

REDUCING HANDPUMP DOWNTIME USING SMS TECHNOLOGY

This document gives an overview of the progress made on the Triple-S experiment in Ghana which sought to improve the reliability of water services through the application and testing of an SMS (short message service) module for reporting hand pump breakdowns, linking with Area Mechanics and spare parts outlets, and ordering and paying for spare parts. The experiment builds on rural water service monitoring studies and on ongoing efforts to address the underlying causes of water service downtime.

THE INNOVATION PROCESS

The Triple-S (Sustainable Services at Scale) initiative has led a process of learning and innovation to improve rural water service delivery in Ghana and Uganda. This document briefly describes one of the innovations with reference to the generic phases in an innovation process:

- **Phase 0: Understanding and ‘socialising’ the problem**, which leads to a clear articulation of a problem and generates awareness among stakeholders.
- Phase 1: Proof of concept, which leads to detailed articulation of an innovation and consideration of its feasibility.
- Phase 2: Limited piloting, provides evidence on outcomes, impacts and costs of the innovation and the requirements to make it work.
- Phase 3: Full scale roll-out, means application of the innovation (almost) nationwide and for multiple years.
- **‘More research’ ideas**, which can be developed into further research into specific parts of the problem
- There are also actions that are deemed not to require an experiment, for example because the cost of an experiment would be higher than implementing the innovation.

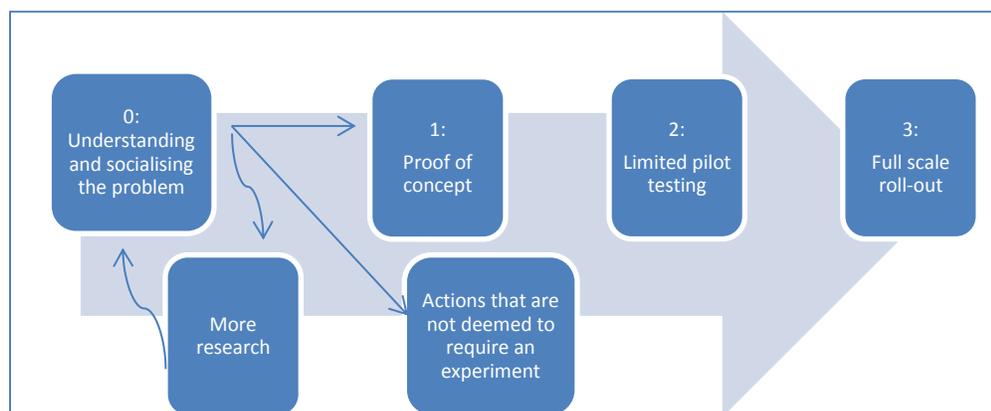


Figure 1 Innovation process: phases in experiments

BACKGROUND

The Community Water and Sanitation Agency (CWSA) guidelines for rural water provision require that non-functional handpumps are fixed within three days. However, many broken-down handpumps do not meet this requirement. A survey conducted in three districts by the Triple-S project revealed that, 34% of 474 of point sources were unreliable (i.e. broken-down for more than 18 days in a year). Sometimes, service downtime is prolonged by the time spent to report faults, seek technical assistance and purchase spare parts. To address these bottlenecks, SkyFox Limited, a private company based in Ghana developed an innovation which uses mobile phone technology to facilitate reduction in service downtime. This experiment was piloted in the Sunyani West District in the Brong Ahafo Region of Ghana.

PHASE 0: UNDERSTANDING AND 'SOCIALISING' THE PROBLEM

The SMS platform is supposed to: a) establish mobile-based savings and payment system for Water, Sanitation and Management Teams (WSMTs) and caretakers to contribute to efficient fund management; b) save on travel costs of enquiring on prices of spare parts and purchasing them; c) make communities less-prone to overcharging for spare parts through third parties; d) provide a medium of fast information flow among all institutions/actors involved in the repair and spare parts supply chain; and e) provide districts access to data on the functionality of their handpumps.

The experiment has built on work done by the Direct Support Committee of CWSA to identify problems and gaps along the spare parts supply chain and their effects on service downtime in Ghana. The scope of the experiment was expanded through another study on critical factors which prolong the downtime of handpumps in Sunyani West District. Findings from this study helped to estimate the potential reduction in transaction costs the SMS experiment could have. The concept of an SMS platform for reducing water service downtime was discussed with stakeholders at different platforms. Representatives of the pilot district, Sunyani West, also gave feedback on the experiment and supported its implementation.

PHASE 1: PROOF OF CONCEPT

A first step in the development of the SMS system was to better describe how it would work and address the problems identified through the studies. In short, the system works as follows:

When a hand pump breaks down, the person in charge (WSMT/caretaker) will use a USSD short code to send report to the technological platform (managed by SkyFox). The system updates the **status of the facility as "Not Working"**. **At the same time, information is sent to a set of phone numbers of relevant persons (e.g. area mechanic) about the breakdown.** An Area Mechanic is expected to go to the community to help diagnose the problem. Communities can order spare parts needed to repair a broken down facility by using a unique alpha-numeric code of the part to be replaced. The part(s) will then be delivered to the district capital and communities are sent an SMS with information when and where to pick them up. Communities/WSMTs are expected to

undertake a mandatory monthly reporting on the status of their handpumps (working, not working or under repairs).

The CWSA Technical subcommittee on supply chains provided Triple-S with technical guidance in the development of the surveys, indicators to track in the SMS system and study methodology. Potential risks of the SMS system and mitigations were identified and consolidated in a working paper (Kumasi et al., 2014) describing the current flow of spares and area mechanics, and how this would alter with the SMS system.

PHASE 2: LIMITED PILOTING

To further test the concept, an effort was undertaken to put the SMS system into practice in Sunyani West district. However, serious delays were encountered, including the lack of facility codes on handpumps, negotiation of arrangements with mobile providers and spare part supplies, and training of caretakers and contact persons in the selected communities.

Data from the second round of water service monitoring were used to develop unique identification codes for 138 functional boreholes in Sunyani West District. SkyFox Limited entered into agreements with MTN, Tigo and Airtel to allow their networks to be connected to the SMS platform. In May 2014, training workshops were organised by Triple-S and SkyFox Limited for WSMTs, caretakers, Area Mechanics and key district staff.

From May 2014, WSMTs/caretakers were expected to provide monthly update on the status of their facilities and use the system to report breakdowns, request for the service of area mechanics and spare parts. Monitoring of the SMS system is being done at two levels: SkyFox is using the platform to check breakdown reports. The Triple-S team and the Sunyani West District Assembly use data from the SMS platform to undertake targeted follow-up visits to communities. The experiment has been running in about 54 communities. Triple-S is documenting how the process has evolved so far, challenges being confronted and lessons learnt.

This experiment will be taken forward under the Hilton Foundation project and the results will feed into the SMARTerWASH project.

FIND OUT MORE

Reducing handpump downtime using SMS technology
[Triple-S Ghana Experiments](#)