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Business on the Frontlines – Spring 2011

Sustaining Water: Applying business principles to water point installation and management in Uganda's rural north

Background

"Why are water points in Uganda's semi-arid northern countryside failing at such an incredible rate, sometimes as soon as weeks after installation? How could business help?" It was with this question that we boarded a plane for Kampala. Our hypothesis: If we could create a real sense of ownership around wells and boreholes at the village level (as opposed to at the NGO/installer level), surely water points could run for many years to come. What we found was a system that in many ways was built to fail.

Rural villagers (who represent 90%+ of the Uganda's 35MM inhabitants) spend their days trying to provide basic needs to their families. For most, their livelihoods consist of subsistence farming or developing a good that can be brought to the market to be sold. For the women and children of these villages, many hours of their days are spent collecting water for. Many of the villagers have recently completed their journey back to their birthplaces after spending over 20 years in Internally Displaced Persons (IDP) camps due to long-standing conflict with the Lord's Resistance Army. IDP camps set up by various foreign governments and NGOs had provided all basic needs for the displaced villagers, including clean water.

Village reestablishment has exacerbated the need for access to clean water for millions of Ugandans. Globally, lack of clean water is one of the leading causes of death and disease:

- Worldwide, 3.575 million people die each year from water-related disease.
- 884 million people lack access to safe water supplies, approximately one in eight people.
- Almost one-tenth of the global disease burden could be prevented by improving water supply, sanitation, hygiene and management of water resources. Improvements of water systems and access will reduce child mortality and improve health and nutritional status in a sustainable way.

Ultimately, clean water for these villages can transform lives by improving health and ultimately economic productivity. "Water is fundamental for life and health. The human right to water is indispensable for leading a healthy life in human dignity. It is a pre-requisite to the realization of all other human rights."¹

¹ UN Committee on Economic, Cultural and Social Rights

Meeting the Need Today

Low population density and subsistence-level incomes throughout much of the north restrict the viability of water delivery methods generally found in more urbanized environments (i.e. underground plumbing, water treatment centers, water channels, etc.). The National Water & Sewerage Corporation (NWSC), Uganda's private, natural monopoly, water corporation thus has played little to no role in development. The federal government's Ministry of Water and local authorities assume the primary coordinating efforts for installation and major maintenance and repair. However, limited resources and widespread corruption have placed NGOS as the primary actor in meeting the need of clean water access to the majority of the population.

The scale and scope of NGO actors varies widely, from small community churches looking to install a single water point to multi-national organizations, such as Catholic Relief Services, Oxfam, and Action Against Hunger. While there are attempts to facilitate inter-NGO dialogue and collaboration, such as the Global Water Initiative (funded by the Buffett Foundation), there are wide-ranging standards and procedures for all facets of the water-point installation and management process. For example, while one organization might create village-level "water management committees" to create ownership and training at a fundamental level, another might more actively place water points without a maintenance infrastructure in place.

Pump Technology

The Indian Mark II hand pump was developed in a joint effort by the Government of India, UNICEF, and The World Health Organization in the 1970's to address the water crisis affecting India at that time. The requirements for the pump included the need for a design simple enough to be manufactured in unsophisticated workshops, easy to maintain, and costing no more than US\$200. In just 20 years, 1 million of the pumps had been installed in the developing world.² An Indian magazine listed India Mark II hand pump as one of the defining inventions of all times in the country.³ While the pump performed much better than the European imported family pumps that were installed prior to this new design, the India Mark II had several flaws. Many versions of the pump use cast iron riser mains (the pipe that carries water from the bottom of the borehole to the surface). These pipes rusted quickly (sometimes in just 2 years), and either leaked water or separated completely from the pump rendering it useless. The pump requires routine maintenance and will fall into disrepair if certain procedures are not followed. A pump cylinder rests at the bottom of the borehole and needs to be replaced every two years. To remove the cylinder, the riser main also needs to be lifted from the borehole. As one can imagine, lifting up to 100 ft of iron pipe and cylinder from a well is no easy task and requires special tools, a tripod stand, the replacement parts, and most importantly, the know how to do it. For these reasons,

²<http://www.unicef.org/sowc96/hpump.htm>

³http://www.skipumps.com/mark2_details.htm

the Indian Mark II frequently becomes a rusting relic of a good intentioned NGO or non-profit donation and leaves a village returning to drink water from unprotected sources.

Longer lasting materials can be retrofitted to the India Mark II. PVC riser mains are less expensive and can last up to 15 years. PVC is much lighter, easier to work with and significantly reduce the cost of ownership of the well. Ministry of water officials have pushed back on the using of PVC citing the materials have not been tested thoroughly. Several countries have been using PVC successfully for years. Government corruption may be at the root of the decision. Iron replacement pipes are often paid for by the NGO. The sellers of the pipes are often the ministry members themselves or family or close friends. In interviews with NGOs installing water points, the consensus is that the Government of Uganda and ministry officials personally profit more when iron pipes are used because of their higher cost and recurring need for replacement.

More reliable pumps have also been developed. The India Mark III, Afridev, and Bluepump were designed for village level operation and maintenance (VLOM). The pumps incorporate the use of larger PVC riser mains to allow for the pump cylinder to be removed without lifting all of the riser mains out of the borehole. This makes maintenance on the pumps easier but the initial cost for the pipes can be twice as much. Routine maintenance is still required and maintaining funds for replacement parts is still necessary. Without the need for a specialized pump mechanic and no rusting riser-mains, these newer pump designs provide longer lasting sustainable access to drinking water. Unfortunately, The Ministry of Water has not approved installation of these pumps in Uganda citing the need to standardize pumps to reduce cost and ensure an adequate supply of replacement parts. The government enforces the standardization by placing exorbitant import duties on pumps other than the India Mark II.

Site Identification & Installation

Whether a village has been drinking from a stagnant water source or their well is broken, the process of either requesting a new well or repairing their current well is long, tedious, and full of misinformation. The most common approach is for villages approach the local government for help with their well. These governments will likely only respond favorably to the village if the majority of its members voted for the local official who is currently in power. Once the government has validated the request, the elected officials will turn to their government-trained pump mechanics who have received approximately one week's worth of training on how to drill wells. The government will keep all of the funds internally - seeking out money from the village, local NGOs, and the national government to fund the project. In some cases, NGOs are able to circumvent this entire process and drill wells themselves - costing around \$5,000-\$7,000. When the government builds a well, it's a minimum of \$10,000.

Once the proper paperwork and funds are in place, the process of putting in the well begins. Government standards require that the village receive proper sanitation and water training. This includes building pit latrines, water purification education, and light maintenance training on the

well. Our team saw no education regarding regular well maintenance and the expected lifespan of a well. Equipping villagers with this basic understanding would go a long way to ensure that wells last at least two years. Unfortunately, with Indian Mark 2's, two years may be the maximum lifespan given the iron-filled water that corrodes at the pipes. Furthermore, pump mechanics often repair wells using faulty parts that have only been painted to look brand new. If villagers could repair a well themselves or at least have basic understanding of the needed maintenance, problems like this could be minimized.

Conclusion

Where could business practices be most effectively implemented to help NGOs as they continued the work of providing long-term access to clean water for millions?

What other organizations might make viable partners? How would such collaboration come to pass?

Case Notes

Brainstorming Solutions:

Improvement Opportunities	Improvement Outcomes
Develop village standards and enforce them (fundraising, latrine requirements, etc.)	Decreased “free-riders”
Pilot new technologies that improve the lifespan of the well	Increased options for wells beyond the current Indian Mark II
Work with government/smaller non-profits to create standards for villages requesting wells	Decreased government corruption in well permit processing
Increasing cohesion and eliminating inefficiencies among stakeholders involved in supplying wells to villages	Longer lasting wells and increased water sustainability

Items to explore:

- How can NGO’s use their “power” to overcome hurdles particularly with the government
- How business practices can go astray
- Why consistency, cohesion, and shared practices across NGOs involved in water sustainability is essential

MNEs would benefit from NGO Competencies as they look to move into developing markets:

- Market expertise
- Value of NGO brand to customers
- Customer relationships
- Legitimacy with civil society players and governments
- Access to local distribution systems
- Awareness of population’s economic and social needs

NGOs would benefit from MNE capabilities:

- Access to world-class human capital, products, and development capacity
- Cross-functional ROI analysis (financial + strategic)
- Supply chain / logistics scale