Prepaid Water in Maputo: Case Study

*Overview*

Maputo, Mozambique’s capital, has a population of about 1.5 million, most of whom live in low-income peri-urban settlements. Compared to many African cities, tenancy levels are relatively low, especially in these peri-urban areas.

Given a choice, most households would want the convenience of a connection close by, either their own or belonging to a neighbour who resells. The government of Mozambique is pushing to increase the number of private connections, using the slogan, “every house with its own connection.” However, there is still substantial need for conventional house connections and yard taps. Maputo’s water utility supports about 600 public standpipes, about a third with prepaid meters.

Maputo’s prepaid meters are used primarily on public standpipes and at communal sanitation blocks. Just over 200 have been in use since 2008. Only the tap attendant or operator has a smartcard. They sell at the regulated vendors’ tariff, which is four times what they pay the utility. There is no difference between the price users pay to tap attendants at water points and what they pay using conventional meters.

The use of prepaid meters has experienced numerous problems in Maputo as a result of interrupted water supply, low water pressure, and virtually no after-sales service by the supplier or access to spares. Nonetheless the prepaid systems protect tap attendants from getting into debt and help to avoid the disconnections that cut off water supplies to standpipe users.

Maputo’s water utility is under pressure from government and some customers to explore prepaid meters on individual connections, but is wary of the technology and concerned that customers would bypass the meters. It sees prepaid as an option, but not a magical solution.

*Lessons*

**Meters that are initially inexpensive can prove very costly** if they fail soon and cannot be repaired.

**Ensure that meters are reparable locally** and that the supplier can offer good after-sales service and spares. Insist that the supplier trains utility technicians how to maintain and repair the meters.

**Prepaid meters can safeguard the continuity of water supply at standpipes run by tap attendants**, because payments to the utility are assured, but the water is no cheaper for users.

**Provide enough places to buy credit**, otherwise the inconvenience to customers incentivizes bypasses.

*Why prepaid standpipe meters were introduced*

Like many utilities, Aquas de Mocambique (AdeM) receives inadequate payment for water supplied to public standpipes. AdeM introduced two changes to improve payments. First, it contracted the operator, directly, to make them personally liable for payment. Second, in 2007, it introduced prepayment meters on standpipes in a pilot project, **to ensure that payment was collected upfront**.

The pilot was not a success because of numerous technical problems with the meters. Within months they were removed and replaced with conventional meters. But the **operators wanted prepaid meters, because they helped them avoid getting into debt** and they were supported by their customers. Installations resumed in 2008.

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Implementation
Prepaid meters are used in three contexts in Maputo:

- 180 public standpipes
- 23 communal sanitation blocks, developed and supported by the nongovernmental organization (NGO) Water and Sanitation for the Urban Poor (WSUP) with a further 13 planned
- 15 neighborhood resellers (private individuals with their own connections who sell to neighbors), but found that the amounts being sold were too low to justify the expense of installation and repairs. Average sales were about 15 kls per month, compared to the 30 to 40 kls that were anticipated. All prepaid meters are run by intermediaries who on-sell to users.

To date, AdeM has tried three types of prepaid meters, but it is not satisfied with the performance of any of them. Most failed within a year of installation. AdeM staff cannot repair the meters and simply have to remove and replace those that are faulty. The utility is currently cash-constrained because it is focused on increasing the number of individual connections. It therefore has no plans to increase the number of prepaid meters on standpipes.

AdeM faces growing pressure from customers and government to install prepaid meters on individual connections, following the successful introduction of prepaid electricity and because customers frequently challenge their water bills. But the utility is concerned that the technology is not sufficiently robust to cope with limited hours of supply (averaging 17 hours a day) and low water pressure and worry about the associated maintenance burden. Staff fear there will be even more bypasses with prepaid meters than ordinary meters (Photo 1). The utility is considering a pilot prepaid project in “the cement city,” the central business district where bypasses are more obvious in the paved streets than in unpaved peri-urban areas.

Vending
There are only two places to recharge smartcards in Maputo (Photo 2). Both are at offices of the utility, and are closed after hours. This is far for many tap attendants to travel (and the utility acknowledges that this incentivizes bypasses), but there are no plans to introduce more vending points. The utility acknowledges that this is inadequate, and is reluctant to invest more in a proprietary system it is dissatisfied with.
Monitoring
There is no proactive monitoring of the meters. Staff respond promptly to call-outs, and exchange what they cannot immediately repair.

Funding, finance, and revenue
Installation of prepaid meters was funded by the utility. AdeM cannot recover the capital cost of installing prepaid meters, and the added maintenance costs associated with keeping a prepaid system running are not covered by the subeconomical tariff it charges standpipe operators, premised on conventional meters. Vendors charge 1 Metical (USD 0.031) for a 20-liter container of water. This is equivalent to 50 Meticals per kiloliter, against a tariff of 12.6 Meticals; even so, most struggle to make a living from water sales alone. The prepaid standpipes offer customers no price advantage, because they pay the usual vendors’ price.

Despite demand for prepaid meters on individual connections, AdeM is adamant that prepayment would make no financial sense. The new customers being connected in the city are predominantly poor customers. Initial monthly metered consumption soon falls from 15 to 20 kls to below 5 kls.

Summary
Maputo’s 200-odd prepaid meters are run exclusively by tap attendants, who sell water to customers at the regulated vendor price. The meters have performed poorly, but most prepaid meters would struggle with reliability in Maputo, given frequent supply interruptions and low water pressure.