

triple-s

Using mobile phones to facilitate local monitoring and improve functionality of rural water points

MAIN MESSAGES

→ Findings

- The M4W system shows promise as a cost-effective method for acquiring monitoring data to support district-level planning and to update the national Water Supply Atlas.
- Estimated cost to roll out M4W to all districts is a little over UGX 785 million (US\$ 314,000). Annual recurrent costs are estimated to be in the neighbourhood of UGX 115 million (US\$46,000).
- In order for M4W to reach its full potential to improve functionality rates, additional factors such as the effectiveness of Water Source Committees and the availability of funds to pay for repairs would need to be addressed.

→ Recommendations to strengthen learning in the WASH sector

- Conduct an evaluation of the effectiveness and efficiency of the M4W system in all eight pilot districts.
- Conduct further community sensitization needs to ensure that the system is fully utilised by the communities in the pilot districts and additional information gathered on what works and what doesn't.
- Fast track integration of M4W data into the national Water Supply Atlas.

Mobile phones for improved access to clean water (M4W) is an initiative to improve the functionality of rural drinking water points by enabling water users to report faults by text message. The initiative is implemented by a consortium of partners including SNV Uganda, IRC/ Triple-S, Makerere University and WaterAid.

This brief summarises findings based on M4W piloting across eight districts: Lira, Kabarole, Arua, Kasese, Kyenjojo, Amuria, Masindi and Katakwi. It identifies challenges associated with implementation, its potential benefits and estimated costs, and possible next steps for scaling up.



Community sensitisation (Photo: Peter McIntyre)

M4W is a technological platform through which a water user is able to send a text message about a faulty water supply facility. When a message is received by the system, notice is sent to a Hand Pump Mechanic (HPM), who goes to inspect the facility in question. Depending on the magnitude of the fault and availability of resources, the water facility may be fixed within a short period of time.

The system can also be used to conduct baseline assessments. As inspection or assessment data are entered by the HPM into the system, district authorities can use it to track and analyze reasons for non-functionality of reported water points – such as dry/low yield, technical break down, water quality, non-functional Water Source Committee (WSC), nearby alternative sources and vandalism. The data collected is also accessible to the public at <http://m4water.org/>.

From 2012 to date, the consortium of partners have operationalised M4W in all eight districts by installing water source identifiers; training District Water Officers (DWOs), Hand Pump Mechanics, Health Assistants and Community Development Officers; and supporting data collection and analysis.

The M4W system uses existing government structures at national and local government levels. At the national level, the Management Information Systems working group is already coordinating the integration of M4W data into the national database (the Water Supply Atlas). The M4W system also generates data that directly goes into the District Water Management Information system, which the District Water Officer can easily access and use.

KEY ACHIEVEMENTS

Expansion of number of water points monitored:

A total of 9,278 water points are currently being monitored under the M4W system. At the time of its launch in 2011, the baseline data collected revealed that at least 19% of the water points that existed in the eight pilot districts had not been captured in the Ministry of Water and Environment Water Supply Atlas database. These water points were included in the M4W database and are currently being monitored.

Tracking response to non-functional water points:

The M4W system has provided a means of tracking response to non-functional water points. Since October 2011 the system has received at least 1,561 messages reporting faults, of which 377 have resulted in the water



Hand pump mechanic affixing sticker with water source identifier and instructions on tap stand (Photo: Peter McIntyre).

point being fixed¹. Since there has been no data on the reporting or repair of non-functional facilities prior to M4W, so was it not possible to establish a baseline against which to gauge the level of improvement that this represents.

Improved functionality of sources in implementing districts:

The Sector Performance Report data for the eight implementing districts for 2012 and 2013 reveals some improvements in functionality in Arua, Lira, Kabarole and Amuria districts; the average increase in functionality for the four districts during this period was 2.5 percentage points. This rise may in part be due to other interventions, such as the formation of HPMAAs.

Monitoring data: The M4W system has generated monitoring data, which the District Water Officers are using for planning and reporting across all eight implementing districts. For instance, additional data collected on functionality in Kabarole district during community sensitization activities, revealed that 70% of the 120 water points that were assessed by the HPMAAs needed minor repairs. The communities were informed of how much it would cost to fix the water points. Using the same data, the DWO duly planned for the rehabilitation of the remaining 30% of the 120 water points that required major repairs.

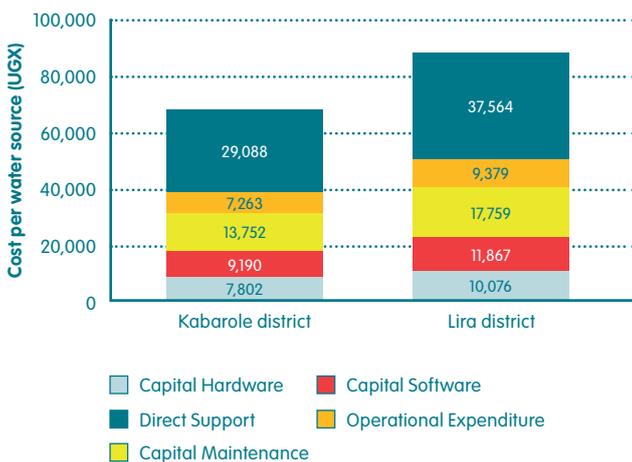
¹ Based on M4W database report dated 26 September 2013. Repair of the remaining 1,184 non-functional water points has been hindered by lack of operations and maintenance funds, often as a result of non-functional WSCs.

COSTS OF ACQUISITION AND MANAGEMENT OF DATA

Available estimates produced by the M4W Systems Administrator suggest that it would cost UGX 785,200,000 (US\$ 314,000) to deploy the M4W system in all 111 districts in the country, and an additional UGX 115,200,000 (US\$ 46,000) for subsequent annual recurrent costs. Thus, the total initial cost of deployment plus the annual maintenance costs for the first year would be UGX 900,400,000 (US\$ 360,000).

A survey conducted by Triple-S to estimate the unit costs of deploying and running the M4W system over the last three years are presented in the figure. The total number of water sources in Kabarole is 1,498 and in Lira 1,160 (based on the M4W system data).

FIGURE 1 COSTS OF DEPLOYMENT OF THE SYSTEM PER WATER SOURCE BY TRIPLE-S (IN UGX)



The direct support costs include those incurred by Triple-S to deploy and operate the M4W system per water source in Kabarole and Lira districts over the last three years. Capital maintenance costs included replacement of lost and damaged mobile phones, and software enhancements and upgrades over the course of the three years. Capital software expenditure incurred included software licenses, costs for the data centre and costs for initial training of the HPMs on how to use the M4W system. Capital hardware and operational expenditure are deceptively low in the figure because M4W was initially an undertaking of SNV, which made the initial capital investment in mobile phones, before Triple-S took over implementation in the two districts.

CHALLENGES

Although the DWOs were trained on M4W and are already using the data for various purposes, there is a need for regular refresher courses to enable them to utilise the products from the system effectively. Most of the M4W data from new water points lacks coordinates, which are required for the data to be integrated into the national Water Supply Atlas database.

Persistent network and connectivity issues continue to undermine the implementation of the system in some sub-counties within the implementing districts. For instance, the M4W system runs only under one of the mobile phone operators. In addition, some of the HPMs download music and photos, which consume the internet bundles, causing the mobile phones to be disconnected from the M4W system.

All these issues need to be addressed in order to scale up the use of the M4W system.

Recommendations

Findings from the piloting experience suggest that M4W could help improve functionality and reduce down time of water points by alerting hand pump mechanics of faults. However other factors, such as availability of funds for repairs and capacity of WSCs, would also need to be addressed.

The Ministry of Water and Environment has already expressed interest in conducting an evaluation of the effectiveness and efficiency of the M4W system in the eight districts over the last three years, in order to obtain a solid foundation for scaling up the initiative across other districts in the country.

Further community sensitization needs to be prioritised to ensure that the system is fully utilised by the communities in the pilot districts and additional information gathered on what works and what doesn't. If the Ministry of Water and Environment supported the establishment of a toll-free line enabling communities to report faults at no cost, it could encourage greater use of the system.

The M4W implementing partners need to fast track the integration of M4W data into the national database so that the system becomes a complementary tool for acquisition of relevant monitoring data by the Ministry of Water and Environment.

REFERENCES AND ADDITIONAL RESOURCES

Abisa, J., 2013. *Monitoring the functionality of rural water sources using mobile phone technology (M4W) briefing note*. Kampala: IRC Uganda. Available at: www.ircwash.org/resources/monitoring-functionality-rural-water-sources-using-mobile-phone-technology-m4w.

MIS – Monitoring Information System Sub-Working Group, 2012. *Mobile phone technology to improve functionality of rural water sources briefing note*. Kampala: IRC Uganda. Available at: www.ircwash.org/resources/mobile-phone-technology-improve-functionality-rural-water-sources-0.

MWE – Ministry of Water and Environment, 2010. *Water Supply Atlas 2010*. [online] Kampala: MWE. Available at: www.mwe.go.ug/index.php?option=com_docman&task=cat_view&gid=12&Itemid=223.

M4W, 2014. *M4Water*. [online] Kampala: SNV Uganda, Triple-S Uganda, WaterAid and IRC Uganda. Available at: www.m4water.org.

Additional resources on the use of mobile phones for data collection are available through the Triple-S website. See *Using mobile phones to improve functionality of rural water services*, at: www.waterservicesthatlast.org/experiments/uganda_experiments/using_mobile_phones_to_improve_functionality_of_rural_water_services.



M4W training (Photo: Peter McIntyre).

About IRC

IRC is an international think-and-do tank that works with governments, NGOs, businesses and people around the world to find long-term solutions to the global crisis in water, sanitation and hygiene services. At the heart of its mission is the aim to move from short-term interventions to sustainable water, sanitation and hygiene services.

With over 40 years of experience, IRC runs programmes in more than 25 countries and large-scale projects in seven focus countries in Africa, Asia and Latin America. It is supported by a team of over 100 staff across the world.

For more information about IRC, go to www.ircwash.org

About this Brief

This brief is authored by Joseph Abisa, IRC Uganda/ Triple-S Research Officer who has been coordinating implementation of the M4W system in the two Triple-S focus districts of Lira and Kabarole. This brief is based on research conducted under the M4W project and Triple-S (Sustainable Services at Scale), a learning initiative to improve water supply to the rural poor, carried out in Uganda, Ghana, and Burkina Faso.

In Uganda the initiative is spearheaded by a consortium of partners: the Uganda Ministry of Water and Environment (MWE), the Network for Water and Sanitation (NETWAS), the Uganda Water and Sanitation NGO Network (UWASNET), SNV Netherlands Development Organisation Uganda and IRC Uganda.

For more information see: www.waterservicesthatlast.org

© 2014, IRC Uganda

This publication is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Netherlands License.

Visiting address

Plot 2220, Aqua Complex,
1st Floor, Portbell road
Kitintale, Kampala
Uganda

Postal address

P.O. Box 40398
Kampala
Uganda

T +256 758 200 782
uganda@ircwash.org
www.ircwash.org/uganda