10 TOWARDS COMMUNITY OWNERSHIP AND MANAGEMENT OF RURAL WATER SUPPLY SCHEMES

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ABSTRACT

A paper by Mark Schapers (2015) looked at "the complex arrangement between technical, political and social structures" in rural (ground) water supply schemes in KwaZulu-Natal and concluded, among other issues, that greater successes are observed when the technical and social components have a greater interaction. In rural Botswana, water supply sustainability is a significant issue, as there are small, remotely located populations, and therefore the unit cost of supply, as well as operations and maintenance costs (both in terms of finances and human and other resource deployment), are extremely high. Botswana has recently approved (as of October 2016) a new policy which calls for the establishment of water committees in rural communities, moving toward a community-based management model – such as is used in Namibia. The project targeted the Habu community (1500 people) and used elements of the highly successful Namibian Community-based management approach, contextualised for the new policy in Botswana. The methodology was to use a simple scheme design, and also develop a governance and technical training course (including management tools). In addition, the community-based management structures were established. Finally, a simple tariff system was designed and implemented in the community. The project was implemented in collaboration with the relevant government structures in Botswana, and the assets (infrastructure) ownership will be transferred to the Government of Botswana as represented by those structures. The tariffs collected from the community, by the water committee are therefore kept by the community in lieu of an O&M contract, which is a highly unusual structure in Botswana. The governance training and management tools have worked extremely well in the community, and most of the households have registered and are paying their monthly fee to collect water from the 5 standpipe taps - one per ward. The committee includes two caretakers and 5 water monitors who manage the volume of water collected by each household. People in the community have proved to be willing to pay for their water, and the taps are well managed. Both the caretakers, and the water monitors are paid a stipend out of the tariffs collected. The committee is in the process of arranging a donation from an external source for fencing materials and are also planning to construct an office. The scheme is in its fourth month of operation and is growing each month. It could be a model for sustainable rural water management for remote communities in Botswana.

INTRODUCTION

In 2015, a paper by Mark Schapers entitled "A collective look at Groundwater supply projects in the greater Manguzi area, KwaZulu Natal, South Africa; and an assessment of the complex arrangement between technical, political and social structures", looked at the sustainability issue in groundwater schemes in rural KwaZulu-Natal, and the impact of the political, social and technical arrangements that had an impact on sustainability in four water supply schemes in KwaZulu-Natal.

Conclusions from that paper indicated that the political component has a significant impact on the community expectations of the project, and that politicians need to be accountable to those expectations. In addition, the greater the overlap between the political, social and technical spheres,

the more likely the project is to succeed in the long term. For example, a project that includes a simple technical design that is promoted by local politicians in order to ensure that community expectations are aligned to that simplicity, and governance and technical capacity building is implemented alongside the infrastructure component, to promote community ownership of the scheme, will address the requisite sustainability factors.

The project to which this paper refers was based in Botswana and targeted water supply and sanitation in the Habu community, located in the North-West District of the country. The funding for this project was provided by an external private donor, and therefore the question of how sustainable the infrastructure project would be, was paramount; and the issue of sustainability needed to be integrated into the project design from the outset.

Notwithstanding the project conditions, sustainability is increasingly becoming the watchword for the water sector, as evidenced by the current thinking and literature with regard to water supply schemes in developing countries, and as reflected in the Sustainable Development Goals (SDGs) – Goal 6 being to "Ensure availability and sustainable management of water and sanitation for all".

CURRENT CONTEXT OF RURAL WATER SUPPLY IN DEVELOPING COUNTRIES

Up to 2015, the focus in the water sector has been on providing access to infrastructure, as reflected in the Millennium Development Goals (MDGs). While many developing countries met the MDG targets in urban water supply, rural areas were neglected.

It is widely acknowledged that there is a substantial gap between urban and rural water supply provision, owing in part to the high unit cost of supply, and the lack of potential cost recovery for services in rural areas. In addition, the sustainability of rural water supply is very much in question.

From the 1990s to date, various sources, papers and surveys looking at water supply operational status, have indicated that the percentage of existing water supply schemes that are not functioning ranges from 30 to 40% (Lockwood & Smits, 2011), even 30 to 60% according to the World Health Organisation (Davis & Brikke, 1995).

In that same period, in order to address both the urban-rural disparities, and to find new solutions to the problem of the sustainability of rural water supply investment, new approaches to rural water supply have emerged. There has been a switch from centralised, government-based, supply driven approaches to more decentralised, demand-driven models, with increased community participation and involvement of local operators. More recently, and particularly in the last decade, many developing countries are moving to entrenching community-based management (CBM) in their water policies.

CBM is a critical component of sustainability in rural water supply, but there are a number of other factors which must be considered.

SUSTAINABILITY FACTORS IN RURAL WATER SUPPLY SCHEMES

There are a number of factors that contribute to the sustainability of a water supply scheme in the rural context of sub-Saharan Africa, or indeed the developing world. As early as 1990, Ngumbu (as referred to in David & Brikke, 1995) suggested the following as key contributing factors for rural water sustainability:

- An enabling environment
- Felt need and health awareness
- Strong institutions
- Supportive attitudes
- Expertise and skills
- Appropriate service level
- Appropriate technology
- Materials and equipment
- Support services
- Financial matters

The factors listed above indicate clearly the importance of all 3 components highlighted in Schapers (2015); political, social and technical.

Sanders & Fitts (2011) suggest that a key factor in rural water supply sustainability, is ownership, in the sense that "communities […] lacked a sense of ownership for the infrastructure and its service. As a result, when [these] broke down the community did not see the problem as being theirs". While this is often the case, and in the (main) author's personal experience in the field, this issue arises with problems as inexpensive and easy to solve as a broken gate key, communities often lack the capacity, or do not have knowledge of the infrastructure "setup" to make the necessary repairs.

Even with simple infrastructure such as handpumps, studies such as RWSN (2010) highlight that only 2 out of 3 schemes using handpumps are "operational at any given time". The key findings of WaterAid study in the Niassa Province of Mozambique (Jansz, 2011) suggests that there are four key sustainability factors for rural water supply, as follows: policy, capacity, community management models and external support, once again highlighting the overlap between political, social and technical factors.

In the last five years, the term "WASH" – an acronym for Water, Sanitation and Hygiene, is increasingly being used in reference to basic services in rural communities, indicating that the environmental component of water supply is also a key factor in sustainability. Sabotal *et al* (2014), state that 5 key factors are critical for sustainable WASH interventions, as follows:

- "Technical appropriateness.
- Continuing functionality through design life.
- Social acceptability to the community.
- Economic viability.
- Protection of the environment and natural resources (Brikke & Bredero 2003)."

This list refines and consolidates the sustainability issues, in the current context, which looks at water supply in the more integrated WASH framework.

So, the contributing factors for sustainable rural water supply are well documented, and have been for many years. We know what to do to get it right, and community-based management is a critical factor, which a number of sub-Saharan African countries are now implementing. One of these is Namibia.

The project to which this paper refers was located in Northern Botswana (North West District, or Ngamiland), and given the proximity of Northern Botswana to Namibia, and the fact that the rural community context is similar, we used the Namibian Community-based management model in the Habu water supply and sanitation project.

PROJECT BACKGROUND

The Namibian CBM model

The Namibia Community-Based Management (CBM) strategy was developed in the late 1990s (MAWRD, 1997) in Namibia and implemented in all regions. Modifications that were necessary on the ground changed the structures from those outlined in the original strategy, but the model remains in place today, and has proved to be very successful in terms of sustainable management of rural water supply.

An assessment conducted by the Luxembourg Development Agency in 2010 found that although there were some conflicts in communities, and

the monitoring and evaluation and support from the Regional office of the renamed Directorate of Water Supply and Sanitation Coordination (DWSSC) needed strengthening, on the whole "[water points] in Kavango are relatively well-managed and the condition of installations is good" (LUX Development 2010).

This assessment was carried out approximately 6-7 years after installation of many of the water points and over 95% were found still to be delivering water to communities, with over 80% of communities reporting (anecdotal information) that the water was good for human consumption.

The basic premise of the model is that communities should be capacitated to manage their own infrastructure, and the duties of the committee are to ensure that the water supply is used by registered members of a constituted Water Point Association (WPA), to raise small tariffs from the WPA members in order to be able to operate the water point on a day-to-day basis and keep the water flowing.

The WPA then elects a Water Point Committee (WPC) to carry out the various functions including minor maintenance of the water point infrastructure. The WPC receives training from DWSSC in Water Point Committee skills, such as reporting, raising and accounting for tariffs etc., and the caretakers (2) receive additional technical training tailored to the type of infrastructure installed in the community – e.g. diesel or solar / electric pumps. Major maintenance is conducted by the technical team of DWSSC, and the community (in fact, the WPC) has the responsibility to report major issues to the Extension Officers from the Regional office.

The mechanisms by which water points are managed under this model are as follows:

- The Agreement of Lease, which defines and delineates the legal obligations of both the WPA and the government during the phase of O&M. Therefore, Water Utilities will have to provide all operation and maintenance services, spare parts and consumables for free until the Agreement of the Lease is signed between the community and them, marking officially the commencement of the operation and maintenance phase.
- The Ownership Agreement, which specifies ownership over water supply infrastructure and defines the respective responsibilities of the Water Point Association and the government for full cost recovery of water supply and replacement of equipment.

The Regional Offices have a number of Extension Officers as well as Chief Extension Officers based in the main centre of the relevant Region. Many Regions also have satellite officers in other urban or peri-urban areas. The Extension Officers are responsible for providing institutional support to WPCs. A technical team based at the main Regional Office is responsible for conducting infrastructure inspections and coordinating major maintenance.

The Namibian model is functioning well and has proved to have good sustainability (according to the LUX-Development reports mentioned earlier in this section. Conditions in Botswana communities in the North West District, are relatively similar to those of communities in the Kavango and Zambezi Regions of Namibia where the LUX-Development review was carried out, and therefore formed a good basis for the approach taken to the Habu project, and within the new policy context in Botswana.

Botswana policy and water sector institutional context

In October 2016, Botswana approved a new Water Policy (not printed yet, but revised from the Draft National Water Policy of 2012), adopted in October 2016, and at the same time as a Ministry reshuffle resulted in the establishment of the Ministry of Land Management, Water and Sanitation Services (LMWS). The LMWS is now the lead agent in Botswana for the water and sanitation sector.

The switch to CBM-type approaches to water management arose from the Integrated Water Resources and Water Efficiency Plan (IWRM-WE) of 2013, where Strategic Area 8.5 is aimed at a "Review the operation of (the few) existing water use associations, who actually manage and maintain water sources at the local level". These existing WUAs are mainly focussed on the agricultural sector, but the review was targeted at the establishment of community-based organisations (CBOs) as WUAs and refers directly to the Namibian model.

However, with the policy in its infancy in terms of implementation, there are currently no mechanisms in place to give effect to the policy – such as Extension or Support officers at Regional offices of the Department of Water and Sanitation (prior to October 2016, this was the Department of Water Affairs), or support structures for WUAs, or training materials.

The institution with the responsibility for water supply provision in all areas is Water Utilities Corporation (WUC), but WUC does not provide water for livestock, and are only responsible for drinking water. The relevance of this will become clear when the governance structure of the project is discussed later in the paper. The WUC took over all water and wastewater infrastructure in March 2014, some from the then Department of Water Affairs (DWA), and some from the District Councils, where previously WUC had only been providing urban bulk water. There was previously no charge for water provided by the Councils, or by Water Affairs, but people were told that they had to pay for water when WUC took over. In addition, WUC had to deploy staff and resources to read meters in rural villages – some of which are very remotely located, and require 4x4 transport to reach.

In essence, the institutional structure for water supply in Botswana was in something of a state of flux at the beginning of the Habu project in October 2015, with the new policy not yet approved, and the WUC only relatively recently having taken over rural water supply responsibility.

The Habu Community

The Habu community is located approximately 170 km from Maun in the North-West District of Botswana, on the edge of the eastern Okavango Delta. The community is relatively small, with a population of approximately 1,200 people, about half of whom are almost permanently residing at a number of cattle posts about 10 km from the village of Habu. There are about 220 households in Habu Central, about half of which are permanently occupied. The village has 5 wards and the community structures that existed at the beginning of the project are the Village Development Committee (VDC), the Parent-Teachers Association (PTA), the Village Health Committee (VHC), the Habu Farmers' Association and the Habu Elephant Development Trust (HEDT). The primary livelihood within the community is livestock farming.

At the beginning of the project, 40 households had connections to the 59 km WUC pipeline from the village of Nokaneng (about 50 km away by road). However, the pipeline is in poor condition, and therefore the community experienced frequent interruptions to supply; at the start of the project there had been no reliable water supply in Habu for a period of almost 3 years.

The community were getting water from two private boreholes or from hand-dug wells, and identified that the quality of water in the wells was extremely poor. Payment was given to the owners of the boreholes in terms of fuel for the pumps, or direct payment for the water. The 40 private connections to the WUC pipeline were also paid for by the householders when they were installed. In other words, the community were well aware that water from a tap comes at a cost, and there was a willingness to pay for water when the project started. Rainfall levels in the 2015-2016 rainy season in Botswana were very low, which meant that access

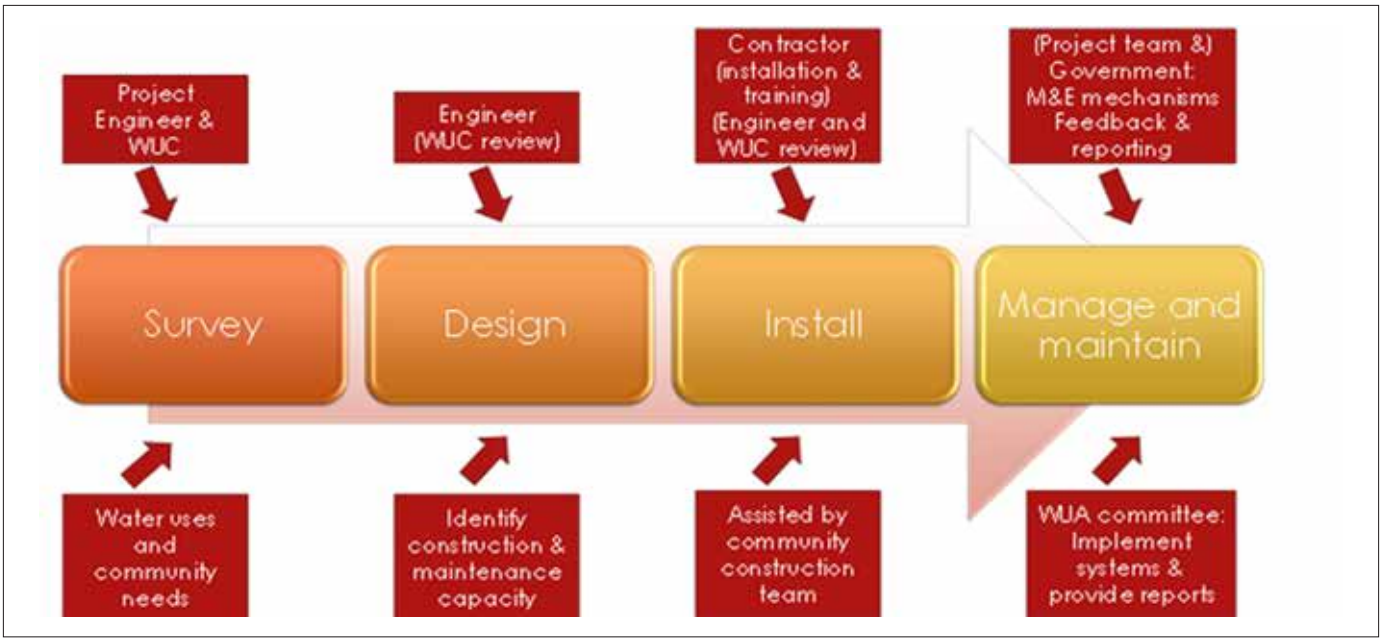

FIGURE 1: Habu CWS project process

to water from hand-dug wells was difficult, and the quality of water was extremely poor.

THE HABU COMMUNITY WATER SUPPLY (CWS) PROJECT

Project overview

The Habu Community Water Supply and Sanitation Project ran from October 2015 until December 2016, and included both water supply and sanitation components. The project was implemented with the support of the Paul G Allen Family Foundation (PGAFF) and also received donations of water infrastructure from the Franklin Wells of the World Foundation. It came about as a result of a Community Needs Assessment supported by PGAFF, from which it arose that the most critical need was a water supply.

Objectives of the project were to design, construct and commission borehole infrastructure to supply water to the community and their livestock excluding cattle (i.e. goats, donkeys, sheep and horses) and to implement a sanitation programme in the community, using the Community Led Total Sanitation (CLTS) methodology. Because this paper is focussing on the water supply component, no further discussion of sanitation will be entered into here.

The basic process for the water supply component of the programme, as shown in Figure 1 below, were translated into Setswana and discussed with the community prior to implementation. Explanations of each stage of the process were also discussed in a meeting with the community. Comments and questions were taken and the team received positive feedback from the community. No changes were made to the project design.

A poster in Setswana of the Figure below was made for the community to put up on the wall of the VDC office.

Project steering and community institutional arrangements

Institutional arrangements were established in the community for each component of the project, as follows:

An "Umbrella Committee" composed of representatives from the community-based structures mentioned above (and in addition a representative from the Office of the Chief) was formed to oversee the implementation of the project. Members of this Committee were engaged at each stage of the project, and monthly meetings were held with the Committee to discuss any issues that arose throughout the project. The field component of the project team was comprised as follows:

- Field support person to conduct monthly meetings with the community in Setswana and maintain project- team-community committee relations: This person dealt with any questions, issues and problems the Umbrella Committee was experiencing with any of the technical implementation processes
- Implementation support person to facilitate all technical activities in conjunction with representation from the Umbrella Committee: This person served as a facilitator in Setswana between the community and any technical practitioners e.g. geohydrologist who conducted the survey, construction/ installation contractors etc. and either conducted or facilitated all trainings (technical, governance, WASH education etc.)

There was a specific allocation of budget in the project, to the task of relationship building – which encompassed the field support person's time, and also time for the project manager to engage with external agencies that were working in Habu, such as the adult Eco Clubs which were supported by Wilderness Safaris, and active in the community, and also the anti-poaching unit in the wildlife concession next door to the community. The Project Manager held a monthly meeting with the community for the duration of the project.

In addition to the separation of the field and implementation support components, the project team made clear from the outset that the infrastructure would not be owned by the community and that the team were developing a Handover Protocol to hand over the infrastructure to the relevant authority in Botswana – at that stage we were not certain whether that would be the Department of Water Affairs or WUC.

Water supply design component

It was made clear to the community form the outset, that the more complex the infrastructure, the more would be required to maintain it and therefore as simple a design as possible was recommended. Initially, yard taps were discussed, but the budget allocation available would not have

FIGURE 2: Habu water supply point

FIGURE 3: Borehole #2 at Habu

FIGURE 4: Borehole #1 at Habu

covered these. A multi-tap water point was recommended and accepted by the community. The community chose the site for the tanks and taps.

A cattle trough was also discussed in the early part of the project, and this proposal was rejected because of the elephant activity in the area of the village. It was agreed that standing water close to the village would attract elephants, and this would pose a risk, not only to the infrastructure, but also to human life. As a result, it was agreed that the design of the water supply scheme would comprise a centralised storage area (5x5 000 litre tanks on a 1 metre stand), and 5 standpipe taps – one for each ward of Habu (Figure 2). All taps were installed with locks, as they would be managed by the Water Committee (See section on Water Supply Governance arrangements).

The pump type selected for the borehole infrastructure was solar pumps (Figure 3 and Figure 4), as there is no mains power in Habu. Handpumps were considered, but the daily volume of water required made this non-viable. It was decided (in conjunction with the community) that the switches for the pumps would be manual. This decision was taken for two reasons:

- Automatic switches are more complex and cannot be repaired within the community
- The action of having to switch pumps on daily (or at least when required) would ensure that the water supply caretakers must check the pumps and pipelines regularly

The geohydrological survey conducted identified 6 potential sites for boreholes, and eventually two were drilled. The first borehole had sufficient yield, but only just and therefore it was decided that a second should be drilled. The second borehole had almost double the yield of the first. The team managed to secure a donation of the pumps and solar arrays from the Franklin Wells of the World Foundation therefore was able to install both boreholes, providing more than sufficient water for the community.

The community formed a team of approximately 30 people and 4 supervisors to dig the pipeline trenches. A labour price was agreed with the group and paid out of the project budget. Supervisors were paid the same as labourers.

The water from the two boreholes is mixed before the taps. Water quality tests were completed at source, and later at the taps and both microbiological and chemical results were well within the relevant ranges on all parameters.

The community was asked to select two people with some technical experience or background, and these two were trained by the contractors on the basic management of the boreholes, storage and taps.

Water supply governance arrangements including tariffs

At the beginning of the project, it was made clear to the community that this project was testing a new way of managing rural water supply in Botswana, and that the Habu would be the first community in Botswana to have a Water User Association related to drinking water supply. In addition, there would be a charge for water to ensure that the community had sufficient funds for the basic maintenance of the infrastructure in place. If was for this reason that the community agreed so readily to the simple design.

During the course of the project, the project team were approached by the community to design a tariff system for them – although it was already in the project plan. We indicated that we were working on a Governance proposal (to the Department of Water Affairs and WUC) which had 3 elements to it, as follows:

1. Handover Protocol for the ownership of the infrastructure
2. The Community-based management structure to be established in Habu
3. The Tariff system.

The Handover Protocol was the set of steps to be followed in the handover of ownership to the relevant authority within the Government of Botswana. The primary reason for the formal handover was to ensure that the infrastructure was included in capital replacement budgets of the relevant authorities and so that it would be included in major maintenance schedules, as this cannot be carried out by the community. Initially the handover was to WUC, but it was decided by DWA that they are the key representative of the Government of Botswana in this instance. An inspection of the infrastructure was conducted by DWA, and a valuation agreed. The handover process will be completed at an Opening Ceremony still to be held. The component of the Governance proposal dealing with the handover has therefore been accepted in full. The establishment of a CBM structure is a new process in Botswana, and therefore needed to be agreed by the DWA. The proposal indicated that, aligned with the new policy, a Water User Association (WUA) would be established and a Water User Committee (WuCom) elected; comprised according to the Namibian model – a Chairperson and Vice Chair, a Secretary and Vice Secretary, a Treasurer and two caretakers who are trained in the technical aspects of minor maintenance. In Habu, there are 7 people (Figure 5) on the committee, as it was decided that there was only one person available at the time who had the capacity to manage the finances acceptably.

A two-day basic governance course was developed using the Namibian Water Point Committee training materials which were provided to the project team by the DWSSC.

The governance course comprised the following elements:

- Introduction and objectives
- Organisational structure
- Organising, holding and recording minutes for meetings and

FIGURE 5: The Habu Water User Committee in the process of registering their first Water User Association members (Caretakers not present)

community reporting
- Roles and responsibilities of the WuCom and the WUA members
- Rules of the water point
- Developing a WUA Constitution
- Decision scenarios
- Planning and management including the annual activity plan
- Discussion and finalisation of the proposed tariff system
- Registration of members
- Keeping a caretaker's logbook
- Financial issues including spares requisitioning and purchase orders; and cash book management.

Tools for all of the above (forms, rules, Constitution format etc.) were provided to the Committee in a file which should allow them to operate without needing to print additional materials for one year.

A tariff system was designed based on the WUC tariff structure which has a basic charge of BWP 20 per month, and is a stepped tariff. The way the Habu system would work (as proposed) was that each household would register, pay a fee based on the number of people in the household, and receive a token which would enable them to receive water at the relevant ward tap for one month. There are 3 colours of tokens, so they are rotated monthly over a three-month period. The BWP 20 was proposed as a maximum charge after an assessment of the potential consumption per household indicated it would be unlikely that any household in Habu would use more than the allocation for this minimum.

The community agreed to the tariff system, but increased the maximum charge to BWP 50 per month. In addition, they agreed that any user would be allowed to go a maximum of 3 months in arrears, but then their supply will be cut off until the account was paid in full. This would only be the case if they had paid on registration for at least one month.

DISCUSSION AND CONCLUSIONS

Summary of results

- 2 boreholes with more than sufficient yield for the community and their livestock were successfully installed in Habu
- A Water User Association was established and a Water User Committee elected and trained in basic governance and accountability
- A tariff system was designed and implemented
- A Water User Association Constitution has been agreed and finalised
- The WuCom are in the process of applying for a bank account and are currently evaluating the best options
- The Department of Water and Sanitation (then DWA) has inspected the infrastructure and agreed to the ownership proposal
- Water quality testing indicated that the water is of excellent quality (both microbiological and chemical)
- 75% of households in Habu have registered for the Water User Association (the balance not registered because they are resident at the cattle posts)
- The delivery of clean water has reinforced the need for good sanitation and institutional arrangements to promote improved sanitation have been put in place by the community
- The caretakers have been paid on a monthly basis and have devised their own system for monitoring the pumps
- The WuCom are in the process of applying to Wilderness Safaris for a donation of elephant-proof fencing for the boreholes
- The WuCom have successfully applied to Botswana's community work support programme, Ipelegeng, for two workers to be allocated to clean the water point daily
- The WuCom have been allocated an office from which to conduct their operations

Discussion

Among the critical factors for the sustainability of rural water supply schemes is community-based management, but most important is how CBM is implemented. The Habu CWS project stemmed from a crucial need that was raised by the community itself, and, following the presentation (in the local language) of the structure of the project to the community, was acceptable to the community.

Both the service level (communal standpipe taps at one water point) and the infrastructure were technically appropriate to both the conditions in the community and to the availability of spares, and maintenance capacity in the future.

In terms of health awareness, following discussions on the original needs assessment, indicated that a sanitation component should be added to the project, and there is now a strong drive for improved sanitation in Habu.

Negotiations with both the DWA (as was) and WUC at the beginning of the project, indicated that these critical institutions saw the project as a testing ground for the new policy and they were extremely supportive throughout – with both DWA and WUC providing the project team with letters of support. These letters created an enabling environment to engage both the community and other local institutions, and for the final issue of ownership and ongoing maintenance.

An adaptable, accountable and well-trained committee has been established in the community, and the results above indicate that they are operating well – having designed some new systems, and made proposals for improvements to the infrastructure. Decisions are made as one, and presented to the WUA before being finalised, suggesting that the WuCom could be judged to be a strong institution.

The attention of the Director of DWS and Regional Director in the North West suggests that the community-based institution has a good support base within the relevant water sector institutions in Botswana.

The very practical governance training that was provided to the WuCom was "the most useful training they have ever had", and delivered the basis for the skills and expertise that is needed for them to undertake the basic maintenance and management of the water supply infrastructure and WUA.

The tariffs raised have allowed the WuCom to pay caretakers and water monitors to ensure that people do not waste water at the taps, and that the boreholes are monitored daily. The financial viability has yet to be seriously tested, but there is a positive balance in the community account, should any spares need to be purchased in the future. Most of WUA members are able to pay their monthly bills, and those that can't have agreed to the 3-month cut-off.

The WuCom is monitoring the amount of water taken by each family, in order not to use too much water and also stepping up sanitation improvements to eradicate open defecation in the village. The application for funds to ensure the boreholes are protected from elephant activity, as well as the regular leak monitoring on the pipelines (by the caretakers) and the presence of water monitors at the taps are all measures that are aimed at protecting the environment and natural resources in Habu.

The separation of the field support and implementation support components was a key success factor in the project, as it enabled the community to engage in all aspects, and raise issues about the technical component without the intimidating presence of technical practitioners in all conversations. This meant that supportive attitudes were demonstrated throughout the project and they created a forum in which the community were able to make some key decisions with regard to the technical components of the project – and influence the outputs.

The project team comprised both technical experts, and social experts

– which created a balance between the implementation of the technical and social components.

Challenges

A key challenge was with the political component of the project is that it was only toward the end that the relevant political actors were engaged. However, the team recognised this as an enabling factor, since the need for rural water supply is great, and political aspirations in this regard may have made it difficult to get buy-in for the fact that the donor's target community was Habu. In addition, at the point that political actors (area MP, sub-District Councillor) were engaged, the project was nearing a successful conclusion and thus it was readily accepted and supported.

Another issue within the political component, was the fact that the mechanisms for handover of donated infrastructure and also for the formal establishment of community institutions are not yet finalised in Botswana, and therefore the project team had to present them in the form of a proposal. While the proposal has been accepted and establishment has taken place, formal handover has not yet happened – although the DWS Director is in the process arranging a Handover Ceremony with the Minister of LMWS.

There were no significant challenges with the social and technical components of the project, although the construction phase started later than expected. There was a delay because the Office of the President was conducting a survey of two boreholes in the area of Habu that were no longer functioning, in order potentially to rehabilitate these boreholes for community gardens. The project team delayed the process in order to establish whether or not the allocation for infrastructure could be combined with this project. In the end, the boreholes were assessed by DWA as not viable.

The situation that created the delay is essentially that the "wheels [of government] turn slowly", and given the number of government organisations that were engaged, it was a challenge to maintain momentum in the project while ensuring that all relevant political and institutional agencies were successfully engaged.

An important issue is that the institutional mechanisms for formalising WUAs, particularly with respect to drinking water supply do not yet exist in Botswana. During the time that the government of Botswana are establishing these, the Habu community will need support. It is not certain, at this stage, whether this DWA will be able to provide this requisite support in the absence of these mechanisms, and external / project support may be critical.

Conclusions

The project was aimed at sustainability from the outset, and thus the team structure, as well as the implementation components of water supply and sanitation were designed with sustainability factors in mind.

Habu is similar in its characteristics to many rural communities and therefore the process should translate to other communities. Given the new policy context in Botswana, this was also an important issue in the project design – though it is recognised that the timing of this project was fortuitous in terms of engaging the political component.

The fact that the institutions were established in the absence of formal institutional mechanisms for community-based management of water supply is important, because it indicates strongly that these mechanisms do not necessarily have to be in place to test this methodology in communities.

However, it is critical to note that if this approach to rural water supply provision is implemented at scale, then the necessary support mechanisms must exist formally. These support mechanisms comprise extension services, financial support and regular infrastructure maintenance, repair and replacement.

One of the most empowering components of the project from the community's point of view, was the governance training, and the fact that that training left a practical and implementable toolkit in the community for the day-to-day management of their water supply.

The project represents a strong overlap between the political, technical and social components, and therefore should have a solid basis for "continuing functionality through [the] design life [of the infrastructure] (Brikke & Bredero 2003).

RECOMMENDATIONS

- Allocate sufficient budget to the social component of water supply projects, including a separate component for relationship building
- Leave practical tools or toolkits on the ground, in communities, following training and capacity building
- Ensure that the relevant authorities are engaged from the outset
- Work with the beneficiary community to engage them in all aspects of the project, including the design
- Build an understanding that clean water costs, and that communities should be willing to pay, in whatever form is viable, to keep the water flowing
- Build the factors that contribute to sustainability into the project design

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