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FOR ALL IN A FAST CHANGING WORLD**

**Learning opportunities for sanitation improvements in
informal settlements of East African cities**

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Progress towards full sanitation coverage in urban areas is slow, with one of the big challenges in East Africa and many other areas being reaching the large proportion who live in informal settlements. The unique characteristics of informal settlements impose varying challenges in installing adequate sanitation facilities. A comparative case study using mixed methods conducted in three East African cities revealed varied perceptions of the residents on barriers hindering the process of toilet installation. Lack of money, topography, lack of space, siting on marginal land, difficult to access sanitation material and services and lack of information were perceived as barriers by residents, but differed between cities. There are different examples of successful strategies to tackle the barriers to sanitation in each city and these offer some opportunities for each of the study cities, as well as other cities with similar challenges, to learn how the same challenges are tackled elsewhere.

Introduction

Progress towards achieving the MDGs targets of 2015 for sanitation has been slow (WHO/UNICEF 2012). Communities have not adapted the innovative strategies that have been suggested by technical experts and considered to lack local inputs at the planning process (Roma et al. 2010). Sanitation infrastructure developments are either not seen as a priority among the other basic needs or are under-used due to safety, engineering, environmental and social issues (Van Wyk 2009; Peal et al. 2010).

The low level of uptake of improved sustainable sanitation in informal settlements is associated with the unique characteristics of the informal settlements as compared to the formal urban areas (UN-HABITAT 2003; Lüthi et al. 2009; Isunju et al. 2011). The challenges in installing improved sanitation come from national and local conditions manifested in forms of demand, economic and marketing and regulatory factors (Jenkins and Scott 2007; Okurut et al. 2014). Understanding these factors can help in developing appropriate strategies to address the low progress.

This paper reports the findings of a study into sanitation in eight informal settlements in three cities in East Africa: Kampala (Uganda); Kigali (Rwanda); and Kisumu (Kenya). The informal settlements studied in these three cities have many shared characteristics (Charles et al., 2013). They meet the UN-Habitat definition of a slum: there is commonly a lack of durable housing, compounded by poor siting placing them at risk of floods; population density is high, with an average of between 3.8 and 4.7 people per (typically single-room) household; access to water is primarily from springs, stand pipes and independent water providers; less than 6% of households have access to sanitation that meets the JMP definition of improved; and there is a lack of security in tenure, with 77.6% of households renting (of whom only 12.6% have written tenancy agreements), which is compounded in Kigali by a recent history of slum clearances.

However, there are also many differences between the cities, and between the informal areas within these cities, that suggest a bottom-up policy approach is required to achieve significant change and that there is a lot that we can learn from the successes and failures in different slums. This paper will focus on two key areas: the variation in perceptions of the barriers to installing sanitation in different cities and settlements; and the success achieved by financing and marketing opportunities in sanitation business.

Methodology

A diagnostic study of the sanitation situation in the three case study cities was conducted and eight low-income informal settlements were purposively selected. A household stratified probability survey was supplemented with transect walks, focus group discussions and interviews. Approximately 5,500 household samples for the surveys were selected through random route sampling techniques in proportion to the population of the study area (Charles et al. 2013). Findings from the household survey were sequentially used to develop qualitative tools for more in-depth analysis of stakeholders' perspectives. The study conducted 83 focus group discussions (FGD) and 99 interviews between March and July 2013.

Due to the difference in cost of living in the three countries and the very inaccurate income data, deprivation was used as a multidimensional scale to measure the poverty levels across the cities. Variables on ability to afford basic needs were used to construct deprivation index and then normalised to have distributions around the mean for samples as a whole and for each country. Statistical Package for Social Sciences (SPSS version 20) was used to analyse the household survey data for frequencies, rates and proportions and cross tabulations to examine relationships between variables. Pearson Chi-Square (χ^2) was used to determine the strength of relationship between variables.

Key findings

Barriers to installing sanitation vary between settlements

Despite similarities in the conditions between the settlements, reported barriers to construction varied. The main barrier reported by owners to building a household sanitation system was a lack of money (cannot afford; 56.2%). This is expected in areas that are economically deprived, where 21.6 % of households report having to constantly limit their expenditure on basic foods, and a further 43.8% have to regularly limit their spending. This corresponds with other studies on demand such as in Ghana where affordability was also reported as the main barrier to demand for sanitation improvement (Jenkins and Scott 2007). However, in all three cities, informal settlements are built in high density on marginal land that makes it difficult to construct sanitation systems: high groundwater tables, steep slopes, rocky soils and flooding are all reported challenges.

"Gatsata is a steep hill and therefore the people are used to suffer from the effects of floods especially in prone-floods (uphill and the swamps areas). The floods also cause soil erosion therefore making the roads unsafe to use." Male tenants, FGD, Kigali.

"We have a problem here in this settlement; you cannot dig more than 3ft into the ground because of our topography. The area is flat which is the cause of flooding around." Male owners FGD, Kampala.

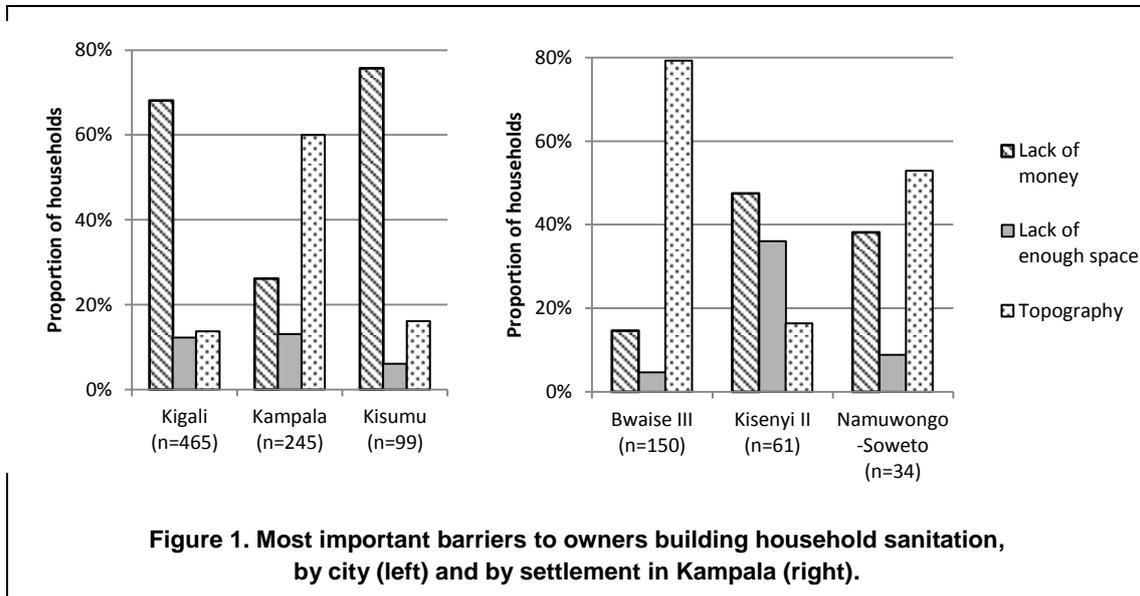
"...we get floods of the river Nyamasaria during the rainy seasons. This affects our latrines which tend to collapse into the pits. The other barrier is loose cotton soils that make construction of a pit very dangerous as the loose soils collapse easily." Resident landlord, interview, Kisumu.

However, in the household survey, there were significant differences between the major barriers faced in building sanitation facilities ($p < 0.001$, Figure 1), with a significantly higher proportion of households in Kampala identifying topography as the major barrier. In Kampala, topography was perceived as the major barrier uniformly across the stages of demand (Preference, intent, choice, installed; see Charles & Okurut, 2013) in Kampala, but fluctuated in the other cities (data not shown).

The perceived barriers varied between settlements within cities too (e.g. Kampala $p < 0.001$, see Figure 1). In Kampala, topography was the most important barrier in two settlements, with affordability a much smaller concern in Bwaise III. Lack of space was a more important concern in Kisenyi II than in the other settlements. There were significant differences ($p < 0.01$) between the settlements in the perception of a lack of information and difficulty in obtaining permits, with these issues recognised in Kisenyi II, but not elsewhere. Though a smaller proportion in Bwaise III perceived space as a barrier from the household survey, it still came out as a big concern in the FGDs.

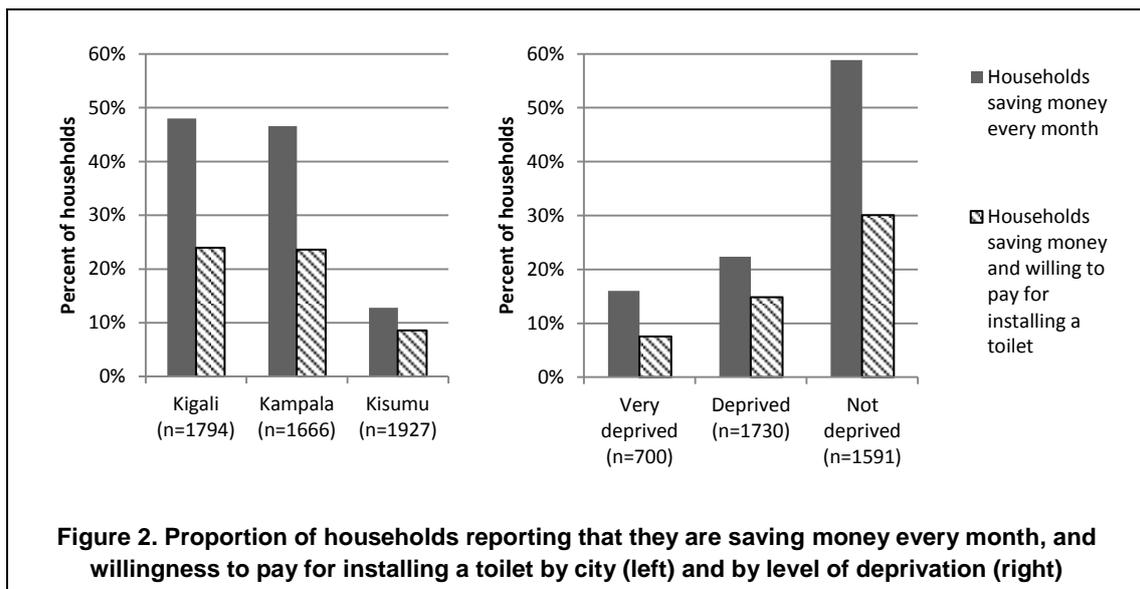
"The settlement is too congested and landlords have problems of space, for instance if one bought a house without a toilet and do not have where to put a toilet. People buy plots and use the land the way they want because of the poor law. One buys a plot, builds a house and leaves a small space that cannot fit an appropriate toilet." Male tenants, FGD, Kampala.

These differences in perceptions of the barriers highlight the different information needs of the different settlements and cities, and the importance of understanding the users' needs.



Gaps in the sanitation supply chain vary

In the three cities there were gaps in the sanitation supply chain, presenting another barrier to people installing or improving their sanitation. In each city there were a proportion of households who were managing to save every month (Figure 2), with significant correlations (1-tailed $p < 0.01$) between deprivation and monthly savings and willingness to pay for installation of a sanitation facility. However, where households are managing to save money, and are willing to pay for the installation of a toilet, there can be gaps in the sanitation supply chain that make services and materials difficult to access and or not available. Perceptions of the availability of construction materials and services varied significantly ($p < 0.001$) between the cities (Figure 3). In Kigali, where demand for sanitation is highest (Charles & Okurut, 2013), materials and services are considered hardest to access.



These gaps in the chain can have serious consequences for the installation and sustainability of sanitation systems, but can also result in innovations.

There was a significant difference ($p < 0.001$) between the proportions of households who reported that their sanitation facility gets emptied. Kampala has an active Private Emptiers Association of Uganda, with a high proportion of the 66.3% of households who reported emptying of their sanitation facility using a private company (23.7%); only 0.5% were emptying it themselves, with 9.0% using an individual (the remainder reported that landlords, local government or NGOs/CBOs emptied it). By contrast in Kisumu where access to pump out equipment is limited, and manual emptying is one of the predominant methods available, a lower overall proportion of households reported emptying of their sanitation facility (28.9%), with 4.3% emptying it themselves and 44.5% using an individual; less than 1% reported using a private company. In Kigali, where there is no central sewerage network and manual emptying is illegal, only 1.4% of households reported that their sanitation facility gets emptied.

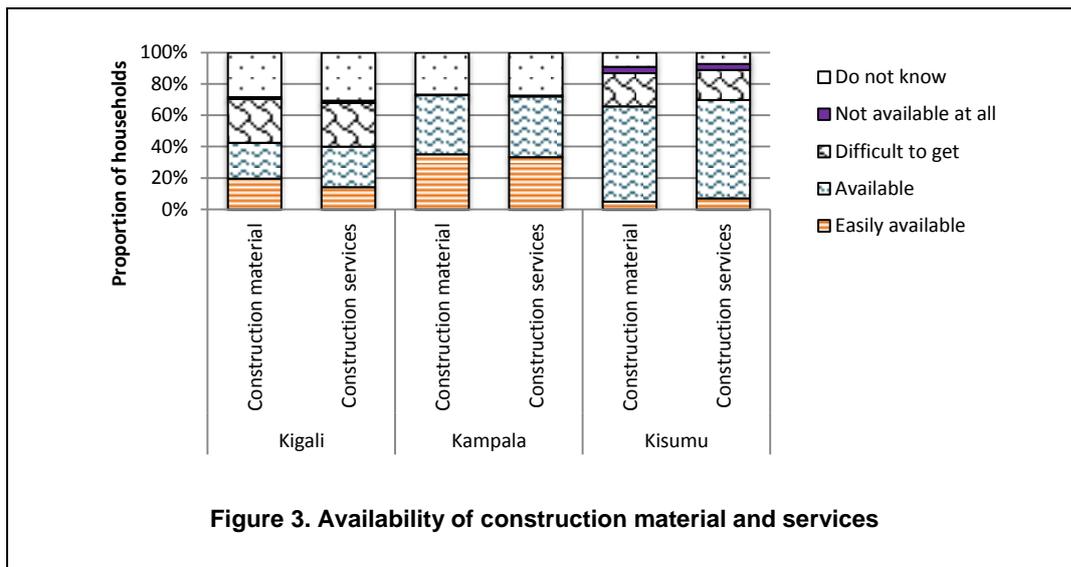


Figure 3. Availability of construction material and services

Small businesses supporting sanitation

While more people in Kigali reported to install sanitation facilities by themselves (19.5%) compared to Kampala (3.3%) and Kisumu (7.7%) because of no service providers; individual and private companies predominantly provide construction and emptying services in Kampala (27.0%) compared to Kigali (9.5%) and Kisumu (2.1%). This implies that there are some small scale sanitation business opportunities in Kigali and Kisumu to fill up the service gaps.

In Kisumu for instance, two biogas centres in Nyalenda B and Obunga were not operating to their fully capacities due to inadequate sludge despite demand for the fuel. But, within the settlements, manually emptied faecal sludge openly deposited in the community cause nuisance. Emptying services is inevitable for the sustainable management of human waste in informal settlements where there is limited space to install new toilets when the old ones get full.

“Government is not poised to provide the services in the informal settlements. It follows that pit emptying is inevitable, as an immediate solution to an urgent problem. It remains a solution so long as bio gas and sewerage systems of sanitation are not serving all people and there will be those using pit latrines in the informal settlements.” Interview, Operator of a Bio Centre, Kisumu.

Equipping manual emptiers with skills and simple manual equipment for emptying (e.g. Gulper) and small cesspool emptier trucks for transportation can improve the emptying services as well as the sustainability of the biogas projects. A model of small cesspool emptier truck (UGAVA) is being piloted by National Water and Sewerage Corporation in Kampala as an innovation to access the narrow routes in the informal settlements of Kampala (AWF, 2012). And, recycling of faecal wastes into fuel and other products can bring a positive contribution to the proper management of human excreta in a city like Kigali that is striving to realise a sustainable access to adequate sanitation but with neither a conventional sewage transit-site nor treatment plant.

Although the management of community/public toilets still remain a challenge especially in Kampala where respondents reported more NGO involvements (5.5%) in form of awareness campaigns and

installation of community toilets compared to the other two cities; they may be a solution in areas with limited space or challenging topographies to provide individual/shared toilets. Suggestions of better management strategies through the experiences of residents of the informal settlements in Kampala can help to develop better management frameworks that are adaptable in any of the settlements in the other study cities. On the other hand, despite limited involvement of NGOs in Kigali, there still seem to be more public commitments to community participation through programmes like “*umurganda*” and during discussions with different resident groups, some feel the impact of some government programmes is increasing progress towards achieving the MDGs targets of 2015 for sanitation.

“These regulations might have been available for the past three years; people came and carried out a survey, they asked for the conditions of the toilets and advised them on how to improve on their facilities Community health workers go to each household, ask them questions and advise accordingly. The community health workers sensitise them after community works; it is the only time that is available and convenient for everyone. The community health workers also wrote posters and hang them everywhere on the streets for everybody to read”, Owners, FGD, Kigali.

The findings show that some programmes are working well in Kigali to change peoples’ behaviour on better sanitation practices but there is a gap to be filled by individual or private service providers to ensure sustainable access to adequate sanitation in informal settlements.

Conclusion

The variation of demand barriers and the finance and marketing services highlights some opportunities for other cities to learn on how to tackle the national and local challenges to providing sanitation improvements, and make sanitation a business. Each of the study cities have made attempts to address the sanitation challenges by using different approaches that seem to be yielding some positive results. The successes registered in the cities can be tailored and improved in other cities to upscale uptake. Kigali has registered some successes on community participation programmes and enforcement of regulations to improve access to sanitation in urban areas and offers an opportunity for other cities to learn how to engage communities to upscale uptake. Community programmes like *Ubudehe* (mutual assistance or local collective action) and *Umuganda* (community works) are examples of success stories in Kigali. Kampala has attempted to open up the service sector to allow individuals and private companies to provide services in the sanitation market, to ensure that products and services are easily available to the targeted households/communities. Kisumu on the other hand has attempted to create value on sanitation waste through the establishment of biogas centres as projects for re-use of human excreta for fuel purposes. When the successes in each of the cities are tailored to engage key stakeholders, create value on the sanitation chain and open up the business market for the private sector; the level of access to and use of improved sanitation systems in informal settlements can be increased.

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