Private sector delivery of school sanitation in urban informal settlements

Key Messages

- Managing sanitation needs in informal urban settlements is challenging.
- A randomized control trial showed minimal differences in maintenance, use, and exposure to fecal contamination between the delivery of government standard services (cistern-flush toilets) and private sector services (dry container-based toilets) to schools in urban informal settlement even though private sector services were five times cheaper.
- Private sector delivery of dry sanitation should be considered as a feasible alternative to sewage sanitation in urban informal settlements.

The Need

Over 65% of Kenyans in Nairobi live in informal settlements with inadequate sanitation. Residents in these settlements, particularly children, are disproportionately at risk for sanitation-related diseases compared to the rural population.

Safely managing sanitation in informal urban settlements is difficult, especially in schools, where facilities must be sex-segregated, hygienic, durable, and used by a large number of students. The narrow and muddy roads in these settlements create additional challenges for collection and transport of waste. Despite substantial capital costs, school sanitation facilities are prone to disrepair and are often not well maintained.

The Study

This study evaluated the feasibility of private sector sanitation services versus government standard delivery of cistern-flush toilets. Twenty schools in informal urban settlements were randomly selected to receive pre-fabricated urine diverting toilets from Sanergy, a private sector enterprise. Private sector toilets required daily removal of waste for off-site treatment. Private sector service was compared to standard government delivery of cistern-flush toilets connected to the municipal septic system.
The Findings Sanitation services were evaluated based on facility maintenance, toilet use, exposure to fecal contamination, and cost.

Facility maintenance: Each sanitation service received daily maintenance. However, private sector services were observed to be significantly cleaner.

Toilet use: Toilet use, as measured by remote sensors, was 1.3 times higher among the private sector urine-diverting toilets compared to government standard services.

Exposure to fecal contamination: The percentage of students with bacterial hand contamination did not differ between the two services.

Cost: The cost of the private sector service (USD 2,053) was lower than the average cost of rehabilitating the government standard (USD 9,306) or constructing new facilities (USD 11,489).

Policy Recommendations Private sector dry sanitation should be considered as a feasible alternative to sewage sanitation in informal settlements. While follow up efforts are needed to capture the life cycle costs and sustainability beyond one year, these findings suggest that public-private partnerships could allow outsourcing sanitation responsibilities to private service providers to meet the demand for safely managed sanitation.

Study Control
Government standard service
- Facility design
  One block of five cistern-flush toilets or ventilated pit latrines per school
- Waste treatment
  Cistern-flush toilets connected to a municipal septic system
- Facility cost
  Rehabilitation: USD 9,306
  New: USD 11,489
- Time to build
  92 hours on average (11 site visits)
- Challenges
  Interrupted access to sewer lines and piped water, blockage of sewage drains, and eroding sewage pipes

Study Intervention
Private sector service
- Facility design
  Five pre-fabricated, container-based, urine-diverting dry toilets per school
- Waste treatment
  Daily collection of waste and off-site treatment
- Facility cost
  New: USD 2,053
- Time to build
  40 hours on average (5 site visits)
- Challenges
  Urine-diverting dry toilet designs not always culturally acceptable (e.g. no water for anal cleansing

Further Readings
UN-Habitat. (2016). Re-imagining sustainable urban transitions
Kimani-Murage et al. (2014). Trends in urban childhood mortality
WHO. (2015). WASH standards for schools in low-cost settings
Sanergy. (2015). The Sanergy model

Publication