



World Vision



Evaluation report on World Vision Ethiopia

W A S H



Projects

Bahir Dar University
&
Cornell University



May 2012
Bahir Dar



SCHOOL OF CIVIL AND WATER RESOURCE ENGINEERING

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To World Vision

Addis Ababa

Subject:- Final Report Submission.

It is known that Bahir Dar University school of Civil and Water Resources Engineering and World Vision Ethiopia have entered an agreement to assess WASH program implementation learning initiative. It was mainly to identify existing gaps or areas requiring improvement and draw lessons that will help to guide future programming of WVE. To evaluate the WASH implemented projects the study team has selected 25 projects in four national regional states (eight projects in Amhara, six in Oromia, nine in SNNP and two in Benishangul Gumuz region).

We really appreciate the endeavour of WVE to improve the life of the poor people by providing safe drinking water and sanitation facilities. With our physical presence on the implemented projects change in the life of the poor people and the environment and especially the reduction of work burdens on women are observed. We hope that you will continue these efforts more by considering the comments incorporated in the document and by reinforcing your strengths.

We are very much delighted to work with you and we hope to continue our partnership in the years to come.

Attached herewith is the final document produced by us.

With best regards,

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CC//

- To School of Civil & Water Resource Engineering

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Fasikaw Atanaw Zimale

Evaluation team leader

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Acronyms

ADP	Area Development Program
CLTSH	Community Led Total Sanitation and Hygiene
FDG	Focus Discussion Group
GIS	Geographic Information System
OM&R	Operation, Maintenance and Running
SNN&P	South Nations, Nationalities and People
WASH	Water Supply, Sanitation and Hygiene
WVE	World Vision Ethiopia

Executive Summary

This report presents results of the evaluation of the WVE (World Vision Ethiopia) Water, Sanitation and Hygiene (WASH) Program funded by various donors. This is an external evaluation commissioned by WVE to generate lessons that can guide the way forward in the WASH project planning and implementation. The projects in WVE's current WASH program evaluation were implemented between 2004 and 2011. WVE continued its WASH program implementation at bigger scale in Amhara, Oromia and South Nations, Nationalities and People (SNN&P) regional states.

The evaluation began in January 2012 and was carried out over a period of three months by the School of Civil and Water Resources Engineering at Institute of Technology, Bahir Dar University. The teams assigned to the tasks had backgrounds and expertise in public health and WASH-related activities. In total, 25 individual project sites were evaluated (Appendix 4) representing a diverse range of cultural, environmental, hydrologic, and socio-economic conditions. A literature review of WVE documents identified appropriate WASH survey techniques and methods, current best practices, and challenges facing the WASH field in sub-Saharan Africa. Based upon the literature review and past team member project implementation and evaluation experience, the following methods were developed to evaluate the WVE WASH projects: (1) knowledge, attitude and practice surveys, interviews, and focus group discussions (FGDs) with key stakeholders including project beneficiaries, WVE staff, and local authorities, and (2) technical inspection and assessment of infrastructure and surrounding environment.

The purpose of the evaluation was to assess: (1) the performance and outcomes of the program, (2) the effects of project implementation on the target beneficiaries, (3) the challenges encountered during program implementation, and (4) the weaknesses and strengths of the program. A final purpose was to document the lessons learned for future programming.

The underlying objectives of evaluation is threefold: (i) document the various implementation approaches and learn from those outcomes, (ii) guide future decision-making processes regarding WV's WASH strategy, and (iii) improve project implementation approaches in the WASH sector.

The evaluation seeks to answer three main queries regarding the implementation of WASH projects:

1. To what extent have the proposed objectives and outcomes been achieved?
2. What was the level of involvement of beneficiaries?
3. To what extent can past lessons be utilized for future implementation?

The extent to which proposed objectives and outcomes have been achieved is discussed in terms of effectiveness, efficiency, coverage, sustainability, and coordination.

Effectiveness

Effectiveness was the extent to which project coverage, in particular, whether access to water, sanitation, and hygiene services was increased. The team observed that access to WASH facilities had significantly increased in the project implementation area during the project implementation period. Increased access to potable water was a fulfillment of a major need expressed by many of the local population. Household interviews show that the time required to fetch water has been reduced from four hours in some cases to a maximum of approximately thirty minutes. Another component of increased access occurred in the construction of pit latrines at the household level after implementation of Community Led Total Sanitation and hygiene (CLTSH).

Continued maintenance of WASH facilities remains a challenge for WVE projects after the implementation stage. The lack of proper maintenance of WASH structures and practices is currently a barrier to the effectiveness of the intervention. For example, while there was increased adoption of pit latrines in target communities after implementation of CLTSH, open defecation remained a common practice in some.

Efficiency

Efficiency was the extent to which target communities effectively participated in project implementation. The project was strong in terms of efficiency. In about 67% of WASH projects visited, the beneficiaries contributed locally available building materials such as sand, building stone and fencing material. Labor costs were reduced by involving beneficiaries in construction activities and the transport of materials to site. WASH projects where beneficiaries did not contribute in such ways occurred in

relatively larger urban centers where contractors are employed to carry out all the construction activities. Thus, involving local beneficiaries is less effective.

Coverage

In analyzing the number of people who had access to WASH services during the project period and given the reliability of the system at the evaluation period, it can be concluded that a modest coverage was achieved. World Vision Ethiopia (WVE) WASH projects visited by the researching team had provided access to clean water to an estimated 13644 households. The water supply coverage of visited projects was on average 75% while sanitation coverage was insignificant compared to the water supply coverage. For future implementation, greater emphasis on water quality is needed to ensure that water supplied is also safe to the beneficiaries. It was also observed that implementation of pit latrines in households may statistically increase coverage, however, some community members improperly utilized such latrines. The result of improperly maintained and utilized pit latrines can act to bring contamination closer to the household.

Sustainability

Sustainability was evaluated from three important themes: social, environmental, and operation and maintenance. Of these themes, WASH maintenance most affects the sustainability of the intervention. While due attention is given to building institutions that operate, maintain and manage the WASH facilities, WVE does not revitalize WASH programs that do not function or marginally function. A bold attempt of revitalizing such institutions is necessary in order to achieve sustainability.

Coordination

WVE have been responsive to the needs of poor and disadvantaged communities in Ethiopia since 1971. As the result of its long presence in Ethiopia, it has maintained a strong working relation with public sector offices. However, it was evident during the field visits that support from woreda office is reducing as political leadership at woreda level fail to understand that these projects augment the GTP (Growth and Transformation Plan) targets.

1. Introduction

1.1 Background

World Vision's project sought to improve access to safe water and sanitation in the target communities by aiding in the construction of water supply and sanitation facilities, improving the capacity of communities to manage and plan for WASH community needs, and improve knowledge and practice of good hygiene behaviors. In an aim to evaluate the success of its WASH projects in Ethiopia, WVE invited Bahir Dar University, School of Civil and Water Resources Engineering to undertake the evaluation task. The School formed teams of researchers in public health and WASH-related fields. The researchers visited and evaluated project sites individually. They conducted a review of relevant documentation and developed an evaluation framework and fieldwork methodology. The fieldwork involved techniques such as focus group discussions, key informant interviews, household surveys, and observations of water and sanitation infrastructure. The Cornell University MPS program in integrated Watershed management at Bahir Dar University had also worked along with the research team.

The evaluation began in December 2011 and was carried out over a period of three months. Researchers interviewed World Vision staff, practitioners in environmental health and rural water supply, and government staff (identifying potential government collaboration with World Vision Ethiopia). They conducted field research for 25 project sites, analyzed data and produced a report on the effectiveness of implementation of the WASH projects. Drawing on the similarities, challenges and strengths of each project's context, the consulting team believes that this evaluation will provide World Vision Ethiopia with a framework for future engagement across the country.

This report is World Vision's first WASH evaluation conducted in Ethiopia. It will enable researchers to recognize patterns over the varying socio-economic, environmental, hydrological, and cultural contexts within the unique challenges and strengths of the specific area, and it is hoped that such an evaluation strategy will have impacts at a wide variety of administrative and social levels. Local project staff, country and regional program managers and World Vision Ethiopia will be able to draw insights relevant to their roles, and then use these insights to begin a discourse regarding useful strategies to plan and implement future projects with greater effectiveness and sustainability.

Before World Vision's involvement in the communities, an intermittent access to safe and sufficient water left many families (in particular, women and children), carrying water (not always of good quality) over long distances to serve their drinking, cooking, and washing needs. Many villages had a sanitary history of open defecation, or the use of 'bush toilets' (open dry pit) which not only caused environmental problems in terms of spreading pollution and pathogens, but such pathogens in the environment can be transmitted and can cause incidences of eye and abdominal disease in children. Excreta washed to water sources exposed these communities to larger health risks that in some cases increased medical expenses and reduced productivity due to increased incidence of water borne disease.

1.2 Objective of the Assessment

The principal aim of the evaluation is to assess the extent to which the WVE was able to achieve its objectives for the last ten years and sustainability of its results in the WASH sector. Moreover, it is aimed at identifying existing gaps or areas requiring improvement and lessons learned to guide future programming of WVE. The specific objectives of this evaluation include:

- Documenting the prevailing implementation of WASH by WVE and produce a report detailing the status of selected WASH projects in four regions (Amhara, Benishangul, Gumuz, Oromia and SNNP) in Ethiopia;
- A recommendation and a conceptual map of immediate, medium and long term improvements to be made with WVE internal and external partners;
- Providing the means to increase dynamic research collaboration between associated scientists and implementers to enhance the effectiveness of research and implementation of WASH projects

2. Methodology

The methods used in the project evaluation included a literature review, interviews, and focus group discussions (FGDs) with key stakeholders including project beneficiaries, local woreda staff, who had been involved in executing the project, and local authorities. In total, twenty five of the WASH projects implemented or supported by WVE have been visited (Figure 2-1 and Figure 2-2). In each project, water supply services, extent of use of latrines and hygiene practices were evaluated. The team was able to evaluate the WASH intervention sites and their components, (including water sources, condition of distribution facilities, type of technology used, and management models implemented) and also assessed reliability of the water supply system. During the field visits the team of consultants was accompanied by woreda officials and WASH committee members (where available). Owners of randomly selected households are also visited and women were interviewed. Further detail regarding selection of projects is provided in sub section 2.2 below.

2.1 Study Area

The evaluation was made on twenty five projects in eleven woredas in the Amhara, Benishangul Gumuz, Oromia and SNN&P regions.

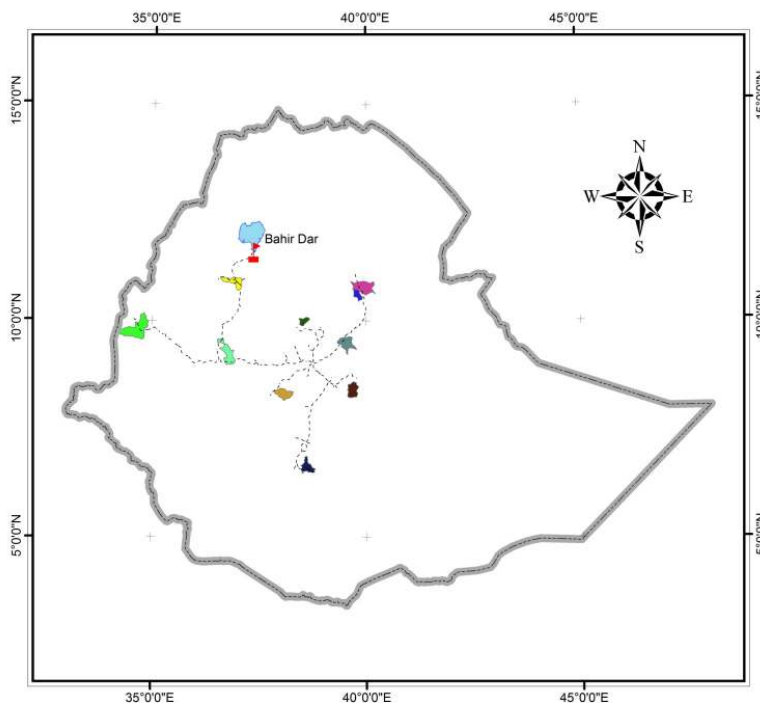


Figure 2-1 The ADPs (shown in colored areas) where project evaluation was conducted

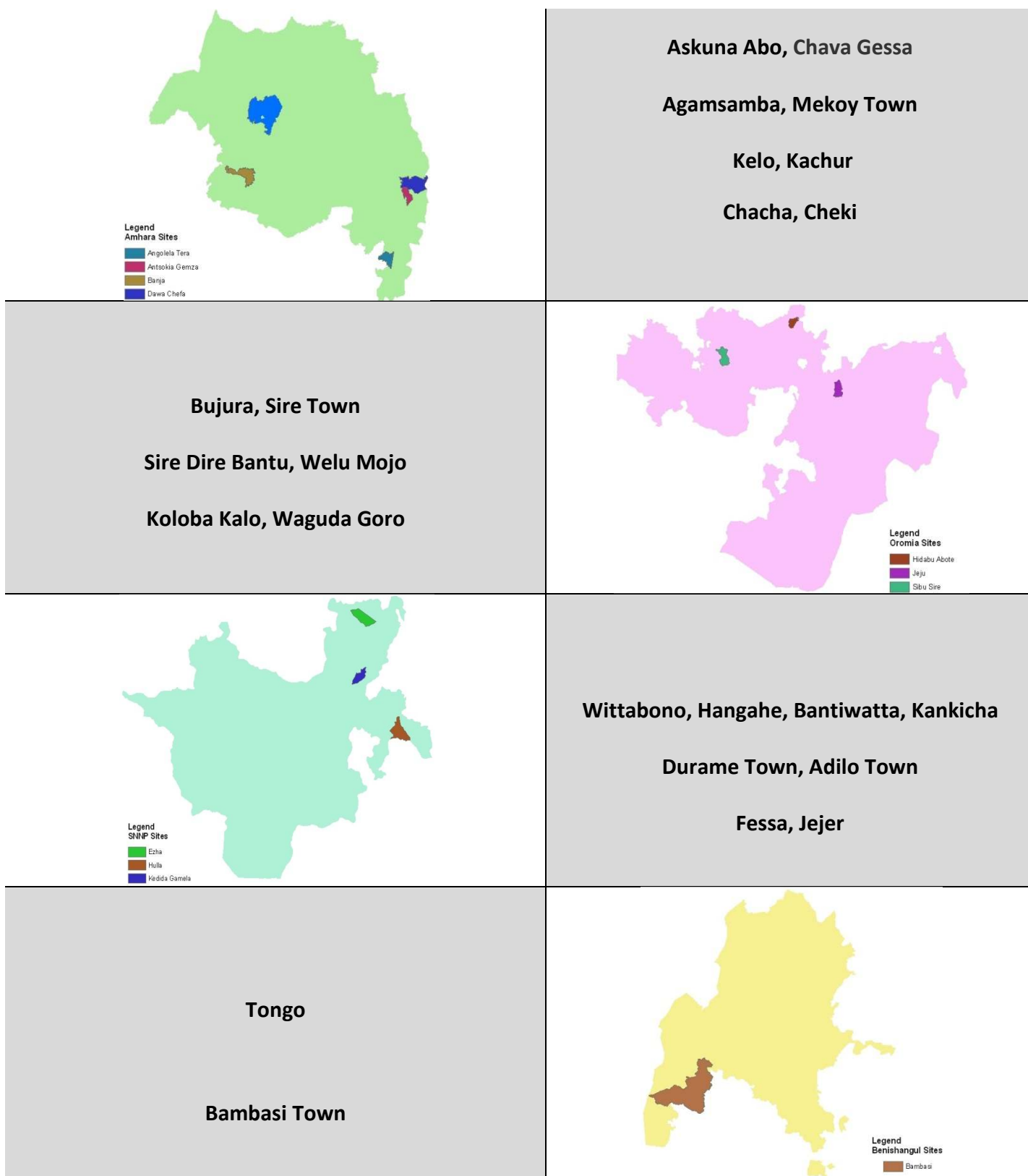


Figure 2-2 Project sites evaluated within the selected ADPs

2.2 Selection Criteria

Upon the review of available documents provided by WVE, the research team learned that WVE development projects are diverse in number of beneficiaries, source of finance, geographic distribution and time of implementation (Appendix 4). Projects were selected on the basis of variability in each of these aforementioned variables following the rationales below.

Criteria I: - Representation of projects executed by various sources of fund

Various sponsors provide financial support for specific WASH programs implemented by WVE. This evaluation attempts to represent projects supported by all sponsors. Accordingly the ‘Shared Sponsorship and Grant Program’ Projects (Angolela and Guraghe ADPs), the ‘Ethiopia Water & Sanitation Program’ projects (Kemise and Antsokia ADPs), the ‘Millennium Water Program’ projects (Jezu and Mao Komo Bambasi ADPs), the ‘Rotary-World Vision Partnership’ projects (Sibu Sire ADP) and the Rehoboth WASH program (Hulla and Banja ADPs) were selected.

Criteria II: - Time span of implementation

In this criterion, newer and older projects are included to learn from experience on older projects and apply these lessons to newer ones as applicable. Projects at Hula & Banja ADPs are representatives of newly implemented schemes while projects at Guraghe & Angolela are the oldest.

Criteria III: - Source, method of abstraction and distribution

This criterion is intended to explore how the source of water and the method of abstraction can impact sustainability of a WASH scheme. Source and method of distribution addressed here include: ‘on spot’ spring development, shallow bore hole fitted with hand pump, spring (motorized or gravity) development with distribution network and storage, and motorized bore hole with distribution network and storage. Another variable considered was sustainability of multi-use systems.

Criteria IV: - Geographic distribution

WVE is operating in most parts of Ethiopia. As a result, its WASH projects are implemented in societies of varying culture, ways of life and customs of using water and sanitation and hygiene. It is anticipated that these projects impact people’s way of life in varying degrees. Such understanding of

the context of different communities in different geographic areas and the degree to which the current projects impact people's way of life will enrich WVE's future WASH projects implementation capacity and can be shared with other implementers to avoid failures and/or embrace successful approaches. We have selected eight projects in Amhara, six in Oromia, nine in SNNP and two in Benishangul regions. Urban centers, rural towns and small villages are also represented.

Criteria V: - Projects with known shortcomings

Projects with shortcomings provide the most practical lessons that can be avoided in future projects by applying appropriate cautionary measures at the planning as well as implementation phases. In this evaluation, we intentionally included the Project at Abote ADP to extract lessons from some of the shortcomings.

2.3 Data Collection

Primary and secondary sources were used for data collection. The primary sources are data collected using both quantitative and qualitative methods. The quantitative approaches include the household survey and GIS mapping, while qualitative information is collected in the form of a participatory impact assessment which encompasses focus group discussions and key informant interviews. Data from secondary sources includes relevant project documents obtained from Woreda offices and the WASH committees.

i. Household Survey Questionnaires

The data collection instrument for household survey was developed prior to the start of field work and based upon prior WASH surveys. Experiences from previous project evaluation projects were also drawn in preparing the questionnaire. The drafted tools were shared with WVE. The forms were then distributed for the teams organized to visit the projects. Four teams were organized to enumerate responses and moderate discussion with stakeholders.

The questions in the questionnaire are targeted to capture responses of beneficiaries, primarily women and children. Collection of water and water-related household labor is traditionally and still predominantly a role of women. As a result, women are the most appropriate source of information regarding the associated labor burden reduction due to

increased access and availability of water, and the most appropriate ones to comment on improvements in wellbeing of the household and related issues. The questionnaire specifically enquires information regarding access to water sources access and utilization of sanitation facilities and hygiene practices pre and post project implementation (Appendix 3).

ii. Participatory Impact Assessment (PIA)

Group discussions were held and participants of each respective visited WASH site explained details of the projects. Some of the important information collected from PIA assessment included operation and maintenance, cost recovery mechanisms of water use, and water management and sustainability issues. Shortcomings of the interventions, possible ways for improvement, limitations in technical capability and issues related to operation and management were raised in all the group discussions. Women representation was emphasized as they experience the benefits and shortcomings of the projects on a daily basis.

iii. Data Supervision, Verification, and Timeline

The implementation of fieldwork was supervised by coordinators having previous experience on WASH evaluation and documentation projects. Research activities were overseen and coordinated by an experienced project coordinator who was responsible to arrange field visits, arrange meetings with WVE staff and compile and cross-check completed questionnaires for consistency and completeness. Fieldwork lasted from January 10 to March 19, 2012.

2.4 Data Processing

We used a spreadsheet tool to analyze the data. Responses from questionnaires were tallied and categorized to describe the proportion and distribution of responses in a given category of evaluation. Reports from group discussion were disaggregated to formulate a list of issues for evaluation and these were summarized in the Conclusions and Recommendations section. Finally, analyses were made for core performance indicators that help to compare attribution of the project interventions to improvement of livelihood.

3. Project Evaluation

3.1 Background

The overall goal of WVE is to significantly improve child well – being by enabling families and communities to achieve sustainable access to adequate, safe water and improved sanitation facilities, and practice good hygiene. Implementation of WVE’s projects evaluated in this report spans 2004 to 2011. Four major programs have been run in implementing these projects and are briefly described below. The regular WASH programs are implemented through sponsorship funding. The others programs get their grant from multiple.

- **Shared sponsorship & grant programs:** Projects evaluated under this category are Cheki and Chacha at *Angolela* and *Fessa at Guraghe*.
- **Ethiopian water and Sanitation Program:** This program launched in 2006 in 7 ADPs of WVE with a total budget of USD 10 million. Projects evaluated under this category are *Mekoy Town*, *Chekechek*, *Agamsamba*, *Kemisse*, *Durame Town* and *Adilo Town*.
- **Millennium Water Program:** This program was launched in 2006 and lasted to 2010. It covered eight ADPs with a total budget of 4 million USD. The first phase of this program has been extended by a year with an additional budget of USD 200,000 which includes two additional ADPs. The second phase of this program was launched on 2012 and will last three years. Projects evaluated under this category are *Dire Bantu*, *Welu Mojo*, *Koloba Kolo*, and *Waguda Goro*.
- **The WV – Rotary Partnership Project:** The projects planned through WV partnership with Rotary international and local Rotary clubs are currently under implementation in one ADP and two non – ADP areas with a total budget of 800,000 USD. Projects evaluated under this category are *Bujura* and *Sire town*.
- **Rehoboth program:** This program was launched in four regions in 2011 and is expected to last for five years with a budget of 36.4 million USD. This program is characterized by its special focus on introducing innovations and alternative technologies such as manual drilling of shallow wells and

solar pumps, and CLTSH. Projects evaluated under this category are *Askuna Abo, Barentag, Ganjur Chichum, Gabato, Kankicha, Bulancho, Bochessa Gobbe* and *Watte*.

3.2 Project Design

The project design was tailored towards responding to the immediate water and sanitation needs of the communities in areas where WASH facilities were not in place. Such projects include major components of rural water supply activities in terms of provision of potable water supply and the corresponding resources for implementation: finance, labor, materials, capacity building training and assistance in institution building for the WASH system management. Thus, the project design must be appropriate in terms of responding to the dire water supply needs of the people in these respective woredas and kebeles. The implementation of these projects increase the national WASH coverage targeted through the GTP which consequently contribute towards the MDG (Millennium Development Goal) in water and sanitation.

The project goal, objectives and activities were clearly stated in the project documents provided by WVE. Such objectives can generally be summarized as:

- Increase access to potable water supply,
- Improve environmental sanitation practices of the community,
- Improve personal hygiene of the community, and
- Increase community capacity to manage water supply schemes.

3.3 Project Planning, Scheme Design and Implementation

It was observed that prior to the launch of WASH projects, WVE enters a signed agreement outlining duties and responsibilities of all parties such as those of: WVE, woreda leadership, the community, and other concerned stakeholders. Accordingly, government bodies and community leaders at woreda level and community representatives at village level directly participate in planning and implementation of the project.

The survey result indicates that 74.7 % of the respondents answered that the project implementation process was participatory starting from site selection to actual construction. In semi

– urban and urban centers, implementers often found it easier to adapt the design and build approach rather than following fully participatory approaches. Nonetheless, the local administrative bodies always fully participate in the site selection, technology choice and other important administrative decisions. In sites that were still functional, none of the teams reported conflict due to lack of access to water or inequitable practices.

Contributions to construction of the WASH facilities by the target communities were also considerable. In about 68% of the projects visited, beneficiary communities participated in the construction process through labor, supplying local materials at location of use, opening access roads, loading and unloading of construction materials.

3.3.1 Implementation Strategy

Management of project activities were handled in multiple approaches: by WVE themselves, involving partners, private consultants and private contractors. The implementation strategy primarily emphasized working with partners, especially with government offices and through community involvement. At the same time, national contractors and consultants were utilized which enhances division of labor, improves the quality of work through involvement of specialists in the sector, and, ultimately, responds to the pressing need of the community to complete the project in a timely fashion. Accordingly, the project activities were categorized based on their complexity and the level of investment cost. Drilling of boreholes were handled by using owned drilling machines with own manpower to operate those tools. In contrast, constructions of hand dug wells were given to the local contractors, and Water and Sanitation and Hygiene (WASH) committee trainings were handled in partnership with the respective government offices.

3.3.2 Construction /Installation of Water Supply Schemes

Selection of water supply scheme type was based on hydro-geological conditions of the area (availability of fresh water) and the corresponding feasibility of each scheme in that specific area. Accordingly, priority was given to gravity spring development (on spot distribution or with a pipe network). Bore hole sources are used where no springs are available or inadequate. In some

projects, drilling of boreholes and construction of hand dug wells were accompanied by construction of cattle and cloth washing troughs. Among the 25 projects visited 56 % were spring development, 32% borehole (BH) and 4% hand dug well (HDW) (Figure 3-1). Only 20% of the spring development works use a motorized system for pumping water to the storage.

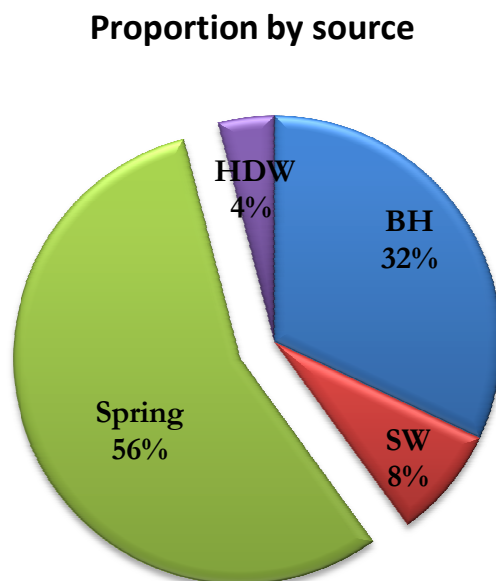


Figure 3-1 Water source by various project sites studied

Use of gravity fed systems, essentially avoided the costly pump O&M costs associated with motorized systems. Out of the fourteen spring development projects visited, one is not functioning (Durame) two are partly functioning (Jejer and Fessa) whereas the construction of one spring (Dire Bantu) has been terminated before completion of construction because of conflict over water between upstream and downstream users.

In contrast, in very few of the projects it was found that water is not available in wells year-round and hence they are not serviceable. Shallow and hand dug wells are especially vulnerable to fluctuations in surface water flow during the dry season. Only six percent of the visited sites have their supplies from a hand dug well or shallow well fitted with hand pump. Such technologies require further study as hand dug wells can be applied as a reliable water source where the number of beneficiaries is small and geologic situations allow.

In the case of boreholes and spring developments, the operation and maintenance of a distribution system is feasible. Such areas where a public distribution system is utilized include a reservoir (50 – 100 m³ volume), controlling devices (water meters, gate valves) and other appurtenance structures (manholes, valve chambers). Construction of low cost water treatment technologies could be a feasible addition to already functioning distribution systems in the addition of a continuous drip chlorine doser and further turbidity removal processes such as rapid sand filtration where water quality is variable and turbid during the rainy seasons.

3.3.3 Conflicts associated with water

In areas where water is shared among adjacent neighborhoods, it is often challenging to reach satisfying compromise between various stakeholders. In the case of the Dire Bantu WASH project, water conflict disrupted implementation of water services. While WVE and other stakeholders had reached an agreement wherein the downstream users would receive a water distribution system and upstream users would have an irrigation project implemented, such a compromise ultimately failed. The irrigation project was not successful and as a result some of the upstream users sabotaged distribution of water to downstream users resulting in a non-functional water scheme for downstream users. Although one underlying reason for sabotage from upstream users was because the promised irrigation system had failed other complicating factors such as socio-economic and religious differences were also causes for sabotage among some of the upstream stakeholders. Ultimately, the upstream users prioritized water use for their own economic and religious activities at the expense of the downstream users.

3.4 Promotion of Best Practices in WASH

The objective of installing WASH schemes is to provide clean water so as to improve the health and well being of the community. This would only be achieved if and only if the established schemes are properly designed and utilized. If the water collected from safe, potable sources like boreholes is not properly handled starting from the source till the end use in each individual household, it could become contaminated and unsafe to use. Proper utilization of WASH schemes along with proper handling, storage and use of the water from these sources is one of the biggest challenges to be

tackled in the sector because appropriate use, handling and storage of water are context specific. Designing ways to use, handle, and storage water varies with respect to cultural groups, socio-economic conditions, hygiene practices and availability of water to the household.

In addition, proper sanitation and hygiene practices may require behavioral change. Although it has been indicated from the survey result that 60% of the communities (in terms of hand washing and personal hygiene) were aware of good sanitation and hygiene practices before the project, bringing about behavioral change (in terms of proper water handling and proper ways of excreta disposal) were the major issues expected to be covered as part of this promotion work. Yet bringing about behavioral change received less attention than expected as both implementers and community usually focus more heavily on water provision.

It was indicated that only 11% of WASH committees were given basic trainings in personal hygiene and environmental sanitation as part of the scheme management courses so as to disseminate such practices to the community. While the WASH committee is primarily responsible for operation and maintenance of water points, including personal hygiene and sanitation education which enables members to play a role in disseminating best practices to the communities. Environmental sanitation training ensures that water points are well maintained. Water sources can be easily subjected to contamination if the sources are not well protected and/or poor solid and liquid waste disposal practices are underway in the vicinity.

In addition, public health and sanitation and hygiene training and promotion works could be an effective way to improve public health at a low cost. Given such variability present in the different ADPs of WVE, promotional work could be designed as per the actual context, yet still at low cost. In many communities, best practices regarding water handling, storage, and hand washing have not yet trickled down to household level. Promotion work requires regular and proper promotion that should be designed with due consideration to the needs and culture of targeted community. Such promotion works would have been best handled through community-based promotion agents.

3.5 Operation and Maintenance/ Sustainability and Phase out Strategy

Sustainability of established schemes and the corresponding smooth phase out strategy depend directly on the level of the capacity built at the user community level to easily operate, maintain, and manage the overall scheme. This process entails having a responsible body with the required capacity and budget to maintain a consistently high level of service, and that also requires assisting beneficiaries and local responsible governing bodies in writing bylaws through which the service will be governed.

The main factors influencing sustainability are: (1) financial and management capacities of the community, and (2) socio-cultural factors regarding the acceptability of the program and technical factors as to ease of use and appropriateness of the technology. Thus, the sustainability issue is analyzed in terms of technical, social, economic, environmental and institutional dimensions.

Technical sustainability: Technical sustainability is the degree to which the community has the technical capacity to repair broken schemes and properly operate the scheme/facility at the desired level, and has access to market and information. In 60% of the projects, supply chain for spare parts is either erratic or unavailable at the nearby market (Figure 3-2). Thus there are expectations for continued support from WVE in form of supply of materials used in maintenance and in fact, in 10% of projects surveyed, WVE reached to the level of providing spare parts. A major bottleneck to procure these materials for maintenance for most of these projects is seen to be either the inability of the community to enforce the cost recovery mechanisms written in WASH bylaws or that these bylaws are enforced, but were written with a fee structure that was an inadequate contribution for operation and maintenance of the services provided. As the service declines due to lack of finance, more households will fail to have access to safe water and hence the satisfaction with the service degrades. Users will become more unwilling to contribute or pay as either quantity or quality of water decreases, and this will further cripple the service. A continuous work for WVE in the future will thus be revitalizing institutions responsible for O&M as required.

WVE has promoted the establishment of WASH committees at each scheme to represent the user community. Each WASH is to act as the responsible body to manage and administer the schemes and the corresponding work in building capacity in terms of training and provision of materials. With this

process, it is clear that WVE has achieved much in terms of understanding and utilizing the major factors influencing sustainability of the schemes. This is especially evident considering that WVE ensures that each project takes into account the communities' capacity by picking the technology most suitable from appropriate technologies selected that could be operated and maintained at community level.

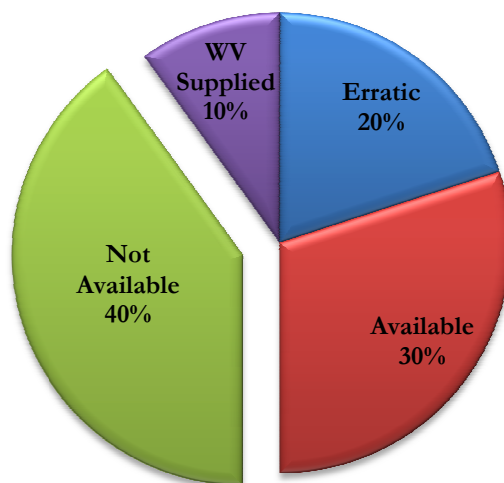


Figure 3-2 Portion of supply chain problems reported by WASH committees as being erratic, supplied by WV, or not available

Social sustainability: Maintenance and provision of service in the water supply system requires a high level of social cohesion among various stakeholders in each project. The extent to which social cohesion is necessary for success of WASH projects varies with respect to geography and cultural group. Among pastoral communities such social cohesion requires and ensures equitable resource sharing. General WVE implementation approaches for the water projects involve the local community on site selection, water management and use. Such involvements should include all relevant stakeholders and as such might reduce unexpected risks such as conflict within and between neighboring communities. In some cases, it is not sufficient to assume that majority of stakeholders in agreement is participatory or will ensure continued functionality of WASH schemes. In the case of Dire Bantu WASH project, it was the vocal minority of upstream users who sabotaged the project.

Economic sustainability: In areas where multi-use schemes are utilized, community stakeholders' economic benefits are associated with the WASH project and ensures economic sustainability of those schemes. Multi-use of water in the forms of irrigation use and cattle watering was reported in 14.3 % and 29 % of project sites evaluated respectively. In multiple use schemes, certain community members have vested economic interest, and thus may be willing to spend some amount towards maintenance of the system apart from the money normally collected by the WASH committee. Such increased funds can ensure continued or greater service benefits.

Indirect economic benefits also arise, such as: saving money that would have been spent on treating waterborne diseases and time savings for women to do other activities that can directly benefit the household. Another indirect benefit of multi-use can be the dissemination and spread of successful multi-use components. In the community of Wellu Mojo, community members took it upon their own initiative to construct additional cattle troughs because of the initial success and demand that WVE constructed cattle troughs (Figure 3-3).



Figure 3-3 Community constructed cattle troughs in Wellu Mojo community – Abote ADP

Environmental sustainability: The introduction of sanitation and hygiene practices has created a more sanitary environment. Best practices in watershed management require careful consideration

regarding the management of solid and liquid waste, run-off control, and proper disposal of human and animal excreta. In all visited sites, respondents had witnessed an improved sanitation condition in their environment largely because of the transition from open defecation to use of household pit latrines. When pit latrines are properly managed, human excreta can be properly disposed which reduces pathogen loading in surface water, shallow sub-surface water and grazing areas. However, to achieve greater environmental sustainability, best practices in watershed management should be considered and implemented.

Because the WASH committee can play a vital role in proper protection and management of water points, the phase out strategy being used by WVE may in the future need to consider mechanisms to: (1) revitalize the WASH committees and also (2) their link to their respective woredas, along with (3) advocacy at regional level to give due attention in building capacity at the grassroots level. The aspects for revitalization may extend to integrating the plans, implementations, budgeting and reporting. Such can function in unison by conducting meetings regularly and updating their work progress at gatherings made at the national WASH program level.

3.6 Capacity Building

Sustainability of WASH schemes is based on the ability of local institutions to effectively run WASH schemes post-implementation. A high level of functionality includes the formation of a WASH committee, writing of an agreed bylaw stating the duties and responsibilities of each functioning unit and the users, and enabling the community to operate, manage and run the system independently or with minimal support. As such, a high level of functionality requires capacity building during implementation phase so hand over of the project can take place.

WASH committees have been established at each WASH scheme. The number of the committee members was fixed at five; three of them being responsible for the management and administration of the schemes, whereas two others were responsible for follow-up and conducting the regular and occasional maintenance of the schemes called 'care takes'. Such roles and responsibilities require well-written and enforced bylaws. While 70% of WASH committees surveyed had bylaws, not all of these bylaws were found to be effectively enforced in the provision of collecting fees for regular and occasional maintenance of schemes.

Capacity building may take the form of: (1) conducting training on operation, (2) maintenance and repair (OM&R) of the WASH facilities, (3) extending service area in a community to increase accessibility and (4) maintaining a timeline of activities including financial details. In 98% of the projects visited either training on operation and maintenance, sanitation or technical, and/or basic start-up tools (pipe wrenches, threaders, cutters etc) are provided. Training for community WASH promoters, community hygiene campaigns and training on improved hygienic practices including hand washing, face washing, bathing, sanitary disposal of infant feces, and safe water transport and storage for mothers are also provided in 11% of the visited projects. A new approach is being used to mobilize the community towards to better sanitation. The approach called Community Led Total Sanitation and Hygiene (CLTSH) is being applied to trigger the community to take the responsibility of building house hold latrines.

3.7 Project Effectiveness/Efficiency

Effectiveness:

The project's degree of achievement of the planned objectives is compared to the realized objectives in terms of the three intermediate results: improved access to safe water sources through development of new schemes, improved hygiene and sanitation knowledge and practice in target communities, and functioning level of management and maintenance system of the WASH projects.

Improved access to safe water sources through development of new schemes

In majority of the implementation sites, communities observed that they were in a desperate situation with limited or no access to clean water prior to implementation. While water may have been available in a very distant location (river or stream) the water was of very low quality and communities were subject to serious water associated health risks. Women and mainly girls in these ADPs spent much of their time in fetching water for the household, time which could have been used for education, household sanitation and well-being, and other income generating activities. The projects implemented by WVE have essentially filled such an opportunity gap by increasing access to safe water and increasing time spent on other activities by women in target communities (Figure 3-4A and B). Though documents that can help to associate improvement in girls' class enrollment or reduction in child morbidity with provision of WASH facilities are not properly documented nor are

they available at woreda level, in 83% of the projects visited, communities expressed that the WASH projects had answered their needs for access to clean water.

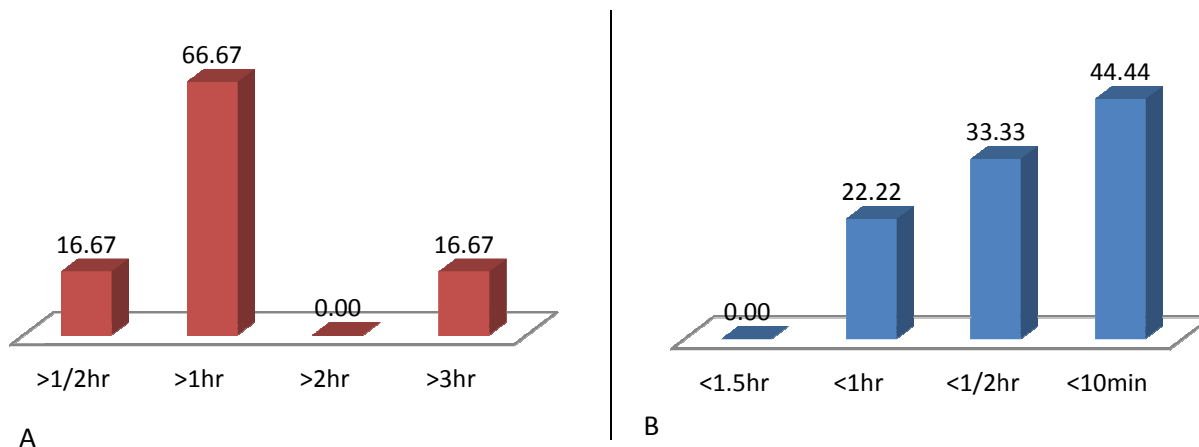


Figure 3-4 Of the surveyed households, the number of hours spent before in travelling and waiting to gather water prior to intervention. b) Of the surveyed households, the number of hours spent before in travelling and waiting to gather water after intervention

Improved hygiene and sanitation knowledge and practice in target communities

In all visited sites, communities expressed that the sanitation and hygiene products had resulted in two major improvements in their livelihood: a cleaner environment and reduced sickness of their children. However a clean environment is not obtained only by constructing and using pit latrines. In some of the visited sites the study team had learned that about 54% of the community disposes wastewater in an open area within their compound and about 36% use a sock pit inside their compound. Only 43% percent of respondents indicated that they wash their hands after using the toilet. In areas where a separate bowl is not used for hand washing the health risks are worse than open defecation. When a separate bowl is not utilized, users can contaminate their water storage container and household supply by using the contaminated bowl that was brought with them to the latrine. A new effort should also be made to ensure consistent use of a separate hand washing mechanism after latrine use so as to break the transmission route of certain waterborne diseases.

Another important lesson of the research is that there should be continuing advocacy on hygiene practices even after implementation. An excreta disposal system currently in use is a dry pit latrine

dug and maintained by individual household. While the use of pit latrines avoids the environmental problem of open defecation, in most of the sites visited the latrine holes are not covered with lids.

While pit latrines are generally an improvement compared to open defecation, the team has identified several weaknesses with household use of pit latrines in some of the visited communities: (i) there is little privacy, (ii) there is no cover for the hole so those pits which are built nearby the house provide a perfect reproduction ground for flies which may transport the disease to the dwellers, (iii) shedding material can be structurally weak and can rapidly decompose, or (iv) no access to cleaning materials. The introduction of ventilated improved pit (VIP) latrines with due consideration of using local materials should be considered in the future as better alternative to maintain superior household hygiene.

Functioning level of management and maintenance system

The WASH management's primary task is to maintain or enhance water supply service and the level of community sanitation while continuing to advocate best hygiene practices, collect service fee and manage the day to day services. The committee's tools to ensure this include a properly written and agreed bylaw, a technical and management capacity to operate, manage and run the system as intended, and proper reporting and documenting practice for monitoring, evaluation and future expansion. WVE assisted in writing the bylaws in 70% of the projects visited and also provided technical training to selected members of the WASH committee. The capacity building was also seen to be extended to the provision of tools and spare parts. A major failure in the functioning of these committees was found to be failure to strictly abide by the bylaws in enforcing fee collection mechanisms. The consistent trend observed in terms of projects success is that where a volumetric, monthly plain rate or per jerican water fee are enforced the water supply system maintains the same level of service. In areas where fee collection mechanisms are not enforced, a shrinking ability to maintain continuity of supply was observed.

Efficiency:

The project's efficiency was evaluated in terms of realization of the planned project activities and the corresponding functionality of the implemented schemes. The hardware part of the project activity includes drilling and completion of boreholes fitted with either motorized or hand pumps,

construction of hand dug wells installed with hand pump, cleaning and development of springs intended for gravity-fed or motorized distribution systems, and installation of motorized schemes along with the laying of a pipe network and construction of public water source points. The evaluation result showed that out of the completed 25 schemes, 2 are not functional. There are also several schemes that were partially functional and two under construction (Bujura and Agemsamba (under construction) and Koloba Kolo (not functioning)) while one was terminated (Dire Bantu). Thus, based on the fully completed projects perspective the cumulative result of the project efficiency is 80% when comparing the number of fully functional schemes against the total number of implemented.

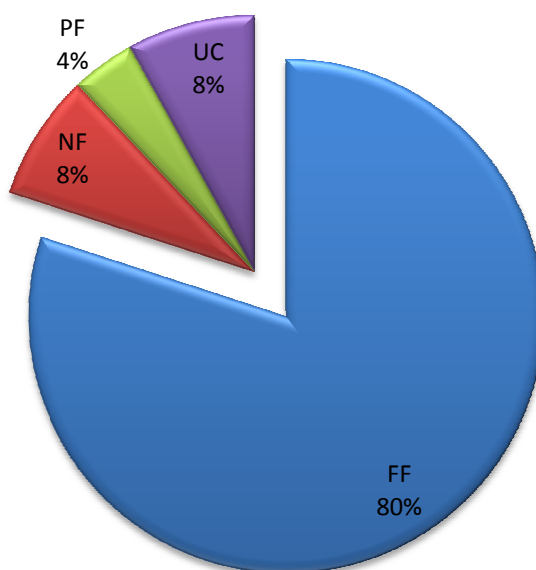


Figure 3-5 The proportion of schemes reported to be fully functioning (FF), partially functioning (PF), under construction (UC), and non-functioning (NF)

3.8 Monitoring, Reporting and Documentation

The rationale behind setting up a monitoring system is to generate and regularly update information so as to make informed decisions. Making informed decisions contributes to improvements in project quality and service, ensures accountability (a case where all stakeholders have been communicated with regard to project achievements), and establishes a culture of organizational learning which mainly focuses on documenting best lessons and practices so as to replicate and scale-up successful projects in any similar conditions.

Accountability to Beneficiaries and their Level of Involvement

The level of participation of stakeholders at every stage of the project (planning to implementation) determines the extent to which the WASH committee and community health promoters were accountable when implementing the WASH projects. In this regard WVE has a very strong reputation in jointly working with stakeholders at various levels. The projects usually start by signing an agreed Memorandum of Understanding (MOU) with woreda administration. The woreda administration enters the commitment stated on the MOU when they are convinced that the projects bring change to their respective community and are participatory. The target communities that participate in the initial exploratory phases need to have influence over decision-making processes during project execution.

In constructing the water scheme, the local population took the responsibility for the transport of some of the construction materials and assisted in the building of WASH structures. Some of the components of the WASH project need other and less conventional implementation approaches especially in the implementation of sanitation and hygiene practices. WVE has started to apply the CLTSH approach in all ADPs. In this approach the health risks of open defecation is explained and this explanation triggers the community to mobilize to construct latrines from locally available low-cost materials. The ultimate goal of CLTSH is that communities achieve and maintain “open defecation free” status and improved hygiene practices. This type of beneficiary participation has been effectively integrated throughout the project cycle in most of the WASH projects visited by the team.

Project monitoring is an important part of a project plan and follows the project cycle management. From a project plan, a joint monitoring system to be carried out with various stakeholders needs to be clearly stated. Findings of the field observations and key informant interviews with government representatives at Woreda and regional levels confirmed that reporting and monitoring systems were inadequate. However, this is especially justified at regional level given that the woreda is more independent and self-governing and the Ethiopian government is pushing more decentralization.

With regard to the reporting system, the available progress or terminal reports seems to be of high quality. From field observation, there was no standard recording and reporting tools indicating that there is no organized and systematic reporting structure which properly captures performance records and organizes such results into an established information system. In summary, most of the monitoring and evaluation standard systems with defined and acceptable standard tools have not been observed. Therefore, the major gaps observed in M&E system are:

- Absence of baseline data or assessment report for all projects
- Limited conceptual understanding on monitoring and evaluation system at the system management level
- Lack of standard reporting tools for documenting and recording performance data
- Reports on regular technical and budgetary coordination at both region and woreda levels do not exist or those reports are not available

3.9 Project Relevance

Availability and accessibility of water sources by type were asked in the survey. Before intervention, communities in 9% of the visited sites responded that they were in a terrible situation where as 75% said they were in a bad situation (Figure 3-6). Only 17% of the villages had sufficient quantity, but the quality was suspect given that the majority was not from protected source. In many cases, people collected their water from unprotected sources such as nearby rivers and streams during both the dry and wet seasons. After the intervention, 25% collect now water from boreholes, 69 % from springs and 6% from hand pump fitted hand dug or shallow wells in dry and wet seasons. Thus the projects essentially changed the water source and accessibility.

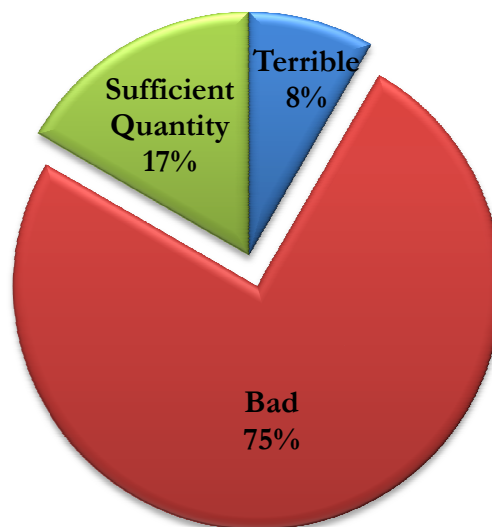


Figure 3-6 Proportion of sites prior to implementation that were in bad, terrible, or reported having a sufficient supply of water

Reports show that prior to implementation of this WASH Program, these areas were noted to have the lowest access (average of 21%) to water and sanitation services. Most of the ADPs identified safe water access as their largest problem and priority issue. In addition, there was a high prevalence of water-borne and sanitation-related diseases, low access to health centers, and poor personal and environmental hygiene. Compounding this, the hot temperature and humidity of some of the areas is favorable for the spread of vector-borne and other communicable diseases. Waste disposal in open fields and poor environmental sanitation contribute to the prevalence of human epidemics in the areas. There were areas where sanitation coverage was as low as 4%.

3.10 Project Management

The water supply development program at WVE is reorganized in 2006 to include the sanitation and hygiene components so as to maximize the impact of the water supply projects. As part of the reorganization task thus the WASH department was established and had developed the necessary capacity to carry out WASH programs in an integrated manner with the water supply development. In 2011, the department was upgraded to a division level to create the capacity necessary to implement the Rehoboth & other WASH programs. The WASH division supports the regular

sponsorship ministries of various ADPs across the country. The major projects within the division and their corresponding budget are provided in the table below.

Table 3-1 List of major projects and their corresponding budget

S/N	Description	ADPs	Total Budget	Period
1	Rehoboth	16	\$36,342,668	(2011-2015)
2	EWSP	7	\$10,000,000	(2007-2012)
3	MWP Phase-I with the bridge funding	8	\$4,200,000	(2007-2010)
4	MWP Phase-II	2	\$1,645,091	(2012-2014)
5	Water Quality Project	-	\$338,912	(2007-2012)
6	WV Rotary-Partnership	1ADP + 3 Non ADPs	\$800,000	(2010-2012)
Total			\$49,126,671	

(Source: WVE documents)

Currently, the WASH Division has a total of 89 staffs (Out of whom, 71 are fECC staffs) with the following functions/Departments:

- Rehoboth WASH Programs
- Multiple Grant WASH Programs
- Sponsorship funded WASH Programs
- Finance & Administration Function

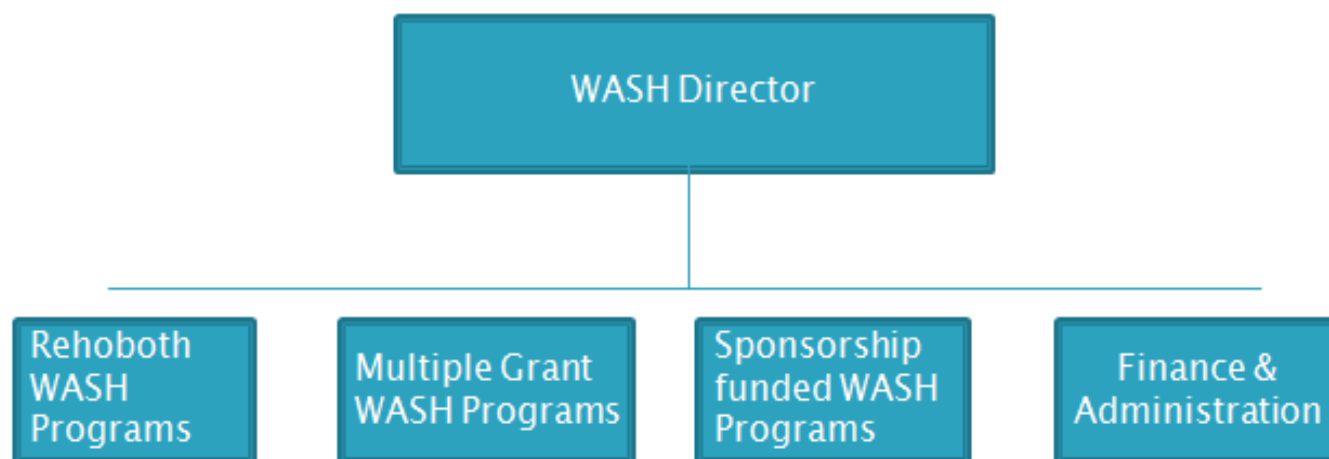


Figure 3-7 Organizational set up of the Wash division. (Source: WVE)

The implementation of the grant program is being carried out in ADP operation areas except in rare cases.

3.11 SWOT Analysis

Strengths

From subsequent analysis of the findings and the reports from each field team, the most visible strengths of the WASH projects were:

- ADPs utilize a participatory approach that includes elements of cost sharing in terms of labor contribution, community ownership which enhances project sustainability after implementation.
- ADPs operate in areas where interventions in water supply and sanitation are desperately needed. Due to this there have been marked improvements in access to safe water for communities.
- WVE is beginning to emphasize ways to ensure sustainability of the projects after implementation (i.e. through the creation of effective bylaws in WASH committees).
- The ADPs emphasis on development of spring with gravity-fed WASH system and this will increase sustainability by decreasing O&M costs.
- There is emphasis on ways of increasing access to water and sanitation and hygiene services for poor and disabled people in some ADP areas. Such actions make projects more humanitarian and ultimately more sustainable.
- Training to the stakeholders and community
- There are projects where provision fees are based upon willingness to pay estimates by local administrators. Such estimates can set reasonable and sustainable provision for a continuing high level of WASH service.
- The use of WASH GIS mapping is a great tool for visualizing and analysing access issues in ADPs.

Weaknesses

Observed weaknesses include:

- Attention is given only to quantity of water and water quality issues are given less attention. In most of the towns the quality of the water tested failed some physical and chemical

standards (Table 4 – 1) (these are considered secondary standards by some agencies, e.g. the US Environmental Protection Agency (USEPA)). However, the bigger problems are: (1) most ADPs do not have a regular schedule for water quality data collection and (2) there have been few bacteriological tests so there is no way to know if the water is safe to drink.

- Not all schemes are regularly disinfected. At most ADPs, handling, storage, and consumptive behaviours in the household are not well studied nor is the water quality in the home as transformed by these behaviours known. Such understanding could be utilized in planning future and more effective interventions for public health promoters.
- Many ADPs reported that the project failed to construct water supply and sanitation facilities integrated implementation was inadequate to bring the desired impact.
- Capacity building of some of the stakeholders was very low. For example woreda offices are not supported with appropriate equipment, tools, and facilities and so on and expect WVE to continue administrative support of projects after implementation.
- There is little attention given to conservation of watersheds of water sources. This could have avoided failure due to hydrological causes as was seen in the hand dug well projects. Eliminating environmental contamination resulting from better handling of human excreta does not ensure that other factors in the environment such as animal waste or nutrient run-off could negatively impact water and land resources. In addition, better understanding of water balance during the year will ensure that WASH schemes function all year round. In 50% of hand dug wells (which can be seasonally dependent on recharge from surface sources), there were reported failures that were associated with decline of water table during the dry season.
- Attention to socio-economic constraints and behavioural practices of members of the community was poor. In particular, it was noted that taps on public water points were not well protected and as such had been broken off as a result of children using them as climbing frames.
- From the site visits, it is evident that few of the infrastructures were either poorly situated or shoddily constructed. Poor quality construction was a common and a significant factor in the failure of some schemes.

Opportunities

The opportunities include:

- Daily labour during construction and administration and OM&R represent job opportunities for the community after end of construction.
- When distance to water sources are decreased, women can use the time for fetching water for other household activities the majority of which were reported to improve household wellbeing.
- Regular water quality testing and monitoring of water supplies could be an active program of WVE to ensure that water at the source is safe to drink and provide yet another area of regional capacity building.
- Lack of assurance of safe drinking water from lack of chlorination and other water treatment processes at ADPs could be an area of innovation for WVE by partnering with other universities, NGOs and GOs who have experience in this area. Such designs and implementation if done correctly could enhance WVE's credibility in providing access to safe water.
- Lack of understanding of latrine use and contamination at the household level in many ADPs constitute an opportunity to broaden the active promotional roles of the public worker.
- There are many gaps in the WASH field where WVE could become a leader in innovation. The lack of understanding of best management practice for latrine use, construction, and household storage and handling practices are present areas where WVE could actively participate in introducing best management practices.
- There is an incredible opportunity with the recently established WASH learning centre for research, development, and dissemination of best management practices in the WASH field. Such a learning centre can bring WASH stakeholders from academia, governmental, and non-governmental sectors and be a centre of excellence in both learning and implementation.
- There is a lack of standard means of appropriate technology selection in communities. Often such selection guides are constrained because of the contextual diversity in the different areas of Ethiopia. Because WVE works in a wide variety of geographical, environmental, and social contexts, such technologies could be studied and then applied effectively within these constraints. The final product could be a selection technology guide that would include socio-

economic and environmental factors that are often absent from other organization selection guides.

- Implementing a system of standard monitoring and evaluation which would include a standard way to collect, store, and manage data at all levels of the project would make reporting easier. In addition, such raw data and indicators could be made open-source and available uploaded on a website to researchers and practitioners that would enhance WVE's profile and ability to publish results.

Threats

The threats are:

- The community considers WVE as promoter of a religion which is different from their own.
- The potential for dependency syndrome stemming from a lack of capacity building of communities in feeling the need for WVE to continue with administrative and financial support well after project implementation.
- Inappropriate design and poor construction quality and materials are resulting in malfunctioning of some schemes and this reduces WVE credibility.
- The lack of detailed construction quality supervision guidelines and hence poor construction quality in some of visited sites will overburden the community with high maintenance cost and ultimately hinder sustainability after implementation.
- High energy cost renders motorized systems unsustainable. WVE should intensify the already started use of renewable energy for its future projects.
- Unaware of the fact that WVE's activity are complementary to the GTP government line offices do not give full support. Integrating WVE community participation works with GTP was difficult and delayed implementation of projects. Meeting with the community, among themselves and top authorities took their time and delayed implementation of needed projects.
- Price escalation in the cost of construction materials, fuel, cement, HDPE pipes, associated fittings and drilling supplies in the country can hinder future OM&R and ultimately sustainability after implementation.

- There were reports of shortage of available vehicles for frequent field visits which lessened the ability of WVE to maintain accountability and conduct vital capacity building as well as supervision works in some communities.

3.12 Lessons Learned

The major lessons learned in these WVE implemented WASH projects are:

- Proper planning prior to start of implementation pays off in terms of avoiding declining support from the woreda and the community.
- Focusing on areas where the need is pressing makes a big difference in people's quality of life, children's well-being and on the quality of the environment.
- In areas where conflicts are imminent, it will be wise to reach a compromise between all stakeholders that ensures maximum benefit of all the stakeholders before embarking on the implementation of projects.
- A detailed baseline survey based on relevant indicators with relevant counterfactuals (comparisons) is crucial for results monitoring and evaluation and, hence, efforts are required to collect such data prior to the commencement of the projects. The survey may include but not limited to the following issues,
 - *Survey on Community Water Supply facilities* – will include types of water supply system, location, status, institutional and financial information in each sample kebeles
 - *Survey on School WASH facilities* – will include type and location of water supply system, status of the WASH facilities, institutional data
 - *Survey on Health Institutions WASH facilities* – will include type of water source, location, status, user population disaggregated by gender
 - *Household Questionnaire on WASH* – will cover demographic, socio economic, water supply, sanitation, living environment, hygiene practices, etc
- Establishing the WASH committee, helping to set the bylaws, providing start up equipment and spare parts alone does not ensure sustainability. A continued effort of revitalizing the WASH committee is very important.
- Water supply and sanitation coverage reports by woredas are often misleading and as a result should be dealt with caution, because otherwise, planning could be inadequate in

scope. Baseline studies should attempt to corporate information gathered from the woreda where applicable.

- Indigenous knowledge on utilities management should be properly developed for use on the WASH facilities. There are areas (specifically observed in Wellu Mojo) where the society diverts excess water for irrigation by their own effort and yet effectively manage the system, whereas in the same areas another suffering because of poor performance of the WASH committees.
- Documentation of timeline of the project is very crucial. Evaluation of WASH projects is time-consuming and requires a relatively large amount of data to be continuously updated that fails when proper documentation does not exist

4. Results of the Household Survey

4.1 Impacts of the WASH Projects

The impacts of the WASH projects may in part be evaluated by the accessibility of water and sanitation facilities. However, accessibility could not ensure affordability of the services to portions of the people most in need. As such arrangements may be needed to extend the service for the poor, elderly, disadvantaged and vulnerable parts of the society. Only in 20% of the visited sites were there reported special arrangements made for disadvantaged, the elderly, and poor families. In areas where water fee is yet not enforced (10% of the sites) the poor still has the advantage of having the service, however, such a practice is not sustainable for the long-term OM & R of service. On the other hand, in 20% of the sites the water fee is 10 cents per jerican (approximately 20 liters). This was seen to be affordable for most of the rural and semi urban areas. The overall impacts of the WASH projects are evaluated below on the basis of their success in extent and quality of water supply coverage, success level of management and maintenance of the WASH components and level of sanitation and hygiene practices achieved.

a. Daily Consumption of Water

Daily water consumption at household level was calculated based on the volume of the water container used to collect water multiplied by the frequency of water collection. According to the survey report, 57% of the respondents consumed about 40 liters of water per day per household from unprotected sources before intervention. Assuming a household size of five people represents a per capita water consumption of 8 liters per day, which is well below the minimum consumptive requirements for rural water supplies of 15 liters per day. However, after the intervention, the household's average consumption grew to about 80 liters per day per household (meeting the minimum consumptive requirements) and was collected from a protected source. For 43% of the households the consumption grew to 140 liters per day per household. Thus, comparing pre-and post-interventions, the increase in water consumption by household has increased by an average of 70%.

b. Water Quality

Assessing water quality is one health indicator. An important health indicator is a bacteriological evaluation for the presence of indicator organisms such as *E. coli*. Unfortunately, such tests were not feasible to be conducted within the constraints of the study. In this evaluation water quality measurements explored the chemical and physical conditions of the water supplies (Table 4-1).

Table 4-1 Results of water quality testing of sources in ADPs

Parameters	WHO standard	Range reported by study teams	Remark
Color	Non objectionable	Non objectionable	
Odor	Non objectionable	Non objectionable	
Taste	Non objectionable	Non objectionable	
Turbidity	0 - 5 NTU	0.25 - >800	All but two below maximum
Ammonia	<1.5 mg/l	0 mg/l	
pH	7.5-8.5	5.4 - 8	
Free Chlorine	250 mg/l	0.01 - 0.15 mg/l	No dosing in most schemes
Calcium Hardness	<1.5 mg/l	4 – 250 mg/l	
Chromium	0.1 mg/l	0.03 - 0.1 mg/l	
Sulfate	483 mg/l	24 – 25 mg/l	
Manganese	0.8 mg/l	0.97 - 0.98 mg/l	All above WHO limit
Iron	0.4 mg/l	0.21 - 0.27 mg/l	
Nitrate	50 mg/l	7.12 – 11 mg/l	
Nitrite	3 mg/l	0 mg/l	
Phosphate	2 mg/l	1.8 - 4.1 mg/l	Potential nutrient run-off
Fluoride	1.5 mg/l	0.4 - 0.65 mg/l	All within standards

As a matter of fact, the majority of the tests revealed that the water in use is within the WHO physical and chemical standards. A high concentration of Manganese was found to be a common attribute in all water sources. Manganese has generally been regarded as nontoxic and naturally occurring. Manganese is removed from well water primarily due to aesthetic reasons as it renders Black-to-brown color to the water and a bitter, metallic taste and also causes hardness. However literature also shows that hard water may exert a beneficial effect on the cardiovascular system. Ranges of observed water parameters are tabulated in Table 4 – 1.

4.1.1 Extent and quality of water supply coverage

The United Nations as well as the World Bank refers to the definitions provided by Global Water Supply and Sanitation Assessment 2000 Report by WHO/ UNICEF, for their understanding of the terms ‘access to improved water supply and sanitation’. This assessment report defines access to water supply and sanitation in terms of the types of technology and levels of service afforded. For water, “Reasonable access” has been broadly defined as the availability of at least 20 liters per person per day from a source within one kilometer of the user’s dwelling. Types of source that did not give reasonable and ready access to water for domestic hygiene purposes, such as tanker trucks and bottled water have not been included. For sanitation, the excreta disposal system was considered adequate if it was private or shared (but not public) and if it hygienically separated human excreta from human contact.

According to the World Bank Access to improved water source is the share of the population with reasonable access to an adequate amount of safe water (including treated surface water and untreated but uncontaminated water, such as from springs, sanitary wells, and protected boreholes). In urban areas the source may be a public fountain or standpipe located not more than 200 meters away. In rural areas the definition implies that members of the household do not have to spend a disproportionate part of the day fetching water. An adequate amount of water is that needed to satisfy metabolic, hygienic, and domestic requirements, usually about 20 liters of safe water a person per day. (Source: www.worldbank.org)

4.1.2 Source and accessibility of Drinking Water

Access to water is a major indicator to the extent of water supply coverage. Thus, respondents were asked where water was accessed prior to and after project interventions. In the pre-intervention case, 67% of respondents travelled more than one hour to collect their water from rivers, streams or unprotected springs (Figure 3-4A and B). However, after intervention, 78% of respondents said they are able to collect water with a total travel time of less than 30 minutes and only 22% responded that they spent about an hour in waiting time to collect water. Such interventions have also significantly reduced the use of unprotected water for household consumption. In 29% of these projects community, a multi-use approach was developed to construct cattle watering troughs.

Separating human and animal water supplies will no doubt reduce exposure of young boys and girls to waterborne pathogens.

4.2 Level of management and maintenance of WASH components

a. WASH Committee

An essential component of governance of WASH projects is the availability of bylaws for establishing a robust operation and maintenance system with which to appropriately price and collect fees, and establish roles and responsibilities of the WASH committee in operation and maintenance of the project. Though 70% of the visited sites have such bylaws in place only 45.5% of the sites enforce the agreed tariff collection. As a result, financial resources are under strain and sustainability of the system is in jeopardy, especially in the case that a serious expenditure of the WASH committee is required such as breakdown of crucial system components.

The WASH committee members at each scheme were also provided with technical, operation, management or sanitation training. Half of the respondents from the WASH committee complained that material support was not, and must be continued from WVE even after the completion of the projects. Such a request is mainly due to the erratic availability of spare parts in the local market, lack of trust in the capability of the woreda to technically sustain the WASH system and an inability to enforce cost recovery mechanism. While continuous provision of supplies is not a mandatory task for WVE, it is worthwhile to revise the exit strategy: community stakeholders made serious comment on the need to revitalize the WASH committee in reorganizing, reforming and re-capacitating it. Woreda water resource offices often fail to fully realize these objectives due to lack of budget, limited manpower and material and such failure represents a barrier to sustainability of the schemes.

b. Documentation practices

Detailed documentation of a timeline of project activities is crucial for monitoring, evaluation, scheme expansion and future planning. In only 50% of the sites visited are such documents available at the woredas. This is an issue of improvement as far as sustainability of WASH projects are concerned and focus should be given to emphasize the need for documentation of

events in implementing a capacity building task for the WASH committee. Of these documents, there are problems with consistency in the details, format and subject types which are reported.

- The reporting interval may be once in three months and reports for special circumstances (during unplanned meetings, emergency activities etc)
- The contents of the report may include the routine surveillance, protective maintenance, disinfection activities, sampling for quality analysis, financial report (fee collected, expenditure etc) and minutes of meetings. It is recommended that the WASH committee keep records of operating costs as these records provide up-to-date information on expenditures and can be used to predict yearly costs and forecast budgets.
- Reports may be archived with the woreda water resources development office with a copy to the zonal water resources development department

c. Need for Maintenance of Service

From interviews and past experience in evaluating other WASH projects, there is a casual relationship that exists between willingness to pay and the quality of service available to the consumer. Well maintained systems, with sufficient quality and quantity are expected and usually do maintain the same level of service and, in some cases, even increase coverage.

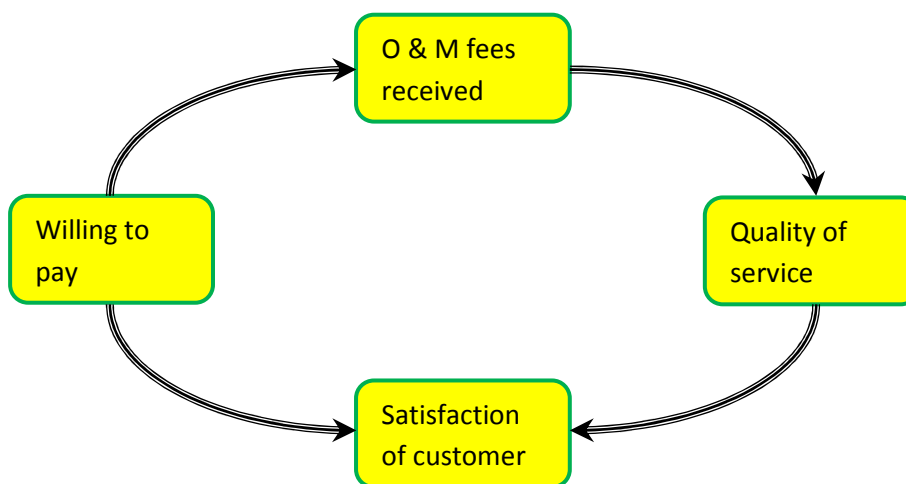


Figure 4-1 Failure to enforce cost recovery mechanisms results in a vicious circle of weakening the WASH sustainability

However, without sufficient operation and maintenance of systems the objective of providing high quality water can fall into disrepair. The causal reinforcing relationship between willingness to pay and service provisions relationship can be summarized by the following steps: (1) consumers are less willing to pay for water that is considered of poor quality or insufficient quantity which in turn can reduce the revenue stream collected for WASH schemes, (2) a smaller revenue stream can reduce the ability of the WASH committee to operate and maintain WASH schemes at the same level of service, and (3) reductions in service cause more consumers to reduce their contributions.

Level of sanitation and hygiene practice

a. Hand Washing Habit

The survey result showed only 43% of respondents often wash their hand after using the toilet. However, the use of separate bowls for hand washing is still a rare experience. In some households users take their bowls used in the household to the toilet which certainly brings a health risk to the water storage.

b. Sanitation Practices

One of the major sanitation components of the project was expected to include safe excreta and solid waste disposal systems. The emphasis given to sanitation and hygiene relative to the water supply intervention was less at the beginning. It is noted in this report that WVE introduces the noble idea of CLTSH in many ADPs with a focus on improving hygiene, sanitation and behavioral change of the community. The new approach encourages community self-analysis of existing defecation patterns and threats, and promotes local solutions to reduce and ultimately eliminate the practice of open defecation (Figure 4-2). In the CLTSH approach the community is mobilized through triggering efforts; and provides understanding on the health risks of open defecation to communities and individuals. In the process, households construct latrines from locally available low-cost materials. The ultimate goal of CLTSH is that communities achieve and maintain “open defecation-free” status and improved hygiene practices. This is a complete shift for communities who have been practicing open defecation as a normal practice. The household survey also revealed that a sanitation practice in terms of using latrines was very low relative to the access.

Beyond the promotion of the community to build house holds latrines WVE had constructed VIPs for communal use at public gathering places and public latrines in schools and health institutions. These VIPs were built in elementary schools and bus stations.



Figure 4-2 Community triggering for implementation of CLTSH practices, Sibire (Photo credit: WVE)

5. Conclusions and Recommendations

5.1 Conclusions

National policy places considerable emphasis on the decentralization of management and implementation responsibilities to shift from the regional to the woreda level. The water resources development offices effectively practices its authority to oversee WASH projects in their respective woredas and are so far successful in avoiding resource overlaps in planning these projects. However, sustainability remains a challenge in the WASH projects visited. This will in the future lead to extensive rehabilitation work which will consume huge budget which could have been expended on expanding new systems for communities with less than adequate coverage.

The paradigm that communities should administer their WASH system sounds appealing to development proponents. Nevertheless, experience had shown that even in societies with modern

water supply system in the developed world rely on the support that they receive from local government. As such the woreda water resources development offices should adequately engage themselves in revitalizing the WASH committees.

As a final remark, the team had observed inflated figures of water supply and sanitation coverage reported by the woreda sources. Reports show that such anomalies occur in different African countries². A detailed baseline survey of all existing water supply and sanitation facilities should be conducted in strategically selected woredas with the aims of clarifying coverage rates and developing an effective tool for long-term planning, monitoring and evaluation.

5.2 Recommendations

- i. Develop a realistic transition from free provision of water to a reasonable water fee which will be collected during collection.
- ii. Improve the coordination with key stakeholders in the project area and use a common approach when undertaking WASH projects.
- iii. Ensure those WASH committees are well equipped with the required capacity right at the beginning and devise a mechanism to revitalize these committees.
- iv. Improve the linkage and integration between woreda and WVE so as to ensure full participation of the beneficiary community.
- v. Lessons drawn from past intervention periods indicate those monitoring and evaluation systems with various stakeholders need to be strengthened.
- vi. Give priority for indigenous institutions. Instead of initiating new institutions such as WASH committee, learn first about existing local institutions and work with these institutions to share the responsibilities of managing the WASH facilities. Traditional irrigation schemes, local grazing conservation efforts and other initiated projects may provide examples of traditional institutions.
- vii. Include baseline studies as a requirement in project designs and establish a user-friendly depository of all available baseline studies and associated databases for result monitoring, evaluation, and future project designs.
- viii. Address wastewater and solid waste management concurrently with improving access to sanitation facilities.

- ix. Conflict resolution should be included in projects where necessary before implementation. The need to understand all possible sources of conflict resulting from the use of a water source in one community to supply another neighboring community is a decisive factor that affects the sustainability of a scheme.
- x. Improving latrine use is as important as improving coverage. While the percentage of households having latrines always seems to be a point of interest for implementers, government or NGOs, this evaluation learned that the best practice uses for pit latrines and hygienic practices appear to diminish with time. A consistent monitoring mechanism is required to maintain the intended level of sanitation in the long term.
- xi. There is a need for re-evaluation of sanitation technology. It can be seen that the older approach of pit latrine construction could not bring the required impact in the community. Though the technology is low cost and avoids environmental nuisance, some households are more frequently and more closely exposed to the potential danger of waterborne disease. Unless proper cautionary measures are adopted the latrines become breeding grounds for vectors. It may be worthwhile to re-evaluate the technology being used and make appropriate adjustment.
- xii. Cleansing habit is impacting effectiveness of use of toilet. Observations showed that people use leaves and stones for anal cleansing. Interventions on behavioral change education should consider the inclusion of changing cleansing habits.

In almost all sites WVE staffs have participated in guiding the teams to the project sites and on the meetings with the woreda experts. It is the research team's strong conviction that their involvement in the process has enabled them to gain insight on how their contribution is impacting the needy community. In the future, WVE offices in the ADP sites need to participate in the process of the baseline survey, because after all, more than anybody else, the experience that can be gained in the field and overall process of the study remains with the staff in the ADP sites that are responsible for the future development intervention in the woreda.

6. References

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7. Annex

Annex 1: TOR

World Vision East Africa Region WASH Learning Center

Terms of Reference (TOR) for Institutional Contract with Universities

Requesting Section: World Vision East Africa Region WASH Learning Center

Nature of Consultancy: WASH Program Implementation Learning Initiative

Background

Ethiopia is making use of all its level best in achieving the Millennium Development Goals (MDGs) for safe water supply, improved sanitation and hygiene by 2015. The provision of safe and adequate water supply and basic sanitation for the population has far reaching effects on health, productivity, quality of life and at large to reduce poverty and ensure sustainable socio-economic development. As Ethiopia has strong vision to reach the level of middle income countries by the year 2025, provision of these basic necessities as early as possible for the whole population in addition to improving health of the population has synergetic effect to enhancing the socio-economic development of the country to achieve its vision. As per the recent update from the government of Ethiopia while developing the Growth and Transformation Plan (GTP) the access for safe water supply has reached 65.5%, 91.5% and 68.5% for rural, urban and combined rural and urban settings. A total of 93,827 schemes must be constructed to achieve 98% access by 2015 in rural Ethiopia. In addition to this improved water supply schemes must be constructed for 8119 rural schools and 4276 health institutions. Side by side with the new construction, non functionality of schemes is expected to reduce from 35% in 2011 to 10% in 2015. And this requires immediate rehabilitation of 58, 595 schemes out of the total estimated 165,000 schemes in the country.

According to Ethiopia's Demographic Health Survey (DHS), 2005, 44% of households collect water from unimproved sources, primarily surface water (30%). The most common sources of drinking water are protected springs (34%). Over half (52%) the population in rural areas spends over 30 minutes for one trip to fetch drinking water; these 'people' are primarily women over 15 years old (80%) and girls under 15 years old (9%). A vast majority of rural Ethiopians do not treat their water

prior to drinking (91%) or merely strain it through a cloth to eliminate turbidity (5%).

Similarly, as per the government's estimate the access to basic sanitation coverage has reached to 60% nationally though there is huge disparity from region to region and district to district.

According to UNICEF, Ethiopia has a high infant mortality rate, with 77 in every 1,000 babies born dying from mostly preventable causes such as diarrhea, cholera and typhoid, illnesses largely attributed to poor water quality. In every 1,000 live births in Ethiopia, 109 do not live to see their fifth birthday. Diarrhea alone is responsible for about 40 deaths in every 1000 live births, with prevalence among children below 5 years in Ethiopia standing at 15% on national average.

This shows that, despite the efforts to reverse the prevailing situation, the major portion of our community is still subjected to different WASH related diseases. The highest percentages of the community in the rural areas collect water from unprotected sources after traversing long distances. Because of the scarcity of water, cattle and human beings use the same unprotected source for drinking and other purposes. This has forced our community to use polluted water which can cause serious health problems. Children are the most affected ones through the water borne and water related diseases that emanate from the specified sources. According to MoH, WASH related diseases are among the top ten diseases registered in most health institutions which cause high morbidity and mortality.

Thus, as one major contributor for the WASH development of the country, WVE would like to capture lessons on its WASH program implementation to inform and improve its planning and implementation. This learning initiative will be done in partnership with local universities for multiple benefits. Accordingly, your University identified as one of the potential institutions in the sector to conduct this study.

Objective of the study:

To develop World Vision East Africa Region WASH Implementation Guidelines (e.g., Field WASH Implementation Reference Manual, Non-WASH People Reference Manual, Water Quality etc).

Outcomes:

1. Document prevailing WV's WASH implementation models in specific environments (practices, lessons and proposed solution).
2. Conduct an inclusive WASH Learning Event, for enriching the documented lessons with inputs from other sectors and Partners (e.g., UNICEF, WaterAid, CRS, SNV, CARE, Universities etc).
3. Produce thematic technical papers for sharing experiences with other institutions/ fora.
4. To discuss and map immediate, medium and long term improvements with WV internal and external partners.

Scope

The universities will map current implementation models interacting with project staff community members and other stakeholders to find out strengths, weaknesses, gaps, challenges, issues or threats to good practices. After having mapped the implementation models for respective projects, participants, along with the project staff they are working with, would identify key strengths, weaknesses and priorities for improvement. And this will finally lead for the development of the WASH implementation guidelines/field manuals.

Project Areas : SNNPR, Oromia, Amhara and Benshagul Regions

Work Assignments and work schedule: Deliverables/End Product(s) and Timeframe: The final output will be delivered in maximum of three months time, but the details and breakdowns will be presented by the university.

Estimated Duration of Assignment: Three months (November, 2011 to January 28, 2012).

Estimated Budget of Consultancy: Refer contract document

Proposed Payment schedule based on deliverable:

- First payment: Submission of work assignments with work schedule and conducting the first interactive workshop - (30%)
- Second payment: Submission of the draft report - (30%)
- Final payment: Submission of final report - (40%)

Annex 2: Understanding of the TOR

The overall objective of the project as understood by the consultants is to conduct a field observation on rural water supply systems at selected projects implemented by WVE. This will give the consultant a firsthand experience on the pertinent situations on the ground.

The project is envisaged to document lessons from implementation of WASH schemes in four regions in Ethiopia during the last 20 years, the status of the schemes, and the weaknesses and strengths of the approaches used for use in future planning and implementation.

Annex3: Survey Tools**Access to water**

<p>What are the different sources of drinking water that your household uses?</p> <p><i>Please list all sources used for drinking water and sources used for other purposes.</i></p> <p><i>A private tap is a tap connection on the plot of the house that is connected to the central system.</i></p>	Sources		Before project		After project	
			Purpose		Purpose	
			Drinking	Other	Drinking	Other
	1	Private tap				
	2	Neighbor's tap				
	3	Community Dug well				
	4	Community stand post				
	5	Spring water				
	6	River/stream				
	7	Tube well				
	8	Pond				
	9	Stone spout				
10	Rain water					
11	Other, specify					
<p>Is the amount of water your household uses enough for your household?</p>	Before project		After project			
	<p>1 O Mostly enough</p> <p>2 O sometimes enough, sometimes not enough</p> <p>3 O Mostly not enough</p> <p>4 O Don't know / no answer</p>		<p>1 O Mostly enough</p> <p>2 O sometimes enough, sometimes not enough</p> <p>3 O Mostly not enough</p> <p>4 O Don't know / no answer</p>			
<p>What is your opinion about the water quality</p> <p><i>[main source of drinking water]</i></p>	<p>1 O Very good</p> <p>2 O Good</p> <p>3 O Not good, not bad</p> <p>4 O Bad</p>		<p>1 O Very good</p> <p>2 O Good</p> <p>3 O Not good, not bad</p> <p>4 O Bad</p>			

	<p>5 <input type="radio"/> Very bad</p> <p>6 <input type="radio"/> Don't know/ no answer</p>	<p>5 <input type="radio"/> Very bad</p> <p>6 <input type="radio"/> Don't know/ no answer</p>
Does your household treat your drinking water in any way to make it safer to drink (quality)?	<p>1 <input type="radio"/> Always</p> <p>2 <input type="radio"/> Often</p> <p>3 <input type="radio"/> Sometimes</p> <p>4 <input type="radio"/> Hardly ever</p> <p>5 <input type="radio"/> Never</p>	<p>1 <input type="radio"/> Always</p> <p>2 <input type="radio"/> Often</p> <p>3 <input type="radio"/> Sometimes</p> <p>4 <input type="radio"/> Hardly ever</p> <p>5 <input type="radio"/> Never</p>
What do you usually do to the water to make it safer to drink?	<p>1 <input type="radio"/> Boiling</p> <p>2 <input type="radio"/> Chlorination</p> <p>3 <input type="radio"/> Wuha Agar</p> <p>4 <input type="radio"/> Filter</p> <p>5 <input type="radio"/> Handkerchief</p> <p>6 <input type="radio"/> Other, specify...</p>	<p>1 <input type="radio"/> Boiling</p> <p>2 <input type="radio"/> Chlorination</p> <p>3 <input type="radio"/> Wuha Agar</p> <p>4 <input type="radio"/> Filter</p> <p>5 <input type="radio"/> Handkerchief</p> <p>6 <input type="radio"/> Other, specify...</p>
<p>How much time did your family spend to collect water (for drinking and other purposes) before the project, and after the project?</p> <p><i>Please give a daily average in minutes (time to get to source, get water, and come back).</i></p>	<p>1. less than 15 min</p> <p>2. 15 - 30 min</p> <p>3. 30 min – 1 hr</p> <p>4. more than 1 hr</p> <p>5. no change in time</p>	<p>1. less than 15 min</p> <p>2. 15 - 30 min</p> <p>3. 30 min – 1 hr</p> <p>4. more than 1 hr</p> <p>5. no change in time</p>
<p>If household spends less time collecting water since the project</p> <p>How does your household spend the time that is saved in collecting water?</p>	<p>1 Other household tasks</p> <p>2 Family tasks</p> <p>3 Income generating work (weaving mats and weaving clothes, poultry etc)</p> <p>4 School/study</p> <p>5 Leisure</p> <p>6 Other, specify....</p> <p>7 Don't know / no answer</p>	
How much water does your household use compared to before the project?	<p>1 <input type="radio"/> Much more</p> <p>2 <input type="radio"/> Little more</p> <p>3 <input type="radio"/> The same</p>	

	<p>4 <input type="radio"/> Little less</p> <p>5 <input type="radio"/> Much less</p> <p>6 <input type="radio"/> Don't know / no answer</p>
Is the water available every day of the year?	<p>1 Yes 2 No</p>
How many hours a day is water available at the tap for your household	<p>1. 1-3 hrs</p> <p>2. 3-6 hrs</p> <p>3. 24 hrs</p> <p>4. Every alternate days</p>
Do you think other households get more water than your household?	<p>1. Yes, they get more</p> <p>2. No, it is equal</p> <p>3. No, our household gets more</p>
Are there any problems by sharing the same tap?	<p>1 No</p> <p>2 Yes, surroundings of tap is dirty</p> <p>3 Yes, I have to wait in line</p> <p>4 Yes, I Don't get enough water</p> <p>5 Others, specify</p>
What is your opinion about the fee for operation and maintenance of the water supply system?	<p>1 <input type="radio"/> Very high</p> <p>2 <input type="radio"/> High</p> <p>3 <input type="radio"/> Fair</p> <p>4 <input type="radio"/> Low</p> <p>5 <input type="radio"/> Very low</p> <p>6 <input type="radio"/> Don't know / no answer</p>
I would like to know how satisfied you are with the water services that were brought by the project.	<p>1 <input type="radio"/> Very satisfied</p> <p>2 <input type="radio"/> Satisfied</p> <p>3 <input type="radio"/> Not satisfied, not unsatisfied</p> <p>4 <input type="radio"/> Unsatisfied</p> <p>5 <input type="radio"/> Very unsatisfied</p> <p>6 <input type="radio"/> Don't know / no answer</p>

1. Environmental sanitation (access and technology choice)

Do you have a toilet at your home?	1. Yes	2. No
Where did your household go for toilet before the project? And after the project?	<u>Before project</u> 1 Private toilet 2 Shared toilet with neighbors / family 3 Community toilet 4 Open field/ river 5 Other, specify....	<u>After project</u> 1. Private toilet 2. Shared toilet with neighbors / family 3. Community toilet 4. Open field/ river 5. Other, specify....
What is the reason behind not building your own toilet?	1. A forest/river is nearby 2. There is no proper place to build one 3. I do not want to use a toilet 4. Too expensive 5. Have another toilet available 6. Others...	
If private toilet - Which type of toilet did your family use before the project? And after the project?	1 ECOSAN 2 Pit latrine 3 Private septic tank 4 Community septic tank 5 Cistern flush toilet 6 Pour flush toilet 7 Field 8 attached to biogas	1. ECOSAN 2. Pit latrine 3. Private septic tank 4. Community septic tank 5. Cistern flush toilet 6. Pour flush toilet 7. Field 8 attached to biogas
Who suggested you to build the above toilet?	1. It is my own vision 2. I saw one at my neighbors 3. SO suggested it 4. Others.....	
How do you manage the waste from your toilet?	1. I dispose it directly to sewer line 2. I dispose it to the septic tank which is connected to the	

	<p>sewer line</p> <p>3. I dispose it in the septic tank outside the house.</p> <p>4. I dispose it in the pit</p> <p>5. Others.....</p> <p>6. Not emptied yet, no problems.</p>
Are you facing any problems in your toilet?	<p>1. Drainage problems</p> <p>2. It gets filled too soon</p> <p>3. It smells very foul</p> <p>4. Toilet needs repair</p> <p>5. I have problems during monsoon months.</p> <p>6. No problems</p> <p>7. Others.....</p>
In your opinion who has had final voice in the decision about the type of toilet?	<p>1. Me/my household</p> <p>2. WASH / project</p> <p>3. SO</p> <p>4. Village Development Committee (VDC)</p> <p>5. Other(s) from outside the village, specify.....</p> <p>6. Don't know/no answer</p>
What options for toilet were presented by WVE before constructing one?	<p>1. No, only one option was discussed</p> <p>2. Yes, several options were presented, namely</p> <p>a) ECOSAN</p> <p>b) Pit latrine</p> <p>c) Pit latrine attached to biogas</p> <p>d) Private septic tank</p> <p>e) Community septic tank</p> <p>f) Other, specify....</p> <p>g) Don't know</p>
Did you receive any subsidy from the project?	<p>1. In cash.....</p> <p>2. Received construction materials (pipe, pan, cement)</p>

	3. No subsidies received.
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2. Solid waste and grey water management, sanitization

Where do you dispose the organic waste (vegetable wastages/kitchen)?	1. Dispose it in the garden 2. Dispose it in the road 3. Give it to the domestic animals like Chicken, dogs, cows as food 4. Dispose it in the pit 5. Others.....
Where do you throw the inorganic waste such as plastics, glass?	1. Burn it 2. Dispose it in the river 3. Dispose it in the (communal) dumping area 4. Recycle it 5. Others...
I would like to know how satisfied you are with the sanitation services that were brought by the project.	1 Very satisfied 2 Satisfied 3 Not satisfied, 4 Not unsatisfied 5 Unsatisfied 6 Very unsatisfied 7 Don't know / no answer
During the project did you or members of your family participate in any health and hygiene activities?	1. Yes 2. No
How satisfied are you with the information provided on health and hygiene by WVE?	1 Very satisfied 2 Satisfied 3 Not satisfied, 4 Not unsatisfied 5 Unsatisfied 6 Very unsatisfied 7 Don't know / no answer
Do you know about any current sanitation activities in your community?	1. Yes 2. No

What should be done to improve the sanitation situation in your community?	1. Increase awareness programs 2. Increase number of toilets 3. Introduce proper solid waste management system 4. Develop wastewater treatment facilities 5. Make proper rules and regulations 6. Others.....
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3. Health and hygiene

Has there been a change in the general health of your family since the project?	1 O Much better health 2 O Little better health 3 O Not better, not worse 4 O Little worse health 5 O Much worse health 6 O Don't know / no answer																		
Has there been a change in the incidence in the following diseases in your household since the project? <i>Please write the number from the list on the right</i>	<table border="1"> <thead> <tr> <th>Disease</th> <th>Incidence</th> </tr> </thead> <tbody> <tr> <td>Diarrhea</td> <td></td> </tr> <tr> <td>Eye and Skin infection</td> <td></td> </tr> <tr> <td>Typhoid</td> <td></td> </tr> <tr> <td>Dysentery</td> <td></td> </tr> <tr> <td>Worms</td> <td></td> </tr> </tbody> </table>	Disease	Incidence	Diarrhea		Eye and Skin infection		Typhoid		Dysentery		Worms		1 Much more often 2 Little more often 3 Not more, not less often 4 Little less often 5 Much less often 6 Don't know / no answer					
Disease	Incidence																		
Diarrhea																			
Eye and Skin infection																			
Typhoid																			
Dysentery																			
Worms																			
If no toilet is used write N/A Is the toilet clean? (make observations)	1. Yes 2. No																		
What material was used to construct the entire toilet? (make observations and photo)	<table border="1"> <tbody> <tr> <td>1 Pan</td> <td>9 Mud</td> </tr> <tr> <td>2 Pipe</td> <td>10 Sand</td> </tr> <tr> <td>3 Cement</td> <td>11 Gravel</td> </tr> <tr> <td>4 Brick</td> <td>12 Stones</td> </tr> <tr> <td>5 Wood</td> <td>13 Iron rod</td> </tr> <tr> <td>6 Bamboo</td> <td>14 others, specify</td> </tr> <tr> <td>7 Plastic</td> <td></td> </tr> <tr> <td>8 Clay</td> <td></td> </tr> </tbody> </table>			1 Pan	9 Mud	2 Pipe	10 Sand	3 Cement	11 Gravel	4 Brick	12 Stones	5 Wood	13 Iron rod	6 Bamboo	14 others, specify	7 Plastic		8 Clay	
1 Pan	9 Mud																		
2 Pipe	10 Sand																		
3 Cement	11 Gravel																		
4 Brick	12 Stones																		
5 Wood	13 Iron rod																		
6 Bamboo	14 others, specify																		
7 Plastic																			
8 Clay																			
	1 Permanent substructure and superstructure (1, 2, 3, 4) (12, 13...) 2 Permanent substructure and temporary superstructure (1, 2, 3, 4)																		

	(7, 9, 12) 3 Temporary substructure and superstructure (5, 6, 7, 8, 9, 10, 11)
Do you put on slippers before you enter in the toilet?	1. Yes I do 2. Sometimes I do 3. No I don't
If yes, then why?	1. To protect our feet from dirt and germs 2. To prevent suffering from diseases 3. Others.....
At what times do you wash your hands?	1. Before having food 2. After having food 3. After defecation 4. After coming in contact with wastages 5. Others.....
After defecation, what do you wash your hands with?	1. Water only 2. Soap and water 3. Ash and water 4. With clay 5. Others.....
After you clean your baby's excreta, what do you wash your hands with?	1. Water only 2. Soap and water 3. Ash and water 4. With clay 5. Others..... 6. No baby
Where do you take your baby for defecation?	1. In plain land 2. In the toilet 3. In the Garden
Where do you dispose your child's excreta?	1. In the toilet 2. There is no any particular place
Where do you throw the wastewater after you wash dishes?	1. Dispose it in the garden/near tap 2. Dispose it in a pit 3. There is no particular place 4. Others.....
Where do you keep your domestic animals	1. Indoors 2. Outdoors 3. No animals
How do you manage the excreta of the domestic animals?	1. Make compost out of it 2. Dispose it outside the house 3. Use it to prepare dried cow dung 4. Others.....

In the past year did you and your family suffer from the following diseases?	Diseases	<5 years baby	5 years above (Adults)
	1. Simple Cough		
	2. Diarrhea		
	3. Typhoid		
	4. Cholera		
	5. Pneumonia		
	7. Ascaris/Worm		
	8. Jaundice/Hepatitis-A		
	9. Dysentery		
	10. Trachoma		
	11. Scabies		
	13. Other.....		
	14. Other.....		

4. Water and Sanitation Users Committee

Do you know about the WASH	1 Yes 2 No
Were you asked to participate in the WASH?	1 Yes 2 Yes, but I was not able to join, because 3 No
Are you informed about what happens at committee meeting?	1 Yes 2 No
Before construction, were you asked to choose who would be responsible for operation and management of the water system?	1 Yes, I was asked 2 No, I wasn't asked 3 No answer / I Don't know
In your opinion how much does the WASH/project take care of the problems in water and sanitation?	1 Very much 2 Much 3 Not much, not little 4 Little 5 Very little 6 Don't know / no answer

Do you think the WASH/VMW is able to maintain and operate the water system?	<p>1 Very much</p> <p>2 Much</p> <p>3 Not much, not little</p> <p>4 Little</p> <p>5 Very little</p> <p>6 Don't know / no answer</p>
Can you please explain why you think the WASH is not able of maintaining and operating the system?	<p>1 Lack of technical knowledge</p> <p>2 Lack of material/equipment</p> <p>3 WASH lack responsibility</p> <p>4 WASH is corrupt</p> <p>5 WASH has too little money</p> <p>6 WASH Don't address the demand directly</p> <p>7 others</p>
Who would you contact if there is a problem with the water system?	<p>1 WASH/ Village Maintenance Worker</p> <p>2 WVE</p> <p>3 VDC</p> <p>4 my neighbors, friends</p> <p>5 no one 6 others</p>

5. Participation and decision making

Did you or any members of your household attend any meeting about the water and sanitation project?	<p>1 Yes</p> <p>2 No</p> <p>3 Don't know / no answer</p>
How often?
Was it mostly male or mostly female members of your household that went to the meetings?	<p>1 Only male</p> <p>2 Mostly male</p> <p>3 Male and female evenly</p> <p>4 Mostly female</p> <p>5 Only female</p> <p>6 Don't know / no answer</p>
Why did you or your family member(s) attend these meetings?	1 I/we were interested

	<p>2 Were asked to attend</p> <p>3 Were obliged to attend</p> <p>4 Other, specify.....</p> <p>5 Don't know / no answer</p>
Did you take part in decisions that were made about the water and sanitation project in your village?	<p>1 Very much</p> <p>2 Much</p> <p>3 Not much, not little</p> <p>4 Little</p> <p>5 Not at all</p> <p>6 Don't know / no opinion</p>
Before construction, on which aspect did you have the most influence?	<p>1 Project management (WASH)</p> <p>2 Type of toilets</p> <p>3 Private taps</p> <p>4 Household contribution</p> <p>5 Prices for water</p> <p>6 Prices for sanitation</p> <p>7 No influence on any</p> <p>8 Other, specify.....</p> <p>9 Don't know/no answer</p>
In your opinion, do feel your voice has been respected by the project?	<p>1 Very much</p> <p>2 Much</p> <p>3 Not much, not little</p> <p>4 Little</p> <p>5 Very little</p> <p>6 Don't know / no opinion</p>
Could you please tell me the aspects of the project did your family get benefited from?	<p>1. Private toilet</p> <p>2. Pavement repair with bricks</p> <p>3. Private tap</p> <p>4. Well repair</p> <p>5. Surface drainage</p> <p>6. Sanitation</p>

	7. Employment
	8. Others.....

6. Project contribution

Have any members of your household been in any of the user (sub) committees or community groups?	1 <input type="radio"/> Yes 2 <input type="radio"/> No 3 <input type="radio"/> Don't know / no answer			
please fill in table <i>Instructions for filling in table:</i> Who: sister, husband, son... How long: in years Ongoing: Yes / No	Who?	Name of committee/group	How long?	Ongoing?
How much money did your household pay for the installation of water system (upfront cash)	Birr.....			
How much money does your household pay for water every month?	Birr.....			
Was it difficult for your household to obtain the money for installing the water system?	1 <input type="radio"/> Very difficult 2 <input type="radio"/> Difficult 3 <input type="radio"/> Not difficult/ not easy 4 <input type="radio"/> Easy 5 <input type="radio"/> Very easy 6 <input type="radio"/> Don't know / no answer			
How much did your household invest for the toilet?	Rs.....			
Was it difficult for your household to obtain the money to install the toilet?	1 <input type="radio"/> Yes 2 <input type="radio"/> No 3 <input type="radio"/> Don't know / no answer 4 <input type="radio"/> Comment.....			

7. End

To what extent do you feel that your family has benefited from the project compared to other families?	1 <input type="radio"/> My family benefited more than other families
	2 <input type="radio"/> My family benefited equally as other families

	3 <input type="radio"/> My family benefited less than other families
	4 <input type="radio"/> Don't know / no answer
Do you have anything else that you would like to add, or that you feel has been left out of this survey? Feel free to make any remarks or comments.	<div>.....</div> <div>.....</div>

Annex4: List of Visited sites

S/N	ADP Name	Region	Projects	Remark
1	Banja	<i>Amhara</i>	Askuna Abo, Chava Gessa	For Every Child Program
2	Antsokia		Agamsamba, Mekoy Town	Ethiopia Water & Sanitation Program'
3	Kemisse		Kelo, Kachur, Repe school	Ethiopia Water & Sanitation Program
4	Angolela		Chacha, Cheki	Regular Wash Program and For Every Child Program
5	Sibu Sire	<i>Oromia</i>	Bujura, Sire Town	Rotary-World Vision Partnership
6	Hidhabu Abote		Sire Dire Bantu, Welu Mojo	Millennium Water Program
7	Jeju		Koloba Kolo, Waguda Goro	Millennium Water Program
8	Hula	<i>SNNPR</i>	Wittabono, Hangahe, Bantiwatta, Kankicha	For Every Child Program
9	Durame		Durame Town, Adilo Town	Ethiopia Water & Sanitation Program
10	Guraghe		Fessa, Jejer	Regular Wash Program
11	Mao Komo Bambasi	<i>Benishangul</i>	Tongo, Bambasi Town	Millennium Water Program

Annex 5: Proceedings of the Consultative Workshop

Evaluation team

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Bahir Dar University

Institute of Technology

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<http://iotbdu.edu.et/scwre/Home.aspx>

In collaboration with Cornell University

