



policy briefing

Private sector delivery of school sanitation in urban informal settlements



- **Project:** School Water Sanitation and Hygiene Plus Community Impact (SWASH-II Project)
- **Location:** Urban informal settlements of Nairobi, Kenya
- **Target Population:** Primary schools and school children
- **Implementing Partners:** CARE International, Sanergy
- **Funders:** Bill & Melinda Gates Foundation



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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.



Private sector toilets included a translucent roof, concrete walls, tile floor, urine-diverting toilet plate, and cartridge waste systems for urine and feces.

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.



Partners



SANERGY



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

Bohnert K, Chard AN, Mwaki A, Kirby AE, Muga R, Nagel CL, Thomas EA & Freeman MC. (2016). Comparing sanitation delivery modalities in urban informal settlement schools: A randomized trial in Nairobi, Kenya. *Int J Environ Res Public Health*, 13(12), 1189.

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)