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Assessing the potential for self-supply in Zambia

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PUBLISHER

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VoR (Version of Record)

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REPOSITORY RECORD

Munkonge, Malama, and Peter Harvey. 2019. “Assessing the Potential for Self-supply in Zambia”. figshare. https://hdl.handle.net/2134/29857.

34th WEDC International Conference, Addis Ababa, Ethiopia, 2009

WATER, SANITATION AND HYGIENE:
SUSTAINABLE DEVELOPMENT AND MULTISECTORAL APPROACHES

Assessing the potential for self-supply in Zambia

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REVIEWED PAPER 118

The Millennium Development Goal target for safe water supply is currently unlikely to be met in Zambia. In order to serve the population that is unlikely to be reached under conventional community-based water supply programmes, alternative approaches to water supply service provision need to be explored. One such alternative is the Self-Supply approach which encourages households to develop and improve their own infrastructure incrementally. However, to ensure the actualisation of such an approach an enabling environment needs to be created that includes enabling policies, sufficient private sector capacity, access to appropriate technologies and technical advice, and effective financial mechanisms and markets. Drawing on the findings of a baseline survey in Luapula province it is concluded that there is significant potential for Self-Supply in Zambia and that an enabling environment largely exists. There is a need, however, to develop effective micro-credit facilities that are accessible to rural households.

Introduction

Progress towards achieving the Millennium Development Goal (MDG) target for water supply has been slow in rural Zambia. Despite a small increase in coverage since 1990, the proportion of rural people without access to safe water was estimated to be 63% in 2005 (CSO, 2006) and 59% in 2006 (UNICEF/WHO, 2008). To provide even half of these people with safe water by conventional means would require investment to double or even treble. Such increases in investment are unlikely, with bilateral aid to the sector having decreased since the 1990s, and water supply featuring as a low priority sector receiving less than 3% of the national budgetary allocation of the country.

At the same time, despite widespread construction and rehabilitation of communal water points, an average of 32% of these facilities are out of service at any given time, generally due to the problem of handpump breakdown (MLGH, 2007). The difficulties of maintaining handpumps are often due to problems of affordability, availability of spare parts, low private sector involvement and ineffective community management, especially among poorer and more remote communities. In addition, rural communities are often scattered over large areas which means that the standard design population of 250 people per handpump cannot be attained. In such cases community water supplies may not be the most appropriate option. This suggests that other strategies need to be adopted to improve the situation, especially considering the fact that even if the MDG target were to be achieved, this would still leave some 36% of the rural poor without access to safe water, and no clear way of responding to their needs.

Self-supply

Self-Supply is an approach to water supply which concentrates intervention and management at the lowest level, including self-financing of infrastructure development by the users themselves. This is at household or small group level and is complementary to conventional community supplies. Evidence suggests that individual households are more willing to invest in their own privately-owned water supply than in a communal one and thereby make incremental improvements to advance up the water supply ladder (Sutton, 2006). Self-Supply focuses on the lower and middle rungs of the ladder, rather than expensive community-based technologies, but does not prevent households from choosing more technologically advanced options,

such as rope pumps and handpumps, if they can afford these. Self-Supply offers improved water quality, quantity and/or accessibility where communal approaches may be less sustainable, especially where there are many alternative traditional water supplies for which there is already a strong sense of ownership, and among very low density scattered communities, or where additional water treatment is required because of poor performance of existing supplies. Self-Supply is a concept for incremental improvement of water supplies rather then a focus on a specific technology. It can be incorporated alongside community-based systems in any rural water supply strategy.

Potential for self-supply in Zambia

It is estimated that more than 2.3 million people in Zambia (more than 25% of the rural population) rely on water from traditional hand-dug wells. In the past these wells have all been considered unsafe and the water quality questioned. However, recent research in Zambia has shown that water from traditional sources, such as hand-dug wells and scoopholes, is often of reasonably good quality with over 50% meeting the World Health Organization (WHO) faecal coliform guideline value of 0cfu/100ml (see Figure 1).

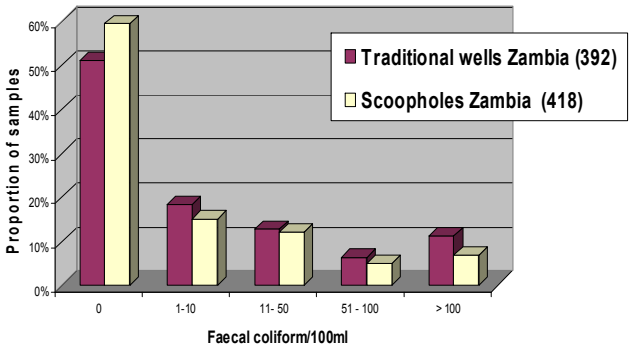


Figure 1. Microbiological water quality of different sources

Source: Sutton (2002)

During the first half of 2008 a baseline survey of 440 water sources and respective users was carried out in Chiengi, Nchelenge, Milenge and Mansa districts in Luapula province. This survey revealed that over 80% of traditional water sources were owned by individual households and that almost all of these were shared with neighbouring households without obligation (see Figure 2). Over 70% of water sources served between 1 and 20 households, with less than 10% serving more than 50 households (see Figure 3).

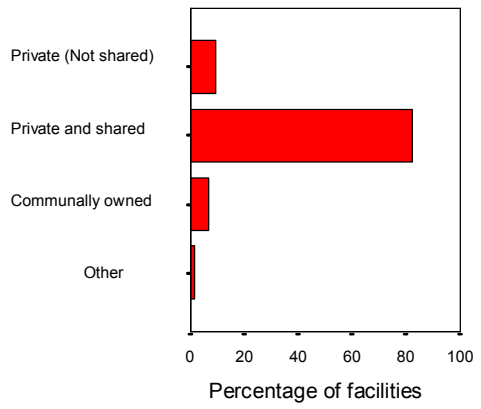


Figure 2. Water facility ownership

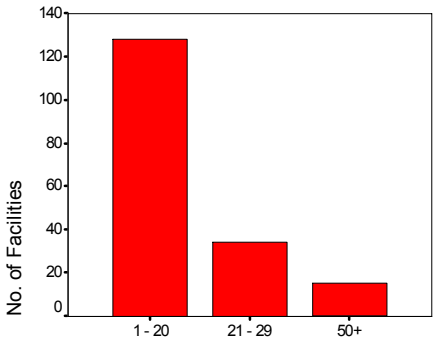


Figure 3. Number of households served

Almost 60% of traditional water sources were less than 10m away from the household and over 90% were less than 25m away. Meanwhile, over 75% of alternative water sources (most of which were unprotected) were over 100m away and 60% were more than 250m away. This shows that people often rely solely on one well as their main water source. Microbiological water quality was acceptable (0 cfu/100ml) in over 35% of wells without any improvement, and only 15% of wells had faecal coliform levels above 100cfu/100ml. This suggests that the vast majority of wells will meet the WHO guideline value following source improvement. The construction quality of the vast majority of wells was relatively poor: 88% had no concrete apron and more than 70% used a plastic container on rope to lift water. The majority of wells surveyed provide water throughout the year and for those that dry up this problem can be resolved by deepening, which is one of the improvements included in the Self-Supply approach.

In addition, the survey showed that more than 90% of well owners reported that they were willing to meet the costs of improving their wells. The most commonly stated preferred improvements were improved lifting device, apron construction, re-deepening and lining. Less than 15% of well owners said they would be willing to charge their neighbours for drawing water from their well.

These findings show that the potential for Self-Supply in Luapula is considerable, however, for the approach to be successful an enabling environment is necessary in which there are enabling policies, sufficient private sector capacity, access to appropriate technologies and technical advice, and effective financial mechanisms and markets (Sutton, 2006).

Assessment of enabling environment

Policy context

The Government of the Republic of Zambia, through the Ministry of Local Government and Housing (MLGH), has agreed in principle for the Self-Supply approach to be piloted in Zambia. The current guiding policy, the National Water Policy of Zambia, is still being reviewed but has been in existence since 1994. In the meantime, the National Rural Water Supply and Sanitation Programme (NRWSSP) for 2006 to 2015 has been developed as a guiding strategy. This strategy focuses primarily on community water supplies, however, the NRWSSP definition of safe water supply includes hand-dug wells among other technical options. Improved water supplies must meet the following four rural water supply indicators:

- Functionality – appropriate lifting technologies must be used to ensure reduction of down-time, which should not exceed two weeks. Accepted technologies include the India Mark II, Afridev, Rope Pump, Bush Pump and improved traditional wells fitted with windlasses.
- Access – a water facility must be within 1 km radius of the beneficiary communities.
- Water Quality – the quality of water from a facility must meet the WHO guidelines for drinking water, especially the faecal coliform count which must be zero.
- Reliability – a water facility must have water all year.

Many family wells in Luapula province already meet these criteria as revealed by the findings of the baseline survey. The proximity of wells to households is also a significant advantage over community water supply options which could be up to 1 km away. Furthermore, boreholes fitted with handpumps are more likely to break down than a well with a bucket and windlass. From this perspective, although there is yet to be a specific policy on Self-Supply, the current policy and strategy do not preclude the approach and if the initial pilot is successful it can be incorporated in future policy documents.

Private sector and technical support

These improvement preferences expressed by well owners in the baseline survey illustrate significant opportunities for small-scale private sector participation in the supply of construction materials, spare parts and skilled labour services. However, the issue of market guarantee was raised by some traders who would not want to stock up on slow-moving commodities. This might be the case for Self-Supply as it focuses on incremental improvements which could be a slow process. However, there has been significant interest expressed by existing enterprises and artisans. Already some private sector suppliers are manufacturing rope pumps and masons have been trained to undertake well improvements. Established Artisan Associations in the districts have also been trained and encouraged to market their services to households and communities. In addition, staff from Local Authorities have been trained to provide technical advice and support to community members, and Environmental Health Technicians have been trained in water quality monitoring.

Financial mechanisms

The survey findings suggest that individual households may be more willing to invest in their own privately-owned water supply than in a communal one. However, since the vast majority of well owners said they would not be willing to charge their neighbours for drawing water from their well, the well owner's ability to raise funds for improvement is key to the success of the approach. Although some more affluent households have already started improvements, for most households this is difficult. The survey revealed average annual household income levels of ZK1m (US$250) to ZK2m (US$500) and yet the cost of complete water source improvement is estimated to be ZK2.5m (US$600). While this is much less than the average cost of developing and equipping a borehole with a handpump, which is about ZK20m (US$5,000), it is still out of reach of most households. Even the costs of incremental improvements, such as re-deepening, construction of a concrete apron or installation of a lifting device, are significant. There is, therefore, a need for appropriate micro-credit facilities to be established. Existing financial institutions charge restrictive interest rates and are inaccessible in many rural areas. Consequently, plans are underway for revolving credit funds to be established by Area Development Committees and Neighbourhood Health Committees, using part community money and part donor money to provide loans to households.

Conclusions

In assessing the potential for Self-Supply in Luapula province in Zambia it is concluded that:

- An enabling environment for Self-Supply as a rural water supply strategy does exist marginally in Zambia. The guiding policy allows for the possibility to include Self-Supply in the NRWSSP upon delivery of positive evidence from the current pilots in Luapula province.
- Private sector participation already exists. All materials required to make incremental improvements to facilities can be made available from local traders but they need to be well advertised to ensure market guarantees for traders.
- Technical support also exists both at community and district level. Skilled labour is available in communities to provide building and maintenance services for the incremental improvements and development of new facilities but ongoing training of artisans is required.
- No financial mechanisms have yet been finalized but plans are underway to establish financial services that can give individual households access to credit to help meet the cost of making incremental improvements to their own privately owned water facilities.

Acknowledgements

The authors would like to extend thanks to WaterAid Zambia, Development Aid from People to People (DAPP), Zulu Burrow Consultants, Engineers Without Borders and the district councils of Chiengi, Nchelenge and Milenge for partnering with UNICEF on the Self-Supply programme.

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