Towards Achieving A Sustainable Community-led Rural Water Supply Management Model in Zambia: Strides or Rhetoric?

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Abstract/Summary

Over 60 percent of the Zambian population live in rural areas with poor access to basic services, including improved water sources. In 2005 access to improved water sources for the rural population was estimated at 37 percent (GRZ, 2015) and this increased to 41.9 percent and 51.4 percent in 2006 and 2010, respectively (UNDP, 2013). The driver was the sector-wide reforms initiated in the mid-1990s. Despite this increase, maintenance of hand pumps remained a huge challenge leading to several hand pumps being abandoned on account of not working. The other reason that led to hand pumps being abandoned was the poor quality of water due to iron-rich groundwater. Overall, community-led management models seemed to have failed; grassroots management structures were not functioning; area pump menders acted with impunity; adequate regulatory mechanisms to control area pump menders were absent. Worse still, ineffective reporting structures overwhelmed these models. In Central and Luapula/Northern provinces, for example, boreholes were abandoned in 56.4 and 55.8 percent of communities investigated, respectively, mainly because maintenance was absent.

Key words
Iron-Rich Groundwater, Village WASHE Committee, Area Pump Menders, Community-led management models

Introduction

Rural areas in Zambia account for more than 60 per cent of the 13,092,666 people (CSO, 2011), but this population has low access to basic services including improved water sources. In 2005 access to safe water supply for the rural population was estimated at 37 per cent (MLGH, 2015) while the proportion of the rural population with access to an improved water source increased from 41.9 per cent in 2006 to 51.4 per cent in 2010 (UNDP, 2013). The driver was the sector-wide reform initiated in the mid 1990's which culminated in the establishment of new institutions and legal frameworks. One such institution was the Department of Housing, Infrastructure and Support Services (DHISS) responsible for water supply and sanitation including the mobilisation of resources to maintain and expand infrastructure and service provision under the Ministry of Local Government and Housing (MLGH). As a consequence, the National Rural Water Supply and Sanitation Programme (NRWSSP) was elaborated and developed in 2005 to guide all government and donor interventions in water supply and sanitation (WSS) in rural areas (GRZ, 2005) and, since then the NRWSSP has been directing all interventions and interventions in WSS in rural areas of Zambia. The component of operation and maintenance (O&M) of NRWSSP was designed to contribute to the achievement of the Programme objectives by ensuring that the operational rate of water supply facilities were at 70-80 percent all the time Agency (JICA) (GRZ and JICA, 2013). The core approach adopted was the Sustainable Operation and Maintenance Project (SOMAP) O&M mechanism and model which were developed and tested in two phases of the for Rural Water Supply (SOMAP1 and SOMAP2) implemented by the Ministry of Local Government and Housing with the technical cooperation by Japan International Cooperation Agency (JICA) (GRZ and JICA, 2013).

Amongst the many objectives that guided the reform process in Zambia, two of these were of direct bearing on strengthening community-based management, namely: promoting community management and integration of hygiene education in rural WSS; development of human resource capacity by promoting training in all institutions and Water, Sanitation and Hygiene Education (WASHE) training in rural areas (NWASCO, 2004). Despite the strong emphasis on community-based management in all rural WSS interventions, maintenance of these water supply sources have largely remained a very big challenge. A number of hand pumps were abandoned simply because they had not been repaired and thus not working while others were abandoned because of the poor quality of water due to high iron concentration in groundwater. Area pump menders (APMs) are tasked, within their areas of jurisdiction, to maintain and repair hand pumps and ensure that they were always in good working condition. The presence of a number of abandoned hand pumps unfortunately suggested that community-led management models had failed: Village Water, Sanitation and Hygiene Education Committees (V-WASHE) were non-functional; APMs had turned out to be very forceful, betrayed the cause of their communities and acted with utmost impunity as the system lacked adequate mechanisms to regulate them. In addition, maintenance fees charged by APMs were excessive and way above the range of approved maintenance fees. As a result, some hand pumps had evidently been vandalised by APMs because of the failure by communities to raise the demanded maintenance fees. It was common practice by APMs to remove parts of the hand pump, i.e. chain, hand pump head, etc., whenever communities were short of the demanded fees. Overall, the situation was further exacerbated by either the ineffectiveness of the community-led management model which in turn was compounded by the unclear reporting systems.

Community-led management of water supply in rural parts of Zambia is implemented through the Village Water Sanitation and Hygiene Education (V-WASHE) Committees who in turn are coordinated and supported by the District Water Sanitation and Hygiene Education (D-WASHE) Committees. D-WASHE Committees are a district level committee that are part of the formal district level planning process. They are constituted by representatives of government departments and institutions. The D-WASHE Committee is a sub-committee of the District Development Coordinating Committee (DDCC) and it is chaired by the Local Authority (Town Clerk or Council Secretary). The DDCC, on the other hand, is chaired by the District Commissioner while the Local Authority (Town Clerk or Council Secretary) is the vice chairperson.

This paper, therefore, looks at community-led management practices of improved water supply sources – particularly boreholes fitted with hand pumps – in rural parts of Zambia. It draws lessons from interventions made in rural areas of Central Province as well as Luapula, Muchinga and Northern provinces which were aimed at increasing access to improved water supply to local communities through two projects, namely: Central Province Rural Water Supply and Sanitation Project implemented from 2000 to 2007, and Rural Water Supply and Sanitation Project in 15 Districts of Luapula, Muchinga and Northern provinces implemented from 2010 to 2015. Importantly, both projects were also designed to contribute to communities that were better organized in managing their own water and sanitation services in a more sustainable approach.

Context, aims and activities undertaken

Water supply and sanitation (WSS) interventions in rural areas of Zambia from two projects were assessed. These are the Central Province Rural Water Supply and Sanitation (CPRWSS) Project which was implemented from 2000 to 2007 and the National Rural Water Supply and Sanitation (NRWSS) Project in 15 Districts of Luapula, Muchinga and Northern Provinces which was implemented from 2010 to 2015. While WSS interventions in Luapula, Muchinga and Northern provinces were implemented in 15 districts, WSS interventions in Central Province (CPRWSS Project) were implemented in four districts. A total of 3,477 water points were provided under the CPRWSS Project (AfDB, 2008) while a total of 2,653 water points were planned to be provided under the NRWSS Project, out of which 777 were supposed to be rehabilitations and 1,876 new water points (GRZ, 2015). However, only 1,847 new water points were constructed and a total of 1,847 V-WASHE committees trained and formed to manage the affairs of the water points (GRZ, 2015).

The assessment was aimed primarily at measuring the impacts WSS interventions had made to the local communities where these projects were implemented. Primary data was therefore collected from households through a household questionnaire. Other sources of primary data were focus group discussions (FGDs) as well as interviews with key informants. A total of 1000 households (500 households per project) were interviewed in the four districts of Kapiri Mposhi, Serenje, Samfya and Kasama districts – 300 household questionnaires each were administered in Kapiri Mposhi and Kasama districts and 200 household questionnaires each administered in Serenje and Samfya districts. Kapiri Mposhi and Serenje districts are in Central Province while Samfya and Kasama districts are in Luapula and Northern provinces, respectively. Despite planning for two (2) FGDs in each district, only one (1) FGD was held in Samfya District. Therefore a total of seven (7) FGDs were held during the assessment.

Stratified systematic sampling was used for primary data collection from households. The systematic approach guided the sampling pattern for the different beneficiary groups (i.e. schools, communities, health centres, and chief palaces). Sample population in each group was proportionate to the actual number of boreholes that were drilled and equipped with hand pumps for each project.

Community water points (boreholes drilled in communities) were entry points for each research area. Equal number of households were selected as respondents based on two aspects, namely: i) the geographical location of the household (i.e. north, south, west and east compass bearing with reference to the community water point), and ii) spatial location of the household (i.e. every other household, i.e. 1st, 3rd, 5th… etc., households). Therefore from each community water point, every other household located north of the water point was sampled until the last household was interviewed. This process was then repeated for households located in the south, west and east of the water point respectively, until the sample population in that community was achieved.

Main results and lessons learnt

The majority of respondents in all the four districts (Kapiri Mposhi and Serenje (CPRWSSP); Samfya and Kasama (NRWSSP)) were female. Female respondents in Kapiri Mposhi and Serenje districts made up 51.8 percent of respondents while those in Samfya and Kasama districts constituted 57.8 percent. Despite this, majority of households in all the four districts were male-headed households – 64.8 percent in Kapiri Mposhi and Serenje districts and 74 percent in Samfya and Kasama districts. There were 35.9 percent of household members that were above 18 years old in Samfya and Kasama districts and 33.9 percent in Kapiri Mposhi and Serenje districts. Therefore it was obvious that over a third of the population were generally matured enough to be effectively involved in community management of their improved water supply sources.

The common form of occupation by majority of the population in Samfya and Kasama districts was farming in which 89.6 percent of respondents were engaged. Classified Daily Employees and sole trading represented 3.4 per cent and 2.4 per cent, respectively. Other forms of employment included health workers, teachers and judiciary services workers. Health workers represented 0.8 per cent of respondents while teachers represented 0.2 per cent, so were judiciary services workers. Similarly, 84.6 percent of respondents in Kapiri Mposhi and Serenje districts were farmers while 12.4 percent were in trading (family businesses) and an additional 2.2 percent of respondents depended on life skills such as bicycle repairing, bricklaying, welding and carpentry for their sources of livelihoods. Farming was typically subsistence in nature were families only grew enough crops for their family consumption but only sold excess harvests.

Different sources of water supply were used in all the four districts and these included boreholes, protected wells, unprotected wells and open surface water bodies. In general, some of the protected wells were modified and fitted with India Mark II hand pump and very rarely was the windlass used. In Samfya and Kasama districts, 68.5 percent of households collected water from boreholes for their drinking purposes while 16.5 percent of respondents collected their water from protected wells. In addition, 6.8 percent of respondents used unprotected wells as sources of water for their drinking uses although 8.5 percent of respondents used open surface water bodies as sources for their drinking water requirements. In Kapiri Mposhi and Serenje districts, however, 80.6 percent of households depended on water supply from boreholes for their drinking purposes while 10.0 percent depended on unprotected wells for their drinking water supplies. Furthermore, 5.2 percent of respondents in Kapiri Mposhi and Serenje districts depended on protected wells for their drinking water supplies while 4.2 percent used open surface water bodies for their drinking water supplies (see table 1 for sources of water supply for household uses).

Table 1: Sources of water supply for household uses

Uses	Water source types (percent)							
	Kapiri Mposhi and Serenje districts				Samfya and Kasama districts			
	Borehole	Protected well	Unprotected well	Surface waterbodies	Borehole	Protected well	Unprotected well	Surface waterbodies
Drinking	80.6	5.2	10.0	4.2	68.5	16.5	6.8	8.5
Cooking	80.4	5.0	10.6	4.0	68.5	16.5	6.8	8.5
Bathing	79.6	5.4	10.8	4.2	73.1	13.8	5.4	7.7
Washing clothes	79.6	5.8	10.4	4.2	74.6	13.1	4.6	7.7
Washing utensils	79.6	5.4	10.8	4.2	74.6	13.1	4.6	7.7

Source: Author's research findings data analysis (2016)

Therefore, the primary source of drinking water supply in all the four districts were boreholes, as such effective community-led maintenance systems was critical to guaranteeing continued operations of boreholes for optimal service provision to the local communities.

It was common for communities in all the four districts to rely on multiple sources of water supply for their household requirements. In Kapiri Mposhi and Serenje districts for example, 90.4 percent of respondents relied on between two (2) and seven (7) sources of water supply compared to 9.6 percent that depended on only one (1) source. This situation was mirrored in communities in Samfya and Kasama districts where 6.8 percent of respondents wholly depended on one (1) source of water supply compared to 93.2 percent that depended on between two (2) and seven (7) sources of water supply. This dependency on multiple sources of water supply by communities in the four districts indicated the lack of reliability of water supply from improved water sources. This, therefore, showed that not all water sources were functioning in all the four districts. A total of 53.7 percent of respondents in Kapiri Mposhi and Serenje districts, for instance, had reportedly between one (1) and four (4) water sources abandoned in their respective communities compared to 43.6 percent of respondent where none of water sources were abandoned within their communities.

Similarly, not all water sources were functioning in Samfya and Kasama districts. The number of abandoned water sources ranged from a minimum of one (1) to a maximum of six (6). A total 61.2 percent of respondents had reportedly abandoned between one and four water supply sources within their communities while 38.4 percent of respondents had reportedly abandoned none of their available water supply sources.

There were various reasons that led to abandoning water supply sources and these included: long distance to water supply source; poor water quality; broken down water supply points (not functioning); personalization of boreholes; failure to contribute towards O&M; protected well collapsed, and dried up water points (see Table 2 for collated summary of responses).

Table 2: Reasons for abandoning water points in the four districts

Reason	**Kapiri Mposhi and Serenje districts**		**Samfya and Kasama districts**	
	Frequency	**Valid per cent**	**Frequency**	**Valid per cent**
Dried up water points	74	26.4	11	3.6
Declining groundwater levels	6	2.1	-	-
Long distances to water points	3	1.1	112	36.4
Restricted access; borehole personalised	7	2.5	1	0.3
Poor water quality; i.e. rusty, dirty water	36	12.9	31	10.1
Water points broken down and not functioning	154	55.0	144	46.8
Failure to contribute towards O&M	-	-	1	0.3
Protected well collapsed	-	-	8	2.6
Total	**280**	**100.0**	**308**	**100.0**

Source: Author's research findings data analysis (2016)

The main reason for communities abandoning water supply points in all four districts was the breaking down of hand pumps (55 percent of respondents in Kapiri Mposhi and Serenje districts and 46.8 percent of respondents in Samfya and Kasama districts). This was followed by the drying up of water points for communities in Kapiri Mposhi and Serenje districts while in Samfya and Kasama districts the second reason was the long distance. The long distance to water supply points made 36.4 percent of respondents in Samfya and Kasama districts not to use alternative water supply sources. The third most common reason that forced communities to abandon their water supply sources was the poor quality of the water (see table 2).

Broken down hand pumps pointed to the lack of maintenance. Maintenance of boreholes was a function of area pump menders (APMs). APMs are volunteers from amongst the community members that were trained in the operation and maintenance (O&M) of hand pumps, and were generally paid in kind or cash as prescribed by District WASHE Committees. Payments made to APMs by communities were fundamentally meant as motivation and not as wages. Ideally, each beneficiary community contributed to the sustainable management of boreholes and this was mainly achieved through mobilizing households to regularly contribute towards O&M of the water point. This, unfortunately, was never the case for majority of communities but where this was done, it was often reactive in nature – i.e. contribution only made when a hand pump broke down. In majority of cases where communities only made the contributions when the hand pump broke down, it was also common that such contributions were often not adequate to cover the full cost of repairs (spare parts and labour) and thus hand pumps were never repaired.

Nonetheless, it was obvious that the presence of active and dedicated APMs provided long term sustainability to rural water supply infrastructure. Unfortunately, APMs were absent in majority of communities in all the fours districts assessed. In Samfya and Kasama districts, for instance, only 31 percent of respondents revealed that they had active and dedicated APMs in their areas while 69 percent did not have active and dedicated APMs within their communities. The same trend was showed in Kapiri Mposhi and Serenje districts where 30.8 percent of respondents had active and dedicated APMs within their communities compared to 69.2 percent of respondents that did not have active and dedicated APMs within their communities.

Besides the absence of APMs in majority of communities, fees demanded by APMs were generally very high. Majority of communities failed to meet the costs demanded by area pump menders. In Samfya and Kasama districts, APMs charged as high as ZMW 350 whilst those in Kapiri Mposhi and Serenje districts charged at most ZMW 200 for repairing of a hand pump. Maximum amount recommended by D-WASHE as community appreciation for services provided by APMs was ZMW 100. In addition to those exorbitant fees demanded by APMs, access to spare parts was an issue to majority of communities. Whilst some communities bemoaned the high costs of spare parts, other communities had no information on where to go for spare parts.

The difficulty of communities not affording the cost for repairing hand pumps would have been eased by regular contributions from households. Ideally, communities were encouraged to contribute towards maintenance of hand pumps once monthly to avoid being overburdened once the hand pump broke down. Nevertheless, it was common practice for communities to contribute towards maintenance of hand pumps only when the hand pump broke down. Only 9 percent contributed regularly towards maintenance of water point in Samfya and Kasama districts compared to 91 percent that did not. Similarly, in Kapiri Mposhi and Serenje district only 8.1 percent contributed regularly towards maintenance of hand pump while 91.9 percent never contributed regularly towards the maintenance of water supply point. It was therefore clear that, the tradition to regularly contribute towards maintenance of water points was absent. This, nonetheless, needed to be strengthened if community-led management models of rural water supply had to be realised.

The other reason linked to the lack of regular maintenance of water points was the absence of effective area water committees, the V-WASHEs. Even though V-WASHEs were established during the course of project implementation, these committees were largely non-existent while in communities where they existed, they were generally ineffective. It was apparent that not enough effort and time was invested in establishing functioning V-WASHEs. Majority of V-WASHEs were formed just before the drilling of boreholes and hence they hardly made any inroads in assuming meaningful ownership of the water points. Furthermore, very limited training was given to V-WASHEs both during project implementation as well as post project implementation. As a result, it was not surprising to learn that majority of V-WASHE committees become moribund just months after their formation. As such, community members had nowhere to report to whenever water points broke down. This unfortunate state was further exacerbated by the 'not-so-clear' reporting channels within community-led rural WSS management system to which APMs took advantage. It was evident , therefore, that APMs wielded a lot of power within communities – obviously taking advantage of gaps within reporting lines – and could vandalise water points at will, knowing very well that they would neither be reprimanded nor sanctioned by the V-WASHE. Inappropriately so as the situation may appear, some water points were abandoned merely because APMs had wilfully removed either a pump head, a chain or even riser mains, rods and pump from boreholes for the simple reason that the affected communities failed to raise enough money to meet their demanded costs of repairing the hand pump.

Full community participation appeared to also have lacked in both projects. Communities were largely used as instruments for the 'smooth' implementation of projects in their respective areas other than as 'equal' implementation partners. Little or no community mobilization post project implementation was observed in all the four districts although this was mostly blamed to inadequate staffing levels at District Rural Water Supply Unit as well as time and financial constraints. There was only one officer responsible for rural water supply and sanitation at local authority level in all the four districts and none of the districts had a coherent plan on building the capacities of V-WASHEs. Therefore, community-led management structures that were established at project implementation were not only deprived of the much needed nurturing and mentorship from the District but also continued to exist without fundamental skills in organizational management and leadership. In addition, it was apparent that the two structures (grassroots structures (V-WASHE) and district structures (D-WASHE)) existed in complete isolation – there was no evidence of V-WASHE involvement in planning interventions in rural WSS or being consulted for purposes of providing inputs into the broader RWSS plans for the districts. As such, more focused support and interventions were required not only in ensuring that the identification of locations for water points were done in sufficient consultation with women in order to ensure ownership, proper usage and sustainability for the infrastructure but also strengthening the grassroots structures. Furthermore, V-WASHEs needed to be continuously trained and exposed to skills in organizational management and leadership, particularly records and book keeping; participatory approaches; community resource mobilization techniques; general hand pump maintenance techniques; hygiene education as well as gender sensitisation for them to become effective.

High iron content in groundwater was the main cause of the poor quality of the water. High iron had been reported in some boreholes in all four districts. GRZ and JICA (2013) reported high iron content in majority of groundwater as well as aggressive pH environment in their study conducted in Luapula, Central, Northwestern and Copperbelt provinces. The preliminary results from the 1st Field Water Quality Analysis showed that *'…Most readings except on Mapipo village water point were greater than 10mg/l with a few varying between 1.89 to 7.5 mg/L but still above the ZABS drinking water standards. This shows that all sites selected (excluding Mapipo) had problems of high iron levels'* and *'…All measured pH readings were less than 7 and varied from 5.56 to 6.89 suggesting fairly acidic conditions though within the drinking water standard limit'* (GRZ and JICA, 2013). The Zambia Bureau of Standards (ZABS) iron standards in drinking water is 1 mg/l while that of pH is 6.5-8 (ZABS, 2010) Therefore, from the 1st Field Water Quality Analysis GRZ and JICA (2013) concluded that all water points were under acidic conditions (pH< 6.8) and very low alkalinity suggesting a corrosive environment, and that all abandoned water points had elevated iron levels beyond acceptable ZABS standards for drinking water (water was brown in colour and with a metallic taste suggesting corrosion). However, a decrease in iron concentration in groundwater was noted upon cleaning (purging) the boreholes. Iron content was higher than 2 mg/l except on Mapipo village, where iron was within the limit before cleaning (purging) the boreholes but it became less than 1 mg/l on several sites except for Mapipo after the boreholes were purged (GRZ and JICA, 2013). As a result, GRZ and JICA (2013) concluded that water types on all sites were fresh. This, therefore, suggested that iron was being introduced into the borehole through other sources other than the natural geological formation environment. Consequently, GRZ and JICA (2013) determined that the iron measured from the selected samples was from corroded components of the water point and not from the geological formation. This was supported by the fact that iron concentration in groundwater decreased significantly after borehole cleaning and introduction of Afridev hand pump fitted with stainless steel rods. It has to be emphasized, nonetheless, that in some areas the elevated iron content in groundwater was because of the natural geological formation environment and these needed a different solution, i.e. the use of iron removal filters. Therefore, high iron concentration in groundwater was attributed to either natural environment or leaching from galvanized iron (GI) pipes and rods because of the aggressiveness of the groundwater.

Other causes of poor water quality were suspended solids. Very high suspended solids contents in some borehole water were also observed especially in Samfya District. This incident, nevertheless, was not very widly spread. The main explanation for high contents of suspended solid was the poor workmanship which could have been averted through effective supervision of the drilling contractor.

Just as putting in place a functional V-WASHE was important, establishing the quality of groundwater prior to completing the construction of the water supply point was also cardinal. Groundwater quality sampling and analysis is an important component of the rural water supply system and should be done preferably at pumping test stage before commencement of any construction works. The groundwater quality results should inform the eventual completion of the water supply point: whether or not the construction to be done; construction of the water point with peripheral structures such as iron removal systems; type of riser pipes, rods and pump to be used, i.e. stainless versus galvanised iron (GI), etc. The use of water quality data to inform the technical aspects of rural WSS projects in the four districts appeared to have been incoherent. In Samfya and Kasama districts for example, while water quality analysis was done, there was no proof however that this inputted into the eventual completion of water supply points. This was evidenced from the fact that groundwater was generally aggressive (low pH) but GI riser pipes, rods and pump were still used. In addition, some water points with high iron concentration levels were not equipped with iron removal filters.

Despite this, there are a number of lessons to be drawn from the study and these broadly covered all aspects of rural WSS chain, namely: systems and structures; governance and technologies. In order to strengthen community-based management of water supply resources, it was fundamental that community-led rural WSS management models were made more effective and functional. V-WASHEs needed to be much more engaged if they were to be relevant and contribute to community ownership of water supply infrastructure. A self-motivated V-WASHE was therefore fundamental to a strengthened community-based management of water supply sources especially because serving on the committees was purely based on voluntarism. Some of the lessons gained from the assessment are as follows:

It takes long to anchor and nurture V-WASHEs
A lot of time and support is required in establishing V-WASHEs. Prior to the construction of a water supply point and in order for V-WASHEs to be effective, a lot of capacity has to be built within the committee. This requires an adequate lead-time of structured training culminating into the general understanding of all aspects of their water supply.

Software key to community-led RWSS management model
Long term sustainability of rural water supply is founded on effective operation and maintenance of the water supply infrastructure. Communities would only take appropriate actions once they know why such actions are necessary. The case in point is the failure to sustain regular community contribution towards the maintenance of water supply points. It is only through effective communication and community engagements were such issues could be resolved.

Community ownership in never realised without full community input
Rural WSS interventions should be led by community members. Communities should select sites for water points and should be fully involved in supervising their construction. Records of construction supervision reports compiled by community members should be kept at grassroots structures (V-WASHEs) and be used as management tools.

Groundwater quality analysis must take place before the construction of water point
Completion of construction of water points should only be done once the groundwater quality analysis reports have been conducted. The use of stainless steel riser mains, rods and pump in aquifers with aggressive groundwater (low pH) would guarantee the long-term supply of good quality water to rural communities, so is the use of iron filters in groundwater with naturally high iron concentration. Otherwise, confidence in hand pumps by rural communities will continue to be eroded while substantial amounts of money lost through abandoned water supply points.

D-WASHEs oversight of V-WASHEs vital in improved management of RWS
Continued provision of support, training and capacity building programmes by D-WASHEs is important to developing a responsive community-led management tier. D-WASHEs should also provide full oversight to V-WASHEs as well as an active platform for community interaction. Regular visits of V-WASHEs by D-WASHEs would provide the needed motivation to grassroots structures.

Linking V-WASHEs into already established community-led initiatives particularly in health sector is vital
The lack of funds to sustain community-led management activities should not be reasons enough for V-WASHEs to be ineffective. Community-led programmes have been successfully implemented in the health sector, i.e. Neighbourhood Health Committee (NHCs). Therefore linking V-WASHEs activities into NHCs programmes would be beneficial to strengthening community-led water supply management models.

Conclusions and Recommendations

In line with the goal of the National Rural Water Supply and Sanitation Programme of providing sustainable access to water supply and sanitation in rural areas so as to contribute towards poverty alleviation of Zambia's rural population (GRZ, 2007), interventions in WSS were supported in 15 district of Luapula, Muchinga and Northern provinces as well as Central Province. Key to rural WSS interventions are the promotion of community management and integration of hygiene education as well as development of human resource capacity by promoting training in all institutions and WASHE training in rural areas. Therefore, the impact of the interventions was assessed with regards to the success of community-led management practices of rural water supply points.

It was obvious from the assessment that although V-WASHEs were established at all water points that were constructed by the two projects, these committees were no longer existing or functioning. Not enough time was given for nurturing and developing the V-WASHEs. There was also very little investment that were made into building the capacities of V-WASHEs (i.e. provision of targeted trainings). This was further exacerbated by the unclear reporting channels of the V-WASHEs as well as the absence of effective oversight that D-WASHEs failed to provide to V-WASHEs.

Furthermore, it was noted that majority of water points were abandoned because they were no longer working. Lack of maintenance was the main reason attributed to water points not working. In majority cases, communities had failed to raise moneys demanded by APMs for repairing hand pumps. Moneys demanded by APMs for repairing hand pumps were generally high – ranging from a minimum of 100 percent to a maximum of 250 percent higher than the accepted maximum allowable fees. Nevertheless, the failure by communities to regularly contribute towards the maintenance of water supply points attributed to their inabilities to meet the costs for repairing of hand pumps demanded by APMs.

Other reasons for abandoning the water supply points were the poor water quality. High iron concentration in groundwater was the main reason for the poor quality of the water. Sources of high iron concentration in groundwater were either due to the natural environment or corroded GI pipe riser main, rods and pumps because of the low pH (aggressive groundwater). Therefore, good borehole designs are fundamental. Best practices in planning and developing groundwater source for water supply should always be ensured.

Therefore, in order to strengthen community-based management of rural water supply schemes, the following have been recommended:

(i) Invest adequately in establishing community-led management structures both in terms of time and training
(ii) Provide adequate time for the software component of RWS projects to be implemented
(iii) Tap RWS grassroots structure into already existing government interventions that have succeeded
(iv) Ensure full and effective community ownership is essential for a successful community-led management intervention
(v) Stronger and active D-WASHEs leads to a stronger and active V-WASHEs – building strong community-led management structures are a continuous process
(vi) Use of technologies that is responsive to local environments would guarantee continued access to water supply sources

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