and PfWS UK Partners can continue to support them to develop and implement the strategic recommendations made after the previous two visits. The Gamo Gofa Zone should prove to be a useful model in this process but PfWS UK Partners should be alive to the fact that there are still another 12 Zones within the SNNPR. It is strongly recommended that PfWS UK Partners continue to work with the Regional WRB to implement the strategy by ongoing training and support and seeking out strategic partners like WaterAid to work with in other Zones and Woredas.

Appendix A: Partners for Water and Sanitation – Project Terms of Reference

Project Title	Support to re-commissioning of water supply schemes in Gamo Gofa zone and in Konso and Derashe Special Woredas, Ethiopia
Justification	It is reported that more than 30% of schemes in SNNPR including the Gamo Gofa zone are currently not functioning. Attainment of MDGs and Universal Access Plan (UAP) by the year 2015 and 2012 respectively will be hard if appropriate and timely action is not taken regarding the non-functional schemes in the region. To this effect, Partners for Water and Sanitation with support from UK partners form Wessex Water Services ltd, UK helping in the process of developing a strategy development for the recommissioning of schemes in SNNPR. The causes for non functionality are numerous and include anything from the failure of a small replaceable component of a hand pump, the malfunction of a complex generator, drying up of a well or spring due to lack of recharge. The major constraints affecting the sustainable delivery of safe adequate water supply for the population in the region as well as the community in Gamo Gofa and the two special woredas various and complex. A strategy need to be devised suitable for each specific region. In March 2009 Partners for Water and Sanitation UK team from Wessex Water Services ltd, UK made a follow-up visit to Ethiopia, to work with the Southern Nations, Nationalities and Peoples Region (SNNPR) Water Resources Development Bureau (WRDB). This support has, to date, focused on the strategy development in recommissioning of schemes. Partners for Water and Sanitation together with WaterAid Ethiopia want to cascade down the recommissioning strategy to zones and woredas in SNNPR.. One of such areas the Gamo Gofa zone and Konso and Derashe special woredas. The project aims to build the capacity of staffs in the zone and special Woredas specified in rehabilitation of schemes based on the on going regional strategy for sustainable re-commissioning of schemes. It also aims to provide required technical and management support for implementing the strategy.
Aims and Objectives	This project aims to help in developing needs-based training materials and to deliver initial training packages, to support sustainable re-commissioning of water schemes in Gamo Gofa zone and in the two special woredas of SNNPR. It also aims to provide technical and managerial support for implementing the region's water sector strategy in the Gamo Gofa zone and in the two special woredas of SNNPR , by assisting them in implementing the Partners for Water and Sanitation recommendations of the regional recommissioning support.
Deliverables	The UK partners team will work in conjunction with WaterAid Ethiopia and other key stakeholders such as ORBIS Ethiopia who are currently working in the area of capacity building with the Water resources bureau in general and the Gamo Gofa zone and the two special woredas in particular, to carry out a training on the scheme rehabilitation.

	The key activities are: ▪ Make an initial training on scheme rehabilitation, and in parallel assess for further possible areas of training on scheme rehabilitation/recommissioning. ▪ Work with other key stakeholders to assist in developing/standardising appropriate training materials (such as guidelines and manuals), making use of existing training package materials where possible.. ▪ Conduct initial training on scheme rehabilitation, supported by workshops where appropriate. Key deliverables include: ▪ Report on initial training support visit that based on the regional recommissioning support assessment process and the WAE's base line survey in the areas; ▪ Identified and /or standardised materials for delivering training packages; ▪ Report on further identified training needs, based on the parallel assessment process during the initial training visit;
Impact	This support to the Gamo Gofa zone and the two special woredas would contribute to the WRB's effort in improving the sustainability of water supply for the community in the region. Providing support to the staff of the water resource office in Gamo Gofa zone and in the two special woredas of SNNPR in aspects of defining roles and responsibilities of staff involved in re-commissioning schemes and engaging with local communities, will improve the accountability of local water service delivery.
Scope	The scope of input required by the Partners for Water and Sanitation UK partner includes: ▪ Consolidate the assessment of current levels of experience amongst key stakeholders (WaterAid Ethiopia, ORBIS International Ethiopia ,WRDB staff, Zonal & Woreda water offices and Water committees, etc.); ▪ Help in developing training packages for rehabilitation/re-commissioning of schemes, based on the existing assessments and recommendations; ▪ Delivery of capacity building training support to implement the training packages (Training of Trainers (ToT)); ▪ Provide input to the staffs of WAE, Gamo Gofa zone water resource department and the two special woredas water resource offices in the development of 3-5 years program and action plans for rehabilitation of water supply schemes.
Organisation and methodology	It is anticipated that this project requires a team of 2 people, offering complimentary skills and experience in areas including project management, operation and maintenance of water schemes, training and needs assessment. The lead contact within the WAE will be Ato Takele Kassa, Director for WASH assisted by Dr Muktar Abduke, Contract Funding Coordinator of WAE, who will be responsible to facilitate the work from WaterAid side At present, the WAE's Konso sub Office will facilitate the cooperation and input of other key stakeholders, to enhance integration among various actors at Zonal and Regional Woreda. The WAE will assign a focal person, who will be responsible for coordination either from head office and /or Konso sub Office until the project structure is put in place. The Partners for Water and Sanitation UK team will develop a report on initial training and identified draft training packages within one month of the

	initial visit, and issue this to the WAE. Following the receipt of appropriate feedback from the WAE and other key stakeholders, the UK team will prepare a final report. The extent of Partners for Water and Sanitation UK team input to the further delivery of capacity building / ToT training will be based on the agreed recommendations from the former regional recommissioning project reports and their own initial findings. Feedback from each capacity building / ToT phase will be reviewed carefully by the WAE, ORBIS and Zone water resource department and Woreda water resource offices.
Milestone plan	A 8 days support visit by 2 UK experts is proposed to take place in mid December, 2009. The visit will include: • 3 days preparatory discussions WAE, ORBIS and with the Zone water resource department as well as with a selected water resource office allowing for additional 2 days round trip; • 3 days trainings in recommissioning of schemes will be carried out. A draft report is to be prepared within 4 weeks of the support visit – for comment by WAE and key stakeholders. A final report is to be prepared within 4 weeks of receipt of feedback from WAE and other key stakeholders. Ongoing remote support to this scheme rehabilitation program/project is anticipated, following-up on advice given and actions agreed during the training visit.
Resource estimate	It is anticipated that this support can be carried out by two experts with relevant skills and experience in the schemes rehabilitation/recommissioning. Input from the Partners for Water and Sanitation UK expert is expected to comprise the following inputs (excluding travel time): **Initial support:** • 10days, allowing 2 days preparation in the UK and 8 days in Ethiopia • Up to 3 days for writing the draft report • Up to 2 days for writing the final report • Up to 4 days for ongoing remote support Further support may be likely, but this is subject to discussion and agreement between those concerned.
Dependencies	Timely feedback on reports issued and effective communication with WAE will be crucial to ensure this work is carried out successfully and efficiently. This will be assisted by the Partners for Water and Sanitation Country Manager, Melkamu Jaleta.
Issues/Risks	**Risk:** Lack of information and Communication with the direct beneficiaries,

	the Zone and Woreda Water Department and Offices respectively. **Mitigation:** The Country Manager will liaise with WAE staff and other stakeholders to secure as much information & relationship as possible, in advance of the training. **Risk:** In-country health, safety and security. **Mitigation:** The Country Manager & UK Secretariat will work with the UK expert to undertake a thorough Health & Safety and Risk Assessment procedure prior to travel.
Communication Strategy	The key contact in Ethiopia is the Partners for Water and Sanitation Country Manager, Ato Melkamu Jaleta. The key contact in Ethiopia from WaterAid Ethiopia will be To Takele Kassa assisted by Dr. Muktar Abduke
Review Mechanism	Project-specific review mechanisms are to be agreed to by the Partners for Water and Sanitation UK expert. A visit report will be prepared after the training visit in Ethiopia, reporting against the visit objectives and making suitable recommendations. In addition the Country Manager will feed into the Secretariat's quarterly reports on project progress, for submission to the Steering Group. On completion of the project, the Partners for Water and Sanitation UK expert may be required to help produce a final project report, detailing the project outcomes and impacts.
Approvals (as appropriate)	**Rebecca Scott**, Partners for Water and Sanitation UK Project Manager **Sarina Prabasi**, Country Representative for Water Aid Ethiopia
Compiled by	**Melkamu Jaleta**, Partners for Water and Sanitation Country Manager, Ethiopia **Takele Kassa**, Director for WASH Department of WAE
Date	**11th November 2009**

Appendix B: Arba Minch Joint Capacity Building – Training Programme

WaterAid Ethiopia (WAE) and Partners for Water and Sanitation

Joint Capacity Building Support to Gamo Gofa Zone WRDO of SNNPR on the Rehabilitation of Schemes, Arba Minch, Ethiopia

25th to 29th January, 2010

Date	Time	Activities	Responsible person	Facilitator(s)
Day 1: Monday, 25th January, 2010 (Workshop)	8:30 – 9:00	Registration	G/G Zone WRDO	WAE Konso sub Office
	9:00–9:20	Presentation and discussion on the status of scheme functionality in the zone	Head of G/G Zone WRDO	Ato Melkamu/ Ato Shibabaw
	9:20-9:40	Presentation by UK experts on their experience of rehabilitation of Schemes	Paul Stanfield and Mike Fray	Ato Melkamu/ Ato Shibabaw
	9:40– 10:30	Discussion on the need for Rehabilitation of schemes and the need for developing a long term plan	Participants	Paul Stanfield and Mike Fray
	10:30 – 11:00	**Coffee / Tea Break**		
	11:00 - 11:30	Group discussion on the possible measures to undertake for the coming two to three years for the Rehabilitation of schemes in Gamo Gofa Zone	Participants	Paul Stanfield Mike Fray
	11:30– 12:30	Group Presentation on the possible measures to take for the coming two to three years for the Rehabilitation of schemes	Participants	Paul Stanfield and Mike Fray
	12:30 – 13:30	***LUNCH BREAK***		
	13:30 - 15:30	Group discussion and presentation to Assign roles and responsibilities in the above process and in the project formulation and write up stage	Participants	Paul Stanfield and Mike Fray
	15:30 -16:00	***COFFEE / TEA BREAK***		
	16:00 – 17:30	Summary of the major tasks to undertake the scheme rehabilitation CB in the coming 2 to 3 years and identifying and the stakeholders in the process and next steps and way forward	Paul Stanfield and Mike Fray	Head of GG Zone WRDO and WAE (Ato Shibabaw)
Day 2: Tuesday 26th January, 2010(Training)	8:30 – 9:00	Registration	Gamo Gofa Zone WRDO	WAE/Konso Sub Office
	9:00 - 10:00	Present on a basic concept of field hydrometric monitoring and data management	Paul Stanfield	Ato Melkamu/ Ato Shibabaw

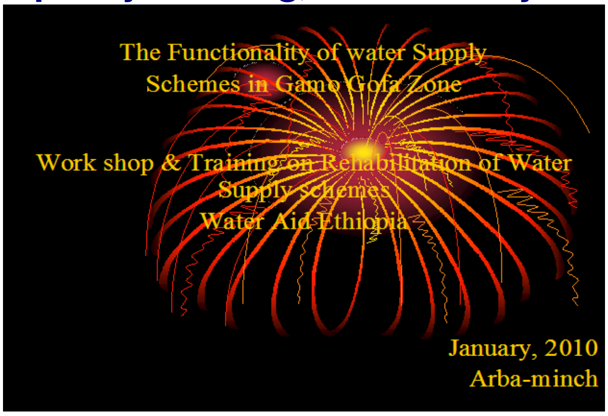
Date	Time	Activities	Responsible person	Facilitator(s)
	10:00 – 10:30	Present and discuss the importance of effective asset and data management and the effect of field hydrometric monitoring & data handling on scheme rehabilitation	Paul Stanfield	Ato Melkamu/ Ato Shibabaw
	10:30 – 11:00	**Coffee / Tea Break**		
	11:00 – 12:00	Group discussion and presentation on how the absence of hydrometric monitoring & scheme data would adversely affect the scheme rehabilitations	Participants	Ato Melkamu/ Ato Shibabaw
	12:00 - 12:30	Presentation on data needed for the monitoring of schemes by sources: e.g.: ground water (bore hole/deep well SW, hund dug well, etc), surface water (spring, river intake, etc)	Paul Stanfield	Ato Melkamu/ Ato Shibabaw
	12:30 - 13:30	**LUNCH BREAK**		
	13:30 - 15:30	Presentation on practical water level and flow measurements s well as the review of data handling and reporting procedures	Paul Stanfield	Ato Melkamu/ Ato Shibabaw
	15:30 - 16:00	***COFFEE / TEA BREAK***		
	16:30 – 17:30	Summary of the day's training and outlining of the next steps	Paul Stanfield and Mike Fray	Ato Melkamu/ Ato Shibabaw
Day 3: Wednesday 27th January, 2010 (Training)	8:30 – 9:00	Registration	Gamo Gofa Zone WRDO	WAE/Konso Sub
	9:00 - 10:00	Presentation to share experience on mechanical aspects of scheme rehabilitation by focusing more on motorized schemes	Mike Fray	Paul Stanfield
	10:00 – 10:30	Panel discussion on the above presentation to link it with the existing mechanical problems	Mike Fray	Paul Stanfield
	10:30 – 11:00	**Coffee/Tea Break**		
	11:00 – 12:00	Presentation to share experience on electro-mechanical aspects of scheme rehabilitation by focusing more on motorized schemes	Mike Fray	Paul Stanfield
	!2:00 – 12:30	Discuss to link the above presentation with the existing electrometrical problems	Participants	Paul Stanfield and Mike Fray
	12:30 - 13:30	Lunch Break		
	13:30 - 15:30	Group work on how to undertake the electromechanical rehabilitation of schemes based on a selected case study	Participants	Paul Stanfield and Mike Fray
	15:30 - 16:00	Coffee/Tea Break		
	16:30 – 17:30	Panel discussions on the group work and Wrap up of the day	Participants	Paul Stanfield and Mike Fray
Date	**Time**	**Activities**	**Responsible person**	**Facilitator(s)**
Day 4: (Thursday	8:30 – 9:00	Registration	Gamo Gofa Zone WRDO	WAE/Konso Sub Office (Ato Hagos)

Date	Time	Activities	Responsible person	Facilitator(s)
28th January, 2010)	9:00 - 12:30	Field exercise on hydrometric monitoring, with emphasis on water level and flow measurement and also on how to handle scheme data collection and management. (It would be very useful if the WAE/Konso sub office could bring along any flow measuring devices (well tapes etc)	Paul Stanfield and Mike Fray	Gamo Gofa Zone WRDO WAE (Ato Shibabaw)/Konso Sub Office (Ato Hagos)
	12:30 – 13:30	***Lunch Break***		
	13:30 – 16:30	Field Exercise on Elecro-mechanical aspect with specific more focus on motorized schemes Review data handling and reporting procedures	Paul Stanfield, Mike Fray and WRB Technician (Ato Tesfaye Nakie)	Gamo Gofa Zone WRDO WAE (Ato Shibabaw)/Konso Sub Office (Ato Hagos)
	16:03 - 17:30	Wrap up of the day	Paul Stanfield and Mike Fray	Gamo Gofa Zone WRDO WAE (Ato Shibabaw)/Konso Sub Office (Ato Hagos)
Day 5: (Friday 29th January, 2010)	8:30 – 10:30	Make a joint wrap up meeting of the week's Support events and discuss on the next steps and the way forward	Gamo Gofa Zone WRDO, WAE, PfWS team (MJ/TY & UK experts)	Gamo Gofa Zone WRDO WAE (Ato Shibabaw)/Konso Sub Office (Ato Hagos)

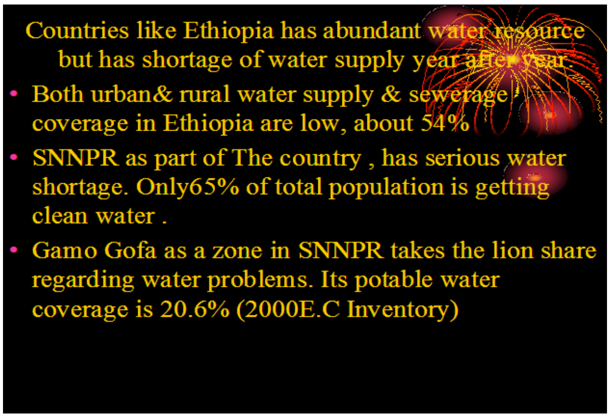
Appendix C: Participants List for Gamo Gofa Zone Scheme Rehabilitation

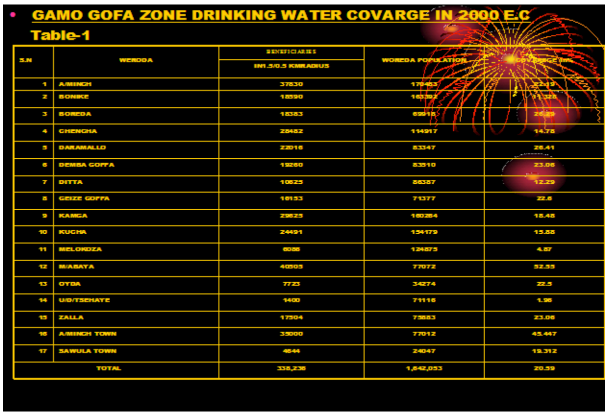
Name	Organization	Responsibility	Email/Mobile
Eshetu Elto	GG zone	Head of Department	0912051798
Gezahegne Gelebo	Konso	Electro Mechanical Technician	0910084649
Olkanto Oycha	Dita	Electro Mechanical Technician	0913726598
Ketema Tare	Melo Koza	Electro Mechanical Technician	0910805509
Sasigo Sharato	Mirab Abaya	Electro Mechanical Technician	0916278360
Lemlem Bogale	Demba Gofa	Electro Mechanical Technician	0910438823
Eshetu Yilko	Oyda	RWSS	0910592553
Matteos Mena	Kucha	Electro Mechanical Technician	---
Daniel Abebe	GG Zone	Water Desk Coordinator	0911768483
Workneh Abraham	A/Zuria	Team Leader	0912132660
Zelalem Tamene	Zala	Team Leader	0916873467
Daniel Seid	Chencha	Electro Mechanical Technician	0916036308
Eneyew Tsigie	GG Zone	Electro Mechanical Technician	0910602547
Bekeket Tilahun	Konso	Electro Mechanical Technician	0912284207
Demeke Dubale	Ubba	Electro Mechanical Technician	0913962419
Yewubdar Ambaw	Geresae	Electro Mechanical Technician	0916879526
Gasala Wursh	Geze Gofa	Electro Mechanical Technician	0916873034
Messele Zewdie	GG Zone	Water Engineer	0916854605
Zerihun Paulos	Daramalo	Electro Mechanical Technician	0913831159
Abraham Meskelu	Derashe	Electro Mechanical Technician	0910322374
Mesele Aynalem	Zone WMED	Community Promotor	0916854384

Appendix D: Gamo Gofa Zone Water Resources Development Office Presentation – Delivered by Ato Eshetu Elto, Arba Minch Joint Capacity Training, 25th January 2010.

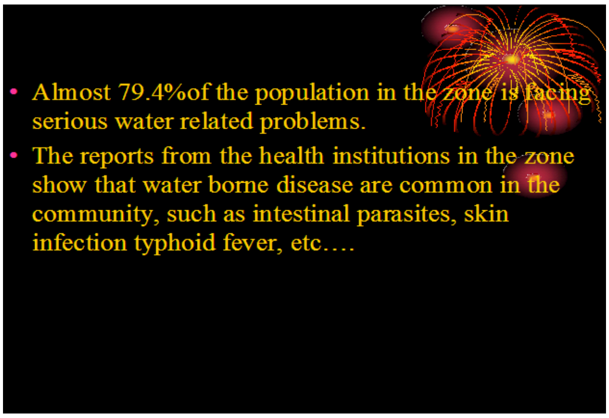



• The Functionality of water supply schema In Gamo gofa
• Background & Justification
• Water is fragile, finite& nutritional resource
• It is essential for domestic, agricultural, pubic &industrial use.
• Almost 75%of our planet is cove red by water but it is unevenly distributed & being consumed in unfair manner.
• Water development practice in different parts of the world defers greatly.
• Some have used much & even started mining& some others are using wisely & adequately.

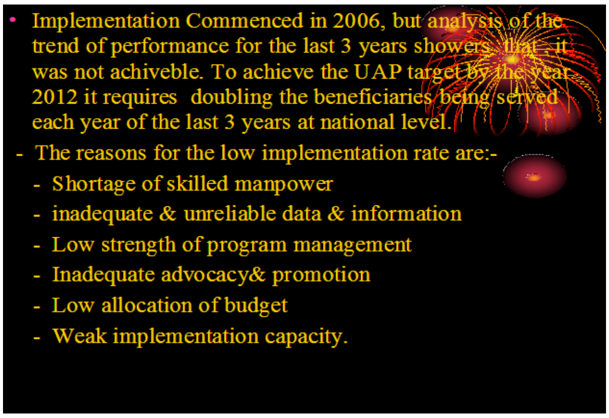

Countries like Ethiopia has abundant water resource but has shortage of water supply year after year
• Both urban& rural water supply & sewerage coverage in Ethiopia are low, about 54%
• SNNPR as part of The country , has serious water shortage. Only65% of total population is getting clean water .
• Gamo Gofa as a zone in SNNPR takes the lion share regarding water problems. Its potable water coverage is 20.6% (2000E.C Inventory)

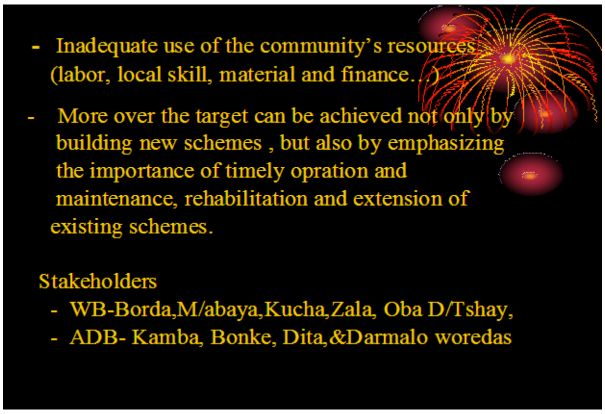


S.N	WERODA	BENEFICIARIES IN1.5/0.5 KMRADIUS	WOREDA POPULATION	COVERAGE IN%
1	A/MINCH	37830	170463	22.19
2	BONIKE	18590	163392	11.328
3	BOREDA	18383	69918	26.29
4	CHENCHA	28482	114917	14.78
5	DARAMALLO	22016	83347	26.41
6	DEMBA GOFFA	19260	83510	23.06
7	DITTA	10625	86387	12.29
8	GEIZE GOFFA	16153	71377	22.6
9	KAMGA	29625	160284	18.48
10	KUCHA	24491	154179	15.88
11	MELOKOZA	6086	124875	4.87
12	M/ABAYA	40505	77072	52.55
13	OYDA	7723	34274	22.5
14	U/D/TSEHAYE	1400	71116	1.96
15	ZALLA	17504	75883	23.06
16	A/MINCH TOWN	35000	77012	45.447
17	SAWULA TOWN	4644	24047	19.312
TOTAL		338,236	1,642,053	20.59


• Almost 79.4%of the population in the zone is facing serious water related problems.
• The reports from the health institutions in the zone show that water borne disease are common in the community, such as intestinal parasites, skin infection typhoid fever, etc.…


• Government leaders of the world committed them selves to halv people living without sustainable access to safe drinking water & sanitation by 2015(MDG)
• Ethiopia is committed to fulfill the target of the MDG in water supply by 2015.
• More over the Ethiopia Government has ratified the universal Access program (UAP) in 2005 to provide access to safe water for 98% of the rural & 100% of the urban population of the country by the year 2012.(More target with relatively short time compared to the MDG)


• Implementation Commenced in 2006, but analysis of the trend of performance for the last 3 years showers that it was not achiveble. To achieve the UAP target by the year 2012 it requires doubling the beneficiaries being served each year of the last 3 years at national level.
- The reasons for the low implementation rate are:-
- Shortage of skilled manpower
- inadequate & unreliable data & information
- Low strength of program management
- Inadequate advocacy& promotion
- Low allocation of budget
- Weak implementation capacity.


- Inadequate use of the community's resources (labor, local skill, material and finance…)
- More over the target can be achieved not only by building new schemes , but also by emphasizing the importance of timely opration and maintenance, rehabilitation and extension of existing schemes.
Stakeholders
- WB-Borda,M/abaya,Kucha,Zala, Oba D/Tshay,
- ADB- Kamba, Bonke, Dita,&Darmalo woredas

- UNICF –Oyda,Damba Gofa, Geze Gofa, Mirab Abaya
- NGO'S – World vision-Chencha & M/Abaya Wordas
- Interaid France- Darmalo
- Hop International –Bonke

Red Cross, Mekan Iyesus, Kale Hiwot Projects are also acting in different woredas.

- Currently water Aid Ethiopia in collaboration with partners in 15 woreds & 2 towns .

2. Functionality & Service level

- Sustainability of rural & urban water supply schemes are a key factor in meeting the MDG'S & UAP

A water Supply service is sustainable if :-

- It is functioning & being used
- It is able to deliver an appropriate level of benefits
- It continues to function over a prolonged period of time

- Its management is institutionalized
- The community itself manages the system
- It adopts a perspective that is sensitive to gender issues
- Its operation, maintenance, rehabilitation, replacement & administrative costs are covered at local level.
- It does not affect the environment negatively,

Gamo Gofa Zone, overall water supply coverag is 22.9% therefore potable watr coverage of the zone should be boosted to save the community specially women and children from harmful traditional practices.

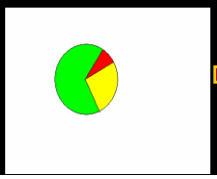
- According to the inventory done in the year 2000 E.C there are 850 water schems in the zone .
- Of these - 116 hand dug well
  - 125 machine drilled shallwowells
  - 58 Boreholes
  - 551 springs of this 314 on spot,17 medium spring & 65 large spring

- Functionality &Non-Functionality Schems in 2001

No	Type of Scheme	No of schem	No of schem		No of schem		No of schem	
			Fn	%	N.Fn	%	Abandand	%
1	Hand dug well	116	62	53	45	39	9	8
2	Shallow well	125	77	61.6	44	35.2	4	3.2
3	Bore hole	58	39	31.2	16	12.8	3	2.4
4	small spring	314	257	81.8	56	17.8	1	0.3
5	Medium sping	172	111	64.5	60	34.9	1	0.6
6	Large spring	65	64	98.5	1	1.5	0	0
	Total	850	610	71.8	222	26.1	18	2.1

- The number of population getting clean water from these scheme is 387,311 (22.9%) from the total population of the Zone (1,691,315)
- The proportion of functional & Non-Functional Schemes.

Fig 3.



¦ functional (72%)
□ Non-Functional (26%)
? Abounded (2%)

- The Non-Functionality reach 222 in number (26.1%) Abounded scheme about 18(2.1%) of the total schemes

- This shows there is high frequency of scheme and water point breakdown, which severely affects water service delivery,

Causes of scheme Non- functionality are

- Lack of regular follow-up & supervision
- Installation of inappropriate technology

- Lack of trainee operators & absence of timely servicing motors
- Pump failure, generator problems & pump head problems
- Scheme breakdown
- Watsan committee management problem
- Constriction problems are the major ones.
- Others are some Schemes served beyond their design period
- During dry season there is high pressure or load on some schemes.

- Some water points provide a service for 5-12 hr per day.
- Quening time is high during dry season (it takes time up to 9 hr)
- When schem break downs occur, the speed of maintenance is too low.
  - Maintenance of minor breakdowns are performed by woredas& zonal department within two weeks (But No movile garage)
  - Major break down are performed by regional water bureau & takes minimum 12 months.

- Unless the Non-Fun. Schemes are maintained immediately, the high pressure on the reaming schemes could lead to break down of those schemes especially during dry season.

Watson committee problems

Internal problems

- Lack of community cohesion
- Lack of management skills
- unstrengthning committee
- technical problems
- Financial problems

- External problem
  - Non-existence of or weak water supply
  - lack of standardized technologies
  - Poor design & constriction faults
  - Lack of specialized spare parts supplying shop

Recommendation

? Replacement of schemes beyond their design period & are not Currently providing a service

? Constriction of new schemes in area of high demand

? Constriction of new schemes at reasonable distance

? Implementation of integrated water shed management activities for source conservation , enhancement & protection .

- Community participation to create a sense of ownership.
- Strict follow-up & supervision
- Capacitating WATSAN through training & provision of maintenance kits
- Promotion of the private sector to open a spare parts shop
- Creation of coordination among stakeholders to fill the gap in O&M
- Establishment of good information mang't system
- Capacitating zonal WMED'nt with Movil garage to O&M of major break downs.

THANK YOU

Appendix E: Partners for Water and Sanitation – Presentation on Hydrometric Monitoring and Database

On attached CD

Appendix F: Partners for Water and Sanitation – Presentation on E&M Issues

On attached CD

Appendix G: Feedback from Attendees at Joint Capacity Building Training, Arba Minch.

	Responses	Score (1-6)
Regarding relevance of course content	5.11	
What I learnt in this course will help me improve my performance?	*20*	5
Material and issues were current and worthwhile	*20*	5.1
The course was relevant to my needs	*20*	5.1
Regarding the quality of course design	5.17	
The structure and institutional modes of the course encouraged learning	*20*	5.38
The course objectives were fully addressed	*20*	5.33
The course actively and effectively engaged me through-out	*20*	5
The duration of the course was just right	*20*	5
Overall this was a high quality course	*20*	5.11
Relative to other training that I have attended I would rank this course as one of the best	*20*	5.22
Regarding the quality of the instructors	5.5	
The instructors encouraged and responded will to questions	*20*	5.5
The instructors have knowledge in the course content	*20*	5.44
The instructors treated participants with respect	*20*	5.38
The instructors were well prepared and organised	*20*	5.66
The pace of instruction was just right	*20*	5.72
Comments		
Please comment on any of the statements in the previous sections, particularly those you disagree with.(e.g. if the duration of the course was right, was it too short or too long?) • The duration of the course is short		
Where there any aspects of the course that you think should be improved? • The theoretical aspect of the course is good and should match with practice		
Which parts of the course did you find useful? • Data collection and hydrometric monitoring • Maintenance and repair part of the course and rehabilitation • The group discussion • The maintenance system was good • The maintenance and repair of water schemes • The electromechanical part of the course • Scheme design and monitoring and evaluation		
General comments • Please continue with this and keep up		