



An Ex-Post Assessment for Planning Purposes:

foto

***Rural Water Supply and Community Management
in Hargeisa, North West Somalia***

01.10.1999 – 15.08.2002

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1. INTRODUCTION

1.1 SwissGroup's Engagement in the Water Sector

Caritas Switzerland and Caritas Luxembourg - operational under the name SwissGroup - began working in Somalia in 1993, and have been working in Northwest Somalia (Somaliland) since 1995, implementing projects which initially focused on the rehabilitation needs of a society emerging from civil war. In recent years, projects have increasingly addressed more long-term development needs. Sustainability is emphasized through the involvement of stakeholders, collaboration with local authorities, the use of appropriate technology and the provision of high-quality training for technicians and educators alike.

SwissGroup implemented the project *Rural Water Supply and Community Management in Hargeisa, North West Somalia* during the 'Second Rehabilitation Program for Somalia,' between October 1999 and August 2002. Its stated purpose was that "[p]eople are trained and acquire knowledge about the correct usage of water, have better access to water and are able to sustain, manage and maintain the water infrastructure and develop water systems (Final Report, 2002: 9)." Rehabilitation and construction activities included *berkads*, latrines, shallow farm wells, sub-surface/sand storage dams and pilot irrigation schemes. Capacity building measures included training in hygiene and sanitation awareness, technical skills for construction, and operation and maintenance of water structures (Final Report, 2002: 9).

The current water project 'WASH,' *Rural Water, Hygiene and Sanitation Project in North West Somalia*, began in June of 2003 and will be coming to an end mid-2006. As in the past, a main component of the WASH project has been to support the rehabilitation of water facilities in order to improve the living conditions for a broad cross-section of rural Somali communities and their livestock (WASH Mid-term Evaluation, 2005: 30). Shallow wells, dams and irrigation schemes have not been included in the project, however, with attention focused on *berkad* rehabilitation, as well as the construction of schools and latrines. 'WASH' also emphasizes collaboration with regional authorities and local NGO's to improve the quality of water and sanitation facilities, and to increase public awareness of the importance of clean water and proper hygiene practices. Capacity building has been emphasized, by offering intensive training courses, which cover topics ranging from hygiene and sanitation education to masonry and site supervision courses.

1.2 Objectives of Assessment

1.2.1 General Objectives

The overall objective of this assessment is to strengthen the planning process currently underway for SwissGroup's future engagement in Somaliland, by generating and collecting ideas on how to improve the sustainability of water-

related projects. Difficulties inherent in assessing the long-term effectiveness and sustainability of *ongoing* projects are well known. Only with the passing of time can one confirm if positive effects remain: whether water sources and latrines are being used, whether villagers' perceptions of SwissGroup are truly positive, whether the resources and skills endure to maintain facilities, and if knowledge abounds to encourage proper hygiene and sanitation behavior. Overcoming this 'time-lag' of effects is best done through an ex-post assessment.

During the evaluation, field visits have been made to sites from the *Rural Water Supply and Community Management* project (1999-2002) to assess their current condition, compare them to ongoing activities in the 'WASH' project, and make recommendations for future engagement in the water sector. What is the state and usage of the water sources and latrines? What has happened to pilot projects and the beneficiaries they intended to assist? Since their completion, none of the facilities rehabilitated or constructed between 1999 and 2002 have been visited in a systematic way. Under these circumstances, chances to build on past successes are more easily overseen, and the risk of duplicating earlier mistakes also increases.

1.2.2 Specific Objectives and Tasks

Detailed visits were made to six villages targeted during the project *Rural Water Supply and Community Management in Hargeisa, North West Somalia*, and to one village where rehabilitation and construction of *berkads* is currently ongoing for the 'WASH' project. Information collected from villagers, *berkad* owners and observations included:

- Performance indicators at each water point, including its current condition, use, and operation & maintenance of the water source;
- Community's perception of SwissGroup and the project's appropriateness, as well as their self-identified development priorities;
- The willingness and capacity of beneficiaries to assume responsibility of operation and maintenance of newly constructed or rehabilitated water sources;
- Limited performance indicators for hygiene and sanitation, including the quality of the water at the source (based on the general maintenance of the water source), the number and quality of latrines constructed and in use, and methods of disposing of garbage.

Based on the assessment's findings, a list of recommendations has been drawn up, which make up the body of this report. The suggestions have been divided into hardware and software components, and relate to the quality and design of water point construction, potential diversification of rehabilitation projects in the future, areas where further capacity building measures should be pursued, and recommendations on collaboration with village authorities and government ministries. I have done my best to note down those modifications which have

already taken place in the current project, such as changes to the quality and design of *berkads*, in order to avoid superfluous suggestions. However, due to the rarity of comparative assessments, and the fact that neither wells nor dams nor irrigations schemes were included in the 'WASH' project, the risk of overlap was considered minimal.

Due to its limited timeframe, this assessment has only been able to present preliminary answers to the above-mentioned questions on long-term effectiveness and sustainability. Nevertheless, the insights it provides increase the chances of building on past successes and lowering the risk of duplicating earlier mistakes.

1.3 Evaluation Methodology

The assessment is based on a combination of the following activities: desk research, in-depth discussions with beneficiaries, counterparts and the 'WASH' team, questionnaires, detailed site visits and a meeting with the Ministry of Water and Minerals. Findings are thus based on ideas collected from team members, beneficiaries and counterparts, as well as new thoughts generated during the evaluation itself. The recommendations provided should serve to compliment and strengthen the planning process, but many of the findings are of an exploratory nature, and may require further investigation.

The assessment mission began with a review of documents from the *Rural Water Supply and Community Management in Hargeisa, North West Somalia* project, including the Logical Framework, quarterly reports, and the Final Report from September 2002. Next, technical literature on *berkads* and sand-storage dams was reviewed, and visits to the field began. The general set of questions asked at village meetings and to *berkad* owners is attached (see Annex 3: Questionnaire for Field Visits). Variations in the discussions depended on the amount of time available at each village. At times, visits were rushed, due to poor roads and security restrictions that required the team to return to Hargeisa or settle in a village with a police station by dusk. The final days were spent in Hargeisa, documenting and discussing findings, and meeting with the Ministry of Water and Minerals. A complete work schedule is attached (see Annex 2).

It should also be mentioned that this is not an impact assessment of the *Rural Water Supply and Community Management* project. The criteria used for this evaluation were not defined by the Logical Framework, but by the consultant and Project Manger. They are based on the sustainability of water structures and improved hygiene and sanitation conditions, with attention paid to current 'WASH' activities and the operating context. The appropriateness of water-related projects has not been studied, but *assumed* based on the plethora of reports that document needs.

2. RURAL WATER SUPPLY AND COMMUNITY MANAGEMENT IN HARGEISA, NORTHWEST SOMALIA, 01.10.1999 – 15.08.2002

2.1 Logical Framework

The **overall objective** of the *Rural Water Supply and Community Management* project was to improve the living conditions of the rural populations. According to the project's Intervention Logic, improvements would be numerous and diverse, including:

- Better health conditions of humans and livestock;
- A sufficient water supply so that people can satisfy their thirst;
- Fewer conflicts due to scarcity of water;
- A decrease women and children's workload so they have more time;
- An increase in agricultural production and stabilisation of livestock production.

The **project's purpose** was that “[p]eople are trained and acquire knowledge about the correct usage of water, have better access to water and are able to sustain, manage and maintain the water infrastructure and develop water systems (Final Report, 2002: 9).”

Training courses carried out included:

- Hygiene and sanitation awareness, introducing the PHAST methodology;
- Technical design, operation and maintenance, and basic skills to build water structures;
- Water management and utilization of irrigated agriculture following the construction of pilot irrigation schemes.

Rehabilitation and construction of water sources included:

- **203** rehabilitated *berkads*
- **49** latrines
- **24** shallow farm wells
- **2** sand storage dams
- 4 pilot irrigation schemes

2.2 Self-Identified Strengths and Weaknesses

The final report identified both what it saw as the project's successes, as well as problems that were encountered during implementation (Final Report, 2002: 23). The problems should not necessarily be identified as failures, but as constraints, as well as the incorrect identification of needs. For many of the objectives, the challenge was measuring impact.

Successes were identified as follows:

- The quality and quantity of water infrastructure was provided at comparatively low costs and adapted to local needs;
- PHAST was adapted and introduced in Somaliland, transferring experience and knowledge to other stakeholders;
- SwissGroup engaged in important debates on topics relating to Somaliland's water and development sectors.

Problems identified at the time included:

- Effective monitoring and evaluation;
- Measuring the impact of agricultural interventions;
- Estimating timing for the construction of *berkads*;
- Discovering that NGOs operate much like local contractors;
- Sub-surface dams for agriculture didn't have good cost-benefit ratios;
- Coming to terms with unrealistic overall objectives, but lacking the flexibility to adapt them:
 - Reducing conflict proved to be irrelevant;
 - Constant readjustments required, but did not happen.

2.3 Long-Term Effectiveness and Sustainability

As time passes, the validity of claims regarding both the project's strengths and weaknesses become less certain, and can only be confirmed by returning to visit villages targeted during the intervention. The objectives of this study, as stated earlier, include assessing the current condition and usage of water sources and latrines built or rehabilitated between 1999 and 2002, gathering villagers' perceptions of SwissGroup, taking stock of the general hygiene and sanitation situation in villages visited, and visiting the pilot projects.

This was done by collecting performance indicators at each facility, assessing the willingness and capacity of beneficiaries to assume responsibility of operation and maintenance for their water source, consulting with communities regarding their perception of SwissGroup and the project's appropriateness, and gathering limited performance indicators for hygiene and sanitation.

2.4 Overview of Field Visits

The following table summarizes the sites visited during the evaluation. Villages were chosen which would allow examples of each type of water source rehabilitated between 1999 and 2002 to be visited. As the exact location of *berkads* could not be determined, numbers correspond with extensive photo documentation, which was submitted to the Project Manager.

DATE	VILLAGE	WATER SOURCE	BUILT	LNGO	CONDITION	COMMENTS
29.01.06	Qolqol	2 Berkads, Rehabilitated	2004	Al Haya	Functioning well; nicely covered.	Design flaw: side walls flush to ground so dirt enters, poor masonry work, too close to village
29.01.06	Qolqol	2 Berkads, Newly constructed	2006	Al Haya	Very nice; quality masonry, plastering and finishing work	Both 70% contributions. See photos for changes to berkad design.
29.01.06	Qolqol	School, latrines, & berkad	2002 & 2006	Al Haya	School, latrines, & berkad all look excellent.	School has reached max. capacity; latrines in use; berkad just completed
31.01.06	Abdidheere	Berkad #1, Rehabilitated	Jul-01	RDCO	Holds water well; nicely covered.	Used daily, cleaned annually, cracks visible near sand trap
31.01.06	Abdidheere	Berkad #2, Rehabilitated	Jul-01	RDCO	Holds water okay; poorly maintained	Used daily, rarely cleaned, poor cover, dead bird in berkad.
31.01.06	Abdidheere	Berkad #3, Newly constructed	Nov-01	RDCO	Holds water well; nicely covered.	"100%" contribution, used daily, cleaned annually, many cracks, but not in inner walls
31.01.06	Ismail Deria	Berkad #1, Rehabilitated	Nov-01	Al Salama	Loses some water; well covered	Used daily, maintained okay.
31.01.06	Ismail Deria	Berkad #2, Rehabilitated	Nov-01	Al Salama	Empty; hold water about 15 days	Functioned for approx. 8 months, the floor was caste a 2nd time, but it still doesn't hold water.
31.01.06	Ismail Deria	Berkad #3, Rehabilitated	Nov-01	Al Salama	Loses water, but still approx 1/4 fill	Claims that berkad doesn't hold water would have to be investigated further - not obvious!
31.01.06	Ismail Deria	Berkad #4, Rehabilitated	Nov-01	Al Salama	Loses water; poorly maintained	"100%" contribution, lots of cracks, little water (very dirty), owners not present.
01.02.06	Gudubi	Berkad #1, Rehabilitated	Mar-02	Al Salama	Little water; poorly maintained; number of cracks.	High daily usage; cleaned 1x / 3 years, covered.

DATE	VILLAGE	WATER SOURCE	BUILT	LNGO	CONDITION	COMMENTS
01.02.06	Gudubi	Berkad #2, Rehabilitated	Mar-02	Al Salama	Holds water well; very large; condition okay	High daily usage; cleaned 1x / 2 years, well covered.
01.02.06	Gudubi	Berkad #3, Rehabilitated	Mar-02	Al Salama	Little water; well maintained, finishing work above average.	High daily usage; cleaned and re-trenched annually, well covered, repairs 1 x by local masons
01.02.06	Gudubi	Berkad #4, Rehabilitated	Mar-02	Al Salama	Loses water (after 2 months), currently empty, lots of small cracks	Not in use, owners not available for questioning, partially covered, in need of repairs for 3 years.
03.02.06	Aw Barkadle	Protected, shallow farm well #1, new	Apr-01	IsRC	In riverbed: functioning, but a 2nd well is being used for pumping	Total depth: 4.8m Water table depth: 2.1m New, watertight lid design needed, larger opening.
03.02.06	Aw Barkadle	Protected, shallow farm well #2, new	Apr-01	IsRC	In riverbed: completely washed out - see photos	Training needed in proper excavation, constructing concrete rings...
03.02.06	Dhubatto	Protected, shallow farm well #1, new	2002	IsRC	Outside riverbed, good condition, sand in bottom?	Total depth: 9.5m Water table depth: 4.5m Used every other day
03.02.06	Dhubatto	Protected, shallow farm well #2, new	2002	IsRC	Outside riverbed, good condition, but full of sand?	Total depth: 7.15m Water table depth: 3.65m Used all year
03.02.06	Dhubatto	Protected, shallow farm well #3, new	2002	IsRC	Outside riverbed, functioning, small agro output.	Total depth: 5m Water table: 3.25m
03.02.06	Dhubatto	Pilot Irrigation Scheme	Jul-02	Al Salama	Not in use, partly filled with manure, doors don't open.	Channels too large? Families prefer to dig channels. Rehab. would require real feasibility study!
10.02.06	Adadley	Sand Storage Dam #1	Feb-02	Al Salama	1 shallow well upstream, sand appears to have increased by 2m+	Poor construction quality. Further tests would be needed to determine the exact impact of the sand storage dam.
10.02.06	Adadley	Protected, shallow farm well #1, new	Apr-02	IsRC	In riverbed, functioning, but water insufficient for farm needs.	Total depth: 4.3m Water table: 1.3m Pumped 1 x day.
10.02.06	Adadley	Sand Storage Dam #2	Feb-02	IsRC	Functioning, after repairs in 2003.	Poor construction quality. Could more wells be built outside the riverbed?

3. FINDINGS

3.1 Village Meetings

Villages meetings were held during each visit, their duration and depth depending on the amount of time available, as well as which elders, village leaders and community members were able to meet with us. The intention of meeting with communities was to discuss the current condition of water facilities in their village, the general hygiene and sanitation situation, and what they see as development priorities for the future.

From these meetings, we also tried to gauge what their impressions of SwissGroup are, which are of course difficult to distinguish from other international organizations. In every case, villages voiced their concerns about access to water, most often considering water their greatest priority. In addition, requests for training were encountered at almost every visit, ranging from teacher training, to training of masons, health care providers, and so forth. The results of each of these meetings are documented, and have been submitted to the Project Manager.

During all of the village meetings it was apparent that the elders and village leaders were familiar with SwissGroup, with the exception of Adadley, where the construction of the sand storage dams was done with a Kenyan consulting firm, and where the number of families targeted in the intervention was comparatively low. It was only in Qolqol, however, where *berkad* construction is currently underway, that villagers spoke of a true partnership with SwissGroup, and expressed their deep appreciation for the nature of the relationship which had developed over time with the community.

3.2 General Hygiene and Sanitation

In the villagers that were visited from the past project, the hygiene and sanitation situation was generally poor. This was particularly true in Gudubi and Ismail Deria, where there are a total of 14 and 3 latrines, respectively. In Gudubi, only 5 of the latrines are in use and garbage collection is not organized, despite the fact that villagers received H&S training in December 2005. In Ismail Deria, villagers have not received H&S training or assistance in constructing latrines, but requested both.

The situation was most positive in Abdidheere, where all 10 latrines are in use, 9 of which were built by SwissGroup. They need another 30 latrines to meet their needs, however. Villagers received H&S training from CARE, and garbage is currently burned in 4 designated areas.

Qolqol was the only village visited with a good H&S situation, this again being an intervention site from the current WASH project. H&S training began in 2003,

and Qolqol currently has a total of 40 latrines, all of which are in use. They hope to build an additional 40 latrines, but are lacking the necessary materials. At present, most everyone in town is using the latrines, and the school latrines are also being used by both boys and girls. A designated committee oversees the collection and disposal of garbage.

In farming areas, such as Aw Barkadle, Dhubatto and Adadley, details on the H&S situation couldn't be gathered, but there also didn't appear to be as many problems as in densely populated areas. Latrines were not being used at the farms visited, and garbage was simply deposited outside the farm.

An evaluation of the PHAST and CHAST programs has not been included in this assessment, something that it is assumed has already been done during the mid-term evaluation, and will be repeated at the end of the WASH project. It is important to keep in mind, nonetheless, that improving village hygiene and sanitation can only be done by combining various project measures, such as education and H&S promotion, as well as improving the construction of berkads and latrines.

3.3 Berkads

3.3.1 Use and Condition

A total of **11 berkads were visited** from the *Rural Water Supply and Community Management* project (9 rehabilitations, 2 new constructions) in the villages of Abdidheere, Ismail Deria and Gudubi:

- 5 of the *berkads* are clearly holding water well. In each of these cases except 1, the *berkads* were also carefully covered and well maintained.
- 4 of the *berkads* appear to be losing water, but these claims would need further investigation. In each of case, usage is high (claims of up to 20 families). Half of these *berkads* were well covered and maintained.
- 2 of the rehabilitated *berkads* were completely empty: one holds water for 2 weeks and one for approximately a couple of months. No successful repairs have been undertaken in the past 3 years.

All of the berkads with water (9 out of 11) are being used. Owners' claims regarding the number of families drawing water from the *berkads* varied between 2 and 20. In the latter claim (2 *berkads* in Gudubi), the *berkads* appears to be open to the community, but this cannot be confirmed. In all of the villages, the **number of functioning berkads was roughly half of the total number of berkads**. Thus, a large number of *berkads* in need of rehabilitation remains. In Abdidheere, for example, there are said to be 50 *berkads*, of which about 20 function well. In Gudubi and its surroundings, villagers claim there are 220 berkads, with 130 functioning well.

3.3.2 Quality and Design

Existing research tracks the decline in the quality of construction, and the negative effects this has had. *Berkad* quality depends on proper site selection, using quality materials, and employing skilled masons who are properly supervised (N. Foersch 2003: 7-9).

The quality of the *berkads* rehabilitated from **1999 to early 2004** leave much to be desired. Poor masonry work has led to numerous cracks in the *berkads*. Plastering and all finishing work should be of a higher standard. One gets the impression that *berkads* have simply been built in any old way. The variety of shapes, sizes and forms makes proper calculations for material (cement, in particular) more difficult. Fortunately, significant measures have already been put in place (beginning in late 2004) to improve construction quality and design, as seen in the photo below comparing construction quality.

2 fotos, 3 comparing quality

Quality 2003

Quality 2006

Other design-related changes, in addition to the leap forward in quality, include:

- 1) Raising the sidewalls of the *berkads* so that they are no longer flush with the ground, which allowed dirt (and other objects) to pollute the *berkad*.
- 2) Doing away with small sand traps, which do not serve their purpose, since the large volume of water entering at high speeds does not allow sand to be taken out, as evidenced by empty sand traps.

3.3.3 Operation and Maintenance

Berkads should be properly fenced (to prevent humans and animals from polluting the water source), well covered (to reduce evaporation and pollution), minor cracks should be repaired (before they grow), trenches should be re-dug before the rains (to channel water in and out of the *berkad*), and the *berkad* itself should be cleaned annually. Although most of these tasks are straightforward, it doesn't appear that *berkad* owners systematically carry out the necessary maintenance measures.

- **Fencing:** all *berkads* were fenced.

- **Covering:** 6 of the berkads were well covered, 3 were not. Those that were not well covered were clearly far more at risk (see photo below), including a dead bird in a *berkad* visited in Abdidheere.

2 fotos, uncared for berkads

Dead bird in *berkad*

Uncovered *berkad* with goats

- **Repairing minor cracks:** Nearly all of the *berkads* visited had numerous cracks, which owners have not repaired.
- **Re-digging trenches:** As rains were not expected for another month, few owners had prepared the trenches, but assured us that they would.
- **Annual cleaning:** some owners claimed to clean their *berkads* annually, but many admitted to cleaning them only once every 2-3 years.

3.4 Shallow Farms Wells

3.4.1 Use and Condition

Protected shallow wells are found primarily in two types of locations: 1) in seasonal riverbeds, and 2) in close proximity to the seasonal rivers. During the assessment, protected farm wells were visited in Aw Barkadle, Dhubatto and Adadley, all of which had targeted medium-wealth agricultural families. A total of 24 shallow farm wells were constructed during the *Rural Water Supply and Community Management* project in 5 different farming areas. Although many of the wells were washed away during heavy rains, those that remain seem to be functioning well, and contributing to significant agricultural output.

- Of the 5 wells constructed in the riverbed in Aw Barkadle, only one survived the rains of April 2005.
- All 4 of the wells in Dhubatto are functioning well; the 3 visited were built outside the riverbeds.
- 2 shallow wells constructed upstream from the sand storage dams in Adadley are functioning (see findings on sand storage dams).

In Aw Barkadle alone, there are more than 100 protected wells where generator-powered pumps are being used to draw water for agricultural purposes. Water is also trucked to water-deprived areas during the dry season and sold. In no way did the materials to construct wells appear to be lacking; most of the wells have been constructed without any assistance from aid organizations. One of the families targeted in 2001, for example, had dug a 2nd well with a more complex construction to maximize yield, from which they were pumping to the farm. There are also hundreds of unprotected, shallow wells, many of which can be seen

along the sides of the roads. This appears to be done wherever the water table is shallow enough to be accessed with crude excavation techniques.

2 fotos of wells

Unprotected Shallow Well, Haro Sheekh

Protected Shallow Well, Dhubatto

3.4.2 Quality and Design

- The number of wells washed away during rains is clear evidence that the construction quality is lacking, as well as proper excavation.
- The metal trapdoor used on the protected shallow wells is by no means watertight. For wells constructed in the riverbeds, in particular, this carries a high risk of pollution from surface water each time that the rivers fill.
- The trapdoor is also too small to permit access to the well, which is required for proper operation and maintenance.
- Many owners are pumping water from the wells, so generators sit next to the well in the middle of the riverbed, exposed to the sun and potentially to the flooding river as well.
- Quality construction is missing, plain and simple. This is seen in the remaining concrete rings from a washed out well in Aw Barkadle:

foto

4 out of 5 of SwissGroup's wells in Aw Barkadle were washed away in 2005

3.4.3 Operation and Maintenance

Little is done to maintain the wells. The general sentiment seems to be “if the well washes away or no longer provides a sufficient yield, just dig another one.” In the case of wells built in the riverbed, the trap door is closed in preparation for the rains, and the well is covered with nearby sand before the rivers fill – assuming there is sufficient time to do so. Several of the wells seemed to have significant sand deposits in the bottom, and, in theory, would need to be cleaned on a regular basis. The size of the trapdoor makes such an operation difficult.

3.5 Pilot Irrigation Scheme

In addition to the shallow wells, one of the four pilot irrigation schemes was also visited in Dhubatto. The irrigation scheme is not in use, which was apparent for a number of reasons: one of the channels was filled with goat manure, others had grass growing in them, and the doors were rusted shut. Nevertheless, when questioning the owners, they were hesitant to admit that the irrigation scheme is not used, and only by prodding further were we able to confirm this and understand why.

Reasons given were that the channels are too large (requiring too much water) and that the water doesn't flow properly. Observations suggest that it is simply easier to dig the channels by hand, which also allows greater flexibility and control. A follow-up visit was arranged between the owners and Project Manager, to look into the matter further and consider changes to the design, which may render the scheme more functional. A condition of further discussion on rehabilitation was that the owners clean the channels and grease the trap doors.

3 fotos, irrigation

Irrigation Scheme, Dhubatto Hand-Dug Irrigation Channels Agricultural Production

3.6 Sand Storage Dams

3.6.1 Use and Condition

Two sand storage dams were constructed in Adadley by the IsRC and Al Salama in 2002, together with a Kenyan consulting firm. Both were visited briefly, although sufficient time was not available to carry out a proper assessment of these dams and their impact. At the first dam, constructed by Al Salama, a well has been constructed upstream, as a result of the sand layer building up. The well has a total depth of 4.3 meters, with a shallow water table at 1.3 meters. Claims are that bedrock was hit prior to the construction of the well at 1 meter.

3.6.2 Quality and Design

Again, as with *berkads* and shallow wells visited during this assignment, insufficient attention has been paid to quality and design during construction, including the rubble stone masonry and concrete work. In particular, the foundation has not properly reached the bedrock, evidenced by water penetrating through the dam. As for the design, sufficient knowledge and experience is lacking to thoroughly evaluate the dams. The photos below show the basic concept behind the dams, including how sand builds up behind the dam, allowing wells to be dug to access water stored in the sand, and then used for agricultural purposes near the seasonal riverbed.

3 fotos, dam-related

Sand Storage Dam, Adadley Protected Well Upstream Agricultural Production

3.6.3. Operation and Maintenance

The sand storage dams serve only a limited number of farms upstream from the dams (2-3), none of which appear to undertake any significant maintenance measures. When the dam constructed by IsRC needed repairs in 2003, SwissGroup was notified and requested to carry out the repairs. Thus, the sense of ownership of these sand-storage dams appears to be rather ambiguous, at least in the case of Adadley.

4. RECOMMENDATIONS

4.1 General Analysis of Findings

The construction of *berkads* and shallow wells during the project *Rural Water Supply and Community Management* has undoubtedly improved the living conditions of rural populations where interventions were undertaken. Water quantity has increased significantly, although measures to improve the quality and design of the water facilities could certainly improve further. These steps would indirectly improve water quality as well, which remains far from desirable in most of the villages visited.

This assessment has not reviewed options for treating surface water, but this would be a valuable avenue to explore, as it is clearly an issue that needs further consideration. The WASH Mid-Term Evaluation has already expressed concern over a suspected increase in malaria infections due to an increasing numbers of *berkads*. Measures to address this have also been suggested, including the use of local fish to reduce the number of larvae.

Increasing the sustainability of SwissGroup's interventions in the water sector will require that increased attention is paid to a wide range of capacity building measures, which are reviewed below in greater detail. The need and desire for both skills and knowledge has clearly been expressed by the villagers that were met during this assessment. A meeting with the Ministry of Water and Minerals, discussed below, confirmed an interest in supporting a variety of technical professions where skills may be relevant for the water sector.

The following recommendations have been divided into hardware and software components. Hardware recommendations relate to the changes in the quality and design of the water facilities visited during the assessment, as well as viable options for diversification in the future project. Software components are related primarily to training, which should be linked to the construction site whenever possible, be it for *berkads*, latrines, shallow wells or dams. In the future, emphasis should also be placed on the operation and maintenance of all water facilities, as well as improving relations, when and where possible, with counterparts and local authorities.

4.2 Hardware Components

4.2.1 Quality

- ***Berkads and latrines:*** construction & rehabilitation has reached a high standard, and training should continue to maintain such a level of workmanship. The objects in the photos that follow, from the WASH project, should serve as examples:

2 fotos, latrine & berkad

- **Shallow wells:** skilled workmanship would also greatly improve the durability of shallow wells, as well as increasing water quantity and quality. This would include skills for proper excavation, constructing and reinforcing concrete rings, and training on the appropriate use of reinforcement, among other things.
- **Sand storage dams:** further literature and expertise would need to be collected before making a decision to include sand storage dams in future projects. In addition, close supervision would be required from experts in such constructions.

4.2.2 Design

- **Berkad and latrine** design, discussed above, has been modified with positive effects.
- **Shallow wells:**
 - The metal trap doors currently used are jeopardizing water quality. They should be replaced with more watertight doors that seal properly – in particular when wells are situated in the riverbed.
 - The door should also be larger, so that the well can be entered easily for necessary cleaning and maintenance work.
 - A design that allows water to be pumped from the side of the river should be considered.
- **Sand storage dams:** would require further investigation, together with an expert in constructing them. In principle, however, the idea is good, and the cost-benefit may not be as low as it was feared in the final report.

4.2.3 Diversification

Based on the findings of the assessment, diversification of the types of water facilities constructed and rehabilitated by SwissGroup in the future appears both feasible and desirable, and could include:

- Protecting shallow wells, including those used for agricultural purposes *and* for consumption by humans and livestock;
- Communal *ballis* (earth dams, or ponds) were suggested repeatedly, both by villagers and by the Ministry of Water.
- Sand storage dams, but only with sufficient expertise and supervision.

Although only one of four irrigation schemes was visited, they don't seem to have proven themselves in terms of costs and benefits. Several farms were visited where hand-dug channels are working well and serving their purpose.

4.3 Software Components (Capacity Building)

4.3.1 Operation and Maintenance (O&M)

The importance of operation and maintenance should be stressed in any future projects that SwissGroup implements. The final report of 2002 states that "*berkads* are managed perfectly well by the owners," thus requiring no further management skills (Final Report 2002: 10). This assumption is contradicted by the findings of this study, which suggest that proper maintenance of *berkads* is lacking in many instances, reducing both the quantity and quality of water available. This is true not only for *berkads*, but all water facilities.

- **Berkad O&M** may include: fixing minor repairs, re-digging trenches, annual cleaning and proper covering and fencing of the *berkad*. These measures serve not only to increase water quantity by preventing water loss through cracks or evaporation, but also to improve water quality.
- **Shallow Well O&M** may include: annual removal of sand in well, cleaning around the well, fencing. In some cases, wells may need to be treated with chlorine before being returned to use.

4.3.2 Training, Training, Training!

Several of the training courses which had been foreseen between 1999-2002 were carried out. For example, courses that had been planned on financial and social management didn't take place. In the end, these were deemed "irrelevant for the Somaliland situation" at that time (Final Report, 2002: 10). In the current context, this assumption may be worth reconsidering.

Despite the fact that village masons received some training during the *Rural Water Supply and Community Management* project, few villages that were visited appear to have the necessary qualified masons to carry out repairs and rehabilitations. Nor when villagers were asked whether they received training for masons or O&M did they respond positively to the question.

In order to assure that training has a lasting impact, it must be undertaken by professionals who can effectively transfer their skills and knowledge to participants. In addition, they should emphasize less tangible elements, such as a strong work ethic, time management, and a sense of pride and responsibility in one's work.

Training in the following areas should be considered (or continued):

- Shallow well construction;
- Operation and Maintenance (of all water facilities);
- Management Skills, Site Supervision, Course for Engineers;
- Hygiene & Sanitation;
- Masonry;
- Related skills, such as painting, metal work, and plumbing.

4.3.3 Strengthening Partnerships and Participation

In addition to the meetings held with villagers and *berkad* / well owners during field visits, a meeting was also held at the end of the assessment with the Ministry of Water and Minerals, to discuss ideas about SwissGroup's future engagement in the water sector. During all of these meetings, a similar pattern emerged, in which counterparts appeared ready to accept whatever SwissGroup had to offer them. Thus, meaningful discussions, debates and even disagreements are avoided, but opportunities for true collaboration are also missed.

It was repeatedly discovered during the field visits that communities have the resources to contribute to projects, and carry out projects on their own initiative, including *berkad* construction, but in particular shallow wells. In these cases, communities should be expected to contribute to the greatest degree possible, a move which in the long run will also strengthen the partnership between SwissGroup and those its interventions target. SwissGroup may be required to provide cement and metal (non-local materials), but their main contribution should be in know-how and technical expertise, which are clearly lacking.

5. CONCLUSION

This is an initial attempt to assess a limited number of projects that have now been standing on their own for up to 5 years, and document lessons that may be learned from their current condition and use. Evaluating the long-term impact of hygiene and sanitation measures is an even greater challenge, which would require greater investments of time and resources to document behavioral changes. Establishing some form of systematic monitoring and/or evaluation of past projects could allow a consistent flow of information to be passed to current interventions. Such feedback could make a meaningful contribution to the effectiveness and sustainability of SwissGroup's interventions in the water sector, in particular given the long-term commitment in the region.

With the drafting of a Country Program for Somaliland underway, this may be an opportune moment to build an internal monitoring and evaluation component into the program. Careful thought would need to be put into how this can best be done in an efficient and effective manner, however, given the difficult and time-consuming travel required to reach project sites.

ANNEX 1: BIBLIOGRAPHY

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ANNEX 2: LIST OF ACRONYMS

CHAST	Children's Hygiene and Sanitation Training
GRC	German Red Cross / Red Crescent Society
H&S	Hygiene and Sanitation
INGO	International Non-Government Organization
LNGO	Local Non-Government Organization
NGO	Non-Government Organization
O&M	Operation and Maintenance
PHAST	Participatory Hygiene and Sanitation Transformation
WASH	Water Supply, Sanitation and Hygiene

ANNEX 3: CONSULTANT'S WORK SCHEDULE, 26.01.06 - 11.02.06

DATE	LOCATION	ACTIVITY
26.01.2006	Arrival Hargeisa (HGS)	Arrive HGS, transfer to Mansoor, SwissGroup introductions, (team/projects), review ToR
27.01.2006	SwissGroup office, HGS	Desk research: review LogFrame, final report, quarterly report, photos
28.01.2006	SwissGroup office and Line Ministries, HGS	Finalize selection of field visits, review literature, create project summary
29.01.2006	Field Visit, Qolqol	Visit berkads currently under construction, visit school & latrines, hold village meeting
30.01.2006	SwissGroup office, HGS	Summarize visits, discuss findings, prepare for 31.01/01.02, review PHAST/CHAST
31.01.2006	Field Visits, Abdidheere and Ismail Deria	Visit berkads rehabilitated and constructed between 1999-2002, hold village meetings
01.02.2006	Field Visit, Gudubi	Visit berkads rehabilitated between 1999-2002, visit school, hold village meetings
02.02.2006	SwissGroup office, HGS	Summarize field visits, discuss findings, plan for visits to Aw Barkadle and Dhubatto
03.02.2006	Field Visits, Aw Barkadle and Dhubatto	Visit protected shallow wells, farms, and irrigation scheme, hold village meetings
04.02.2006	Field Visit, Burao	Attend opening day of H&S course in Burao
05.02.2006	SwissGroup office, HGS	Summarize field visits, discuss findings, prepare photo documentation
06.02.2006	SwissGroup office, HGS	Begin drafting final evaluation report
07.02.2006	SwissGroup office, HGS	Begin drafting final evaluation report
08.02.2006	SwissGroup office, HGS	Prepare outline of initial findings for meeting scheduled with Minister of Water
09.02.2006	SwissGroup office, Ministry of Water & Minerals, HGS	Meeting with Minister of Water to discuss the future, preparations for visit to Adadley – see literature & reports on sand storage dams
10.02.2006	Field Visit, Adadley	Visit sand storage dams and shallow wells, hold village meeting & discuss their request
11.02.2006	Departure HGS	Debriefing, prepare departure

ANNEX 4: OUTLINE FOR VILLAGE MEETINGS

Village Meeting in: _____

Date of Visit: _____

General:

- Number of berkads in the village:
- Number of functioning / non-functioning berkads:
- Other water sources in the village:
- Other international aid agencies operating in the village:

Relations between SwissGroup and Village

- Do the communities remember who did the job?
- Were / have the communities been involved / consulted?
- What is their impression of the NGOs / SwissGroup in particular?

Hygiene & Sanitation

- Have villagers received Hygiene & Sanitation training?
 - Were follow-up visits made?
- General situation for H&S in the village:
- Number of latrines: _____ Number being used: _____
- Is there a garbage collection?

Operation & Maintenance

- Have villagers receive training in O&M?
- Are the berkads in the village well cared for? Other water sources?
- What is done if a berkad or water facility is broken?

Future Plans & Priorities in the Village

- What are the plans for future developments in the village?

Notes:

ANNEX 5: QUESTIONNAIRE FOR ASSESSING WATER SOURCES

Water Source _____ in _____

Visit on: _____

Rehabilitation of Water Source:

- When was the water facility built or rehabilitated?
- Which NGO worked on the project?
- Did villagers receive training in construction?
- Were the families involved in the construction?
- What did they contribute?
- Did they have to complete certain activities before construction commenced?

Current Condition and Use:

- What is its current condition of the facility?
- How often is the facility used?
- How many families normally use the water source?
- Do families pay to take water in the dry season?

Operation & Maintenance

- Did the owners or villagers receive O&M training during the rehabilitation?
- How do families care for their water source?
 - If a *berkad* or well, is it covered?
 - How often is it cleaned?
- What do you do if the water source is broken or needs maintenance?

Notes: