

Impact of SMART Centres to accelerate Self-supply in rural water services. An example from Tanzania

Type: Short Paper

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Abstract/Summary

A market-based approach with affordable products such as Rope pumps and hand-drilled wells can increase access to functional water supply. It is an efficient approach to accelerate Self-supply at lower-income households in peri-urban and rural areas and to provide small communities with a reliable water source. Self-supply may result in increased income.

Requirements for accelerating Self-supply are a developed supply chain and well-trained local entrepreneurs. For a complete national distribution and sales network, new local companies need to be found and trained continuously.

In this study, the best marketing seems to be a bottom-up approach. Good-working examples with a certain critical mass, and clearly showing the socio-economic advantages for the user, seem to be an efficient way to create demand and to realize a shift in the customers' decision making in favour of affordable private service-delivery. To avoid risks, consumers prefer to choose the same technology and supplier as their neighbour.

Introduction

By the year 2030, Tanzania should achieve universal and equitable access to safe and affordable drinking water for all (SDG 6). One way to reach the yet un-served and to improve rural and peri-urban water supply is to use a market-based approach as promoted by the SHIPO SMART Centre. Focus is to improve livelihoods of low-income groups by the use of innovative, low cost and repairable technologies (the so-called SMARTechs) that are produced and sold by the local private sector. Examples of SMARTechs for water supply are manually drilled wells and Rope pumps, but also affordable and efficient drip irrigation sets and locally produced water filters.

The SMART Centre, as a training and knowledge centre, aims to strengthen the local entrepreneurs in production, maintenance, business management and quality control. Main customers of the entrepreneurs are private households (Self-supply) in semi-urban and rural areas, and NGOs or government (communal use).

Several literature studies show that the per capita investment and maintenance costs of a Rope pump are significantly lower than those of a conventional piston pump such as an Afridev pump or India Mark II (P.A. Harvey and Drouin 2006, Acra 2012, iWASH 2013). In small communities, NGOs or government can install Rope pumps or a similar type of pump, combined with manual drilling, to reduce cost. In general the initial investment costs for communal water supply are for 80 to 100% funded by NGOs or government (A. Olschewski 2015, H. Holtslag 2015, RWSN 2015). Low-maintenance costs and local supply can contribute to increased sustainability of the communal water supply.

The lower costs also allow certain households to purchase an own well and pump. Self-supply can further increase water supply sustainability, and private purchase of a hand pump may result in a substantial increase of the family income, as they are often used for multiple purposes, such as drinking, washing, cooking, animals and irrigation.

In order to increase sustainable rural water supply, it is therefore important to accelerate scale-up of this approach, both for Self-supply and communal use. This paper describes the results of a study how to accelerate Self-supply by looking at two parts of the supply chain: (1) the business of the local entrepreneur and (2) the motivations, needs and demands of his Self-supply customers.

Description of the Case Study – Approach or technology

The study was carried out at the SHIPO SMART Centre in Njombe. SHIPO introduced the Rope pump in Tanzania 10 years ago. Information about the business of the local entrepreneur was acquired by open interviews with employees of the SHIPO SMART Centre and twelve trained local entrepreneurs in Njombe, Iringa and Morogoro region, who have a business in manually drilled / hand-dug wells and/or Rope pumps. Needs and demands of the Rope pump user (the direct or indirect customer of the local entrepreneur) were studied by interviewing 71 Rope pump users (65% private use and 35% communal use), in Njombe and villages around Njombe, Songea and Mafinga. From the interviews, an approach to accelerate Self-supply was developed.

Main results and lessons learnt

The business of the local entrepreneur and how to increase Self-supply

The local entrepreneurs interviewed served two types of customers:

(1) the Self-supply customer, mostly one family or a small group of households in peri-urban and rural areas. 95% of the interviewed households indicated they had fully financed the well and Rope pump themselves, the remaining 5% had used a low interest microcredit fund.

(2) NGOs and government, who aim to supply communities, health clinics and schools with communal wells and Rope pumps. Important for this second segment is to ensure sustainable access to safe drinking water for as many people as possible. Entrepreneurs indicated that they do not supply communities directly: the financial risk is too high and initiatives from the community to purchase a water point by themselves are low. Supply normally goes via NGOs, who can at the same time fulfil an important role in social marketing and awareness creation.

In the period between 2005 and 2010, Self-supply in Tanzania was mainly a spin-off from communal supply. In this period some 1500 Hand-drilled wells and Rope pumps were funded by DGIS funds, and a supply chain was built up. After 2010, SHIPO SMART Centre and other organizations in Tanzania started to train more local companies and stimulated the private sector to also sell to consumers directly. This resulted in a further increase in sales of private wells and Rope pumps. In total, around 10.000 Rope pumps are now known to be sold in Tanzania (number derived from SHIPO reports and former surveys, and interviews with the entrepreneurs). Currently, the SMART Centre has a list of 33 trained small companies which are active in the production and sales of quality Rope pumps and/or hand-drilled wells in Tanzania. In 2015 only, these 33 companies together produced and sold around 900 Rope pumps of which 600 were for Self-supply. Next to the known entrepreneurs, there are some other companies around which copied the Rope pump technology. These companies could be potential candidates for future training programs to increase quality because giving entrepreneurs a good technical training and support afterwards (certification, monitoring, repeated trainings, etc.) is essential to ensure sustainability and quality of the SMARTechs. A broken pump or dry well is bad publicity and will inhibit further scale up.

As incubators, the SMART Centre and other NGOs give newly trained entrepreneurs the opportunity to start their business by supplying wells and Rope pumps to NGOs for communal supply. More established companies, with a few years experience in producing safe wells and quality Rope pumps, are supposed to run their business more independently. Increase in the number of experienced entrepreneurs is therefore expected to lead to a further scale up of Self-supply in rural and peri-urban water services, when they are indeed able to make a living with the sales of SMARTechs. For that reason, twelve companies were assessed how they perceive their business.

For most of the interviewees, SMARTechs became a significant part of their business (50-80%) after the

training and this resulted in an increase in income and job creation. The entrepreneurs did not seem to face heavy competition, they had their own geographical area or had a good long-lasting relationship with their ‘competitors’.

The supply chain seemed to have developed reasonably well: entrepreneurs indicated that all materials to produce a Rope pump were available in Tanzania. In few cases where the local markets were not yet well developed, entrepreneurs travelled to Dar es Salaam for bulk supplies.

Most local companies not only had Self-supply customers in their own region, but also far outside their region. This may have to do with the way they find their customers, or actually, how the customers find them: by good working examples at neighbours, health clinics and other public places. Self-supply customers did not seem to shop around to find the cheapest supplier, but selected the ones they know. One of the entrepreneurs installed a Rope pump as demonstration model next to his office, which was a good marketing tool. Announcements on the radio, on the contrary, did not seem to be very effective.

The business strategy of most entrepreneurs is to expand the customer base with new products like hand pumps and or manually drilled wells. They want to grow by opening a branch office, changing the workshop location, increasing promotion of the products, investing in more advanced equipment or arranging a loan to be able to purchase more material. In reality, however, not all workshops are growing. Sales of products sometimes stagnate or even decrease. The discrepancy in ideas about growth and reality is caused by several factors: a lack of financial means, insufficient business and marketing skills, not enough insight in the market, no detailed strategic planning and, according to Ugula (Ugula, 2015), attitude: people are responsible for their own business, not SHIPO or somebody else.

Motivations, needs and demands of Self-supply customers

Knowing the motivations of the consumer can support the local entrepreneur in scaling up his business more efficiently, thus accelerating Self-supply.

The study showed that Self-supply customers invest in an own well and Rope pump to have a reliable and protected water source and abundant water nearby, which is affordable and easy to maintain. With their own water supply, they do not depend on neighbours, on irregular functioning of a communal hand pump or unreliable piped water. *The Danida pump (Afridev pump, ed.) gives limited water, it is old and needs repair. It is a crisis’ (family in Mtili, who chose for a private Rope pump).*

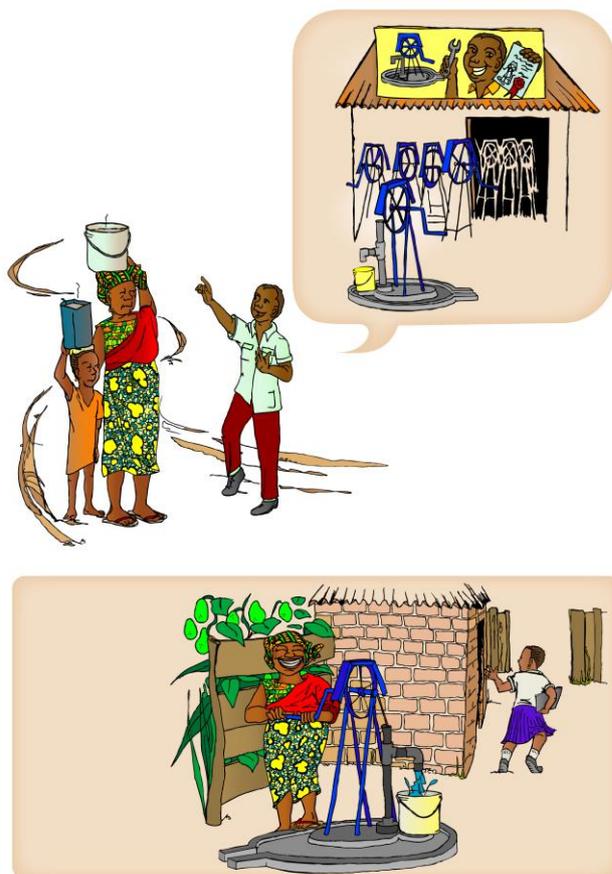
From the interviews on household level, it was seen that most Self-supply families have a higher economic status than the communal water users: they had improved housing, more capital goods and often a job outside agriculture, such as teacher, shopkeeper or factory owner.

Interviewees indicated that Self-supply led in most cases to an increase in income. Due to the reliable and abundant water supply, the water was not only used for domestic use such as cooking, cleaning, drinking and washing, but also for commercial use such as construction, keeping animals, gardening, car wash, selling water. On basis of the interviews it was estimated that investing in an own Rope pump could bring a family an annual additional income between 90 and 1350 USD or even more. This is in accordance with other studies: Haanen and Kaduma showed that the Rope pump resulted in additional income for 89% of the households studied (Rik Haanen and Kaduma 2011). An extensive study in Nicaragua showed that annual income of Rope pumps for Self-supply increased yearly family incomes with US \$225 (J.H. Alberts and Zee 2002). A recent study on Rope pump users in Malawi showed an estimated increase in annual income of 180 USD (Rosendahl 2015).

Market-based Self-supply can lead to increased sustainability and functionality of the water point for two reasons: (1) supply by local companies without the need or interference of NGOs and (2) low maintenance and repair costs. The private water points in this study showed a functionality of 92% (compared to 80% of communal supply), with the remark that 40% of the pumps investigated during the study was installed in the last year.

Although the Rope pump in the case of Self-supply users was bought for private use, the number of households using one Rope pump varied between 1 and 35 households (5 to 175 people), compared to 6 and 40 households (30 to 200 people) in case of communal supply. Thus, even when one family

purchased a Rope pump, many households used it. Most owners provided the water for free to neighbouring families, a minority sold the water for 50 to 200 TShs / 20 l bucket. Reasons to provide the water for free was that (1) it was a favour for the neighbours, (2) a habit in the village to share, or (3) fear for the neighbours.



Picture 1. The supply chain of SMARTechs as described in this paper. A local entrepreneur explains the Rope pump, which results in a satisfied customer.

Conclusions and Recommendations

It has been shown in this study that, when certain conditions are fulfilled, a market-based approach can accelerate Self-supply of rural water services. This may lead to increased access to improved water sources, and ultimately reaching the SDG6 Goals.

There is a sizeable group of customers from middle income and upper low-income groups in both (peri) urban and rural areas, who can afford to purchase the pump for own use. This gives them a.o. convenience and often increase of income. It was seen in the study that Self-supply can increase sustainability of water supply, due to low maintenance costs and ownership.

One of the ways to accelerate Self-supply is to expand the number of entrepreneurs producing and selling low cost water supply technologies. Continuous training of new entrepreneurs on technical and business skills, including the ones that have copied the technology, should be carried out until a complete national distribution network has been reached.

At the same time, it is important that existing entrepreneurs are supported in sustaining and growing their business. It will help when government and NGOs facilitate them more in several aspects of their business: ensuring that there are enough raw material suppliers, training in all kinds of business aspects, facilitating loans for equipment and material, and providing tools for efficient marketing, taking into account the needs and motivations of the consumer.

The market for Self-supply, thus reaching a larger group of households, can be enhanced by adding other inclusive business models. These are for example innovative financial support solutions, lower cost pump

models, partial funding etc. When lower income households can afford a pump themselves, both sustainability and income may increase.

In this study, most effective marketing appeared to be showing good working examples and creating a critical mass, clearly showing the advantage for the users and thus derisking their purchase. The bottom-up approach, also described in earlier studies (Hystra 2013, Viswanathan 2015), is therefore one of the more efficient ways to create demand from low income customers. As most local entrepreneurs do not have sufficient capital or knowledge to do extensive (social) marketing, it may be a supporting task for NGOs and government to raise awareness and install low-cost water points for communal use in new areas where the SMART approach is not yet known. After a critical mass has been reached, well-trained entrepreneurs can work independently to create their customer base and sustainably grow their business and thus accelerate Self-supply.

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