



Look-back study:

Zambia rural water supply, sanitation and hygiene promotion project in the Southern Province



**International Federation
of Red Cross and Red Crescent Societies**

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Cover photo credit: Gerhard Tauscher

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Acronyms

CLTS	Community-led total sanitation
DHID	Department of Housing and Infrastructure Development
GWSI	Global Water and Sanitation Initiative
IFRC	International Federation of Red Cross and Red Crescent Societies
JMP	Joint Monitoring Programme
KML	Keyhole mark-up language
MDGs	Millennium Development Goals
NGO	Non-governmental organization
PHAST	Participatory hygiene and sanitation transformation
RAMP	Rapid mobile phone-based system
Sanplats	Sanitary platform (concrete latrine slabs)
SWASCO	Southern Water and Sewerage Company Limited
SOMAP	Sustainable operation and maintenance for rural water supply
WASH	Water, sanitation and hygiene promotion

Executive summary

To be able to measure the impact and sustainability of developmental water, sanitation and hygiene promotion (WASH) projects, the International Federation of Red Cross and Red Crescent Societies (IFRC) and its National Societies are conducting *look-back* studies, three to five years or more after a project's completion. The expected outputs of these studies are two-fold, firstly, to ascertain if impact and sustainability over time is within acceptable limits, in effect measuring the degree of success or failure of individual projects. Secondly, to capture and disseminate lessons learnt for ongoing or future programming.

For a project to be considered a success, IFRC has set a provisional target formally launched in 2015 that 'at least 70 per cent of the inputs (i.e. both *hardware* and *software*) must be measurable, operational and maintained over a ten year period'.

Both these kind of long-term WASH projects and subsequent *look-back* studies fall under the umbrella of the IFRC's 20-year Global Water and Sanitation Initiative (GWSI 2005 to 2025). GWSI captures the collective Red Cross Red Crescent contribution to initially meeting the millennium development goal 7c and now the sustainable development goal 6 by providing equitable and sustainable WASH services and systems to the vulnerable populations worldwide.

The project in Zambia was implemented in the Southern Province, in the districts of Choma and Sinazongwe/Maamba, between 1 March 2007 to 28 February 2010. The project was delivered by Zambia Red Cross Society within a consortium led by IFRC which included the ACP-EU Water Facility and the British and Swedish Red Cross. Additional resources were provided by Norwegian Red Cross and SHELL to construct more boreholes.

The results of this *look-back* study observed that 65 per cent of the evaluated new or rehabilitated boreholes that have been in use over the last five to eight years are still functional. The degree of functionality indicates that during this period, the water points were, for the most part, regularly repaired and maintained. However, with time, an increasing number of these are not being repaired. All the institutional latrines surveyed in schools and clinics remain functional and in use.

Poor construction (e.g. borehole collapse) or low water level or yield, in some cases is the reason for non-functionality, however, in the majority of cases, poor maintenance and lack of repair due to financial constraints at community level are cited as the reasons for the breakdowns that remain unresolved.

By the end of the project implementation period, an estimated 31,350 people¹ had access to improved water supply. Since then, and taking the non-functional water supply systems into consideration, this number has reduced to an estimated 20,400 people² within the target group who still have access to improved water supply as a result of this project.

Access to improved sanitation was an integral part of the project. This was achieved by constructing both institutional latrines (at schools and clinics), and casting and providing sanitation platforms (sanplats) to families for latrines at the household level. Construction of latrines has continued post-project period, to a limited extent at institutions but more so at household level. This has been a result of community initiative without external support (in the case of institutions). Further, through a nationwide community-led total sanitation (CLTS) effort, households are also being encouraged to build latrines of their own initiative with no subsidies provided.

It is estimated that 6,000 school-going children have benefited from improved sanitation from this project. The number of out-patients at clinics who benefited from improved sanitation are difficult to ascertain, suffice to say the facilities are available and being used.

While the communities provided labour and local materials to construct latrines at household level, the cement, tools and technical support were provided by the National Society. Of the 2,748 sanplats casted and provided to households for latrines, the sampling shows that most of these facilities are in use and families have maintained these latrines. The provision of sanplats by the project (now discontinued in Zambia due to the adoption of CLTS) was popular and in fact could not meet demand.

Based on the improved hygiene knowledge of the target population and increased use of safe water and access to excreta disposal facilities, it can be concluded that the project has had a positive and sustained influence on hygiene practices and community-based management. Hygiene promotion initiatives have contributed to households building sanitation facilities, refuse pits and using dish racks.

Since most households now have toilets, open defaecation has significantly reduced. This was evident from the site visits and observations, focus group discussions and interviews undertaken for this *look-back* study.

The fairly high percentage of infrastructure that remains functional indicates that the community-based management, i.e. the *software* component which encourages and provides training and community

¹ This figure differs from the estimated population figures used in the verification mission report (Annex 1). The verification mission team arrived at the estimate based on an average of 250 people being served per borehole (as per government estimates). However, given the population density in rural areas is low, the average number has been revised to an estimated 150 people served per borehole.

² In Zambia, the average number of persons per household is six. Based on the fact that 65 per cent of the boreholes were functional at the time of the evaluation, it is estimated that 20,400 people still have access to safe water.

mobilization for community-based management has been effective. However, communities can benefit from further trainings and refresher courses.

Even though this project was concluded prematurely in 2010 due to institutional constraints at country level, the *look-back* study confirms that it was a success in terms of impact and sustainability. Sixty-five per cent of the evaluated water supply and more than 90 per cent or more of the sanitation facilities remain functional.

It is also concluded that if the project had not been concluded prematurely, activities (especially reinforcing community-based management and hygiene promotion activities) could have led to a higher degree of sustainability and impact.

Through this project, an estimated 31,350 people gained access to safe water. Within the same group, 16,488 people gained access to improved sanitation at household level. Institutions, i.e. schools and health centres, were fitted with 198 latrines. More than 6,000 school-going children benefitted from the latrines installed in schools and at least 34,750 people were reached with hygiene promotion messages.

It is strongly recommended that the Zambia Red Cross Society with limited support from external stakeholders undertake additional sustainability activities. This includes – renewed interaction with government and communities on spare parts availability and water quality surveillance; interaction with communities that have struggled to maintain or repair water points including intervention in assisting with repairs; with government and the institutions that benefited from increased access to safe excreta disposal formulate a plan or way forward to replace or de-sludge institutional latrines; consider additional software activities or refresher training and consider a new role in supporting CLTS activities in the target area, potentially with other actors.

The National Society has demonstrated its capacity in successfully delivering WASH programmes and should consider expanding their long-term programming at scale in this sector.

The Government of Zambia at Ministerial, national and sub-national level interface and cooperate well with the Zambia Red Cross Society, fully appreciate their contribution and has encouraged them to continue and expand their WASH portfolio.

Introduction

Under the framework of the Global Water and Sanitation Initiative (GWSI), the International Federation of Red Cross and Red Crescent Societies (IFRC) has significantly scaled-up delivery of long-term water and sanitation programmes to provide equitable, affordable and sustainable solutions to help improve the health of communities. GWSI projects are implemented in countries where:

- the National Society has a proven track record in longer-term water, sanitation and hygiene promotion (WASH) programming;
- An enabling environment exists, principally a relatively stable political context and where there was government commitment to achieve the set targets of the millennium development goals (MDGs); and
- WASH needs were evident, well documented and coverage is lower than the regional averages – where needs were greatest.

In the past, evaluations of these programmes have been undertaken immediately after project completion, making it difficult, in most cases, to assess impact. For the same reason, it has also been challenging to measure the extent to which the communities and local authorities are truly self-sufficient in operating and managing the facilities, and how changes in access to safer water sources and improved sanitation services are sustained in the target area.

For this reason, IFRC has developed a framework for a post-project evaluation called the *look-back study*, a set of tools and guidance (still evolving), that helps gain a better understanding of the longer-term impact of WASH projects and the sustainability aspects three to five years or more after project completion.

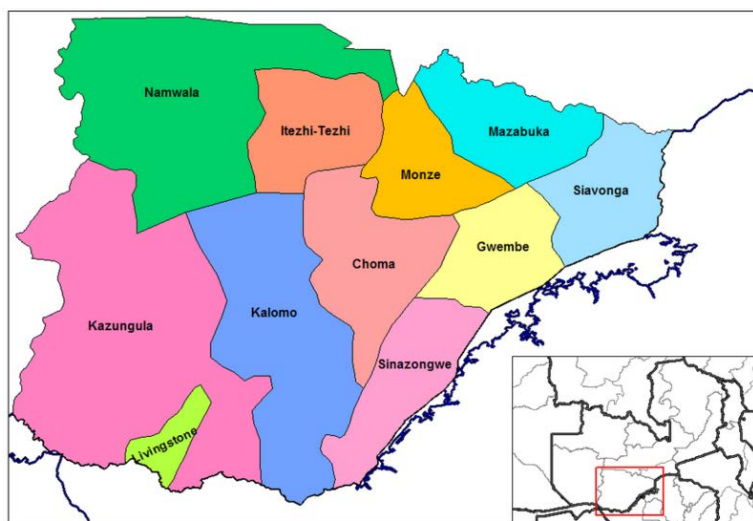
A *look-back study* examines consequences of achieving or not achieving the overall objective, often linked to health impact as well as issues related to wider socio-economic and socio-cultural changes. From a sustainability point of view, it provides an insight on whether or not the structures and resources put in place are long-lasting and if these will increase resilience and make communities less dependent on external assistance.

For a project to be considered sustainable, as a provisional target, IFRC has set that ‘at least 70 per cent of the inputs, i.e. hardware and software must be measurable, achieved and maintained over a ten year period’.

In addition to assessing the impact and sustainability of the WASH project in Zambia, the purpose of this study is to learn from Zambia’s experience and provide recommendations for future water and sanitation programming.

In summary, the primary goal of this study is to learn from previous experiences in Zambia, understand the long-term dynamics of water and sanitation projects in the country and set-up recommendations for future WASH programming. The recommendation will be presented as country specific, regional and global findings. The report also looks into how to troubleshoot problems within the context of an old programme.

Background



Zambia is one of the poorest countries in the world. Water-related diseases, particularly diarrhoea, is among the leading causes of death. According to UNICEF, more than one-third of the population of Zambia does not have access to clean water and more than half lacks access to basic sanitation facilities. The state of water and sanitation facilities in schools remain poor.

Table 1: Drinking water and sanitation coverage estimates in Zambia

	Drinking water coverage estimates					
	Urban (%)		Rural (%)		Total (%)	
	1990	2015	1990	2015	1990	2015
Piped onto premises	47	36	1	2	19	16
Other improved source	41	50	23	49	30	49
Other unimproved	11	12	44	30	31	23
Surface water	1	2	32	19	20	12
Sanitation coverage estimates						
Improved facilities	59	56	29	36	41	44
Shared facilities	27	25	7	8	15	15
Other unimproved	11	18	23	34	18	27
Open defecation	3	1	41	22	26	14

Source: WHO/UNICEF, Joint Monitoring Programme 2015³

Between 2007 and 2010, the Zambia Red Cross Society's WASH project was active across eight wards in the districts of Choma and Sinazongwe/Maamba in the Southern Province with the aim of:

- Increasing the communities access to safe water and improved sanitation and raising awareness on better hygiene practices;
- Building capacity of the communities to manage the improved facilities; and

³ <http://www.wssinfo.org/about-the-jmp/mission-objectives/>

- Building capacity of the Zambia Red Cross Society staff and volunteers to implement the project at community level.

The project was funded by the European Union, British and Swedish Red Cross and implemented by the Zambia Red Cross Society with support from IFRC with a total budget of 2,456,736 Euros over a 36-month period.

The project had three main components – hardware, software and capacity building. The hardware component involved rehabilitating and drilling boreholes, constructing institutional latrines, and providing households with sanitary platforms, i.e. concrete latrine slabs (sanplats) to support them in constructing latrines.

The software component involved training local artisans in latrine construction and area pump minders and village water, sanitation and hygiene education groups to operate and maintain the water facilities and facilitate hygiene promotion activities.

To build capacity, the Zambia Red Cross Society staff members were trained in the participatory hygiene and sanitation transformation (PHAST) methodology, financial management, logistics and warehousing. Volunteers were also trained in PHAST, latrine construction, maintenance and repair of water facilities. Vehicles and equipment were procured to enable the project team to undertake tasks efficiently.

Table 2: Water and sanitation facilities delivered by this project

	EU	Norwegian Red Cross – SHELL	Total	Functional facilities	Percentage
New boreholes	94	19	113	101	89
Rehabilitated boreholes	96	...	96	66	80
Institutional latrines	198	...	198	180	91
Household latrines	2,748	2,748	2,748	100

Note: This table has been summarized based on the information presented in the verification mission report. Refer to Annex 1 for further details.

Through this project, an estimated 31,350 people gained access to safe water. Within the same group, 16,488 people gained access to improved sanitation at household level. Institutions, i.e. schools and health centres, were fitted with 198 latrines (refer to Table 2). More than 6,000 school-going children benefitted from the latrines installed in schools and at least 34,750 people were reached with hygiene promotion messages.

Due to a number of institutional challenges, mainly gaps in overall management and accountability that surfaced across various programmes managed by Zambia Red Cross Society, the WASH project was abruptly terminated in 2010. Hence, the set targets for this project could not be fully achieved.

Methodology

1. Evaluation methods

An independent consultant and a staff on loan from German Red Cross jointly conducted this *look-back* study in close collaboration with the Zambia Red Cross Society staff and volunteers both at headquarters and in the field. Key stakeholders, i.e. the government, other WASH actors and most importantly the target population themselves including local community leaders participated fully.

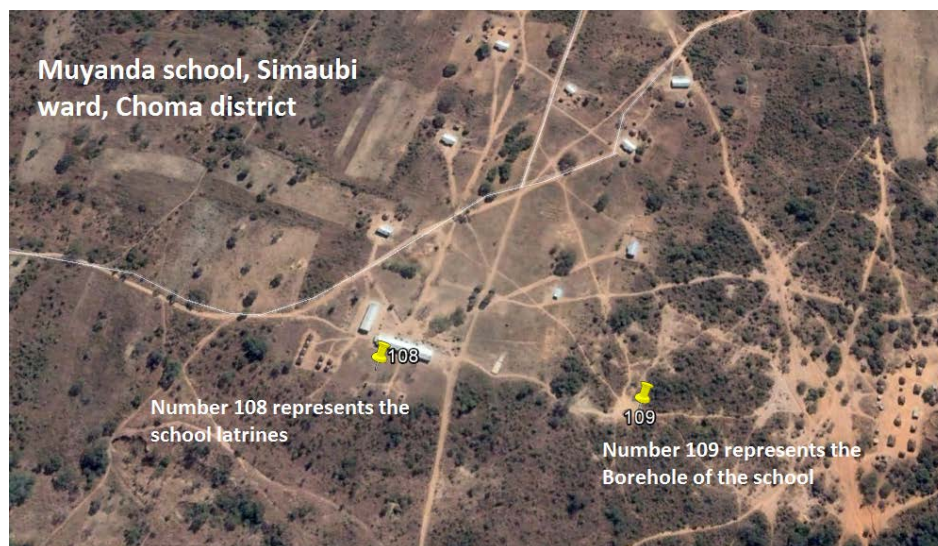
Desk research

The evaluation team from the *look-back study* reviewed available documents and relevant information about Zambia in general, and the water and sanitation sector in particular (refer to the Bibliography).

Due to lack of managerial oversight, many key documents linked to the project were lost. Hence, the evaluation team relied heavily on the information recorded in the 2012 verification mission report (refer to Table 2 and Annex 1).

Preparation for the field visit

The GPS coordinates for the constructed and rehabilitated infrastructure gathered during the verification mission in 2012 was available in hard copies only. To facilitate the evaluation team's field visit, these coordinates were fed into a database, converted into keyhole markup language (KML)⁴ and included as a layer in Google Earth. The accuracy of the data was then verified by checking Google Earth satellite images. With the exception of some hardware which showed up, for example, in the bush, the majority of the infrastructure appeared in the right locations. Doubts about the coordinates remained in instances where the handwriting was not legible.



⁴ Keyhole Markup Language (KML) is an XML based **file** format used to display geographic data in an Earth browser such as Google Earth, Google Maps, and Google Maps for mobile.

To assist the team with navigation, Oruxmaps,⁵ a map application was installed on one of the phones. The KML file was uploaded as an additional layer. A local guide with good knowledge of the area also accompanied the team on their field visits. A combination of Oruxmaps and the familiarity of the local guide with the region, enabled the team to reach the target areas with ease. Of all areas visited, the data for only two locations were incorrect.

The use of rapid mobile phone-based system to collect data⁶

Since 2011, IFRC has been using mobile phones and digital data collection applications to gather information. The tool, known internally as the rapid mobile phone-based (RAMP) system, is easy to use and provides flexibility as it can collect different types of information and provide analysis and visualization of data in near to real-time.

For the purpose of this *look-back* study, RAMP was used to conduct two surveys: infrastructure (Annex 2) and household (Annex 3). These surveys were programmed on 18 mobile phones. Ahead of the field mission, e-mail addresses (e.g. chomawash1@gmail.com) were set up and individual user accounts created on a software platform called Magpi.

The generic training plan (Annex 4) was modified and cut down to two days in a *classroom* setting. The first practical data collection exercise, which can be considered part of the training, was conducted under close supervision of the trainers.

The application of *mobile phone-based technology, survey sampling and satellite imagery* used for this study has once again shown the way forward not just in undertaking efficient and effective survey work but also reiterates its increasing role in full project cycle management, monitoring and evaluation.

Infrastructure survey

Institutional sanitation facilities and newly constructed or rehabilitated water points were visited across eight wards, four from each district, namely Kabimba, Mapanza, Chilalantambo, Simaubi, Maamba, Mweezya, Mweemba and Tekelo.⁷

The survey (Annex 2) was structured to review sanitation facilities and water points based on the following categories (as set out by the 2012 verification mission team):

- Fully functional
- Functional with a technical problem
- Not functional
- Not implemented/finished (mainly due to the project being wrapped up ahead of time)

Interviews with the area pump minders or members of the committee were conducted across 153 locations – in the south, around the town of Maamba, situated on the northern shore of Lake Kariba and the north, approximately an hour north of the city of Choma.

⁵ http://www.oruxmaps.com/index_en.html

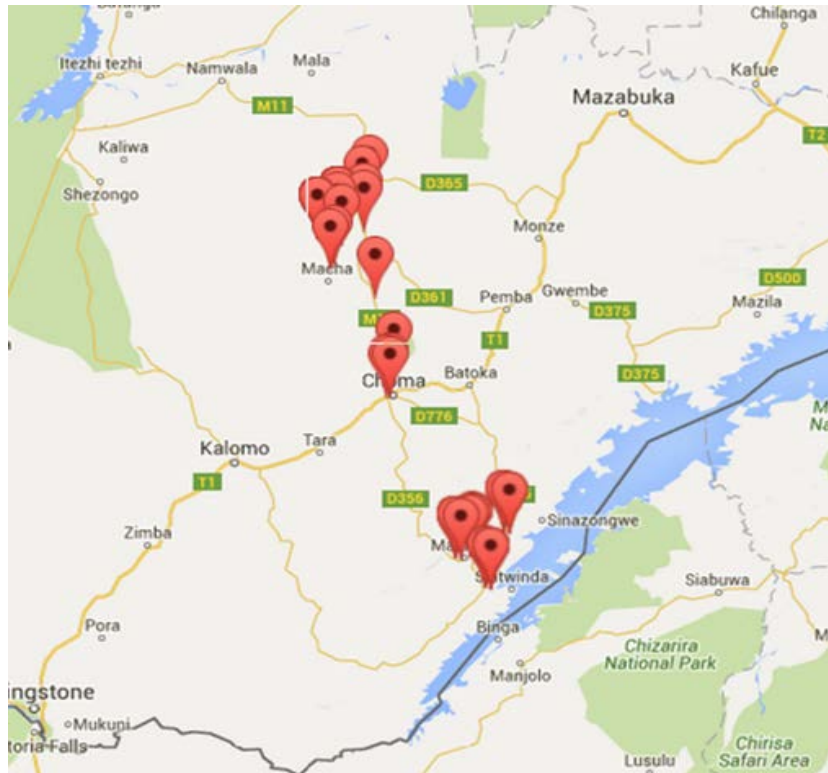
⁶ <http://www.rampsurvey.org/>

⁷ Wards are the next smaller administrative unit under district

Household survey

The impact and sustainability of the project to a large extent is determined by the change in attitudes and practices post-implementation. To assess the success rate of the software component, a household survey (Annex 3) was developed to gauge the knowledge, attitudes and practices of families regarding their use of safe water, sanitation and hygiene.

Interviews and focus group discussion



Face-to-face interviews with members of local authorities (District Authority, District Development Fund, etc.), hand pump minders, latrine builders, environmental health technicians, nurses, school health masters, among others involved in the project were conducted. Qualitative information from the target audience from the eight wards, including community leaders, women, general population, PHAST groups, members of the water point committee and pupils in schools was gathered during focus group discussions (Annex 5).

To better structure the interviews and focus group discussion processes, a detailed guide for interviewees and groups was developed beforehand based on the questions included in the terms of reference and guidance provided by the standard *look-back* methodology.

Factual information from interviews and focus group discussions was triangulated with other sources including household survey, direct observation (transect walks and site inspections), and the inventory.

Nearly 200 people from different backgrounds and level of involvement in the project provided their views and opinions through interviews and focus group discussions. The results outlined in this study,

including those highlighted under *Findings and Discussion* are based on the analysis of the information generated through various evaluation techniques and do not reflect personal opinions of any of the team members.

2. Limitations of the evaluation

Sampling strategy

Initially the evaluation team was set to visit all the rehabilitated and newly constructed infrastructure. However, due to long distances and travel time between locations, this was not possible. Hence, a random selection of infrastructure to visit across the districts of Choma and Sinazongwe/Maamba was made. As part of the sample survey, 92 boreholes and 21 institutional latrines were visited and evaluated.

The household surveys were carried out in target communities that were in close proximity to the constructed or rebuilt facilities, typically boreholes and school latrines. After the initial household was selected for the first survey, the next one was identified in a different direction (spaced at 120 degrees) and so on. Between three to five households were randomly selected in each community. Overall, 444 households were interviewed.

The sample size calculator⁸ with the following parameters was used to determine the interviews:

Table 3: Parameters

Population size	90,000 (original target population)
Sample size (households)	444
Confidence level	95 per cent
Margin of error	4.7 per cent

This was based on a response distribution⁹ of 50 per cent with a calculated margin of error¹⁰ of 4.7 per cent.

⁸ <https://www.surveymonkey.com/mp/sample-size-calculator/>

⁹ If sample data for a survey question is skewed, the population probably is too. In case of uncertainty, use 50 per cent, which is the most conservative assumption and provides the largest sample size.

¹⁰ Margin of error is the amount of random sampling error that is acceptable. If 90 per cent of respondents answer yes, while 10 per cent answer no, you may be able to tolerate a larger amount of error than if the respondents are more evenly split, such as 45-55. The larger the margin of error, the less confidence you should have that the survey results accurately reflect the whole population. A lower margin of error requires a larger sample size. Five per cent is a common choice.

Findings and discussion

1. The situation

A Status of the infrastructure

Table 4: Status of institutional latrines that were surveyed in 2015

	2015	Percentage of functionality
Functional	21	100
Near to full	9	43

Several latrines in schools and clinics were still under construction when the project ended prematurely in 2010. The communities took the initiative to have these facilities completed. In schools across five locations, namely Nakula, Sinakasikili School, Siahkese, Kariba South School, Svapukwe and Siankodobbo, members of the parent teacher association reached out to the Ministry of Education and negotiated that the construction of latrines was prioritized and completed.

Of the 198 institutional latrines constructed during the project period, the evaluation sample indicates that all such facilities are still functional. An additional 20 latrines have been constructed in the targeted institutions since the project concluded. Minor repairs or maintenance work has been carried out in the institutions that were surveyed.

At least nine institutional latrines out of the 21 evaluated, are nearly full. In Zambia's context, there is no technical solution to deal with this problem. The Ministry of Health mainly promotes the construction of new latrines every ten years. Therefore these will need to be either emptied or de-constructed and sealed-off. Considering the weak logistics, road conditions and distances in Southern Province and the fact that no safe disposal system is in place for de-sludging, new construction appears the best option for the longer-term. In locations close to major towns de-sludging may be a viable option, where this service is available.

The Zambia Red Cross Society together with the government should play a role in advising and advocating for longer-term solutions for institutions especially in the more remote locations. This should include a de-sludging component for sites near to urban centres. For household latrines, the Zambia Red Cross Society should consider a role in supporting CLTS activities with other stakeholders.

Table 5: Status of boreholes that were surveyed in 2015

Boreholes	2015	Percentage of functionality
Functional	92	65
Not functional	34	35

Note: Of the 209 new and rehabilitated boreholes provided by the project, 92 were visited and evaluated in 2015.

Most of the boreholes that were installed or rehabilitated have required repair in the last five years. In the event that boreholes need further repair, it is likely that parts will need to be replaced in order to keep these functional.

Table 6: Status of boreholes across various locations

Status of boreholes	Location
Major breakdown/unrepairable, e.g. borehole collapse	Simapulasi
No more water, low water table	Nkwaanyonyona, Kalebe, Sikalonzo, Silubange, Cikooyo, Mwadambizi
Found a better water solution	Siabaswi
Under repair/work in progress	Hansingo, Showya
Unclear reasons	Bbombo, Shibwasa
Lack of funds	Kapeyo, Maanda school, Sipuumina, Nkungwe (c), Siachoona, Nkungwe (b), Simalawo, Mudodoli, Siapolo, Vwekenya, Mwadambizi, Nkungwe (a)

Note: Though Nkungwe is one location, it appears as Nkungwe (a), (b) and (c) since there are multiple boreholes in this area.

All communities initially collected funds for regular maintenance and repair of boreholes. However, with time, communities have become reactive rather than proactive. In situations where there are clear signs that the water point will need repairs, it can take up to a week to collect the required funds. Due to distances, delays in procurement and availability of spare parts, the repair can take up to a minimum of four weeks.

In only one location, Siabaswi, the community has access to an electric/new borehole that is approximately 500 metres away. Hence, the community does not feel the need to repair the borehole provided by Zambia Red Cross Society.

The borehole in Simapulasi is damaged beyond repair. It is likely that the damage to this borehole occurred during the initial years after implementation.

Communities across Nkwaanyonyona, Kalebe, Sikalonzo, Silubange, Cikooyo and Mwadambizi faced problems in accessing water either because of lack of water or a low water table. In some locations, this may be a seasonal issue while in others a solution can be found. It was not possible to investigate this further and find a solution while conducting the *look-back* study.

While problems faced by other communities can be resolved and do not leave the population without access to a safe water source, communities in Kapeyo, Maanda school, Sipuumina, Nkungwe (c), Siachoon, Nkungwe (b), Simalawo, Mudodoli, Siapolo, Vwekenya, Mwadambizi and Nkungwe (a) that lack funds to carry out the required repairs are of particular concern.

During the verification mission in 2012, it was noted that water and sanitation facilities across 11 locations (refer to Table 7) were not functional. These facilities are now functional. This has been made possible either because communities took the initiative to repair these or other organizations, like World Vision Zambia have rehabilitated the boreholes in the last three years.

Table 7: Status of water and sanitation facilities that were not functional in 2012

From unfinished or non-functional in 2012 to functioning or functioning with a technical issue in 2015	Locations	How did it happen
School latrine	Nakula, Sinakasikili school, Siahkese, Kariba south school, Svapukwe, Siankodobbo	Parent teacher association liaised with Ministry of Education; Ministry of Education finalized the project
Community borehole	Nyowani, Muyuni village (b), Sinachikuyu borehole, Simankawa, Siankondobbo, Basic school Mpinda	Community managed to repair/finalize and World Vision Zambia

Well-functioning water committees are responsible for having repaired the community boreholes. In six cases, namely Nyowani, Muyuni village (b), Sinachikuyu borehole, Simankawa, Siankondobbo, Basic School Mpinda, the committees have managed to carry out the required repair that were noted during the 2012 verification mission.

One of the key issues to remain unresolved is the lack of quality control for water. In Zambia, water quality is unfortunately not considered an issue. All the borehole sources were initially laboratory tested. In many locations, the *water safety zone* has not been maintained. This needs to be improved.

The local water authorities are of the conviction that a borehole by definition equals a safe water source. Hence neither has regular testing been undertaken nor have any been scheduled in the foreseeable future. Water quality tests need to be carried out systematically. A long-term surveillance system for this needs to be put in place and implemented.

The Zambia Red Cross Society should consider providing a low-cost intervention to support sustainability in the target areas and assist communities in repairing the non-functioning water points (35 out of a total of 209). Most repairs required are likely to be minor and therefore with a low investment and renewed interaction with a few target communities, more than 7,000 people can recover access to an improved water supply. Spare parts availability and refresher training on maintenance and repair are elements that should be considered in such an intervention. The National Society should advocate on the necessity of systematically monitoring water quality and surveillance with the government and other stakeholders.

B Software component

Four hundred and forty four households from across all the eight wards in the two districts, Choma and Sinazongwe/Maamba, were randomly selected and interviewed. Of the total respondents, 58 per cent were female and 42 per cent were male (average age group of 42 years). Seventy-six per cent of those interviewed were not members of any water and sanitation committee. The WASH knowledge they displayed was based on the messages received during the project implementation period. Eighty-seven per cent of the respondents indicated that they received WASH messages from community-based groups that were trained as a part of the project. Since the closure of the project until now, no other NGOs have been operating in the area. Based on this, it can be concluded that the capacities that were built during the implementation period and knowledge shared, continues to benefit the community.

To continue creating the desire for improved facilities, the trained community-based groups, namely the hygiene promoters, PHAST groups, village WASH education groups, continue to conduct door-to-door hygiene campaigns. These campaigns have proven to be more effective than any other approach. At the time of the interview it was noted that the most recent dissemination of WASH messages to the community members was carried out at a month's interval (end-July 2015). This is a good indicator of the sustainable capacities that have been built in the local communities that has consequently led to a change in attitude and practices.

Positive change in practices and behaviour is also evidenced by the water and sanitation facilities in each household. For example, 71 per cent of the local communities now draw water from boreholes as opposed to gathering it from streams and rivers like before. In addition to this, 94 per cent of the households cover their water storage containers. Based on observations made during the interviews, 81 per cent of the households have clean water storage containers and 80 per cent of the water points have water committees of which 66 per cent were active at the time of the survey.

The water committees are responsible for mobilizing and facilitating operations and maintenance of the water points in the local community. Previously, this task was carried out by traditional leaders who would collect the money for repairs, which more often than not, went unaccounted for.

Whilst traditional leaders are not active members of the water committees formed under this project, they remain engaged and resolve any major issues that may arise. This has created a culture of trust between the community and the committees. Community members feel assured that no one will try and take advantage of them and in case of any accountability issues, they can rely on higher authorities to take the required disciplinary measures. As a result, communities are now more willing to contribute funds for minor repairs of, for example, hand pumps.

Further low-key and low-cost sustainability interventions as recommended above should automatically include a software component. Revisiting and refreshing community engagement and delivering key messages should be undertaken with a focus on communities or families that appear to have least taken on board improved hygiene practices or support to improved sanitation or support to community-based management.

C Regional differences

Sinazongwe/Maamba district

Sinazongwe/Maamba district is facing problems with corroding pipes (galvanized iron) and other parts of the pumping system. This is probably because the water in this region contains a higher amount of corrosive contents. In many locations, the owner of boreholes complained about this. World Vision Zambia applied this as a lesson learnt and resorted to using stainless steel pipes.¹¹

In the city of Maamba, a thermal power plant is being finalized. It brings additional employment during construction and improvements for the city, especially in terms of reliable electrical power supply. This may open up and simplify opportunities of installing electrical pumps in certain areas.

The Red Cross branch is going through a transition in its leadership. The president has been ailing since the past three years and his situation continues to deteriorate. He is in the process of passing on his executive role to his successor. As a result, the branch activities have been progressing slowly in the last three years.

It has not always been easy for communities to buy the spare parts required for repairs. The sustainable operation and maintenance for rural water supply (SOMAP) shop in Sinazeze, for example, is the only spare parts provider in the Sinazongwe/Maamba district. However, there have been logistical issues. As a result the shop lacks multiple items. The procurement process is also complicated and the price list set by the government was revised in 2013.

The process of updating the prices of items is lengthy and complex. With the Zambian kwacha (ZMW)¹² being unstable and on a constant decline (refer to Annex 7), this process needs to be improved. In the event that the prices are not adjusted to at least a cost recovery level, the system produces losses. This does not encourage a pro-active system of spare part provision. Hence it is imperative that a transparent and flexible business model to keep the SOMAP shops stocked and running is installed.

Choma district

In Choma district, communities rely on the local hardware shops for the provision of spare parts. There are at least three such shops in the vicinity, which creates competition. Coupled with this, the prices in the local hardware stores are higher than the SOMAP shop. A comparison of two items provided by SOMAP and a private dealer vary as follows:

	Pipes and washers	Mark II pump complete
SOMAP	ZMW 219	ZMW 3,200
Private	ZMW 312.5	ZMW 3,650

¹¹ This is further supported by documentation produced by Government of Zambia's Department of Water Affairs available at: https://www.bgr.bund.de/EN/Themen/Wasser/Projekte/abgeschlossen/TZ/Zambia/sp_broschure.pdf?__blob=publicationFile&v=2

¹² <http://www.oanda.com/currency/converter/>

Balance in percentage	42	14
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2. Appropriateness

Facilities

The type of latrines and solutions implemented under the umbrella of this programme are appropriate in the Zambian context. All facilities complied with the national standards and conformed with the water authorities policy and strategy. The water committees for the boreholes continue to work well. Evidence, in the sanitation sector indicates that there is a strong commitment by the communities to finish the incomplete latrines.

The following aspects of the programme were well planned: minimum number of users for a borehole, establishment of a user's committee, sufficient number of technical staff to support repairs, knowledge of good hygiene practices, and use and maintenance of latrines and water points.



Map 4: Water points in Maamba ward's Kaisya village

All the same, in certain instances the water committees were not as active as envisaged. Furthermore, the catchment area in three locations for boreholes (in Maamba ward) was not as big as initially assumed. The main reason for this was that a better water solution was available for part of the catchment area. This was particularly observed in Maamba ward. Shortly after 2010, the water authorities agreed that other agencies, particularly World Vision Zambia, could implement similar projects in the same wards.

The water points in Maamba ward's Kaisya village (refer to Map 4), for example, were established in close proximity to one another. Distance between the two water points (405 and 402) is only 920 meters. In addition to these another two water points provided by other organizations were also within the same range.

A possible reason for this can be that due to the Zambia Red Cross Society project closing earlier than planned, gaps remained at community level. As a result, the water authorities worked with other organizations to close the gaps.

Community-based groups

All members trained to form the community-based groups were identified together with the communities. The traditional leaders were also part of the process. The criteria for identifying potential candidates was shared with each community. The selection criteria entailed, for example, that the candidate be a permanent resident of the village. This was mainly to ensure sustainability.

The 2015 survey showed that the community-based groups remain active. Post project implementation, 25 per cent of these groups continue to conduct door-to-door hygiene campaigns every month, while another 31 per cent do the same every few months. The remaining 44 per cent of the community-based groups rarely conduct similar campaigns.

The community-based groups trained by the Zambia Red Cross Society are the ones that other NGOs are working with in the event they require, for example, to raise further WASH-related awareness. This happens irrespective of whether the NGOs reach out to the local council or traditional leaders.

3. Sustainability

For sustainability, it is imperative that the facilities being provided can be maintained, repaired and funded beyond the implementation phase of a project.

Lack of coordination between area pump minders, water committees and local council and government spare parts procurement system created confusion and led to issues with transparency. For example, communities were not always aware of how much a spare part cost. This gave rise to disharmony between community members and the water committees. This situation is avoidable. It requires good coordination and communication channels to be in place.

The local council have a special fund available for communities that lack the financial resources for maintenance and repair of facilities. However, communities were unaware of this option. The *look-back study team* did not come across a single case where this mechanism had been used.

4. Impact health data

Based on the hygiene-related messages that have been delivered since 2007, the communities expressed that their WASH-related knowledge has increased and their attitudes and practices have improved.

Table 7: Diarrhoeal diseases trends, Sinazongwe/Maamba district

Wards	2010			2011			2012			2013			2014		
	Pop	Diarrhoeal cases	%	Pop	Diarrhoeal cases	%	Pop	Diarrhoeal cases	%	Pop	Diarrhoeal cases	%	Pop	Diarrhoeal cases	%
Maamba	11,798	7,619	65	13,595	1,864	14	13,989	1,513	11	14,256	1,623	11	14,684	896	6
Mweemba	14,863	2,035	14	15,531	775	5	15,739	1,358	9	16,286	1,231	8	16,806	328	2
Mweezya	6,596	586	9	6,604	713	11	6,796	342	5	6,924	351	5	7,133	137	2
Tekelo	3,497	260	7	3,767	272	7	3,845	173	4	3,918	210	5	4,036	201	5

Trends show that in the wards of Sinazongwe/Maamba district the communities are facing fewer cases of diarrhoea (refer to Table 7). In 2010, 65 per cent of the total population of Maamba, 14 per cent in Mweemba, nine per cent in Mweezya and seven per cent in Tekelo suffered from diarrhoea. As a result of intensive hygiene promotion activities carried out by the Zambia Red Cross Society together with access to safe water, by 2014 the case load for diarrhoea in communities across these wards was down to six per cent, two per cent and five per cent respectively.

While the improvement in diarrhoeal disease rates cannot be entirely attributed to the project, it is safe to assume that the project has had a positive impact on health in targeted communities.

More than 75 per cent of the community-based groups that were trained continue to live in the same communities. Therefore, the capacity and resources remain with the community.

5. Intervention by other agencies

The district water, sanitation and hygiene education committee through the local government (councils) and in collaboration with the Ministry of Local Government and Housing drive the WASH initiatives in their respective districts. As such, they have a record of areas with low WASH coverage. This information is frequently updated through reports that are shared by each stakeholder and during the district development coordination committee quarterly meetings.

To reduce duplication of efforts, whenever an agency expresses interest in setting up a WASH programme, these two bodies direct the organization on where to work. For example, in the event that the areas of focus and objectives of different NGO vary, two or three NGOs can operate in one area, though in rare cases.

UNICEF has been the major player in community-led total sanitation methodology with the target of making Zambia open defecation free. As per the interview with the Ministry of Local Government and Housing, UNICEF has a target of drilling 40 boreholes per year nation-wide. All other stakeholders, such as World Vision Zambia, Development Aid from People to People Zambia and Village Water in collaboration with Ministry of Health are advised to adopt one approach of enable communities to become open defecation free.

If the communities are open defecation free, as incentive the local authorities in partnership with UNICEF awards the community with a borehole for access to safe water. This has encouraged the communities to change their practices in a positive way.

Community-based groups trained under the leadership of Zambia Red Cross Society have taken advantage of this approach and continue to go door-to-door with WASH-related messages. This has enhanced the sustainability component, especially given that no other NGO has been allocated projects in the same area as the Zambia Red Cross Society.

Conclusions

Five years on, the knowledge gained and the positive change in attitudes and practices in targeted communities is evident. In general, communities and local authorities are self-sufficient and have been able to mobilize themselves and collect user fees that has helped with the overall operation and maintenance of the facilities and sustainability. The facilities provided are socially and culturally appropriate and have been well received.

While SOMAP shops were meant to facilitate easy access to obtaining spare parts, communities have faced several challenges on this front. The SOMAP shop in Sinazeze, for example, is the only spare parts provider in the Sinazongwe/Maamba district and comes with logistical challenges. The procurement process is complicated. As a result the shop lacks multiple items. The process of updating the prices of items is lengthy and complex. With the Zambian kwacha being unstable and on a constant decline, this process needs to be improved.

In conclusion, the project was well designed and has factored in the key components, such as, training, community engagement and establishment of water committees. The water committees were established in all target communities. The project was well embedded within the overall government programme and financial system to collect funds for repair and rehabilitation worked.

Recommendations

1. Immediate follow up on project results

- The area pump minders need a refresher course. To increase efficiency, each pump minder should have his or her own tool kit.
- The village WASH education groups require refresher trainings. This would also contribute to reactivating some of village WASH education groups that have gone dormant.
- Communities struggling with finances to maintain and operate the facilities need to be linked to the district WASH funds. Awareness regarding this funding stream should be raised at community level.
- Water quality tests need to be carried out systematically.
- For hygiene reasons, particularly in communities that are predominantly rearing livestock, the water points should be protected with fences, to better protect the area. Awareness regarding the necessity of a proper and complete system need to be in place to ensure that the water sources remain clean.
- Prior to implementing any future WASH projects, a comprehensive baseline survey should be conducted. The details of this survey should be shared with all stakeholders so that when a *look back study* is carried out, it is possible to make comparisons and measure impact.

Current situation



What it should look like

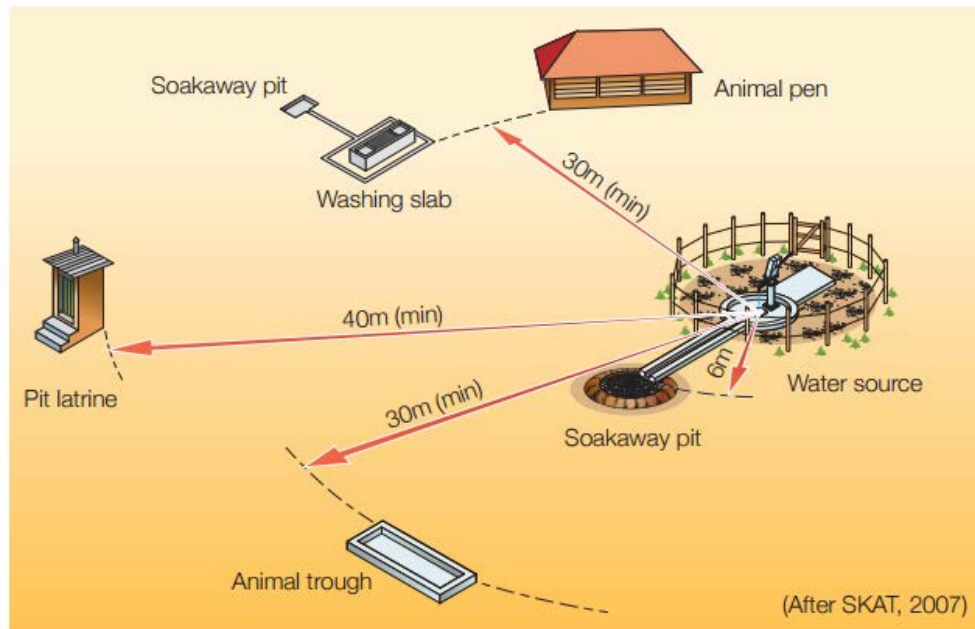


Figure 2. Location of a water point at a safe distance from potential sources of pollution

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2. Continuity and replication

A key recommendation would be to negotiate the re-establishment of SOMAP in Choma district with the National Water Authority. As a result of the constant drop in the currency, SOMAP requires procedures that would enable prices to be adjusted regularly and quickly. The procurement procedures also need to be revisited.

3. Design of future WASH projects

The project in Zambia had to be discontinued earlier than planned for management reasons. As other programmes were put on hold, all the branches of the Zambia Red Cross Society had to reduce their operations substantially.

The district WASH authorities should have communicated information on how to tap into funding available to maintain and repair facilities at the start of the programme. An integrated project strategy across sectors, such as WASH, health and disaster risk reduction, with long-term presence, in the same locations would benefit the communities. This will also enable building local knowledge and experience and facilitate sharing of lessons learnt from previous project.

¹³ http://wedc.lboro.ac.uk/resources/booklets/BK003_APR_A4_Pages.pdf

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Annex 1 Final report: Verification mission

Zambia Red Cross Society

**The International Federation of Red Cross and Red Crescent Societies (IFRC – applicant)
British Red Cross Society and Swedish Red Cross**

Verification mission to ACP-EU Water Facility Action

**Southern Province rural water supply, sanitation
and hygiene promotion project in Zambia
ACP project number 311**

Final report

Geneva, 10th July 2012

1.0 Background

As a result of consultation between the EU office in Lusaka and IFRC Director of Africa zone, Mr Alasan Senghore, it was agreed that IFRC (the applicant for the above action) would lead and undertake a verification mission, together with the Red Cross partners, namely the Zambia Red Cross Society and the British and Swedish Red Cross and the EU Office principally to verify the physical outcomes of the project.

The verification mission was undertaken between 24th June to 4th July 2012.

A preliminary report which summarized the findings of the mission was presented and discussed with the EU office prior to the verification team being disbanded. This final report concludes the mission with additional analysis of the findings and some key annexes.

2.0 Terms Of reference for the mission

The following terms of reference (ToR) was shared with the partners to the action prior to the mission:

- (a) Form a verification team led by IFRC (Robert Fraser), at least one Zambia Red Cross Society and participating National Society representative each, and offer the EU country delegation one representative on the team.
- (b) After meeting with the Zambia Red Cross Society and EU office in Lusaka, undertake a five to six day field mission to the project target areas to verify, as much as time allows, the physical assets/construction works/materials provided during the implementation period, as reflected in the various reports during and at the conclusion of the project.
- (c) Consult with the Zambia Red Cross Society branch staff and volunteers who were active during the implementation period and inspect their records on project assets and outcomes that are measurable (records and documentation held at the Zambia Red Cross Society headquarters level should also be made available).

(d) On return to Lusaka, submit draft mission report to the Zambia Red Cross Society and EU for their feedback and inputs prior to concluding the report and submitting to the IFRC zone director for formal distribution.

The ToR was agreed upon by the partners, however the EU office raised concerns over the time period allocated and encouraged the team to ensure most, if not all sites should be visited. This concern proved correct and indeed the original mission period was extended by three days to do so. Unfortunately, the EU office were not able to join the field mission due to other commitments. However, the verification team appreciate the time given by the EU office at the inception and conclusion of the mission by several EU officers to discuss expectations and findings.

3.0 Verification team composition

The team was assembled and briefed in Lusaka and consisted:

- Priscilla Nsama (Representing the Zambia Red Cross Society headquarters). Formally, the Zambia Red Cross Society's hygiene promotion specialist/software specialist based in Choma for 20 months during the project period, now Lecturer for Development Studies, University of Zambia.
- Dianne Moody (Representing the British, Swedish and Norwegian Red Cross). Programme support manager (Africa), British Red Cross, International division who had visited the project previously.
- Robert Fraser (Team Leader, representing IFRC). Senior Officer, Water and Sanitation, IFRC Geneva who has made several project visits during the project period.
- Zambia Red Cross Society branch presidents and volunteers at field level who were active during the project period.

One 4x4 vehicle and driver was provided by the Zambia Red Cross Society. The driver had extensive knowledge of the project since he had been active during the implementation period.

One 4x4 vehicle and driver was provided by the IFRC country office, Zimbabwe. After meeting with the EU office the team departed for the field.

4.0 Verification team methodology

Two field teams were formed, led by Dianne Moody and Robert Fraser respectively. The eight wards targeted by the project, four in each district, were chosen at random and each team visited two wards per district. Project documentation from IFRC Geneva, the Zambia Red Cross Society headquarters and from branch level were consulted and cross-checked. Each physical outcome was marked by white spray paint to avoid double counting but also as a future reference. Care was taken in ensuring, especially with constructed boreholes, that they were indeed constructed during the project period by the IFRC/ Zambia Red Cross Society project and not by other agencies that may have been active previously or since the project period. In most cases, date of construction was marked in the concrete aprons. Similarly, at sites where the project had constructed institutional latrines, care was taken not to record latrines constructed previously or since the completion of the IFRC/ Zambia Red Cross Society project by other actors.

At every site visited where verification was undertaken, GPS coordinates and the condition of the physical asset was recorded, as being functional, in-use or incomplete. Verification sheets recorded every site visit and were signed off by either Dianne Moody or Robert Fraser and the Zambia Red Cross Society representatives. Copies of the original verification sheets are annexed to the final report.

Courtesy calls and consultations were undertaken with the District Commissioners, Zambia Government, in Choma and Sinazongwe/Maamba districts.

A total of 236 separate sites were visited and verified by the two field teams.

5.0 Findings

The primary source referred to is the **End of Project Report** (covering the period 1st March 2007 to 28th February 2010) that with other documentation, was used to guide the verification team and against which the findings are compared.

The verification team cross-checked that report against the other documentation and wherever possible, and in most cases, concluded by discussions with community members and elders, health centre staff, school headmasters and staff and existing or previously employed the Zambia Red Cross Society staff and volunteers (in each ward) that the assets inspected were constructed by the ACP Action in question and within the time period that the Action had been active.

It should be noted that in the eight target wards, during the project implementation period (broadly 2007–2010), the respective district water and sanitation hygiene education committees had allocated those sites exclusively for expected outputs by the ACP project. Other players were awarded other wards during that time. This ensured to a major extent that the verification team were indeed inspecting and verifying ACP Action outputs.

The 236 site visits included:

- (1) 113 constructed borehole sites
- (2) 83 rehabilitated borehole sites
- (3) 40 institutional latrine sites (schools and clinics)
- (4) Constructed boreholes (drilled and fitted with hand pump and concrete apron)

In the **End of Project Report**, the narrative indicates a total of 95 boreholes, however only 94 are recorded in the borehole list in the same report. The team verified the 94 sites and therefore concluded that there were 94 constructed boreholes, all complete, constructed under the umbrella of the ACP Project.

In addition to those constructed by the ACP Project, an additional 19 boreholes were constructed (14 boreholes by Norwegian Red Cross funding and five boreholes by SHELL funding) all complete, and also verified by the team.

Therefore, 94 ACP funded boreholes and 19 Norwegian/SHELL funded boreholes are verified and complete, that is 113 in total of which 101 are fully functional (89 per cent), two are functional needing repair (two per cent), and ten are presently not functional (nine per cent).

Though it was not in the remit of this mission to verify sustainability, we are very satisfied with the degree of constructed borehole functionality considering they were all constructed during the period 2007–2009.

(2) Rehabilitated boreholes

The **End of Project report** records 96 boreholes as being rehabilitated. The verification team visited 83 such sites (86 per cent) and unfortunately were unable to visit the remaining 13 due to time constraints, which are in Sinazongwe/Maamba district. However, the verification team noticed that of those 83 sites visited, they were all accurately indicated in the project documentation held at branch and headquarter level and no anomalies were noted leading the team to conclude that indeed all rehabilitations probably took place. Of the 83 sites actually visited and verified, 66 were fully functional (80 per cent), five were functional needing repair (six per cent), and 12 (14 per cent) were not functional.

Once again the team observed an acceptable rate of functionality, especially as most rehabilitated boreholes are dating back to construction either by Red Cross or other agencies prior to 2007, some of which are dating back over 20 years.

(3) Institutional latrines, constructed at schools and clinics

The **End of Project report** records a total of 204 latrines complete (that is each latrine with one drop hole, roof, superstructure and vent pipe). At the 40 sites visited the verification team recorded 198 (97 per cent) were in fact complete. However, of those completed, 18 were not being used as the pits were full. The verification team also recorded a further 112 partially constructed latrines, many of which had only reached ground level.

6.0 Comparison original target versus actual verified outputs

In reference to the *Detailed Grant Application Form* for this Action, the infrastructural outputs of the project were clearly indicated and can be compared to actual verified outputs as follows:

Description	Target	Actual	Verified % achieved	% functional (at time of Verification)
Constructed Boreholes (Complete)	120	94*	78.3	89
Rehabilitated boreholes	250	96	38.4	86
Institutional latrines	450	198	44	97
Maamba town water supply	1	nil	0	N/A
Household Latrines (SanPlats)	9,000	2,748*	30.5	not verified

Notes:

*The externally funded constructed boreholes (19 funded by Norwegian Red Cross and SHELL) are not included in this table which only reflects outputs funded directly by the ACP Action.

*Household latrines (sanplat distribution) was not verified by this mission but was visited and commented upon previously in the *Assessment Mission Report* by Robert Fraser dated 14th to 22nd December 2009 and previously shared with the EU office which recorded 31 per cent of target sanplat distribution and at which time the project activities had ceased. This matches very closely with the 30.5 per cent target met reported in the end of project report.

7.0 Impact and estimated beneficiary numbers versus target population

Safe water supply: Functioning boreholes (both constructed and rehabilitated):

The verification team can estimate, that at an average of 250 people served by each functioning borehole (constructed or rehabilitated, a total of 174 boreholes, ACP plus those externally funded) the projects efforts are meeting the needs of safe water provision to 174 x 250, that is an estimated 43,500 people in the project target areas at present.

Set against a target of 100,000 people that is 43.5 per cent achieved in safe water supply.

Improved Sanitation: Institutional and household latrines

The verification team can estimate that on average 30 adults/children may use each an institutional latrine therefore safe excreta disposal is at present serving 170 x 30 that is 5,100 school-going children and clinic visitors which are benefitting from these institutional latrines.

The verification team can estimate that at an average of six people per household, an estimated 16,488 people are benefitting from safe excreta disposal at household level after distribution of sanplats.

In all, 21,588 people benefitted from institutional plus household latrines. Set against a target of 100,000 people that is a total of 21.6 per cent achieved in improved sanitation.

8.0 Physical assets remaining in the field and in Lusaka

No physical assets are remaining in the field (such as tools, equipment and materials). Any remaining assets were transported to Lusaka. All these assets were handed over to the Zambia Red Cross Society in the normal manner and recorded in the *gift certificate* copied in the end of project report. Although after official handover those remaining assets are the property of Zambia Red Cross Society that can dispose these as they see fit, the verification team can report that apart from items with a short shelf life (cement which has been sold-off) the other assets, apart from some motor bikes which have been used in a debt-swap with a creditor, are still with the National Society.

Conclusion

The verification mission can conclude that with only very minor variations, the end of project report and other documentation has been proved to be mostly accurate, in terms of the infrastructural outputs of the Action of which most were verified by this mission at field level.

More importantly, although the project was curtailed and did not meet targets to a significant degree, the work that was achieved was of good quality overall and indeed has a very high rate of sustainability at this time, over two years after all activities ceased.

A sincere note of thanks to all verification team members, Zambia Red Cross Society staff and volunteers at headquarters and branch level, the British Red Cross, the IFRC country office in Harare, Zimbabwe, and the EU office in Lusaka for their assistance and efforts during the mission.

Robert Fraser

Senior Officer, Water and Sanitation Coordinator, IFRC Geneva

Achievements

Hardware component

Water supply

- 95 boreholes drilled (Target: 120)
- 96 boreholes were rehabilitated (Target: 250)

Outcome and impact

The newly drilled and rehabilitated boreholes increased households' access to safe water. Previously members of these households had to walk long distances to reach protected sources for water supply. Where water points have been constructed or rehabilitated, the waiting time for community members has reduced. The continued use of safe water coupled with good practices related to water use and storage has contributed to improving the overall health in target communities.

Sanitation

- 204 institutional latrines constructed (Target: 450), mainly in schools and health centres
- 2,748 sanplats casted and distributed to households for latrine construction

Outcome and impact

Interviews with authorities in the targeted schools and health centres confirmed that access to improved sanitation facilities had contributed to solving challenges faced, especially by school-going children. In the past, whenever children needed to use the latrine they had to either go back home or use the bush, which is in most cases is bare because of drought. This particularly posed a challenge for school-going girls who have reached puberty. When the girls had their menstrual cycle, they were forced to skip school since they lacked privacy and did not have any discreet ways to dispose their sanitary pads. Access to latrines has improved the learning environment for children.

Those households that have been able to construct latrines have access to improved sanitation and hand-washing facilities, effectively reducing cases of water-borne diseases.

Software component

- 40 area pump mechanics (pump minders) received training in repairing hand pumps
- 40 masons received training in latrine construction
- 32 caretakers and 83 village water and sanitation hygiene education committees received training in operation, maintenance and financial management
- 120 hygiene promoters received training and went on to form 209 village PHAST groups
- 17 trainers received training in PHAST methodology. They went on to train hygiene promoters who further cascaded the training to reach community members.

Outcome and impact

Trained masons were responsible for the construction of 204 latrines in institutions. The capacities gained are benefitting community members post-project – masons continue to give technical advice for similar construction projects.

Area pump mechanics continue to maintain hand pumps and work together with the village water and sanitation hygiene education committees to ensure prompt repairs are undertaken. Each ward has five pump mechanics who have been allocated zones within the vicinity of their houses. Since the areas they cover is vast, every mechanic has been equipped with a bicycle. Most of the hand pumps have remained functional since the end of the project in February 2010.

Hygiene promoters in collaboration with the PHAST groups and the village water and sanitation hygiene education committee members continue to sensitize communities on better hygiene practices, some even conduct door-to-door campaigns.

Advocacy and visibility

Government authorities at the national and district levels were engaged through regular participation in stakeholders' forums such as, district water and sanitation hygiene education to advocate for improved access to water through provision of clean and safe water supply. The project team also shared progress reports with the district water and sanitation hygiene education committee on a quarterly basis. The updates were included in the district database.

The project activities were highlighted through an elaborate visibility plan and strategy through the use of banners, t-shirts and plaques which were produced and posted on all project assets such as vehicles, motorcycles, office computers and desks. Road side posts were erected leading to key project sites such as schools and health centres where latrines were constructed. Community PHAST and Hygiene Promoters were issued with T shirts with promotional materials. The IFRC also commissioned a film crew to promote GWSI and the Zambia project was highly covered and posted in You-tube.

Capacity building of the Zambia Red Cross Society staff

The capacity building of the Zambia Red Cross Society staff was built through trainings and by carrying out baseline surveys during the projects/action baseline survey the project team was trained by the Project Manager and through developed tools undertook the data gathering, analysis and reporting of the findings. Further training and coaching was done to the finance staff of Zambia Red Cross Society who was attached to the project by the finance and administration delegate who was based in the Zambia Red Cross Society headquarter. Two district staff members also benefitted from the trainings on PHAST. On water point and water source mapping, the staff were trained on the use of GPS.

Number of people reached

A total of 39,357 people were reached through access to safe water; 9,181 households improved their overall sanitation (cleanliness); institutions (schools and health centres) from 204 latrines benefitting more than 6,000 school-going children. Capacity building has been done through the training of 40 community members in masonry, 40 people trained as area pump mechanics, 32 trained as water point caretakers 83 village WASH/water point committees trained in community-based management and 120 trained in hygiene promotion using the PHAST methodology, 34,750 people were reached with hygiene promotion messages.

Collaborations

Implementation of the activities was well coordinated with the government structures. During the project inception, the team established contact and shared key project information at the national level

with the Ministry of Local Government and Housing. At the district level the project team established contact with the district WASH committee (a sub-committee of the local authority) and attended coordination meetings to share progress on the implementation of the activities. In Sinazongwe/Maamba district the project team closely liaised and shared training materials and approaches with Development Aid from People to People Zambia, which was implementing a project funded under the European Union under the water facility. In the two districts, the local authority was responsible for allocating priority sites and wards where project activities were to be implemented by the project team.

Red Cross partners, namely Swedish Red Cross, British Red Cross and the IFRC supported the Zambia Red Cross Society in the implementation through field visits, trainings especially in the PHAST methodology and in carrying out the mid-term review.

Annex 2 Questionnaire: Infrastructure

1. Welcome to the *look-back study* of the Southern Province rural water supply, sanitation and hygiene promotion project in Zambia (ACP Project No. 311)

Find the information to the following questions from members of the water committee, users or technicians.

2. Name of the district:

- Choma
- Maamba

3. Select the ward:

- Kabimba – If this response, jump to 4
- Mapanza – If this response, jump to 4
- Chilalantambo – If this response, jump to 4
- Simaubi – If this response, jump to 4
- Maamba
- Tekelo
- Mweezya
- Mweemba

4. Select the number given in the verification mission list

5. Name of the village and water source/facility

6. What type of infrastructure/intervention is it?

- Borehole, new – If this response, jump to 8
- Borehole, rehab – If this response, jump to 8
- Shallow well – If this response, jump to 8
- Shallow well rehab – If this response, jump to 8
- Protected spring – If this response, jump to 8
- Latrine, school – If this response, jump to 8
- Latrine, public – If this response, jump to 8
- Latrine, clinic – If this response, jump to 8
- Latrine, household – If this response, jump to 8
- others

7. Specify others

8. When was this water point/institutional latrine mentioned in question number 5 drilled/last rehabilitated/constructed?

9. What is the condition/status of the infrastructure?

- A. Very good, fully functional (A) – If this response, jump to 16
- B. Functional but with a technical problem (B)

- C. Not functional (C) – If this response, jump to 12
- D. Not completed (D) – If this response, jump to 15

10. What is the technical issue?

11. Why is it not functioning?

12. Can the problem be fixed easily?

- Yes
- No
- Maybe

13. What would be the cost to fix one unit? (Give in Zambian Kwacha)

14. Why was it not completed?

15. Who carried out the rehabilitation?

- Local area pump minder
- Someone from an NGO/institution
- Masons
- I don't know
- Others

16. What is the state of the water point in terms of cleanliness/hygiene?

- Clean
- Dirty
- Medium
- I don't know

17. Who is responsible for the cleaning?

- The village water and sanitation hygiene education committee
- Surrounding community
- Fully employed members of staff

18. Is there a water committee?

- Yes
- No – If this response, jump to 24

19. How many members are on the committee?

20. What exactly do they do in the community and how often?

21. Where do you get your spare parts from to repair the water point?

22. How do you raise funds to buy spare parts for the infrastructure?

23. Do you want to add any other comments?

24. End of the survey, thank you. Swipe left to save.

Annex 3 Questionnaire: Household level

1. Welcome to Zambia ACP – Project # 311 household questionnaire for the *look-back survey*

2. Give a number to the household. Preferably use the phone number.

3. Date of interview:

4. Select the district:

- Choma
- Sinazongwe/Maamba

5. Which ward:

- Kabimba
- Mapanza
- Chilalantambo
- Simaubi
- Maamba
- Mweezya
- Mwaeemba
- Tekelo

6. Name of the village:

7. Age of respondent (in years):

8. Sex of respondent:

- Male
- Female

9. Marital status of the respondent:

- Single and never married
- Married
- Cohabiting
- Widowed
- Separated/divorced
- Others

10. Are you a member of any water and/or sanitation committee?

- Yes
- No – If this response, jump to 12

11. Please specify, which committee and your role.

12. What is the Respondents' status in the household?

- Head, male
- Head, female
- Wife of head
- Head, but a child (<15)
- Head, grand parent
- Other person in household

13. What is the education level of the respondent?

- None
- Primary, not completed
- Primary completed
- Secondary
- Tertiary

14. What is the estimated income per-month (for the household in Kwacha):

- Below 100
- 101–500
- 501–1000
- Over 1,000

15. What is the total number of people in the household?

16. Number of children in the household between five and 17 years of age:

17. Number of children in the household below five years of age:

18. How many children in this household attend school?

19. Have you ever received any messages/information on hygiene and sanitation?

- Yes
- No – If this response, jump to 23

20. If so, how often do you hear or receive any hygiene and sanitation education messages?

- Every week
- Every month
- After several months
- Irregularly
- Rarely

21. When was the last time you received a message on water, sanitation and hygiene?

22. Have you changed anything in your daily routine as a result of the messages given?

- Yes
- No
- Not sure

23. What do you think has been/would be the best communication channel for sanitation and hygiene

messages to reach you (Select one best option)?

- Mass media (Radio/TV/video)
- Print media (Posters/pamphlets)
- Outreaches by community health workers/hygiene promoters
- Door-to-door hygiene education
- School
- Health centre
- Friends and peers
- Seminars/workshops
- Public/youth events
- Others

24. Specify others

25. What is the main source of drinking water for members of this household?

- Surface well, unprotected
- Unprotected spring
- River/lake
- Rain
- Protected well
- Protected spring
- Borehole (Deep well)
- Piped water, away from home
- Piped water, on premises

26. What is the main source of water for other purposes (e.g. washing) for this household?

- Surface well, unprotected
- Unprotected spring
- River/lake
- Rain
- Protected well
- Protected spring
- Borehole (Deep well)
- Piped water, away from home
- Piped water, on premises

27. What is the estimated distance to this source of water (in kilometres)?

28. How long does it take to travel to this water source (in minutes for going and coming back)?

29. After reaching the water source, how long do you have to wait before you get the water (in minutes)?

30. How much water do you collect each day from that water source (in litres)?

31. Who usually fetches water for use in this home?

- Children, male

- Children, female
- Children general
- Adults male
- Adults in general
- Children and women
- Any (not specific)

32. Do you pay for the water you fetch?

- Yes
- No – If this response, jump to 34

33. If yes, about how much do you pay per jerry-can ?

34. Do you do anything to the water to improve it before drinking it?

- Yes
- No – If this response, jump to 36

35. If yes, what do you usually do to improve your water?

- Boil it
- Use cleaning tablet
- Filter it
- Let it stand and settle
- Other

36. Where do you store your drinking and cooking water?

- Plastic/metal container (lid)
- Plastic/metal container (no lid)
- Clay pot (lid)
- Clay pot (no lid)
- Other

37. Observation, is the water container clean?

- Yes
- No

38. Can you show me how you get water from the container?

- Pouring
- Dipping
- Pouring and Dipping
- Container has an outlet/tap
- Other

39. Who owns the main water source from which you obtain drinking water?

- Privately owned by another individual or household – If this response, jump to 41
- Owned by this household – If this response, jump to 41
- Owned by individual/churches/institutions but freely available to community – If this response, jump to 41

- Owned by the community or freely available – If this response, jump to 41
- Others

40. Specify others

41. Does the water source have a 'water water committee'?

- Yes
- No – If this response, jump to 44

42. Is the water water committee active?

- Yes
- No

43. Does the owner or water committee collect a maintenance fee?

- Yes
- No
- Not relevant

44. Are you involved in the maintenance of this water source?

- Yes
- No – If this response, jump to 46

45. If yes, in what way are you involved?

- I provide physical labour
- I contribute money
- I contribute materials
- Other

46. Does household have a latrine/toilet?

- Yes
- No – If this response, jump to 48

47. What type of latrine/toilet is it?

- Flash toilet – If this response, jump to 49
- VIP – If this response, jump to 49
- Pit with a cement (cast) slab – If this response, jump to 49
- Composting (echo-san) – If this response, jump to 49
- Covered pit from local materials – If this response, jump to 49
- Open pit – If this response, jump to 49
- Ordinary latrine without a door – If this response, jump to 49
- Other – If this response, jump to 49

48. In case you do not have a latrine, what do you use?

- Bush, field,... – If this response, jump to 50
- Neighbours latrine – If this response, jump to 50
- Institutional latrine – If this response, jump to 50

49. Do you share this latrine or toilet with other households?

- Yes
- No

50. Have you constructed a sanitation platform in the last five years?

- Yes
- No – If this response, jump to 52

51. Who assisted you in doing this?

- Area mason
- A community member
- Nobody
- Not sure

52. Which of the following item/installations are a part of the household?

- Hand washing facilities at the latrine
- Food cooked in a separate place from the main house
- Cooking shade
- Rubbish pit
- Drying rack for utensils
- Bath shelter

53. Where do you deposit waste?

- Dug in good condition
- Non-dug, a dump site
- Built in good condition
- Garden/plantation
- Bush
- Field
- Everywhere
- Stream
- Others

54. What is the distance of rubbish pit from main house (in metres)?

55. Inspect whether latrine/toilet is clean

- Yes, latrine clean/ well maintained
- No, not clean/poorly maintained
- No latrine

56. Do you always wash your hands after using the toilet?

- Yes
- No – If this response, jump to 62

57. How do you wash your hands after using the toilet?

- Availability of a tip-tap
- Availability of other hand washing facility
- Availability of water

- Availability of soap/disinfectant

58. Is this practice done regularly by everyone in this household?

- Yes – If this response, jump to 62
- No

59. If no, why?

- Lack enough water – If this response, jump to 62
- Lack of latrines – If this response, jump to 62
- It is a waste of time– If this response, jump to 62
- Ignorant – If this response, jump to 62
- Cultural limitations/hindrances (Specify in next box) – If this response, jump to 61
- Disabilities – If this response, jump to 62
- others

60. Specify others

61. Specify any cultural limitations/hindrances you face.

62. How do you dispose stools of small children in the household who cannot use the toilet?

- Throw them into toilet
- Bury them in the field
- Throw them in rubbish pit
- Throw the outside the yard
- Other
- N.A.

63. Do you always wash your hands before you eat?

- Yes
- No

64. Do you think women in households have an important role to play in managing water and sanitation in homes?

- Yes
- No
- Not sure

65. Between women and men, who do you think is responsible for promoting sanitation and hygiene in homes?

- Women
- Men
- Both equally
- Any
- Not sure

66. Do you think men currently play an active role in promoting sanitation and hygiene in homes?

- Yes

- No
- Not sure

67. Do you think men should play a more active role in sanitation and maintaining hygiene in homes?

- Yes
- No
- Not sure

68. Do you think women are actively involved in managing water sources in the village?

- Yes
- No
- Not sure

69. Between women and men, whom do you think is responsible for cleaning the latrine and ensuring availability of water and soap at the sanitation facility?

- Man
- Woman
- Both equally
- Any
- Not sure

70. Is there anything else you would like to mention?

71. Thank you for your participation in the survey

Annex 4 Generic training plan: Initial RAMP training

Recommended arrangements prior to the training If none or just few of the below points are arranged prior to the training, you may require an additional day (day 0) to arrange any pending technical issues.			
1.	Have suitable smart phones in sufficient numbers available (Magpi will run on any Android device running Android 2.2 or higher and on I phones). For further details refer to: http://support.magpi.com/support/solutions/articles/4863-magpi-user-guide-for-the-android-mobile-app		
2.	All phones need to have SIM cards (data) ready to use (and already activated) with sufficient/unlimited data use. That would be particularly relevant if you would like to add pictures to the questionnaire.		
3.	Every phone needs to have a valid email account installed. An email id will be required to send permission to use the different forms.		
5.	Create a Magpi account for each phone on: http://home.magpi.com/		
6.	Download the Magpi application on each phone. https://play.google.com/store/apps/details?id=org.magpi.android&hl=en The application is free of charge.		
7.	Once the software and the questionnaire are on the phone, the enumerators can work offline, but need an option to upload data once a day (via 2G/3G or Wi-Fi).		
8.	Ensure access to a 2G/3G or wireless internet connection at the venue of the training.		
9.	A projector should be available		
10.	Pre-reading: http://www.rampsurvey.org http://support.magpi.com/support/home		
Day 1	Training of trainers ToT and supervisors		
1.	Form design	Refer to: http://support.magpi.com/support/solutions/folders/6000031009	2 hrs
2.	General aspects of a survey. General aspects of sampling	On general aspects. e.g. http://www.rampsurvey.org/generic-ramp-survey/ On sampling:	2 hrs

3.	Use of RAMP in project management	http://www.rampsurvey.org/pro/project-management-for-community-volunteer-programs/	1 hr
4.	Set-up of the survey system. E.g. who has access to the licence? Shared accounts? Set-up within the team		1 hr
5.	Practical exercise of designing the needed form for the project.		1 hr
6.	Assign training sessions for the next day		1 hr
Day 2 Training of enumerators			
1.	Introduction	General overview of the technology: https://vimeo.com/58915809 Videos should be downloaded before the training.	1hr
2.	General use of smart phones	Check credit, screen safer, charging	2 hrs
3.	Open an email account and set up the smart phone		1hr
4.	Upload MAGPI via “Play store”	https://play.google.com/store/apps/details?id=org.magpi.android&hl=en	1hr
5.	Upload a form into MAGPI		1 hr
6.	Use of the form in MAGPI, different type of options to answer	http://support.magpi.com/support/solutions/folders/6000031009 Label, Plain text, integer, Decimal, Drop down, Radio button, check box, date GPS,....	1 hr
Day 3 Training of enumerators			
1.	Use a simple questionnaire in the classroom	Interview other classmates	2 hr
2.	Upload completed forms		1 hr
3.	Share how would collected		1 hr

	data look in the overview		
4.	Upload a more complex form and use it		1 hr
5.	Field test the form, rest of the day	Have a person supervising the upload on the MAGPI dashboard: https://www.magpi.com/forms-dashboard	3 hr
Day 4	Training of enumerators		
1.	Collect feed-back from enumerators		1hr
2.	Give feed-back on the collected data	Use dashboard and project online	1.5hrs
3.	Convert the feed-back into adjustment if applicable	Use dashboard and project online	1.5hrs
4.	Give an overview of the options for the questionnaire	Use dashboard and project online	1hr
5.	Start real survey with supervision on every team, rest of the day	This is possible only if the area to be surveyed is nearby. If not, start the next day	
Day 5	Training of enumerators		
1.	Briefing for the day	Assign teams and areas	1hr
2.	Real survey with close supervision per team and on the dashboard	Have a supervisor/mentor on all the teams and a person monitoring the dashboard with the incoming data (applicable if the enumerators have mobile phone coverage). Ideally, correct any major mistakes.	6hrs
3.	Debrief	Receive a feed-back from the enumerators and give a feedback	1 hr
Depending on the accuracy and the level of independency of the enumerators you might add another day (Day 6) with a similar set-up. When the enumerators reach a level of proficiency, allow them to go on their own. If possible keep the “dashboard” monitoring on for the duration of the survey.			

Annex 5 Focus group discussions

1. Ministry of Local Government and Housing, Lusaka and districts of Choma and Sinazongwe/Maamba. Sustainable operation and maintenance for rural water supply

Discussion: Most of the local communities faced challenges in finding spare parts for repairing the water facilities, such as hand pumps. The government through the Ministry of Local Government and Housing and the Department of Housing and Infrastructure Development (DHID) has been running the sustainable operation and maintenance for rural water supply (SOMAP), which initially was established in six districts and are now operational across 27 districts. The districts of Sinazongwe/Maamba and Choma are included in the targeted areas. Though at the time of the survey, this programme was undergoing a mid-term review, nevertheless, in Sinazongwe/Maamba district local council has been running the SOMAP shop, which is fairly stocked, centrally located to the local community.

In Choma district, the situation is quite different. The shop being run by Southern Water and Sewerage Company Limited (SWASCO) was mostly out of stock and often remained closed. As a result, the local communities had to rely on private shops like Choma garage, Greenbelt Agro and Hardware Centre Ltd. To buy spare parts. The prices in the private shops are approximately 65 per cent higher than the SOMAP shops. This has had a negative impact on the community. Some communities have no or limited capacity to raise funds, therefore, end up staying without access to water from protected sources and are forced to look for alternatives.

During the meeting, it was highlighted that SOMAP project, with support from Japan International Cooperation Agency, has been working towards scaling up the outlet shops for the spare parts, and has been extended to 27 districts. A mid-term review report has been prepared in this regard but is yet to be shared via email by the principal engineer with the Ministry of Local Government and Housing, Lusaka office.

Other players: During the discussion, it was highlighted that the Ministry of Local Government and Housing is now using cloud-based approach to water and sanitation programmes. To this end it has trained community champions national-wide. In their new approach it was also announced to the members present that the Ministry of Local Government and Housing has incorporated Ministry of Chiefs and Traditional Affairs to facilitate the implementation of local community programmes. The senior chief Macha for Choma district is involved in reducing open defecation.

Following the combined efforts in improving water and sanitation in Zambia, it was reported by the Ministry of Local Government and Housing and Ministry of Health that since 2011 to date, the district of Sinazongwe/Maamba has been cholera. Previously, cholera had been endemic in this district.

On 8th September, the *look-back study* team visited the provincial office for the Ministry of Local Government and Housing/DHID in Choma district. During this meeting it was highlighted that among other stakeholders working in the water and sanitation sector, the Ministry of Chiefs and Traditional Affairs are now also working towards facilitating change in the local communities. This is mainly because

the local communities fall directly under the auspices of this ministry. Furthermore, it was brought to the attention of the members present that there has been transfer of operations of the SOMAP shop from Choma local council, the key custodians of the outlet shops, to SWASCO.

The Ministry of Local Government and Housing further informed the members that communities are being encouraged to apply for the water and sanitation facilities on the condition that they can raise up to ZMW 1,500 (USD 125) to be considered eligible for a borehole. Once these funds are received by the district WASH committee, it will be deposited into an account that is meant to help the community in the event that their facility requires repairs. Meanwhile, if operations and maintenance of the hand pump exceeds ZMW 500 (USD 45), the government will take the responsibility to help repair the facility using the ward development funds. However, if the repair costs are lower than ZMW 500 (USD 45), the community will cover the costs.

From the focus group discussions it was clear that the area pump minders are to work hand-in-hand with the government institutions. For example, each area pump minder is given a pricelist of the spare parts from the SOMAP shop so that they are able to advise the local community accurately on the prices of any items needed for the repairs. Similar price lists are also availed to the area counsellors for transparency.

Considering that tool kits are very expensive and the area pump minders could not be given a tool kit in each ward, the government has allocated one tool kit each to the regional health clinics. These are to be used by the area pump minders free of cost.

In addition to the traditional chiefs involvement, the government has been working with other stakeholders like UNICEF that is drilling approximately 40 boreholes per year nation-wide. UNICEF is using the community-led total sanitation (CLTS) approach.

World Vision Zambia is another organization that is working hand-in-hand with the government in delivering water and sanitation programmes in the country. They are also using CLTS approach. World Vision Zambia is operating in three regions, covering areas far away from where the Zambia Red Cross Society operated. Their operations in Sinazongwe/Maamba district, have proved to be a big challenge due to the chemical content underground, which impact the lifespan of the pipes used in the hand pumps. This issue was particularly faced by the local community from Tekelo ward, where most of the galvanized iron pipes used have corroded. In the discussion, it was highlighted that, despite the stainless steel pipes being expensive, World Vision Zambia has resorted to using them because they do not corrode. This has prolonged the lifespan of the boreholes.

Observation: Based on the discussions, it can be concluded that in Sinazongwe/Maamba district SOMAP has been very active. However, it was noted that the shops were not always attended to since those responsible for the sales were not always present. This particularly happened if the person in-charge had to go to the bank to deposit money. In such situations, the client would have made the journey to the shop in vain.

In Choma district, the overall running of the shop has been challenging due to limited turnover and the private sector taking over the business.

Since distances are long, it is challenging for the area pump minders to access the tool kits from the clinic. Hence, the area pump minders take too long to attend to the communities. This is especially the case if the area pump minders have not undertaken repairs for a long time since they have to raise funds to repair their mode of transport, i.e. bicycles that they received at the start of the project – five years ago.

2. Chief Macha

Discussion: Chief Macha is one of the senior chiefs in the area where these projects were being implemented.

Chief Macha recommended that CLTS approach be used since it is best suited for the given context. He also proposed that it would be best to mobilize the local communities from the villages and carry out trainings in the vicinity rather than conducting these in town, in which case most of the financial resource would get used up covering hotel bills.

He highlighted that some of the approaches, such as, casting sanitary platforms in the community and the quality of the ventilated improved pit latrines institutions, with his reason that, the facilities (ventilated improved pit latrines) were very expensive for the local communities to emulate because they are financially not sound.

Observations: From his comments, Chief Macha did not seem to have a full understanding of the approach that the Zambia Red Cross Society was using, for example, hygiene promoters, masons, village WASH committee members were all trained within their villages for practical reasons and using existing facilities.

3. Area pump minders

Discussion: The area pump minders expressed concern regarding the lack of tool kits. The place where the tool kits are available is far from their villages. Communities are finding it challenging to mobilize funds for repairs. As a result, the area pump minders do not carry out regular repairs. Hence, they in turn face challenges when it comes to repairing their bikes and travelling long distances.

Observation: Most of the area pump minders were selected and trained are still living in the same local communities, which is a good indicator for the sustainability of the project.

4. Community members

Discussion: Most of the community members complained against the area pump minders stating that they take long to respond when the hand pump breaks down. They also stated that they still do not know where to get the spare parts for the boreholes.

Observation: This was an indication that most of the community members were not very well sensitized after the SOMAP operations was scaled up by the government.

Annex 6 Zambia: Impact of currency fluctuations on pricing

Zambia's gross domestic product (GDP) growth rate has been stable in the past year. A high percentage of the state income is generated by copper and other ore/minerals.¹⁴ Even though the reports in the past year draw a positive picture about the situation, there are indirect negative signs of dependency. The copper price, for example, was on an all-time high in February 2011 at United States dollars (USD) 4.5 per pound. Currently, the price range is at USD 2.35 per pound.¹⁵ This has had an indirect impact on the foreign exchange rate of the Zambian kwacha (ZMW) that went from USD 0.1881 per ZMW (USD 1 = ZMW 5.3) to USD 0.0847 per ZMW (USD 1 = ZMW 12).¹⁶



The deflation of the ZMW has resulted in an increase in prices for imported goods impacting the cost of spare parts that are produced in neighbouring countries as well as the energy processes. This overall situation has had implications for water and sanitation sector. The Government of Zambia subsidises spare parts used in the construction and maintenance of rural water and sanitation infrastructure. Due to the constant fluctuations in currency, the government is unable to adjust the pricing (sustainable operation and maintenance for rural water supply (SOMAP) system), which ideally should be done on

¹⁴ http://www.africaneconomicoutlook.org/fileadmin/uploads/aeo/2015/CN_data/CN_Long_EN/Zambia_GB_2015.pdf

¹⁵ <http://www.infomine.com/investment/metal-prices/copper/5-year/>

¹⁶ <http://www.oanda.com/currency/historical-rates/>

weekly basis. If prices are not adjusted on a regular basis, the SOMAP system results in negatively impacting the income.