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The effects of information, subsidies and financing on private investment in improved sanitation in Kampala, Uganda

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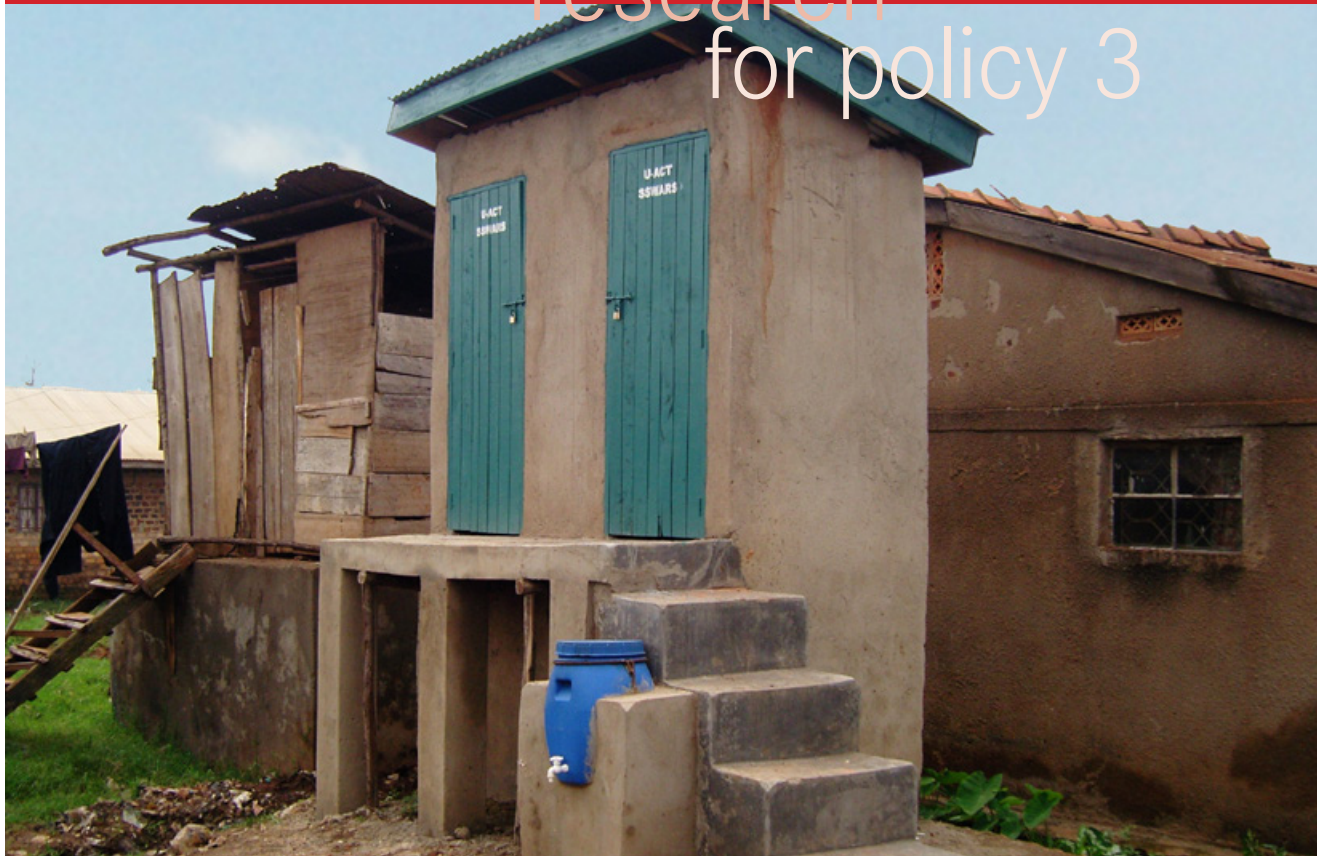
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How to increase toilet coverage among the urban poor?

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Lack of Investment in Urban Sanitation

Although there is widespread agreement that improved sanitation decreases the risk of waterborne diseases, both public and private investment to expand access to the more than 2.5 billion people worldwide without a toilet is low. Lack of sanitation facilities is particularly dangerous in dense, urban areas where existing facilities are vulnerable to overuse, putting people at risk of contracting waterborne diseases.

In fast-growing, unstructured, poor parts of cities with limited water resources, sewage systems are typically not an option. Hence, improved pit latrines are often thought to be the best-suited technology. A one-stance ventilated pit latrine (VIP) with a lined pit and a plastered brick superstructure costs about US\$ 760 – about 150% of the median annual per capita income of Kampala's slum dwellers (Lüthi et al., 2013).

The high up-front investment costs of this infrastructure suggests a role for public investment in sanitation. Moreover, adequate sanitation not only leads to improved health outcomes for users, but also has positive health and environmental effects on the broader community, further suggesting a strong role for public investments.

However, since city governments are generally not making these investments, poor households in developing countries must frequently make private investments in sanitation if they want access to an improved sanitation facility. As a result, improved sanitation coverage in developing world cities remains extremely low.

In the absence of public investment, two major policies are typically recommended to induce more private investment in sanitation: (i) subsidies for the purchase of improved sanitation facilities and (ii) information campaigns to raise awareness about the benefits of improved

sanitation. Yet, little empirical analysis of these interventions currently exists: to our knowledge, there is only one other paper that studies these interventions, but it is focused on rural, not urban, areas (Guiteras et al., 2015). To fill this research gap, we tested the traditional policy interventions of information campaigns and subsidies in poor areas of Kampala. In addition, we identified and tested two additional policy interventions that had the potential to influence private investments. First, the use of micro-credit financing to reduce the burden of an up-front investment in an improved sanitation facility. Second, the use of intervention targeting to account for variation in property ownership: 68% of slum residents in Kampala are tenants, while 32% are homeowners (Günther et al., 2011).

Methodology

Between 2011 and 2014, we conducted a clustered randomized controlled trial (RCT) among a random sample of more than 1,000 households ($n = 1,192$) from 40 slum communities in Kampala, Uganda (see Figure 1). A clustered randomized design was applied to ensure that, within a given urban zone, all eligible households received the same policy intervention. Eligible households are households that had no access to an improved pit latrine at the beginning of the study.

All households in the study received information about the health and other benefits associated with improved sanitation facilities.

Study Description

The results presented in this policy brief are part of a larger three-year research study conducted between 2011 and 2014 by the Swiss Federal Institute of Technology (ETH Zurich), the Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Makerere University, and a Kampala based local NGO (SSWARS). The study involved five senior researchers and three PhD students from Uganda and Switzerland. The objectives of the study were to systematically analyze the sanitation situation of Kampala's low-income households and to identify and test promising interventions to increase access to and maintenance of sanitation facilities in poor urban areas.

For more information about the project please visit <http://www.dec.ethz.ch/research/u-act.html>.

To select the 1,500 sample households for this study, a two-stage clustered random sampling method was applied. First, 50 low-income zones with no access to the central sewerage system were randomly selected from a list of 304 slum areas within Kampala. Within each zone, 30 households were randomly selected from an average of 1,450 households per zone, using geo-graphic sampling methods based on census maps of 2002.

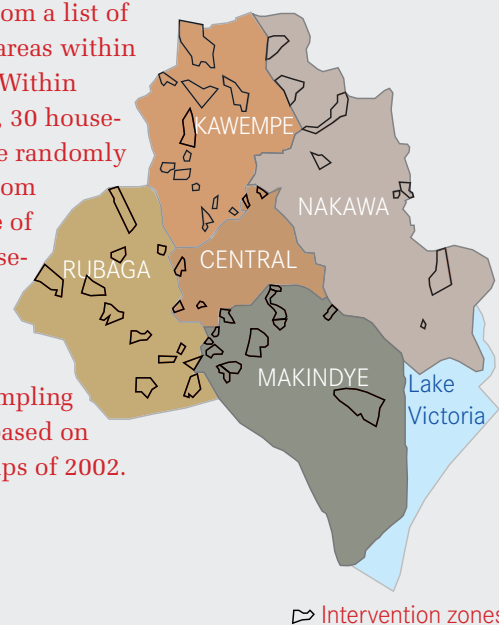


Figure 1: Map of Kampala, Uganda with intervention zones

In order to test for the effectiveness of information campaigns and subsidies, vouchers for ventilated improved pit (VIP) latrines were made available at three different price levels (see Figure 2 and 4):

- High: 70% of market price
- Medium: 25% of market price
- Low: 15% of market price

The highest price voucher was intended to test whether information campaigns alone could have an effect on private investment: the high price amounted to a very small price reduction in relation to official market prices.

To evaluate the impact of reducing the burden of up-front investments on household decisions about investing in improved sanitation, we offered two types of financing options: up-front financing and micro-credit financing.

To test whether targeting had an impact on household investment decisions, we used two household outreach strategies: direct targeting to homeowners responsible for decision-making and indirect targeting to homeowners via their tenants.

A baseline survey was conducted prior to implementing the aforementioned interventions, and a follow-up survey was conducted 16 months after construction of the purchased sanitation facilities.

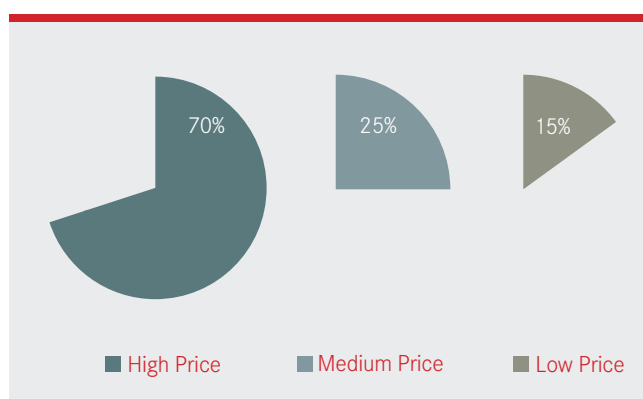


Figure 2: Voucher Interventions (% of market price)

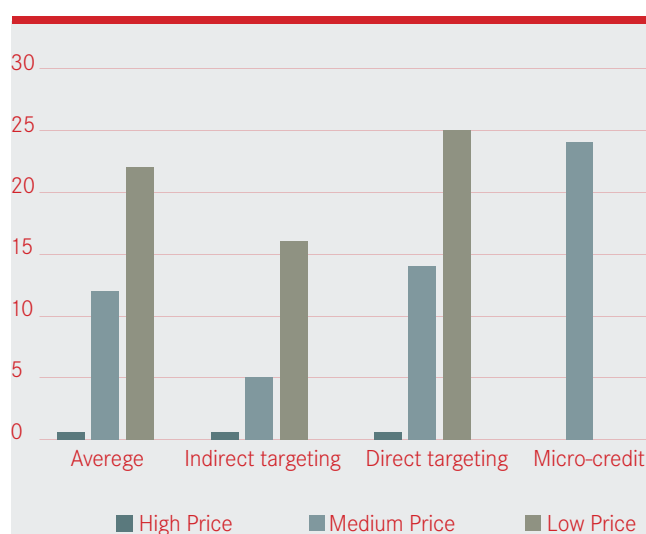


Figure 3: Take-up VIP latrines (% of households)

One Time Use Only – One Offer per Household

You can choose:

Option 1:
1-stance VIP

Option 2:
2-stances VIP

Special Price*: _____

You pay in 2 installments:
 1st payment due at start of construction
 2nd payment due 2 months afterwards

Figure 4: Voucher distributed to households

Results

Investments in latrines are highly dependent on price levels: 22% of households invested in a toilet facility when offered the very low price, compared to only 12% when offered the medium price voucher (see Figure 3). The fact that no one who received a high price voucher invested in an improved latrine suggests that information campaigns alone are not sufficient to encourage households to invest in improved toilets.

The results also showed that offering households micro-credit financing for toilet facilities has about the same impact on take-up rates as moving from medium to low price vouchers – equivalent to a more than 50% cost reduction. Hence, liquidity seems to be a major barrier for sanitation investment.

Direct targeting of homeowners was found to be significantly more effective than indirect targeting. At the same price level, directly targeted homeowners were two times more likely to purchase a VIP latrine than indirectly targeted homeowners. Directly targeted homeowners may be more likely to live in the urban zone and benefit from the investment personally, while indirectly targeted homeowners may be simply collecting rent from their tenants while living outside the urban zone. It is also possible that indirectly targeted homeowners may not have been informed by their tenants about the offer.

We also looked at the impact of sanitation investments on sanitation use and conditions. The subsidies had strong, positive impacts both on sanitation use and cleanliness (based on coded photographs of the facilities).

Cleaner facilities as a result of the interventions might be attributed to the fact that the VIP latrines purchased through the study were relatively new, were used by fewer people, or provided access to a better sanitation technology than the simple pit latrines many people throughout the slums in Kampala usually use. There was no evidence to suggest fewer people were sharing a given facility. Moreover, after controlling for the amount of time the new toilets were in use, the positive effect on cleanliness remained, suggesting that access to improved technology is the plausible explanation.

There was no evidence that different price levels affected the use or cleanliness of toilets. Households that received high subsidies were just as likely to have access to clean facilities as households receiving low subsidies. However, rents increased among tenants if homeowners were offered a medium price to buy a new toilet, whereas rents did not increase if toilets were offered for the low price. Hence, first results indicate that homeowners may be passing on the higher investment costs to their tenants.

Policy Implications

Our findings show that some policy interventions do have the potential to increase private investments in improved sanitation among the urban poor while others may be less worthwhile.

Subsidies can work without reducing toilet use and maintenance.

We found demand for improved sanitation to be highly price elastic, with sanitation investments increasing as the cost of the facility decreased. We also found no evidence that paying less for a facility was linked to lower usage rates or cleanliness. This suggests that people receiving higher subsidies will still take care of a sanitation facility.

Information campaigns are not sufficient to increase sanitation coverage.

Even though pure information campaigns are frequently implemented in developing countries to expand sanitation investments, we found no increase in investments in sanitation infrastructure when information was the sole intervention. This is an important lesson for those currently implementing or planning to implement information campaigns with the expectation that they will stimulate investment in sanitation infrastructure.

Micro-credit financing is a cost-effective policy.

Households that had the option to pay for their toilet facility in installments were more likely to invest in the technology – an investment rate equivalent to those who received a 50% price reduction. This finding has important implications for efforts to determine the level of subsidy needed to motivate investment in improved sanitation and suggests that micro-credits might be more cost-effective than subsidies.

Understanding property rights is essential.

Directly targeted homeowners were significantly more likely to invest in improved sanitation facilities. This finding suggests that community-based approaches to outreach, which primarily target tenants instead of homeowners, may not be effective in stimulating investment in sanitation infrastructure. Moreover, homeowners might also live outside of the slums with no interest in improving the sanitation situation for their tenants. Improving sanitation coverage in poor urban areas therefore requires enforced sanitation regulations in addition to market mechanisms.

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