

FSM services in Lusaka: moving up the excreta management ladder

Despite most residents of African and Asian cities depending on non-sewered sanitation, only a handful of sanitation authorities have addressed the management of faecal sludge from these systems. This Practice Note describes the launch of a faecal sludge management (FSM) service in the peri-urban area of Kanyama.



The "Dream Team" on their way to empty a customer's pit latrine

Why FSM services in Kanyama?

Nearly two thirds of Lusaka's 2.3 million residents live in peri-urban areas (PUAs), where 95% of the population depend on pit latrines. When these latrines are full most landlords choose to bury the sludge nearby, contributing to the contamination of open areas and shallow groundwater, and to annual outbreaks of cholera in several PUAs. As the largest PUA, Kanyama was an ideal candidate for introducing FSM services: the challenging geology and low average income of the settlement ruled out sewers as a solution, and over 50% of residents expressed willingness to pay for formal pit-emptying services. The case was strengthened by the presence of Kanyama Water Trust (KWT), a community-based operator serving 167,000 customers under a delegated management arrangement with Lusaka Water and Sewerage Company (LWSC).

How was the service introduced?

Supported by LWSC and WSUP, KWT hired and trained 10 labourers in early 2013 with experience in informal pit-emptying. The emptiers (marketed as the "Dream Team") were hired on a commission basis with responsibility for service delivery and infrastructure operation. KWT took responsibility for overall management of the service including finance, monitoring, promotion and infrastructure maintenance.

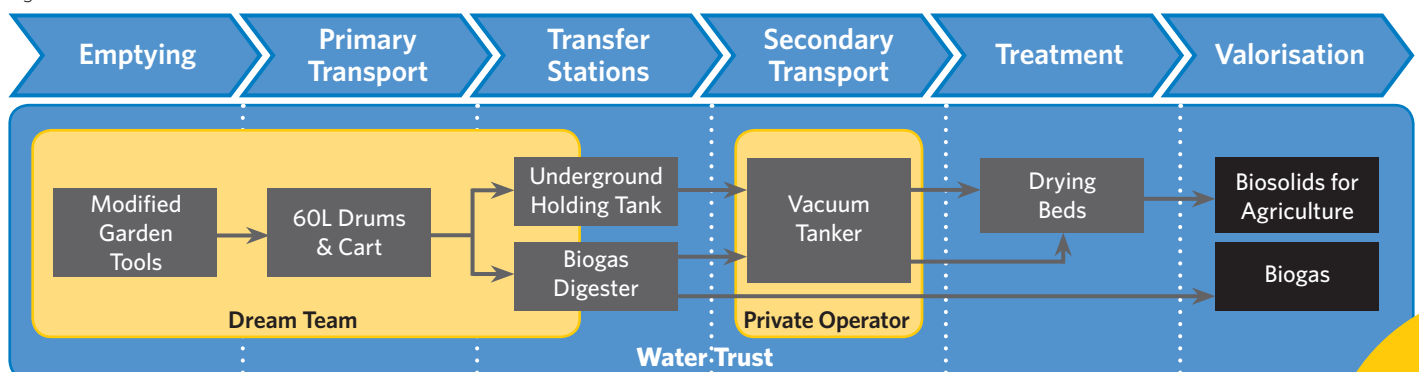
The Service: Front End

A diagram of the FSM service is provided in Figure 1 below. Three levels of service are offered according to the volume emptied: 12 60-litre drums for US\$40; 24 drums for US\$60; and 32 drums for US\$70. Landlords typically go to the KWT office and pay for the service in advance; the Dream Team then empty the agreed number of drums on the agreed date. KWT's monitoring team logs information about the client and the service, which is shared with LWSC and WSUP for analysis.

The Service: Back End

To empty the pits, manually powered mechanised devices such as the Gulper and the Crocodile were initially trialled; however, due to the high solid waste content in the pits, modified garden tools (long-handled pick and shovel) emerged as the only way forward. The drums are transported in hand-drawn carts to decentralised transfer stations, for solid-liquid separation and anaerobic digestion of the sludge. The solids portion of the sludge is transported to drying beds and sold as biosolids once treated; in addition, the gas generated is used for cooking at the KWT canteen.

Figure 1. FSM service chain.



FSM services in Lusaka: 500 day update



The solids portion of the sludge is transported to drying beds for treatment

Where are we now?

Demand for the service has been sustained through the first 500 days; as of June 2014 nearly 600 pits have been emptied, serving approximately 10,000 people, and with nearly 500m³ of sludge removed. The new infrastructure has the capacity to serve approximately 25,000 residents of Kanyama at a capital cost of US\$5 per resident. In coming months the service will be replicated and launched in Chazanga (another of Lusaka's PUAs with an estimated population of 80,000), overseen by Chazanga Water Trust; a marketing campaign will then be rolled out to stimulate demand.

Building demand is integral to the long-term success of an FSM service. Late in the first year of the intervention, LWSC and WSUP teamed up with the Zambian Ministry of Health to conduct a large-scale behaviour change campaign in Kanyama based on the PHAST methodology, and including household visits by community health workers. The campaign aimed to raise awareness about the health benefits of having pits emptied, and about the importance of not disposing of solid waste in pits.

Key learning: review tariff levels on a regular basis

Setting the optimal tariff level for an FSM service is an iterative process. In the case of Kanyama, analysis was undertaken prior to implementation to set a tariff that would recover operational and maintenance costs and ensure affordability. LWSC and KWT are now undertaking a full review of the business to identify inefficiencies in service delivery: this may lead to an immediate increase in the tariff, and possibly to a periodically increasing tariff schedule over the next five years to keep up with inflation.

Key learning: support high-capacity service providers

The service in Kanyama has benefitted from a management model rooted in KWT's existing capacity, as demonstrated by their provision of reliable water services. This management capacity has enabled the Dream Team to concentrate solely on labour; in WSUP's experience, such growth is difficult to achieve when small-scale operators or entrepreneurs are tasked with both providing labour and managing an entire FSM business.

Key learning: moving up the "excreta management ladder"

The concept of *sanitation ladder* refers to a gradual upgrade of toilet technologies: households start at the bottom of the "ladder" and move up. The analogous concept of *excreta management ladder* can be used to represent the steps a whole city can take to improve its systems for managing excreta. With improved FSM systems, Kanyama has already taken a step up the excreta management ladder: faecal waste is being more effectively removed from the community, emptying practices are more hygienic and dignified, and customers are happier. We suggest that this first step may make subsequent steps easier: now that a basic system and consumer demand have been established, we can envisage gradual improvements (e.g. better treatment facilities), leading to a more sophisticated FSM system, or perhaps eventually (via an intermediate phase with pour-flush toilets and septic tanks) to a sewerage network.

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