

Mapping sanitation in peri-urban Lusaka: a toilet database

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This Practice Note outlines the development of a toilet database to support sanitation business development and public health monitoring in Lusaka. Currently being tested in the peri-urban area (PUA) of Kanyama, the electronic database enables information on the ownership, location, quality and emptying history of local pit latrines and septic tanks to be stored in one place.

Developing a safely managed FSM service in Kanyama

Kanyama is Zambia's largest PUA, with a population of over 200,000 people. In the absence of any sewer network, households in Kanyama are dependent on pit latrines of widely varying standards; in recent years, Kanyama's high water table has combined with poorly constructed pit latrines and a lack of widespread safe emptying practices, exacerbating the spread of diseases like cholera.

Since 2013, WSUP has worked in partnership with Lusaka Water and Sewerage Company (LWSC) to support Kanyama Water Trust (KWT) - a community-based organisation mandated by LWSC to provide water and sanitation services in the PUA - to address the sanitation service gap, by developing one of the first safely managed FSM services in Africa to be targeted at and funded by low-income customers.

Enhancing FSM business viability through improved customer data

The FSM service in Kanyama is now well established, reaching 33,000 people to date. However, it was apparent that business development would be enhanced by improved information about new and existing customers, including if their pits are ready for emptying; and if their latrine should be upgraded. The concept for a toilet database was developed: the initial aim was to provide an electronic database which could be used to monitor and predict 1) pit latrine upgrades; and 2) FSM service demand, enabling pit emptying businesses and toilet construction companies to improve their customer targeting.

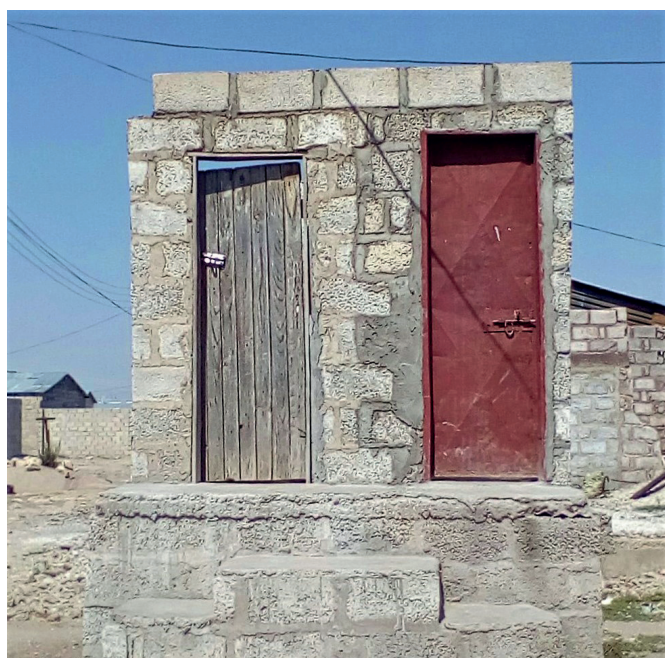


Image: Example pit latrines in Kanyama, as surveyed for the toilet database.

Collecting the data

The database was populated using data from a sanitation mapping process completed in Kanyama from March to June 2017, in which almost 16,500 toilets were surveyed. Data was collected through a combination of structured questionnaires (recorded on mobile tablets programmed with mWater software), observation and image capture. Questionnaires recorded the location of the toilet, key demographic information and the status of the facility (Table 1 overleaf); completed questionnaires were randomly selected to verify data. The collection of spatial data was supported by GIZ; this was combined with the questionnaire data to display Kanyama's toilets and their status on an up-to-date map of the area (Figure 1 overleaf).

Table 1: Questionnaire data recorded in the toilet database.

Toilet location	GPS location data
Demographic information	Number of users Plot owners Contact details Occupancy status
Status of the facility	Quality of the structure Amount of sludge Approximate maximum volume Date of most recent emptying service Date of most recent facility upgrade User motivation for improving the toilet

The toilet database: potential applications

Quantifying the market potential of sanitation services

A core function of the sanitation mapping process and resulting database has been to quantify the size of the market for 1) toilet upgrades and 2) pit-emptying services in Kanyama.

Toilet upgrades: Of the 16,500 toilets surveyed - all of which were on-site - 12,000 toilets were pit latrines of varying quality, including Ventilated Improved Pits (VIP), lined and unlined pits, and disused and/or buried pits. The majority of toilets surveyed were in residential plots (although toilets in schools, bars, churches and markets were also included). This information is captured in the database, and could prove invaluable for toilet construction companies and other actors in promoting uptake of toilets in Kanyama, where survey data also revealed that only 7% of toilets had been upgraded in the last two years.

Pit-emptying services: The database contains the details and location of about 1,000 pit latrines which are categorised as 'ready for emptying', a third of which are almost full, with around 10% completely full and in urgent need of emptying. Of the pits that are not yet totally full, it is estimated that a quarter will be ready for emptying by December 2018. Most toilets surveyed are used by six or more people, indicating that they fill up quickly, while just over 7% of household toilets had been emptied before. The data contained in the database affirms the substantial market for pit-emptying services in Kanyama, and provides the basis for the existing service led by LWSC and implemented by KWT to conduct targeted marketing at the household level.

Next steps

The toilet database and the data it contains is expected to come under the control of institutional stakeholders in the planning and implementation of the LSP. The future of the tool will hinge on careful and regular maintenance to ensure data is accurate and up-to-date; WSUP aims to facilitate this through continued capacity development support as part of its ongoing partnership with LWSC and key actors in Lusaka. Effective maintenance of the database will require sustained institutional commitment, but the immediate and long-term impact of well-managed and comprehensive data will be substantial.

Long-term sanitation planning support

Sanitation in Lusaka is at the cusp of major change as the US\$ 250 million Lusaka Sanitation Project (LSP) begins. The database could potentially be expanded to map sanitation in Lusaka's other PUAs, providing context for planned interventions. Existing data could be used to inform planned activities under the LSP, notably the planned construction of 12,000 new toilets - 10,000 in the PUAs of Chawama and Kanyama and 2000 in George PUA.

Figure 1: Kanyama's pit latrines - located and colour coded according to fullness. Red = full pit latrine, blue = almost full, green = half full, purple = almost empty, yellow = empty. Source: mWater.



Public health monitoring

Overflowing pit latrines in Kanyama and other PUAs in Lusaka are linked to outbreaks of illness and disease. The data stored in the database could potentially be used by public health bodies to target inspections of sanitation facilities which are close to full, at key periods - just before the start of the rainy season, for example - to reduce the potential for disease outbreaks. The toilet data contained in the database was used by LWSC and Lusaka City Council (LCC) to support planning and budgeting for pit latrine emptying in Garden PUA and service provision in Kanyama following the recent cholera outbreak in Lusaka in October 2017.

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