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**WATER, SANITATION AND HYGIENE SERVICES BEYOND 2015:
IMPROVING ACCESS AND SUSTAINABILITY**

Public-private partnership model for WASH effectiveness

Adam Harvey, Joel Mukanga & Johnson Waibi (Uganda)

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Water-borne disease remains endemic despite increasing access worldwide to clean water sources. This is due to unhygienic practice, unreliability of the clean water sources (frequent breakdowns and extended repair “down-times”), and contamination during transport and storage. To address these problems, a methodology has been developed centring on financial incentive for local private sector actors operating as rural WASH service providers. A community-based management approach is adopted under which community water and sanitation committees pay for annual service contracts. The paper presents monitored data from a pilot project conducted in 2013-4 in 155 communities in five districts of rural Uganda. The conclusion is that the local incentive system developed by the pilot is producing results (more than 90% reliability is recorded), and that the monitoring and public-private partnership structures provide a strong basis for further interventions which promote full cost-recovery from consumers and improved hygiene and water quality.

Background

Several leading organizations have noted a crisis in rural WASH effectiveness in developing countries. Although great strides are being made to ensure universal coverage of clean water sources, there is a growing body of anecdotal field evidence and research study indicating that the problem of water-borne disease will not be solved by access alone, without significant investment in new methods of addressing persistent poor hygiene, poor operational reliability, and poor water quality in the home. Emphasis has been placed on the health burden associated with poor functionality records of water supply systems (Hunter et al 2009). Functionality of rural water sources in developing countries in the year 2013 has been reported as 62% (Davis 2014). However research also shows that if all improved sources were 100% reliable, water-borne disease would persist, since contamination of water at source, and during transport, storage, and use is commonplace (Bain 2014 and Wright 2004). The implication is that a new approach is needed to transformation of hygiene conditions and to water quality in homes and at sources, as well as to operational reliability, applicable to communities designated formally as having access to improved sources. Field work in rural Uganda undertaken by the authors in the past decade led the same conclusion. The conviction was that a results-based-financing or “payment-by-results” approach at local level could be an effective and innovative solution. To test this, a Safe Water Security programme was launched in the UK in 2011 by the non-profit social enterprise Whave Solutions (registered in Uganda in 2012) with the motto “EveryDay, EveryOne”, the emphasis initially being on operational reliability and equitable access. A pilot project was conducted in 155 communities in five districts in the years 2012-2014 in partnership with Busoga Trust, a NGO specializing in WASH over the past 30 years in rural Uganda. The pilot led in late 2014 to second project “Model WASH Public-Private Partnerships” which is currently scaling the approach in close collaboration with three district local governments.

Objectives

A key objective has been to identify the root causes of poor hygiene, reliability, and water quality in communities with shared hand-pumps. A parallel objective has been to develop, implement, test, and refine solutions to these causes, taking care that the solutions are self-sustaining and permanent, not dependent on external finance. Training and capacity-building of local actors is an objective. The final objective has been testing of the solutions at scale in diverse communities, and demonstrating their effectiveness or otherwise to key decision-makers, with a view to replication as appropriate nationally and internationally.

Method

Local WASH service providers contracted by a WASH service company

The central component of the methodology has been the hypothesis that frequent breakdowns and extended down-times can be avoided, if local technicians have “payment-by-results” contracts with a rural service company (a “WASH Service Operator”). Each technician maintains a group of clean water sources; these “concessions” are in a concentrated area to minimise transport costs and are open to growth (typically 20 to 30 sources for an individual) or shrinkage depending on performance. The concept extended beyond technical maintenance to promotion of hygiene and water quality, and consequently the local contract-holders became “WASH Service Providers” (WSPs). The WSPs are trained not only in technical preventive maintenance, and to track and optimise life-cycle costs of hardware, but also to promote local installation and use of basic sanitation facilities and to promote use of chlorination measures and maintenance of purification equipment. Monthly fees are earned which are sensitive to daily operational reliability of the sources (down-times are penalised by fee deductions) as well as being sensitive to water quality test results and the hygiene grades of the communities served. To earn good incomes and keep their jobs, the WSPs are obliged to anticipate contamination and take measures to prevent it, as well as to anticipate and prevent technical breakdowns. Whave Solutions acts a non-profit prototype WASH Service Operator, contracting WSPs to provide hygiene, reliability and water quality services for rural communities through service contracts (described below) paid for by the client communities. The prototype acts as a model for study by government authorities, private sector bodies and civil organizations working in WASH. It acts as a model for example for district-level associations of hand-pump mechanics, who may adopt its approach or learn from its approach, and provide similar services competitively.

Monitoring

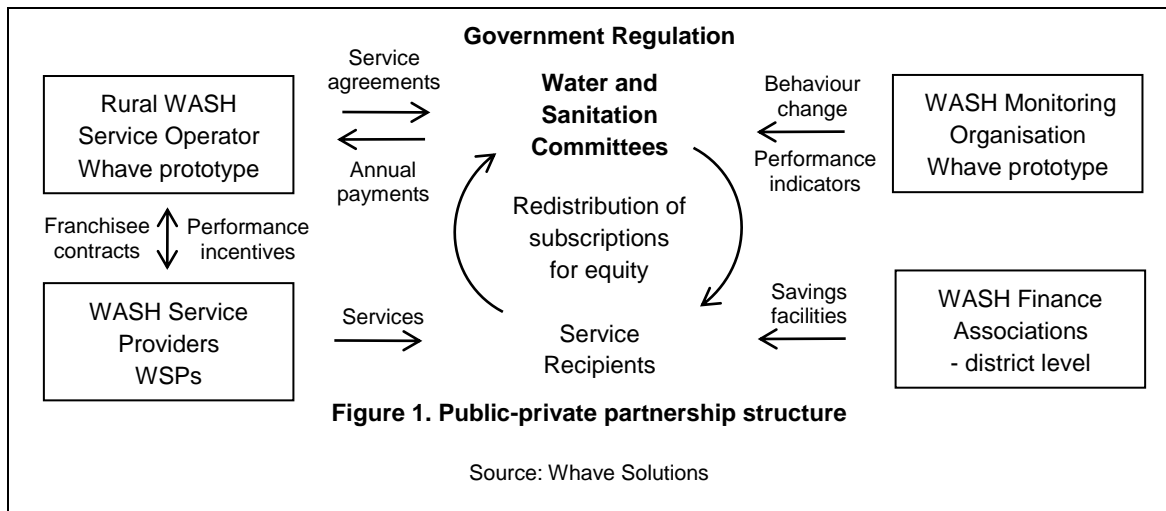
Performance indicators are monitored regularly (initially monthly, then quarterly where possible to reduce costs). The three key indicators are the hygiene grade of each community, the number of days of operation of each source, and the water quality in homes as well as at sources. The hygiene grading approach involves observation-based measurement of a comprehensive set of conventional hygiene indicators (i.e. latrine usage, hand-washing, container-washing) with addition of less conventional criteria such as usage of closed-top drinking pots fitted with taps, to replace open-top drinking pots which invite cup-dipping and hence contamination by fingers. Water quality measurement is conducted by random sampling in home drinking pots and faecal coliform counts. Monitoring is included in the methodology, and its costs justified, because it acts as an important driver of change, rather than solely as a method of tracking performance.

WASH service agreements

Payment of fees by communities to cover the costs of both the performance-based fees and the monitoring described above is a fundamental programme objective. The method adopted to accomplish this, is a service agreement between the service operator and the community, involving payment by the water and sanitation committee (WSC) of the community of an annual sum. This fee amount is initially subsidised but rises each year until the subsidy is no longer in place, since immediate full payment is not feasible for a new service approach which communities have no previous experience of, while partial payment allows time to evaluate. The projected price increment is transparent during discussions leading up to a (voluntary) signing. Each year the community can decide to renew and pay the increment or opt out, depending on whether they value the service at the price offered.

Enabling environment and equity

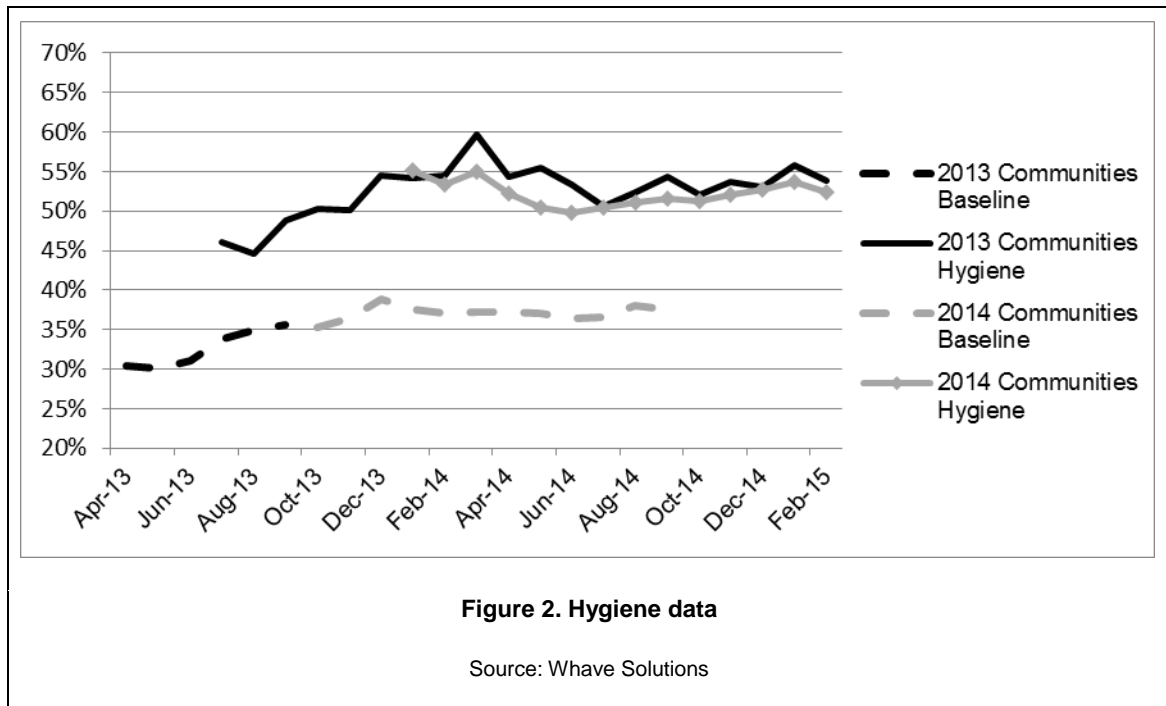
An institutional and regulatory structure was developed by the pilot project through a series of district and central government discussion workshops. Central and district government offices regulate and arbitrate. Community water and sanitation committees (WSCs) represent their members and pay the annual service fees on behalf of all members. Equity is ensured by the WSC re-distributing the bulk annual service fees, collecting individual family subscriptions according to welfare considerations. The local private sector plays a major role in the form of WASH Service Operators contracting local WASH Service Providers.



Findings

Monitoring hygiene, reliability, quality

Hygiene. The graph below shows both pre-project baseline and project values for community hygiene.



Reliability. The graph below shows average monthly percentage of days the project sources did not experience down-time. It also shows two baseline study results.

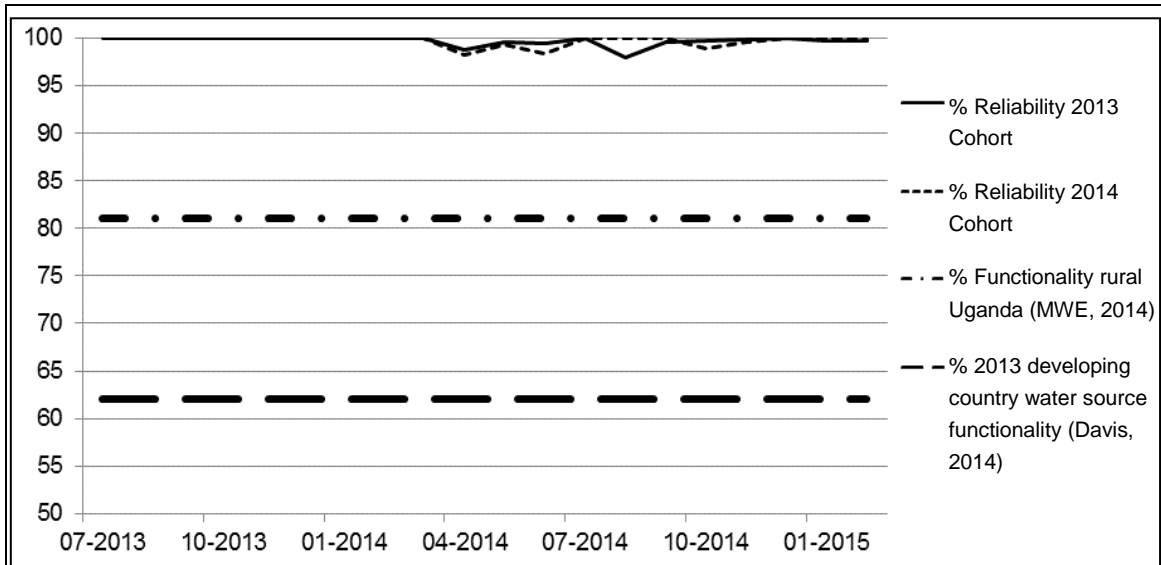


Figure 3. Reliability

Source: Whave Solutions

Water quality. All water quality tests for faecal coliforms are assessed against the WHO low risk guideline of 10 colony-forming faecal units per 100 ml. 80% of all tests undertaken on sources (1,795 samples) have qualified according to this guideline. 65% of household drinking vessels have qualified (1,270 samples). 57% of all homes qualifying also had a source which qualified. In cases where sources and homes were tested at the same time (1,270 samples), 35% showed the same result (within +/- 2 cfu), while 43% of homes were more contaminated than the source, and 22% of sources were more contaminated than the home.

Incentives for WASH service providers

The pilot project contracted 9 Service provider franchisees, and measured their performance against targets of 100% concession hygiene, 100% reliability, and 100% achievement of home water quality benchmarked at WHO low-risk threshold levels of <11 cfu/100ml.

Table 1. Performances of nine WASH Service Providers				
Principal Indicators	% Source Reliability	Concession Hygiene %	Source Water Quality (<11 CFU)	Home Water Quality (<11 CFU)
Performance range	93% in one concession, >99% in all others (July 13 to Feb 15)	Between 47% and 56 % (March 2015)	74% to 99% (Sept13 to Feb15)	55% to 98% (Sept13 to Feb15)

WASH service agreements

Annual service agreements are signed at an introductory price of 20% and 10% respectively of the two common by-law water user fees of US\$500 (\$0.17) and US\$1000 (\$0.34)/family/month. By mid-march 2015, 64 communities had been asked to renew their service agreements at an increased price equivalent to 80% and 40% respectively of these two common by-law water user fees. Of these, 71% have signed with payment, while 97% have agreed to sign and pay, leaving 3% non-compliant.

Institutional structure and equity

Senior local government officials have shown enthusiasm for the model and practical regulatory and arbitration interventions by government officials at district and sub-county level have occurred in support of the model. Community water and sanitation committees (WSCs) have been collecting advance payments for (subsidized) annual service fees. Redistribution within the communities is occurring (commonly exemptions or half-payments are granted to the elderly). The 2014 government sector review of “Golden Indicators” (MWE, 2014) stated that rural coverage of 64% and WSC functionality at 71% were both the same as in 2013; functionality at 85% is a 1% increase since last year, and hand-washing facility near toilets rose by 4% since 2013 to 33%. The project has found that district government officers demonstrate strong commitment to improvement of these ratings, and welcome the programme as a method of enhancing results.

Discussion and learnings

The findings derive from two language groups in eastern and central Uganda, and from 155 communities in five districts (approx. 7,000 families, 40,000 people). The project has trained nine WASH Service Providers, and engaged 155 WSCs and 5 district and 11 sub-county governments. It has trained two senior management staff, four community development officers, three local monitors, two lab technicians and two administrators. Three district-level WASH Finance Associations have been established, and Public-Private Partnership (PPP) agreements have been signed with two district governments. One Hand Pump Mechanics Association has been active so far within the PPP structure.

The key objective is demonstration of self-sustaining and permanent solutions not dependent on external finance. Willingness-to-pay is at the heart of achieving sustainability. So far the strategy of incremental pricing is promising. However practical field work indicated that fee collection is demotivated by lack of affordable and trusted banking services. Accordingly the programme was modified to include registration of district level WASH Finance Associations offering secure savings facilities to WSCs. Further, evidence suggested that motivation of the water and sanitation committee members could be enhanced if the funds collected for WASH were integrated with locally-managed village saving and loan associations (VSLAs). Accordingly, the current 2015-7 project now includes WASH-VSLA trials.

The sustainability objective raises the question “what is the full cost of assurance that a community water source hardly ever suffers down-time longer than a day”? The project has indicated so far that for hand-pumps, this will be in the order of US\$3000 (\$1.1)/family/month, to cover administration, technical monitoring, and technical maintenance tasks, including hardware and labour, and including renovations of major components. This represents less than 2% of average monthly household income in rural Uganda of \$73.1 (UNHS, 2010). Monitoring is included, as it is regarded as a key driver of change and necessary to achieve professionalization of the local actors. The estimate does not include initial capital expenditure, but does include renovations over decades. It corresponds approximately to existing research in Uganda (Biteete 2013). The current 2015-7 project includes provision for life-cycle cost tracking and cost optimisation for no-downtime sources. The introduction of preventive maintenance and economy of scale will optimise no-downtime cost and develop a solid information base for bench-marking.

The incrementally-priced service agreement strategy implies availability of external finance to support the decreasing shortfall between cost of service and consumer revenue, and also to support the complementary hygiene and water quality transformation. Grants and investments (raised by candidate service operators) are appropriate to cover initial costs, and subsequently Outcome-Based Aid is appropriate to provide declining subsidy while strengthening performance-reward and thus professionalization of local actors.

In respect of hygiene findings, the project succeeded in maintaining community hygiene lifts of 15% on average, but did not create a continuous upward trend. In respect of water quality findings, quality is maintained rather than improved over time, and the programme faces the challenge of introducing an upward trend. The learning here is that successive hygiene lift campaigns and other methods, such as closed-top drinking pots fitted with taps, prize-giving events and accreditations to local actors drawing on monitoring data, will be needed. These approaches are integrated into the current project.

In respect of reliability findings, it is noted that all the hand-pumps were reconditioned prior to hand-over to the WASH service providers. The 2015-7 project continues monitoring to test reliability in the long-term.

During the stakeholder consultation process it was suggested that the regulatory role in the PPP structure could be strengthened by regular meetings of sub-county water and sanitation boards composed of representatives of community WASH committees sitting alongside government representatives. However some experienced government personnel suggested that regulation would be more efficient through existing

channels. It was also suggested that regional civil society organizations could act as objective monitors, and also provide arbitration and regulation consultancy to local government offices. Another suggestion was that district-level Hand-Pump Mechanic Associations (who already play a role in rehabilitation of hand-pumps under the PPP structure) could be candidates for the role of WASH Service Operators; this suggestion has been adopted in design of the 2015-7 project which includes training for the associations for this role.

Conclusion

In conclusion, the pilot project found that the performance-payment of local private sector actors effectively introduces preventive maintenance and optimization of life-cycle costs for no-downtime functionality. Continuous monitoring underpins this. It was found that communities are willing to pay annual bulk fees in advance for WASH assurance, albeit so far subsidized, and are compliant to the concept of incremental payments. The PPP and monitoring structures developed by the project have created a strong base for public-private partnership and for outcome-based aid which in turn promises to professionalise the local private sector through performance-payment. However it became clear that further interventions, such as rural banking and livelihood lending facilities, should be integrated. Other additions should be successive hygiene campaigns, competition for prizes and increased adoption of modified sanitary technology, all of which promise to be effective on the strength of the continuous monitoring and data sharing established within the PPP structure. These “next steps” have been included in the scaled 2015-7 project.

Acknowledgements

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Contact details

Adam Harvey
POBox 72305, Kampala, Uganda
Tel: +256782846875
Email: adam.harvey@whave.org
www.whave.org

Joel Mukanga
POBox 72305, Kampala, Uganda
Tel: +256790466370
Email: joel.mukanga@whave.org
www.whave.org