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**ENSURING AVAILABILITY AND SUSTAINABLE MANAGEMENT  
OF WATER AND SANITATION FOR ALL**

**FundiFix: exploring a new model for maintenance  
of rural water supplies**

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*A critical building block of sustainable rural water services is financial sustainability, with flows of finance from users, governments and development partners. A model for maintenance service provision (the FundiFix model) is described, based on prepaid user contributions, performance-based contracts and remote monitoring, providing a professional and rapid maintenance service for community water supplies. Results from the initial six months show 30% sign-up and 89% collection efficiency of monthly tariffs, suggesting that rural communities can and will pay for a quality service. Institutional coordination and scaling up the business model in terms of service area and type of infrastructure are future steps.*

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**Introduction**

Sustainable rural water services, (in particular financial sustainability) have become a ‘holy grail’ for the water sector in recent years. Carter et al (2010) highlighted the need for financial viability and the design of new cost-sharing arrangements in relation to handpump maintenance, and the same applies to all water supply infrastructure. A variety of management models are in use around the world from community management, through varying degrees of private and government/local authority involvement, however few have been able to deliver reliable and financially sustainable water services in rural areas. While full cost recovery remains the ideal endpoint, in reality a blend of tariffs, taxes and transfers will be necessary for financing operation and maintenance of water supply infrastructure. This briefing paper presents the initial results from a model of maintenance service provision, developed in Kenya (Oxford/RFL, 2015) with insights for policy-makers, enterprise, local government and development partners. The study area is in the semi-arid north of Kitui County, covering two wards with a population of 50,766 (surface area 2,466km<sup>2</sup>) where the main livelihoods are agro-pastoral. Over half of the 512 water points are unimproved (streams, unprotected shallow wells, earth dams) and in the dry seasons people rely heavily on year-round sources such as the Kiambere pipeline kiosks, deep boreholes and more than 66 handpumps.

**The FundiFix model**

**Model rationale**

The ‘FundiFix Model’ pays homage to local and skilled mechanics (‘fundis’ in Swahili) and focuses on performance metrics, which means in this context repairing handpump failures fast. Key components of the model are:

- A local company acts as a **maintenance service provider (MSP)** as opposed to a water service provider such that they are not responsible for a legacy of poor installation or changing environmental conditions. MSPs can monitor water quality metrics but in cases of health risks the burden for action would be with mandated government agencies.
- Regular **prepaid user contributions** are made through M-PESA (a mobile money service in Kenya), and registered users (up to ten community and committee members) are sent notifications of payment and reminders via SMS (text message). This provides an efficient and transparent mechanism for financial

flows from rural water users to the maintenance service provider, one element of **sustainable finance** (tariffs).

- Providing a professional service is linked to **performance-based contracts**. If a repair takes longer than three days, communities receive a free month of service, so building in penalties for poor performance.
- **Remote automated monitoring** occurs through transmitters fitted to pump handles that monitor movement (usage and functionality) and send data to a central server using the mobile phone network. The status of handpumps in the system can be remotely monitored via internet. This is essential for validation of repairs and information sharing in remote rural areas, keeping the service accountable to government, donors and other stakeholders.
- **Unit of analysis**. As each handpump is managed differently related to group size, water demand, access rules, alternative water sources and other factors, the decision was made to collect a 'community payment' rather than individual payments to reduce the complexity and transaction costs of the service.

### How the model works

A rapid maintenance service is offered to handpump users, for a fixed monthly tariff that is paid using mobile money services. A small office provides a physical presence and focal point for enquiries, and stores high quality spare parts. When a handpump breaks down, any user can call a hotline number to notify the company. A skilled local mechanic, equipped with a motorbike and tools, responds as soon as possible to diagnose the problem and carry out the repair. Some more details on the service are given below:

- **Community trust** - A free trial of the MSP builds trust before a contract is signed. In Kyuso (where the pilot began), it was found that the establishment of a physical office with local staff was well-received by communities and government.
- **Affordable tariff** - Observed handpump usage data allow variable tariffs to be designed with provision for regular, low or special cases. Most communities fall in the former; low users are monitored with a reduced tariff; and 'special' cases, including schools, clinics or other facilities with handpumps benefit from a much reduced rate. The latter provide a basis for government support through 'taxes'.
- **Payment feedback** - A feedback loop of payment and performance is essential, here using M-PESA and FrontlineSMS (a payment management software) platforms. Up to ten community members split between water committee members and non-members are registered on FrontlineSMS to receive monthly messages on payment and performance data, plus paper receipts for transparency to build community confidence.
- **Performance monitoring** - FundiFix is responsible for fixing any 'normal' repair in three days. A range of performance metrics are reported in the 'Rights to Results' report (Oxford/RFL, 2014), including unit cost of water produced (USD/m<sup>3</sup>, percentage downtime, operational efficiency etc.).

### Box 1: Performance-based contract

The maintenance service covers "**Normal repair services**", only covering normal wear and tear, up to an annual maximum value and excluding theft, vandalism and dry wells.

A "**Notice Period**" of several months is included, meaning that if a monthly payment is missed, communities will still be covered by the service for a period of time. This flexibility allows for the seasonal nature of cashflows in rural areas, for example advance payments can be made when money is available.

"**Normal repair duration**" specifies the maximum time between a fault being reported and the repair being carried out, in this case three days. The service provider faces a penalty if this is exceeded.

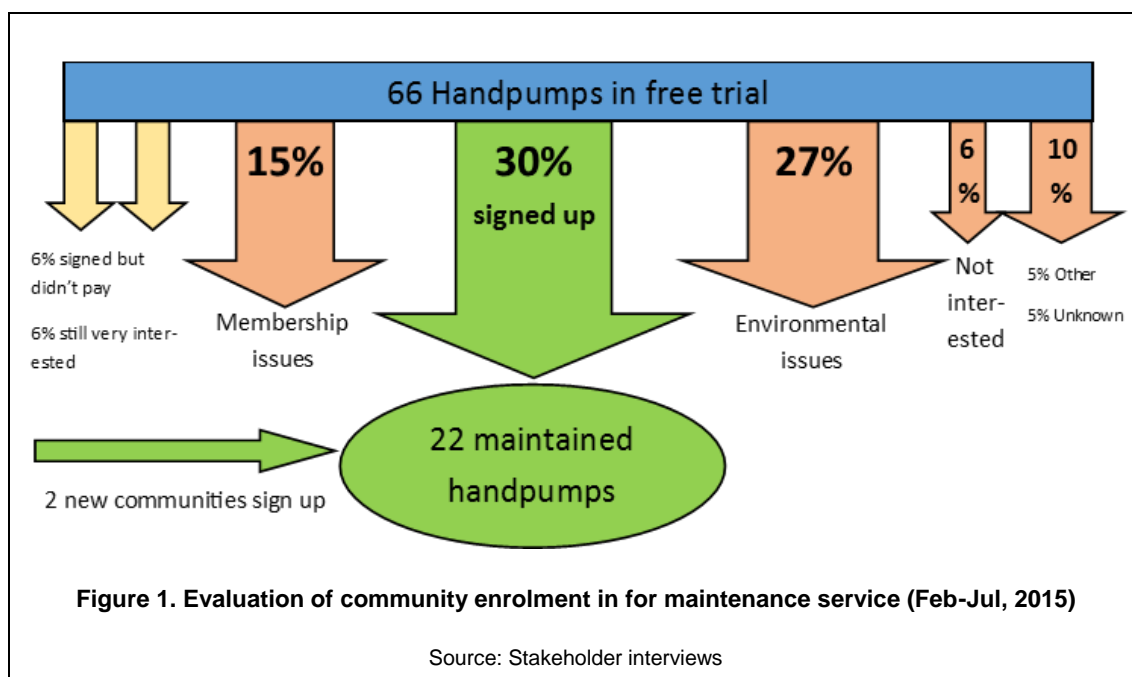
### Experience from the ground: FundiFix Ltd., Kyuso

In Kyuso (Kitui County), FundiFix Ltd. has been legally registered as a Maintenance Service Provider for handpumps and other infrastructure, and a second company is functioning in Kwale County.

### Community enrolment

Baseline analysis evaluated if the communities were likely to enroll for the FundiFix service. According to the focus groups the majority (89%) would commit to a pre-payment maintenance service after the pilot.

Launch results from the first six months show that just under one in three (30%) of communities have registered and are paying regular monthly payments with 89 per cent revenue efficiency. Affordability of the proposed tariff system was not a major constraint.



Environmental issues were the principal reason for non-enrolment (27%). Unsatisfactory water quality, particularly high salinity, collapsed well or groundwater declining were frequently cited by communities. Handpump maintenance is not their main concern, rather the water resource itself, with some planning to dig a new well elsewhere. Membership issues were the second major reason (15% of total) for non-enrolment. Interviews identified poor organisation, lack of agreement between members and leaders, or waiting for committee elections as constraints to enrolment.

One community withdrew from the service, having not fully paid the sign-up fee, or any monthly fee for the 6-month notice period because of low water levels. Two new groups signed up later in 2015, and enquiries continue to be made prompted by the efficient and effective service provision that has been tested and approved by signed-up groups.

### Operational performance

Between February and June 2015, FundiFix made 56 repairs to 18 handpumps (range: 0-17; mean = 3; median = 2). All but two repairs were made within three days, with an average repair time of 1.1 days. Delays were caused by insecurity (livestock and human conflict) and waiting for water level to subside before the community could desilt a well, and were not outside of contractual obligations.

Performance is skewed by nearly half of the repairs (48%) attending to two handpumps: the first had not been part of the free trial, is deep and heavily-used and required replacement of several parts, and the second, had a rusted cylinder, which was causing rapid wearing-out of the U-seals. Pooling risk at scale underlies the economic logic of the FundiFix model and most insurance schemes. The flip-side is that just under a fifth of handpumps (18%) did not require any repairs during the time period. All repairs were carried out by one fundi (pump mechanic), using a motorbike provided by the Sub-County water office.

### Financial performance

Income in the first six months was USD 1,057<sup>1</sup> with 72 per cent in monthly payments, and 28 per cent in registration fees. This represents 89 per cent collection efficiency, down from 96 per cent in the first quarter. Overdue payments are followed up using the FrontlineSMS software, allowing a number of community

members to be reminded by SMS, as well as personal phone calls or visits where possible. Some late or non-payments are due to the lack of an M-PESA agent to deposit the money or the distance to access this. Analysing payment behaviour identifies the number of communities in arrears as of end of July, per payment band. Most of the communities in arrears (71%) are in the low-use payment band, the majority of which had not previously made regular payments.

Expenditure over the first five months of operation (February-June), the local costs of running the maintenance service (transport, labour, spare parts and information) was USD 2,156. These figures do not include overheads such as office rental, utilities, support staff and consumables, some of which are related to the research programme.

## Lessons learned and future perspectives

Initial results from the FundiFix pilot in Kyuso have been promising, showing significant reductions in downtime and good payment rates linked to performance. Under certain conditions, rural handpump users can and will pre-pay for a quality maintenance service, which can be facilitated by mobile money services. The experience has highlighted various surmountable challenges such as using mobile money services in rural areas (access to agents and network, familiarity), the complexity of community management and the challenge of group decision-making, and seasonality of income in rural areas. In addition, where water sources are unreliable (eg. seasonal), undesirable (eg. salty) or of poor construction quality users are unlikely to pay for maintenance.

At the current scale, the model is not financially sustainable (less than 50 per cent of costs covered) but has the potential to be scaled up geographically at Sub-County or County level (as currently taking place in Kwale County), and potentially grow to cover other community-managed water supply systems such as submersible pumps and kiosks. Recommendations are to focus on creating an enabling environment at County and National level for maintenance service providers, including institutional coordination, regulation and performance monitoring, as well as mechanisms for cost-sharing.

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## Note

<sup>1</sup> An exchange rate of 1 USD = 100 KES is used throughout.

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