



Partners for Water and Sanitation

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Partners for Water and Sanitation

**Southern Nations, Nationalities and Peoples
Region (SNNPR) Water Resources Bureau:
Capacity Development to Provide Technical and
Managerial Support for the Re-commissioning of
Water Schemes Strategy
Phase II Report**

Submitted by:

**Chris Chambers (Wessex Water Services Ltd)
Paul Stanfield (Wessex Water Services Ltd)
Melkamu Jelata (Partners for Water and Sanitation)**

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Contents amendment record

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| 1 | Draft I for WRB Comment | June 2009 | Paul Stanfield |
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| | | | |

Southern Nations, Nationalities and Peoples Region (SNNPR) Water Resources Bureau: Capacity Development to Provide Technical and Managerial Support for the Re-commissioning of Water Schemes Strategy Phase II Report

1. Introduction

In March 2009 Partners for Water and Sanitation partners, Chris Chambers and Paul Stanfield from Wessex Water Services Ltd, UK made a follow-up visit to Ethiopia with Partners for Water and Sanitation Country Manager, Ato Melkamu Jaleta, to work with the Southern Nations, Nationalities and Peoples Region (SNNPR) Water Resources Development Bureau (WRDB). The project concerns the re-commissioning of improved sources (boreholes, wells, protected springs etc) that have ceased to function. Partners for Water and Sanitation's role is essentially to work with the WRB to develop the re-commissioning strategy and local capacity development.

The Wessex Water team made an initial (Phase I) visit in March 2008, comprising of workshops, meetings and site visits with WRDB staff and relevant partners from across the water, health and education sector (NGO's and State run facilities). The purpose of the initial visit was to review the existing re-commissioning situation and make recommendations with regards to developing the strategy within the context of existing partnerships and priorities. The output from the initial visit was in the form of a report entitled "Southern Nations, Nationalities and Peoples Region (SNNPR) Water Resources Development Bureau: Capacity Development to provide technical and managerial support for the water supply strategy and re-commissioning of Water Schemes (88 ETH) – May 2008".

2. Recommendations from the Phase I Report

The recommendations from the initial report were accepted by the WRDB and were subsequently worked up into 10 action points for the WRDB to role out with support from Partners for Water and Sanitation.

- (i) To develop an increased knowledge of the SNNPR-WRDB assets, by collecting and collating asset information into a database that will identify site, location, source type, etc. The database will be built on the information collated from previous projects, and will build on the work being undertaken by JICA and SNV
- (ii) To implement a monitoring policy and procedure which will identify water resource information to be collated from each site, with type of data, data frequency and control mechanisms to measure against MDG and UAP targets
- (iii) Develop and formalise management and monitoring data reporting 'down from' and 'up to' appropriate levels within existing Water Bureau structure in order to enable appropriate and timely response to re-commissioning issues.
- (iv) To highlight the most appropriate centre of excellence within each zone for the purpose of coordinating re-commissioning activities. This will include the skills,

- resources, facilities and location and may be focused within either high or low performing Woredas
- (v) To link WRDB Capacity development with other initiatives being delivered within the region to ensure that maximum benefit is achieved. This will include working with key agencies, ministries to delivered a sustainable future including TVTC's and JICA
 - (vi) Develop and formalize management of relationships with water and sanitation NGO's and other service providers
 - (vii) Review and define the WRDB's operating mandate, in relationship to the ability to deliver within the current frameworks, and develop a water policy to clearly outline the role and responsibilities of WRDB
 - (viii) Develop the existing budgetary and action plan process into an auditable business plan with a structured road map for dealing with re-commissioning and business improvement.
 - (ix) Support the development of appropriate operational, technical and financial guidelines to enable the implementation of the regional water sector strategy, utilising resource and funds from both within the bureau and via external sources.
 - (x) To continue to assess the impact on human capacity from changes within the Federal Structure and legal framework within which the WRDB operates, including the potential role of a state and/or national regulatory agency to monitor the provision of water services strategy

3. Actions Resulting from the Phase I Report

The SNNPR WRDB leadership are very positive about moving forward on re-commissioning. In addition to responding to the recommendations in the Partners for Water and Sanitation initial report they are also responding to developments within the Federal system where alternative funding and reporting streams are under proposal.

On point (iv) above, the WRDB initially suggested setting up four centres within the region at which to locate resources (human and equipment) to support the re-commissioning activity. However, after looking at the logistics of these arrangements it was decided to revert to having centres within each Zone. It was felt that this would lead to greater coverage and reduce the potential for inter-Zonal issues in a Region where the Zones are based on different ethnic groupings. SNNPR is unique among Ethiopian Regions in this regard.

A very significant development that the SNNPR WRDB instigated subsequent to the Partners for Water and Sanitation initial visit in March 2008 was a regional resources inventory of all the improved sources within each Zone, Woreda and Kebele. This major piece of work involved significant numbers of WRDB personnel across the Region and took three months to complete in early 2009. Partners for Water and Sanitation was informed of this initiative and asked to comment on the data to be collected and the field sheets prepared for the field staff involved in the data collection. The second Partners for Water and Sanitation country visit was delayed in order to allow the bulk of the work to be done beforehand so that the results of the inventory could better inform the second visit.

It is believed that the collection of a wide range of data under this inventory exercise will add significantly to the WRDBs understanding of the water supply and sanitation situation within their region. This in turn will allow realistic progress on the remaining recommendations from the initial report to be delivered (reiterated in Section 2.0 of this report).

4. Partners for Water and Sanitation Phase II Visit – April 2009

Subsequent to the first visit and discussion that developed from it, Partners for Water and Sanitation was invited to assist SNNPR WRDB by undertaking further workshops and training on re-commissioning in March 2009.

4.1 Objectives of Phase II

There were several key objectives of the Phase II country visit under the re-commissioning project. They included:

- Follow up of progress from Phase I
- Review of lessons learnt from SNNPRs regional water resources inventory
- Workshop on preparation of recommissioning strategy and planning
- Training of key personnel in basic hydrometrics and database management

4.2 Phase II Programme

The Phase II country visit took place from 19th April – 3rd May 2009. In cooperation with the Partners for Water and Sanitation Country Manager, the SNNPR WRDB arranged for a 2 day workshop on Strategy Preparation and Planning in Hawassa. This involved key staff from all levels of the WRDB from each Zone within SNNPR. This Workshop was followed by four days of training on Data Collection, Database Management, data analysis and Hydrometric Monitoring. This was subdivided into 2 days of theoretical training in Hawassa followed by 2 days of field based training focussing on testing boreholes / wells and assessing the condition of springs.

Table 1 below summarises the Phase II programme.

Table 1 – Phase II programme

| Date | Location | Task |
|-------------------------------|----------------------|--|
| Monday 20 th April | Addis Ababa | Meet with Federal Water Resources Ministry Consultants - Discuss re-commissioning issues |
| | | Meet UNICEF – discuss recommissioning |
| Tuesday 21 st | Addis Ababa -Hawassa | Travel |
| Wednesday 22 nd | Hawassa | Preparation |
| | | Initial meeting with WRB Head |
| Thursday 23 rd | Hawassa | Strategy Workshop |
| Friday 24 th | Hawassa | Strategy Workshop |
| Saturday 25 th | Hawassa | Theoretical Training |
| Sunday 26 th | Hawassa | No activity |
| Monday 27 th | Hawassa | Theoretical Training |

| Date | Location | Task |
|----------------------------|-------------|--|
| Tuesday 28 th | Hawassa – | Field work – Springs |
| | Midre Genet | Field work - Boreholes / Wells |
| Wednesday 29 th | Hawassa | Field Work – WRDB Demonstration site |
| Thursday 30 th | Hawassa | WRDB Demonstration of database |
| | Hawassa | Wrap up meeting with WRDB |
| Friday 1 st May | Hawassa - | Travel to Addis Ababa |
| | Addis Ababa | Partners for Water and Sanitation team debrief |

4.2 Ethiopian Federal Ministry of Water Resources – Meeting with Consultants

The Partners for Water and Sanitation team met with Ato Tesfaye, a private national WASH consultant with the Ministry of Water Resources (MoWR) in Addis Ababa on the 20th April 2009 to discuss existing and proposed Management Information Systems (MIS) in relation to re-commissioning issues. This discussion related to the Federal situation and not specifically to the SNNPR. It appears that data collection of the countries water resources and assets has not been systematic in the past but a series of “one off” data collection exercises. Studies in four Regions (SNNPR, Oromiya, Tigray and Amhara) have shown that each region uses different methods and instruments. This has made analysis of the resource and asset condition at Federal level very difficult. The Federal Government is tackling this issue by producing new guidance manuals for MIS. These manuals have been prepared and have been reviewed and accepted by all Regions. Essentially they contain 3 levels or modules namely the Washcom, the Kebele and the Technical Modules. Each of these requires specific types and levels of data to be collected and directed back into the MoWR for analysis. The World Bank is supporting the MIS development and it is being piloted in 5% of the Woredas in each Region as well as certain selected towns. Mention was also made of ‘Woreda Net’, a web based system that is used in video conferencing etc. This could in future be used as a data transmission facility, although it is currently not available in all of the 800 Ethiopian Woredas.

The Partners for Water and Sanitation team also met Ato Ababu in the MoWR. He is one of the Rural National Consultants supporting the Woreda Support Groups (WSGs) within the Regions. He advised that within the SNNPR Region there are four WSGs. These are newly developed Groups and are meant to assist the Woredas in their new responsibilities as recipients of direct funding from the Federal Government for WASH activities including the re-commissioning activities. The WSGs act as consultants on four main areas namely technical issues, planning and management, community participation and sanitation / hygiene. However, at present they lack experience, particularly in the area of project & contract management. This is an area where Partners for Water and Sanitation might be able to assist in the future.

4.3 UNICEF – Meeting with WASH Representative

The Partners for Water and Sanitation team met up with UNICEF in Addis Ababa on the 20th April. The aim of the meeting was to brief UNICEF on the work Partners for Water and Sanitation is doing in order to avoid any unnecessary duplication of effort. UNICEF has been active in producing formats for data collection on water, sanitation and hygiene issues. They have produced a score card system which has been piloted in four regions and accepted as standard for the country. UNICEF advised that they had organised a workshop with the SNNPR WRDB and other stakeholders in Hawassa in early May. Partners for Water and Sanitation team were invited to attend, although the date was after the Partners for Water and Sanitation workshop and the team had returned to UK.

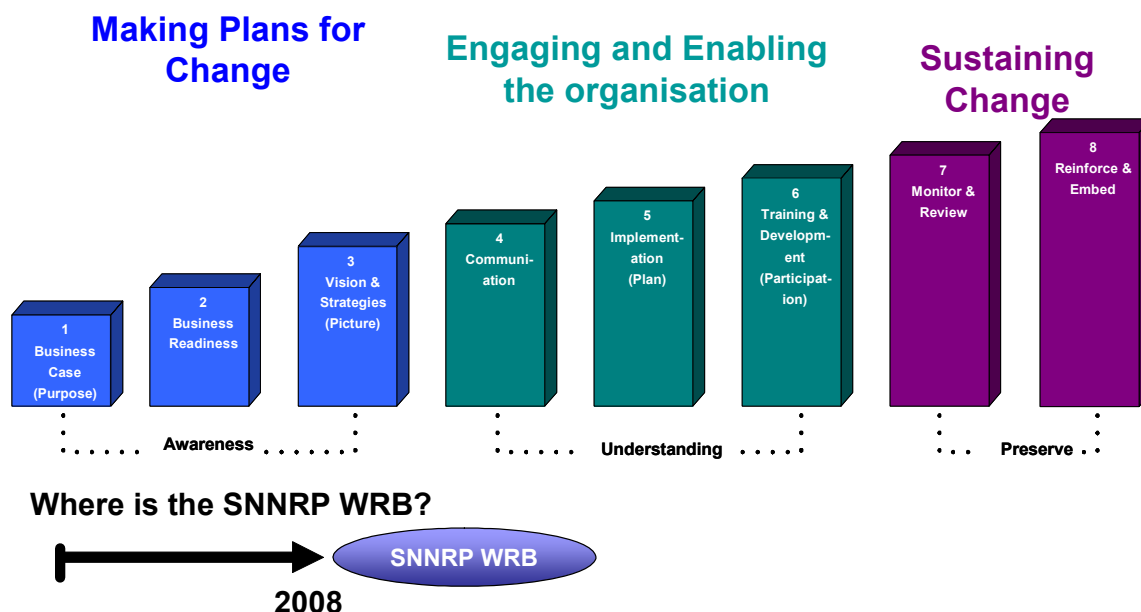
4.4 SNNPR Strategy Workshop 23rd – 24th April

The two day strategy workshop in Hawassa was attended by approximately 40 WRDB staff and from a number of Zones Water offices within the SNNPR Region. A list of delegates is included in Appendix A. The delegates were from across a range of disciplines covering office-based administrative and field-based technical staff. The workshop covered planning, preparation and implementation of strategy. The format of this event was partly instruction in the form of lectures from the front and partly group discussion work and feedback, to ensure that we gained the most for the sessions, and the all could contribute we encouraged the group working to be discussed in Amharic. This proved very successful, with good participation across the groups.

The mix of staff from a range of areas and disciplines worked well. The sharing of experience and knowledge as well as challenges and frustrations from across the region proved to be a significant output of the workshop. The feedback was very positive.

The key themes of the strategy workshop were to explain and discuss the finding documented from the first visit, look at positive that the bureau have delivered over the past year, and show how the strategy links into the daily delivery on the ground.

The presentation recapped on the journey that the bureau have entered into as explained by the diagram below



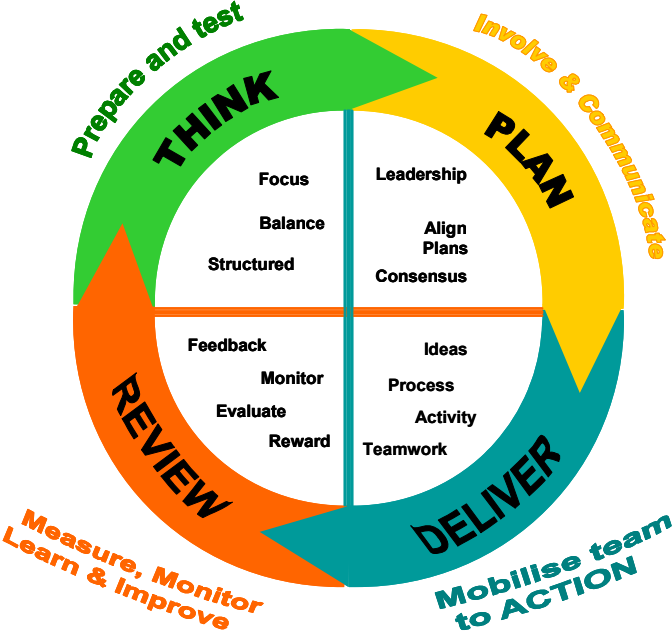
The second part for the training looked at the manager’s role at delivering strategy in the work place. The group were asked to reflect on the major data collection exercise (see appendix 7.3, and review the barriers and challenges ahead for re-commissioning water sources under the four main heading:

1. **Springs – Gravity supply**
2. **Deep Borehole – Electric submersible pump**
3. **Shallow Wells – Afridev or similar**
4. **Deep Wells – Hand Pump – India MkII & III**

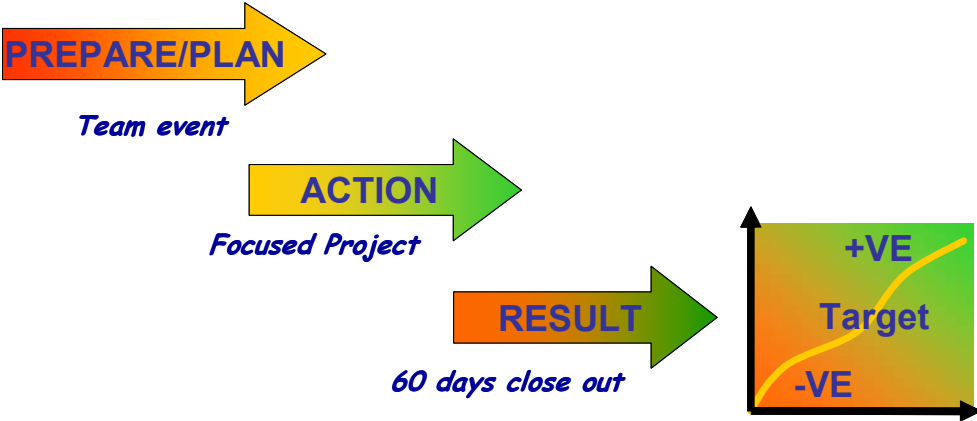
In both these exercised we found that the group working helped to develop cross functional ideas bring engineers, electricians operators and manager together. The group were encouraged to debate in Amharic to aid the working environment, this was greatly aid ed by the in-country manager, although feedback and final presentations were given in English.

The next session focused developing the managers skills to deliver the recommissioning strategy using the following model to prepare, plan deliver and review the implementation of the strategy, two model were suggested

Model 1



Model 2



These were supported by group work to review how these could support the delivery of the recommissioning strategy against the heading of:

1. **Prepare / Plan**
 - **Define issue that you wish to address**
 - **Define targets and success criteria**
 - **Draft plan to resolve issue**
 - **Validate Plan**
2. **Action**
 - **Identify Resources**
 - **Secure Resources**
 - **Implement plan**
 - **Monitor Progress**
3. **Result**
 - **Monitor & Evaluate against target**
 - **Recognise level of success**
 - **Communicate**

The training concluded reflecting of the on the focal points that the recommissioning strategy could include, these were the themes highlighted in the initial report and remain consistent to the finding from this visit

- **Use low cost and standard technologies** commonly used in Ethiopia but is appropriate for the region.
- **Integrate water supply and sanitation and Hygiene activities** in order to bring about an enhanced impact.
- **Strengthen capacities of regional and district water and health offices** in planning, management, and implementation of water supply and sanitation and Hygiene activities.
- **Promote community participation/involvement** to ensure sustainable management of project investments.
- **Work in partnership with the local NGOs, bilateral organizations and private sector** to promote co-ordination of efforts on development as well as emergency intervention.

A copy of the workshop presentations is included in CD format as Appendix B.



Picture 1: Recommissioning Strategy Workshop Discussions



Picture 2: Panel discussions on Group Presentations of the Strategy Workshop

4.5 SNNPR Hydrometric and Database Training 25th – 29th April

The technical training sessions were attended by approximately 20 WRB staff. Most of the attendees were technical, across the range of disciplines (electrical, mechanical, hydrology and hydrogeology) although there were some administrative staff. Once again the format of the training included instruction from the front and group work with feedback.

The first two days of the session were theoretical and covered database issues (set up, management and analysis), basic hydrology / hydrogeology and hydrometric data collection. The mix of disciplines from across the region resulted in very useful discussion that added significantly to the training.

The second two days were scheduled to be field days when the group could visit a range of sites from springs to boreholes and wells. The plan was to carry out simple pumping tests on a borehole to demonstrate the techniques and share knowledge.

The theoretical side of the training went well and the feedback was very positive. The raising the level of understanding of monitoring, data collection, management and analysis among staff of all disciplines has built the capacity of the WRDB in general. This is a very significant outcome of the training. Copies of the presentations are included on CD as Appendix B of this project.

The field work was unable to follow the original plan, although many positives can be taken from it and lessons learnt.

The first field day involved a visit to a major spring at the south end of Lake Awassa (Loke spring). This gave the group the opportunity to review the issues surrounding spring protection and maintenance. It underlined the need for a proper understanding of the details of each source (infrastructure type, construction and location). The proper assessment of the yield of complicated spring layouts does require preparation work up front and good coordination. For example the true yield of Loke spring can be measured by switching off all pumps, allowing time for the spring chamber to fill up until the overflows are flowing at full rate and measuring the discharge with a suitably large container to capture all the flow. However, it will only be possible to switch off the pumps when the demand on the reservoir is low. This will have to be planned.

The second site visited was Midre Genet borehole and well. The borehole contains an electric submersible pump while the well contains an Afridev hand pump. Both were in good working order at the time of the visit. However, as the headplates were both completely sealed, it was not possible to carry out any testing on these facilities. Future training requires the identification of borehole and wells where access for dipping is available.

The second day of the field trip was rearranged because Partners for Water and Sanitation were advised that there were no boreholes or wells available for testing at the time. As a result, the group visited the demonstration facility at the WRDB Head Office and spent the morning receiving instruction on hand pumps and electrical pumps from the WRB Chief Mechanic.



Picture 3: Hydrometric training Practical exercise at Midere Genet WS Scheme & WRDB's demonstration site

5. Conclusions from Workshops and Training

The Partners for Water and Sanitation team has been encouraged by the way that the SNNPR WRDB is pushing forward on re-commissioning. The data gathering exercise that was completed in April 2009 has added to the understanding of the existing situation and will allow further in depth analysis. This will allow the Bureau to refining the re-commissioning strategy and give a significant 'kick start' to implementation the action plan.

The workshops were well attended and the participants fully engaged in the discussion sessions and training sessions.

The feedback forms suggested that delegates had benefited from the training which they considered relevant and well presented.

The overall visit was well structured and organised, although the logistics for the field work and lack of access to the selected boreholes did limit the training in terms of pumping tests on the boreholes and wells. However, this in itself was useful in highlighting a key issue in water resource management, being able to carry out site measurement. Recommendations and potential solution in this area were discussed with the groups to ensure that new schemes provide access to water levels and pump test. Further training is required in this area, which would be carried out at Bureau demonstration facility with some minor alteration improvements.

To further assist the re-commissioning strategy there would be merit in reviewing the Ripple January 2009 report which may help to give structure and further support to the key areas of focus for the bureau, around the headings of Role and Responsibilities, Monitoring and Communication, Human Resources and Physical Resources

6. Recommendations

The data collection exercise covering all assets and improved sources within the SNNPR Region is now complete. During the country visit the Partners for Water and Sanitation team had the opportunity to see some of the data and the excel database that is being used to store the data. It was very encouraging to see the detail and quality of that data and to see that it was already being used to build a more comprehensive picture of the Regional re-commissioning needs and priorities. It is believed that there is value in moving this information into a Microsoft Access format, which will support great flexibility in both data control and reporting, via the addition of front end form. It is recommended that the bureau investigates local sources of IT training in this application for a small number of key users. The process of data capture and reporting forms the back-bone of the re-commissioning monitoring process and it is hoped that it will serve as a catalyst to build on the recommendations identified within the original Phase I report.

In refining and delivering a re-commissioning strategy, it is recommended that the WRDB establish a small working group that comprises different disciplines such as hydrologist, hydrogeologist, mechanical & electro-mechanical engineers and possibly other relevant expertise, together with a business leader, to work on developing the re-commissioning strategy. This document should be developed with reference to the existing 5 year Strategic Planning and Management (SPM) document and eventually be supported by action plans that identify how the strategy will be implemented.

(Note: In developing an effective recommissioning strategy, it may be necessary to review aspects of the existing SPM, for future amendment when it is next reviewed.)

The aim of this working group, within the WRDB, will be to prepare the recommissioning strategy. The Partners for Water and Sanitation UK lead experts have already begun to assist the process by identifying relevant main categories to be addressed in the recommissioning strategy document (refer to section 5.1 of the visit report dated May 2008 and key issues covered in the 2-day Strategy Workshop, highlighted in Section 4.4 of this report). UK experts can give further guidance through commenting on drafts of the recommissioning strategy, in the development of subsequent action plans and in defining final outputs and targets. This support can be offered remotely from the UK. The WRDB's working group should maintain close communication with the UK experts, either directly or through the Partners for Water and Sanitation Country Manager and UK Secretariat.

A further support visit in Ethiopia can be offered by UK experts, to facilitate discussions as the recommissioning strategy reaches its final development and/or seeks final approval, and to help the WRDB as they develop and/or finalize the associated action plans. Workshops to familiarize the wider stakeholder community of the recommissioning strategy are also recommended

With regards new schemes, eliminating risks and difficulties at design stage was discussed during the workshops. An example of this is the practice of constructing a low cost, permanent gantry / tripod over the well or borehole as part of the initial scheme construction. This would eliminate the need for the transport and setting up of a heavy and awkward tripod. Instead, if the gantry were already in position only a winch would be required and this can be carried by mule or motorbike from the Zonal centre to site. Dealing with issues like this at the design stage could have a significant impact on the ease and cost of lifting pumps for refurbishment and/or repair. It is recommended that the working group should look at the whole life design of all future schemes, considering all of different aspects of the scheme, to ensure that they are designed and constructed for the most efficient operation and maintenance possible. The Partners for Water and Sanitation team can assist in this process.

Further training on hydrometric data collection is recommended, in particular pump testing on properly selected boreholes and wells is required and Partners for Water and Sanitation is in a position to offer that support.

During the April 2009 visit, the demonstration site at WRDB Hawassa offices was used as a surrogate for field based training. The usefulness of the facility was noted. It is recommended that the role of this demonstration site and the skilled staff who built it should be reviewed and if necessary expanded so that it can fit into an overall training strategy which would include the TVET's and other training stakeholders. This will help to bridge the gap between theoretical training and practical experience.

It was pointed out that the Woreda Support Groups (WSGs), whose role will become increasingly important as the funding and reporting structures within the MoWR and Water Bureaus are modified, will need support. Once again Partners for Water and Sanitation is in a position to offer support to these bodies.

A follow up visit by the Partners for Water and Sanitation UK team is recommended towards the end of 2009 / start of 2010 to review progress, undertake further training on groundwater asset data collection. This should include a workshop with the WRDB stakeholders in order to ensure standardisation of data collection techniques and data handling in addition to the communication of strategy mentioned above.

Appendices

7.1 Appendix A – Attendees at Workshop and Training Sessions

SNNPR Strategy Workshop, 23rd – 24th April 2009

List of Attendees

| | Name | Zone / Woreda | Responsibility |
|----|-----------------------|------------------------|--------------------------|
| 1 | Mohammed Redywan Muz | Alaba Special Woreda | O&M |
| 2 | Israel Tadesse | Amaro Special Woreda | O&M Team leader |
| 3 | Workinesh Mulugeta | Basketo Special Woreda | Mechanic |
| 4 | Getahun Balcha | Bench Maji Zone | O&M Electrician |
| 5 | Tariku Gina Dae | Burji Special Woreda | O&M |
| 6 | Astatike Ayalew | Derashe Special Woreda | O&M |
| 7 | Kebede Negash | Gamo Goffa Zone | O&M |
| 8 | Akmei Muzemil | Gurage Zone | O&M |
| 9 | Tefera Aberu | Hadiya Zone | O&M Team leader |
| 10 | Tariku Gebabo | Kafa Zone | Mechanic |
| 11 | Desta Shumebo | Kembata Tembaro Zone | O&M |
| 12 | Gelsimo Gelto | Konso Special Woreda | O&M |
| 13 | Alemeyehu Forteye | Konso Special Woreda | O&M |
| 14 | Bizuayehu Tefaye | Sheka Zone | Hydrogeologist |
| 15 | Workicho Aliye | Silte Special Woreda | O&M Team leader |
| 16 | Teshome Mulu | WRDB Region | Chemist |
| 17 | Tamirat Yata | WRDB Region | Mechanics |
| 18 | Woldeyesus Yacob | WRDB Region | Planning and Programming |
| 19 | Tesfaye Habte Giorgis | WRDB Region | O&M |
| 20 | Assay Gebre Mikeal | WRDB Region | Hydrogeologist |
| 21 | Shiferaw Fogi | Yem Special Woreda | O&M |
| 22 | Girma Bezu | | |
| 23 | Desalegn Guro | | |
| 24 | Tilahun Yimam | | |
| 25 | Endelkachew Engda | South Omo Zone | O&M Technician |
| 26 | Bekele Challa | | |
| 27 | Eshetu Elto | Gamo Goffa Zone | WRDB Office Head |
| 28 | Yoseph Lamoro | | |
| 29 | Salim Negussie | | |
| 30 | Mundino Yassin | Alaba Special Woreda | Office Head |
| 31 | Kassahun Kossu | Basketo Special Woreda | WRDB Office Head |
| 32 | Orkissa Orano | Konso Special Woreda | WRDB Head |
| 33 | Jemal Abdi | Burji Special Woreda | WRDB Head |
| 34 | Tashke Anshebo | Wolayta Special Woreda | O&M |
| 35 | Desalegn Ginbato | Dawro Zone | WRDB Office Head |
| 36 | Abdulfeta Nuri | Silte Special Woreda | WRDB Office Head |
| 37 | Tewodros Konu | Gurage Zone | WRDB Head Office Rep. |
| 38 | Salomon Negash | | |
| 39 | Habtamu Teferi | Kafa Zone | Zone Head |
| 40 | Teklu Negatu | Dareshe Special Woreda | WRDB Office Head |
| 41 | Tadele Mugore | Hadiya Zone | Zone Head |

SNNPR Hydrometric and Database Training, 25th – 29th April 2009
List of Attendees

| | Name | Zone / Woreda | Responsibility |
|----|-----------------------|------------------------|-----------------------|
| 1 | Israel Tadesse | Amaro Special Woreda | O&M Team leader |
| 2 | Workinesh Mulugeta | Basketo Special Woreda | Mechanic |
| 3 | Getahun Balcha | Bench Maji Zone | O&M Electrician |
| 4 | Tariku Gina Dae | Burji Special Woreda | O&M |
| 5 | Astatike Ayalew | Derashe Special Woreda | O&M |
| 6 | Kebede Negash | Gamo Goffa Zone | O&M |
| 7 | Akmel Muzemil | Gurage Zone | O&M |
| 8 | Tefera Aberu | Hadiya Zone | O&M Team leader |
| 9 | Desta Shumebo | Kembata Tembaro Zone | O&M |
| 10 | Gelsimo Gelto | Konso Special Woreda | O&M |
| 11 | Alemeyehu Forteye | Konso Special Woreda | O&M |
| 12 | Bizuayehu Tefaye | Sheka Zone | Hydrogeologist |
| 13 | Workicho Aliye | Silte Special Woreda | O&M Team leader |
| 14 | Teshome Mulu | WRDB Region | Chemist |
| 15 | Tamirat Yata | WRDB Region | Mechanics |
| 16 | Tesfaye Habte Giorgis | WRDB Region | O&M |
| 17 | Assay Gebre Mikeal | WRDB Region | Hydrogeologist |
| 18 | Shiferaw Fogi | Yem Special Woreda | O&M |
| 19 | Girma Bezu | | |
| 20 | Desalegn Guro | | |
| 21 | Tilahun Yimam | | |
| 22 | Endelkachew Engda | South Omo Zone | O&M Technician |
| 23 | Mohammed Redywan Muz | Alaba Special Woreda | O&M |
| 24 | Tariku Gebabo | Kafa Zone | Mechanic |
| | | | |

7.1 Appendix B – CD of Workshop and Training Presentations

Attached

7.2 Appendix C - Summary of the Recommissioning Training Course Evaluation Feedbacks

| | Response s | Score (1-6) |
|---|---------------|-------------|
| Regarding relevance of course content | 4.93 | |
| <i>What I learnt in this course will help me improve my performance?</i> | 20 | 5.1 |
| <i>Material and issues were current and worthwhile</i> | 19 | 4.6 |
| <i>The course was relevant to my needs</i> | | 5.1 |
| Regarding the quality of course design | 4.8 | |
| <i>The structure and institutional modes of the course encouraged learning</i> | 20 | 4.7 |
| <i>The course objectives were fully addressed</i> | 20 | 5.2 |
| <i>The course actively and effectively engaged me throughout</i> | 20 | 4.3 |
| <i>The duration of the course was just right</i> | 20 | 3.75 |
| <i>Overall this was a high quality course</i> | 20 | 4.3 |
| <i>Relative to other training that I have attended I would rank this course as one of the best</i> | 20 | 4.6 |
| Regarding the quality of the instructors | 5.42 | |
| <i>The instructors encouraged and responded well to questions</i> | 20 | 5.4 |
| <i>The instructors have knowledge in the course content</i> | 20 | 5.5 |
| <i>The instructors treated participants with respect</i> | 20 | 5.5 |
| <i>The instructors were well prepared and organised</i> | 20 | 5.4 |
| <i>The pace of instruction was just right</i> | 20 | 5.3 |
| Comments | | |
| <p>Please comment on any of the statements in the previous sections, particularly those you disagree with.</p> <ul style="list-style-type: none"> • In general the workshop is very important and very fine, but regarding time the duration was short (at least 12 respondents raised this point) • Make your course duration longer than this one next time • The duration of course was very short but well qualified • Even the technical training is very important for the office managers, because it may help them to deal with the importance of the ...data requests (???) • For the future training please try to relate the training and trainers profession by dealing with SNNPRS WRDB because the course given and the trainers profession of the most is opposite • I think this course outlined would be better to be delivered by hydro geologist as they were fully responsible on data collecting • The course would have been better if it were given during the regional inventory time • Lack of per diem • The course was very important but some of us with little background in English language found it difficult and would have been better if it were given through an interpreter | | |
| <p>Where there any aspects of the course that you think should be improved?</p> <ul style="list-style-type: none"> • In the future when designing this kinds of course it is better to include also the electricity and generator part | | |

| |
|--|
| <ul style="list-style-type: none"> • Both parts of the training were good • |
| <p>Which parts of the course did you find useful?</p> <ul style="list-style-type: none"> • Pump test • Database • Strategy development • Hydrometric theory • Hydro geological part • Hygrometry is not fully worked out in this country wish to be fully explored and registered • |
| <p>General comments.</p> <ul style="list-style-type: none"> • The training was useful • Thank you • The instructors did not have enough time to get ready • Include the geologists at zonal level for the training next time to attend • Please instruct us for the remaining part of the course if you have time • We do have problems and need assistance on practical oriented training • You have a good knowledge. I thank you for sharing your experiences with us. God bless you forever. Continue to help Ethiopia though technical support |

7.3 Appendix D – Group Presentations

GROUP ONE

How has data collection exercise gone?

1. pre-data collection
 - a. developing inventory formats
 - b. preparation of training exercise
 - c. conducting TOT
 - d. conducting training for data collectors and supervisors
2. Data collection

Data collection of each scheme in each kebele

Data collected are:

- i. drinking water supply schemes
- ii. irrigation schemes
- iii. potential assessment of water supply schemes and irrigation schemes

3. post data collection
 - a. summarizing collected data at zonal and woreda level
 - b. submission of summarized data to the RWDB

Early impression of the position of water resources assets across the region

- a. To identify functional and non-functional water supply schemes
- b. It gives common understanding of the water coverage at each woreda, zonal and region level
- c. It helps to allocate budget fairly
- d. It helps to fill the gap of supply and demand
- e. It helps to identify potable and non potable water supply (WQ)
- f. It helps to establish proper management of water schemes

Lessons learnt, endorsement and new findings

- a. Data will be updated regularly
- b. Collaboration of stakeholders at each level (political leaders, administrators, NGOs, community and line departments)
- c. Awareness created among community and leaders

Challenges and way forward

- d. Vehicle shortage (problem of means of transportation)
- e. Weather condition and topography
- f. Inaccessibility of topography
- g. Time limitation

GROUP TWO

Administration, financial and transportation, technical problems encountered

- a. There was time shortage and inadequate transportation accessibility
- b. Unavailability of recorded data at office and site
- c. Data accomplished by interview with customers
- d. Unavailability test kit to record the water quality
- e. Observation pipe for infection and disinfection was not available
- f. Design construction not included in controlling mechanism which is not indicated in its operational status
- g. GPS shortage
- h. Inventory duration would have been much less had there been a system or a network. The assets would have been counted on the. otherwise it would be necessary to conduct a census every five years would incur many costs

GROUP THREE

1) How does data collection exercise gone?

- The asset inventory was conducted in an integrated manner as regional, Zonal, Woreda and kebele administration commenced the census work with very clear consensus on its need.
- The scheme inventory was holistic as it included the overall water potential assessment including the irrigation potential and was realistic as utilised GPS data collection system.
- Although there was no historical data of the schemes, the inventory was done by filling the gap by secondary information from the local community.

2) Early impression of the position of the water assets across the region?

- Apart from establishing the system with which water schemes to be managed by community themselves, there was no adequate monitoring by other bodies.
- The former data collection system was non-integrated and not based on the data base management.
- The construction of the old schemes didn't take the capacity of the water sources in to account.

3) What are the lesson learnt and experience gained from this asset inventory works?

- In order to undertake the ground water measurement, there should be indicating equipments such as depth meter.
- There should be close monitoring of the scheme
- Reasonable estimate/forecast of the kebele and Woreda population should be available.
-

4) Problems encountered and measures taken

- Logistics and budget problems
- Lack of schemes /water supply and irrigation schemes/ initial history
- Unable to know the constructor of the scheme
- As the water discharge of the repairable malfunctioned schemes are not known, the size of the beneficiaries was only rough estimate.

- It was observed that any newly constructed schemes needs to be monitored and included in the water coverage.
- There should be domestic and animal consumption with respect to each scheme.
- The asset inventory time shouldn't be so short.

GROUP FOUR

How has data collection exercise gone?

- a. The geographical landscape is not convenient
- b. Due attention was not given to the affairs of water resources development bureau
- c. Information about the operation and maintenance (O&M) not well kept and recorded
- d. The fact the water schemes are found scattered about the areas have made it difficult to reach all places
- e. Lack of sense ownership for the schemes in some areas
- f. Shortage of GPS
- g. Inadequate training on inventory data collection
- h. Transportation and fuel budge for the inventory
- i. Political leaders didn't give it due attention

Early impression of the position of water resources assets across the region

- a. No spare parts available
- b. Not adequate budget was allocated the water resources development bureau
- c. Not the right person on the right position was assigned
- d. Trained experts were not in the office
- e. Lack of awareness on the part of the community not to consider inventory data collection has nothing to do with political initiatives

Lessons learnt, endorsement and new findings

- a. The process could have been run more efficiently had the responsibility of leading the process been give to the water resources bureau
- b. Due attention was not given by the political leaders for the work of inventory data collection
- c. Lack of GPS
- d. Logistics related problem and shortage of budget
- e. No correspondingly adequate preparation was given in terms of time allocation and awareness to the stiff work it requires and was done in a haste

7.4 Appendix E – Group feedback on strategy development

Barriers and Issues

Springs – Gravity supply – Group 3

- a. Design problems
 - a. Appropriate head diff
 - b. Spring yield / discharge
 - c. Demand analysis
- b. Construction Problems
 - a. Leakage of capping
 - b. Damage of distribution line and pressure main
 - c. Changing of spring eye detection
- c. Decrease of spring yield/discharges
- d. Turbidity problems
- e. Natural problems
 - a. Flood
 - b. Landslide onto water supply structure
 - c. Earth move diverting source
- f. Sanitation problems

Deep Borehole – Electric submersible pump – Group 2

- a. Operators not skilled
- b. Installation problems
Eg not fitted by N.R.V
- c. None available controlling utility (electricity / diesel)
- d. Cost of heavy machinery high
- e. None availability of sustain? committee
- f. Frequent damage and electrical and mechanical problems
- g. Lack of spare parts in local market
- h. Pipe leakage, broken cable, bits of iron
- i. Water draw down in dry season
- j. Incompatibility of pumps
- k. Power interruption – phase failure
- l. Pump drop in the well, heavy cost
- m. Hot water not compatible with installed pump
- n. Operational cost fuel & oil
- o. Environmental pollution

Shallow Wells – Afridev or similar – Group 4

- a. PVC crack
- b. PVC disconnected
- c. Rod disconnected or damaged
- d. Corrosion or salt water

- e. U seal damaged
- f. Bobin head worn out
- g. PVC pipe leakage
- h. Damage to rod stack
- i. Centraliser
- j. Storage of water
- k. Lack of spare parts
- l. Plastic bearing worn out
- m. Handle parts worn out
- n. Hanger damage
- o. Hanger parts worn out

Deep Wells – Hand Pump – India MkII & III – Group 1

- a. Breaking of GI pipe
- b. Disconnection of the rod & pump
- c. Loosing of chain
- d. Cracking of the cylinder
- e. Worn out of “foot” value & leather
- f. Lack of preventative maintenance
- g. Problem of installation
- h. Wearing out of head
- i. Lack of spare parts (eg leather)
- j. Absence of spare part suppliers (shops)
- k. Lack of maintenance
- l. Lack of skilled resource
- m. Lack of “fishing” materials

Scenario – Kebelle “Wessex”

Information given in brief:

- a. Scenario
- b. Water resources issue in Kebelle “Wessex”
- c. No water from borehole with hand pump
- d. Nearest safe alternative supply 10km
- e. Nearest non safe supply 2km
- f. Prepare an action plan to resolve scenario W