

MicroSave

Market-led solutions for financial services

Smart Meters to Enhance Access to Water Services in Rural Africa



An estimated 663 million people lack access to clean and safe drinking water in the world today. Mobile money services have opened new frontiers in the development and promotion of livelihood services for the mass market. GSMA's [Mobile for Development Utilities – Innovation Fund](#) supports pilot projects that test innovations promoting access to water and energy through pay-as-you-go (PAYG) systems, such as smart meters.

Smart water meters are also known as intelligent or multi-functional water meters and can measure water levels, leakages, and water quality. More importantly, these meters can send data to a portal or other device for further analysis and action. Smart water meters make use of inbuilt sensors and digital devices based on the Internet of Things – IoT. Technology companies are currently making use of IoT to develop and promote smart meters.

Access, quality, and payment methods are three important challenges that limit the provision of water and other basic utilities to low-income populations. A combination of smart meters and convenient payment mechanisms would respond well to the challenges of universal access to water services among low-income households.

Such solutions create new services that promise to enhance access to water in Africa. Scaling them up would contribute significantly to the realisation of [UN Sustainable Development Goal 6](#). These goals aim to enable the availability and sustainable management of water and sanitation for all by the year 2030.

[Eseye Engineering](#), UK is one of such companies that manufacture smart meters and meter readers. These devices have inbuilt sensors that facilitate multiple functions through mobile phones. However, only water vendors have adopted these solutions. Adoption remains low at the household-level, which otherwise could create the significant transformation in access to water services.

The [Lilongwe Water Board](#) and Nairobi Water Company tested the [eWaterPay](#) solutions – or water ATMs – at water vending points. Customers use prepaid Near Field Contact (NFC) cards to purchase water. The installations have reduced the distance people have to travel to get water and have reduced the risk of contamination. Since the meters provide detailed transaction records, many merchants are now willing to venture into the water vending business. More water vendors mean greater access to high-quality water within shorter distances. Additionally, the pre-payment system enables buyers to monitor their water service expenses.

There is a great opportunity to scale up access to water if these prepaid meters are installed at the household-level. Households would have the assurance of access to high-quality water and, with the pay-as-you-go system; utility providers would have the assurance of payment through convenient mobile money services. Providers, therefore, would be motivated to expand their network and water infrastructure.

However, the adoption of these technologies has been low across many African countries. For instance, Kenya, Tanzania, and Ghana have seen low levels of adoption due to low investment that could have otherwise facilitated partnerships and up-scaled new technologies. Innovators at the recent [GSMA Mobile 360 event](#) in Dar es Salaam mentioned capital requirements in the range of USD 500,000–USD 2 million, which would be needed to refine the solutions based on lessons learnt during the pilot-test before a full roll-out. Such investments require private investors. Development agencies that promote initial tests, therefore, should link the innovators with potential private investors for the scale-up phase. For example, we expect that water utility providers would be interested in investing in such initiatives.





As noted by the [World Bank's Water and Sanitation Program \(WSP\) India](#), poor billing and collection practices have huge commercial implications and affect a utility's creditworthiness and access to commercial finance significantly. A three-month pilot test of prepaid water meters with 200 households by [Water Tek Africa](#) in Tanzania led to a 30% improvement in revenue collection and 20% reduction in operating expenses for the utility company.

Finally, the demand-side (users) requires support to adapt to the new technologies. A few questions however remain. What would it cost to install such meters at the household-level? What after-sale services would the utility company

provide? For example, TANESCO, the electricity provider in Tanzania deployed pre-paid meter inspectors to continue the functioning of the smart meters and minimise non-technical losses. Further, adequate social marketing is required to trigger sufficient demand that would ensure the adoption of prepaid meters. *MicroSave's* past work on [customer support](#) has been informative while deploying such innovative solutions to scale up access to and impact of water and sanitation.

Development interventions have made great progress to improve access to water. However, millions of people still lack access to clean and safe drinking water, especially in developing countries. This has resulted in high incidences of diarrhoeal diseases and death. However, the wide adoption of pay-as-you-go systems can enhance access to piped water at the household-level with the development and adoption of smart meters.

Ongoing pilot tests have shown a potential for significant changes in the water sector with the adoption of smart meters, as has been the case in the energy and mobile telephone sectors across East Africa and beyond. While households have control of the water and can pay with more convenience, improved revenue collection ensures that the utility providers invest in the network.



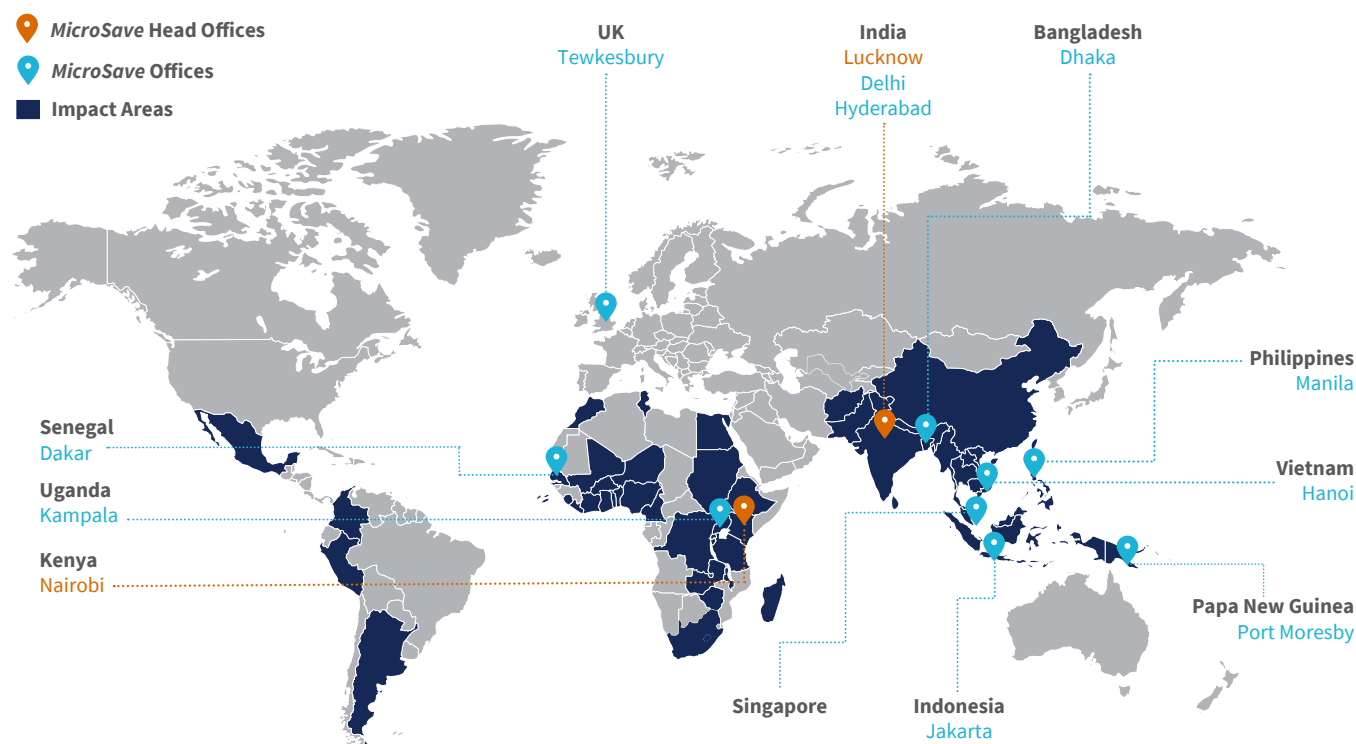
Author: George Muruka

George Muruka, a Principal Consultant at MicroSave, works in Kenya and leads the Private Sector Domain in Africa.

A specialist in research and community finance, George provides business advice on design and financing of livelihoods, including developing strategies for sustainable access to water and sanitation.

About MicroSave

MicroSave is an international financial inclusion consulting firm with nearly 20 years of experience, operating in eleven offices across Asia and Africa. Our mission is to strengthen the capacity of institutions to deliver market-led, scalable financial services for all. We guide policy, provide customised strategic advice and on the ground implementation support.



www.MicroSave.net