

Working Paper 1, Centre for Global Development, University of
Aberdeen

Between the Market and the State: Financing and Servicing Self – Sustaining Sanitation Chains in Informal Settlements in East African Cities

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Published by the Centre for global Development, University of Aberdeen, April 2017
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ISSN2399-4975

DOI: [10.2139/ssrn.2951915](https://doi.org/10.2139/ssrn.2951915)

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Acknowledgements

The research on which this report is based was undertaken as part of the Catalysing Self-sustaining Sanitation Chains in Informal Settlements Project (3K-SAN) funded by the European Water Initiative ERA-Net (SPLASH). The consortium undertaking the research included the Robbins Centre for Public and Environmental Health, University of Surrey, the Institute of Policy Analysis and Research-Rwanda, the Department of Civil Engineering, Makerere University, Kampala, Uganda and the Victoria Institute for Research on Environment and Development (VIRED), Kisumu, Kenya.

The paper was also built on findings from a Post-Doctoral Grants (Post-doc) Scheme through the University of Rwanda, UR-Sweden Program of Research, Higher Education and Institutional Advancement, which is funded by the Swedish International Development Agency (SIDA).

The authors are especially grateful to Katrina Charles and Jonathan Chenoweth who commented extensively on earlier versions of this paper.

The authors alone are responsible for the views expressed in the paper and they cannot necessarily be taken to represent the views of ERA-NET (SPLASH), the Court of the University of Aberdeen or the Board of directors of IPAR-Rwanda or the University of Rwanda.



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1. Introduction

This paper discusses how hybrid sanitation markets can contribute to improving sanitation in informal settlements¹ in three cities of the Great Lakes Region in East Africa; Kisumu (Kenya), Kampala (Uganda) and Kigali (Rwanda) and more generally in sub-Saharan Africa. In doing so it draws on research carried out as part of a larger project developing and evaluating strategies for catalysing self-sustaining sanitation chains in informal settlements in the three countries. One of the strengths of comparative research is that it enables us to begin to distinguish the factors that relate to the physical, social, economic and cultural specifics of place from those that relate to the characteristics of people and their situation, including their socioeconomic circumstances and residency status. In doing so we recognise that there is a mutually reinforcing and reciprocal relationship between people and place (Cummins *et al* 2007) and that understanding how place relates to sanitation will enable us to provide more 'contextually sensitive' policy interventions - a more nuanced understanding of what works, or is likely to work, in improving sanitation in informal settlements. In doing so we argue that poor sanitation is an outcome not just of individual choice but of the state of society (Mills 1954; Burawoy 2008) and that increasing access to improved sanitation must take into account political economy factors (e.g. Booth 2011; Booth and Golooba-Mutebi 2012a; Fritz and Menocal 2006, 2007; Harris *et al* 2013; Kelsall 2011a, b).

A hybrid sanitation market, at its simplest, is a way of stimulating the demand for and supply of affordable, acceptable, appropriate and profitable sanitation arrangements and services that meet legal and regulatory requirements as well what is required to finance sanitation. It recognises that adequate sanitation² is a public as well as a private good and that the state plays a necessary and legitimate role in ensuring that all citizens have access to it. It attempts to specify the role of the key actors in the sector - government, development partners, NGOs, CBOs, the private sector, landlord and tenants - so that sustainable improved sanitation facilities and services are provided to all citizens, including the urban poor. However, a hybrid sanitation market is much more than a technical solution to the failure of governments or the market to deliver basic services, including sanitation; it is an outcome of a theoretical and practical way of reconceptualising state-society relationships to ensure sustainable service provision. The role of the state is

¹ We are using 'informal settlement' as defined by OECD: illegal occupancy of the land and/or areas where housing is not in compliance with planning and building regulations (<http://stats.oecd.org/glossary/detail.asp?ID=1351>). We also specifically targeted densely populated and impoverished urban areas.

² We use 'adequate sanitation' here to differentiate what is required from 'improved sanitation', as used, for example, by the JMC. The latter takes into consideration only the need for safe containment. We consider adequate sanitation as needing to take account, in addition, of the need for the safe disposal of waste - the sanitation chain.

conceived as facilitator, coordinator and regulator of the supply of and demand for sanitation products and services. Its role is to promote the supply and maintenance of appropriate sanitation facilities and services in urban areas. It stimulates citizen demand by raising awareness of the importance of improved sanitation, it provides training for technicians to deliver services, it provides a legal, regulatory and enforcement framework for sanitation and, more broadly, it regulates markets, including financial ones. The analysis of the state's role is most developed in the sanitation market literature by Oosterveer, van Vliet and colleagues (see e.g. van Buuren *et al* 2014b; Oosterveer 2009; van Vliet *et al* 2010; van Vliet *et al* (eds) 2014a). The importance of hybrid sanitation markets for solving the problem of poor sanitation and hygiene in informal settlements is recognised by practitioners from the public, private and voluntary sectors in East Africa (East African Practitioners Workshop 2011; Ministry of Infrastructure 2010).

1.1. Conceptualising the Problem

Sanitation is a basic human right (Langford *et al* 2012) and poor sanitation and insanitary conditions are a threat to the health of the whole population. The human right to sanitation is both an individual right and a collective right. Everyone has the right to live in a safe, healthy environment, and the lack of access to sanitation of some can have a negative impact on the health of all. It is generally acknowledged that governments have a responsibility to ensure a healthy environment for all, but most governments in sub-Saharan Africa have proved unable to take up this task. The individual and collective social and economic costs of poor sanitation are high, with the poor bearing an inequitable share of the resultant morbidity and mortality as well as loss of dignity, self-esteem and safety risks. It is estimated that approximately 2.4 million deaths and seven per cent of the total disease burden could be prevented annually with safe water and sanitation (Cairncross *et al* 2011, 2014). Furthermore, increased investment in improved sanitation (and water) has significant economic and development benefits that are comparable to other interventions in terms of cost-effectiveness. It provides excellent value for money, with the economic value of returns greatly exceeding costs (Cairncross *et al* 2011). The World Health Organisation's 2007 estimates, for example, show that every US\$ invested yields a return of more than US\$6 from improvements in health, educational attainment and the increased productivity of workers. Hickling and Hutton (2014) estimate that the economic cost of inadequate sanitation in Africa is between one per cent and 2.5 per cent of GDP; the cost in Rwanda is estimated to be US\$54 million, in Kenya US\$324 million and Uganda US\$177million (Water and Sanitation Programme 2012a, b, c)³. Yet African governments continue to underfund sanitation despite the eThekweni

³ <http://siteresources.worldbank.org/INTAFRICA/Resources/economic-impacts-of-poor-sanitation-in-africa-factsheet.pdf>, last accessed 09/03/2014

commitments made in 2008 through the ratification of the Sharm el Sheik Declaration to spend at least 0.5 per cent of their budgets on sanitation and hygiene, investing in inclusive sustainable approaches including community development (African Ministers' Council on Water 2011a).

There is a major and specific problem in the overcrowded informal settlements of rapidly growing urban areas in the global South, yet the focus of attention has been on rural areas (Hawkins *et al* 2014; Isunju *et al* 2011; Racki *et al* 2014; Uwejamomere 2008). Residents and landlords left to make their own provision have used technologies and waste management practices more suited to rural areas and relied on informal sector service providers, CBOs and NGOs. The nature of the problem is different in urban areas and requires specific solutions and this has failed to be recognised in the JMC definition of improved sanitation, which considers only safe containment (Hawkins *et al* 2014) and rules out any form of shared sanitation. In overcrowded urban areas it is often not possible to dig a new pit when one fills up or even for every household to have its own on-site sanitation (Gunther *et al* 2012; Mazeau 2013). Hygienic sanitation has to take account of the need for collection, treatment, transport and disposal/reuse of waste (Figure 1) and also the realities of space; barely, however, does it do so (Letema 2012). What residents in informal settlements need is access to is hygienically safe, functional and sustainable sanitation facilities and services (Jenkins *et al* 2014).

Factors limiting progress include: the legal status of residents, which limits their and others' willingness to invest in improving their sanitation; low prioritisation by stakeholders and households; inadequate funding, including poor access to affordable finance for service providers as well as households and landlords; appropriate technologies for pro-poor systems; and affordable solutions with cost recovery. There is no planning or regulation of sanitation in informal settlements, and the sanitation is provided by multiple providers, including householders themselves, landlords, NGOs, CBOs and the formal and informal private sectors (Letema 2012; UN-Habitat 2008). There has been limited engagement with residents and landlords (Isunju *et al* 2011; Otsuki *et al* 2013) and the transient nature of informal settlements combined with insecurity and poverty means that there is a lack of the necessary social capital and social cohesion to drive community development (Abbott *et al* 2014; Green *et al* 2006;; Tukahirwa *et al* 2010a). An additional factor is that governments often have long-term plans for the rehabilitation or even re development of informal settlements; in Kigali for example, it is estimated that 48 per cent of the housing stock needs to be replaced and a further 32 per cent upgraded (Joshi *et al* 2013). This can create a tension between making improvements to existing provision in the short term and investing in long-term solutions.

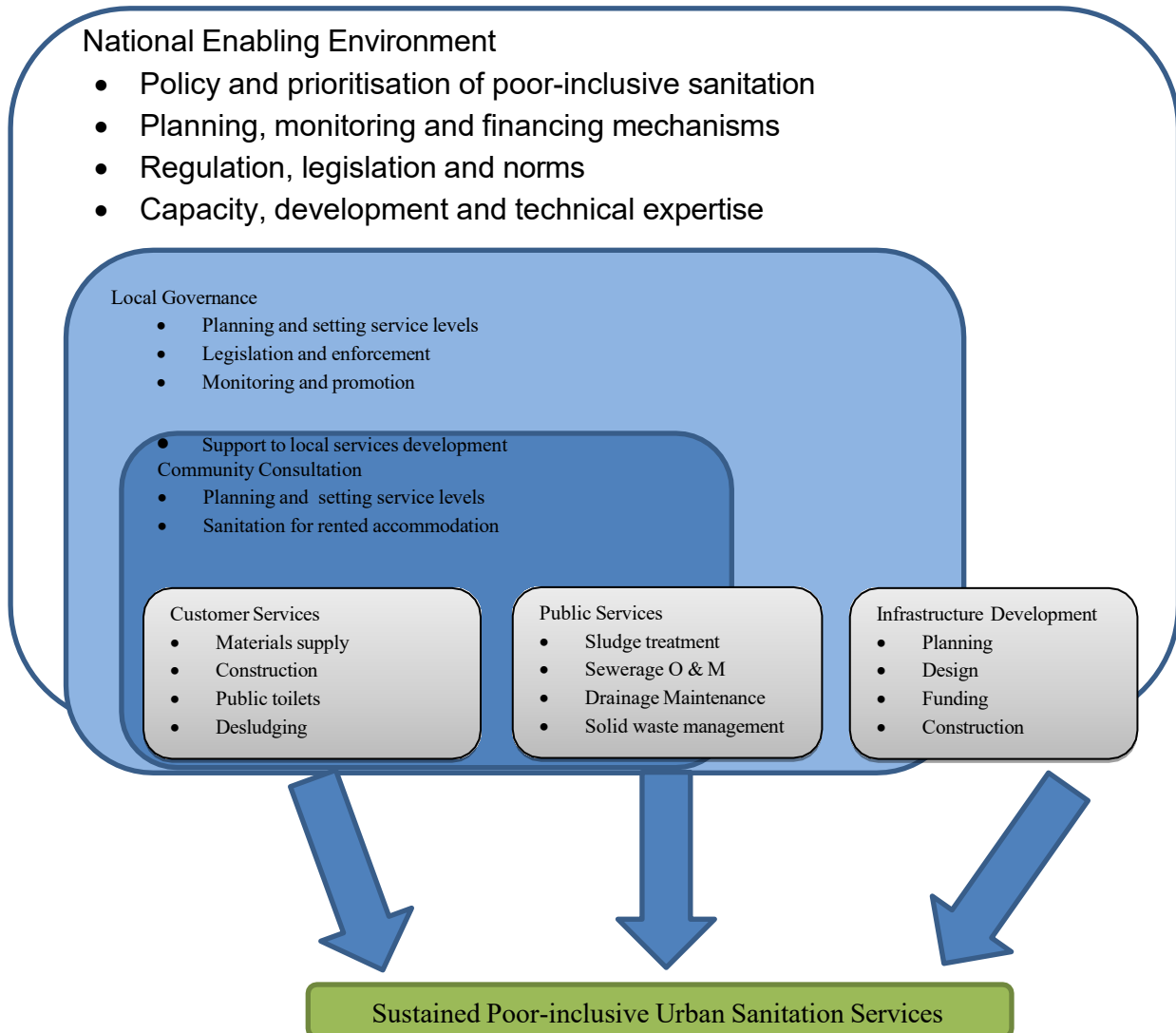
1.2. Financing and Marketing Sustainable Sanitation Chains

Recognising that governments do not have the capacity to deliver improved sanitation and taking account of the specific issues confronting residents of informal settlements, the proposed solution is to find ways of enabling the residents (and landlords) to purchase and maintain their own sanitation. This requires developing appropriate technologies for sanitation in informal settlements and providing sanitation markets, with householders/landlords mainly supplying the finance. Sanitation, it is argued, must be affordable, acceptable, appropriate, sustainable and profitable and meet legal and regulatory requirements. Most of those advocating this approach, however, acknowledge that sanitation is a public good and recognise the importance of public support for aspects of sanitation such as promotion of hygiene behaviours, training artisans and stimulating demand and supply, and providing those aspects of faecal waste management that extend beyond the household, such as transporting and treating sludge (e.g. Hawkins *et al* 2013, 2014; Scott and Reed 2006; Tucker and Mason 2012). There is also a need for governments to create a policy environment that is enabling for pro-poor financial services, including regulatory changes to remove interest rate ceilings and exaggerated requirements for collateral (Water and Sanitation for the Urban Poor 2012).

There are two main issues: who should/can finance sanitation and who can/should provide it. Funding can come from only four potential sources: out-of-pocket payments by homeowners/landlords, taxes, tariffs or transfers. In practice the residents and landlords in informal settlements have been left to fend for themselves and have generally failed to provide hygienic sanitation for themselves. This means that there is a large potential market for products and services (Sy *et al* 2014), including building materials and sanitary fitments, and for associated services and products, including financial services, repairs, pit emptying and sewage disposal. The issue is not so much inability to afford the cost but the unavailability of good quality products that are acceptable to potential consumers (World Bank 2013). What is necessary, it is argued, is the development of appropriate products, at the right price, available (place) and known through promotion. However, stimulating the supply of and demand for sanitation services requires determined effort. Many households do not consider sanitation a priority and therefore demand is low (Hickling 2014; Isunju *et al* 2011; Katukiza *et al* 2012; Tremolet 2010a, 2011), and supply is fragmented, with multiple providers of different products making it difficult for potential consumers to make informed decisions (Kappauf 2011; Devine 2014). Suppliers (entrepreneurs/private sector) are likely to be risk-averse and cautious about getting involved unless there is clear financial benefit and may have difficulty gauging potential demand (WaterAid 2011).

The notion of a sanitation market at its simplest, then, is a set of recommendations as to how sanitation can be financed and markets created to give the poor access to affordable and sustainable sanitation. However, a range of positions is taken on how this can be achieved, ranging from those that take a more neoliberal approach (e.g. Nhlema *et al* 2014; Solo 1999) and those that advocate a more interventionist approach. The former argue that the issue is not a question of money (the poor already pay for sanitation) but of developing a market-based approach, with acceptable and affordable sanitation being on offer, and of encouraging businesses including the informal sector to recognise that serving informal settlements would be profitable. Others, however, argue that a sustainable solution involves developing a partnership between a range of actors including government, development partners, NGOs, CBOs, landlords and residents (Patkard and Gosling 2014; Otsuki *et al* 2013). This partnership is important not least because sanitation solutions in informal settlements often mean collective solutions, the provision of communal or public toilets, due to lack of space (Schouten and Mathenge 2010). Hawkins *et al* (2013, 2014) set out a framework for the role of partners in providing pro-poor-inclusive sustainable urban sanitation. Ensuring the delivery of sanitation services requires that the necessary institutional drivers are in place and the partnership is managed, a role they suggest local government is best placed to take on.

Figure 1: A Framework for Achieving Poor-inclusive Urban Sanitation



Source: Hawkins *et al* 2014, p 119

Recommendations for financing are informed by the extent to which the different potential partners are conceived as having a role and include recommendations both as to who should fund what and as to how the funds can be raised by those responsible for making payments. In practice the key concerns underlying recommendations for financing are sustainability and being pro-poor; with residents (and landlords) generally seen as responsible for the costs of the sanitation facility itself and its maintenance, whether this is through funding on-site sanitation, making contributions to the costs of maintaining communal facilities or payment per

use for public facilities. There is also little disagreement that services such as the building of facilities, emptying, transporting and processing should be provided by the private sector. Government is seen as responsible for the legal and regulatory framework for sanitation and its enforcement and for stimulating the market as well as investing in infrastructure (World Bank 2011). NGOs are seen to have a role in stimulating demand, supporting community organisation and training small service providers. There is more concern about cost recovery - the extent to which charges for communal/public facilities will be affordable for the poor if they are set at a level which enables capital cost recovery as well as meeting running costs (Water and Sanitation for the Urban Poor 2012). More contentious is the issue of subsidies for the poor, with some arguing that they distort the market (e.g. Solo 1999) and others that carefully targeted subsidies can leverage household investment (e.g. Cairncross *et al* 2011; Johannessen *et al* 2013; Tremolet *et al* 2010b; UN-Habitat 2014). Alternative to subsidies are lowering/abolishing VAT on sanitation-related goods and services (Sijbesma 2011) or price regulation to prevent private sector profiteering (Murungi and Dijk 2014). Investment by government/NGOs in the siting and building of communal sanitation has also been advocated (Schouten and Mathenge 2010). Others have advocated giving communities small amounts of finance so that they can come up with their own solutions (e.g. Archer 2012; Boonyababcha *et al* 2012; Satterthwaite 2012; Satterthwaite *et al* 2005). The importance of taking a lifecycle approach to the costs of installing and maintaining sanitation is also seen as essential (e.g. Cross and Coombes 2014; Fonseca *et al* 2014).

Leveraging private sector investment is central - finance for investing in businesses and for households to purchase goods and services. Tremolet *et al* (2010b), for example, has pointed out that the cost of on-site sanitation installation is often half or more of a poor household's annual income. Public/private partnerships have been seen as one potential way of ensuring the delivery of coordinated services in informal settlements (Ahmed and Ali 2003, 2005; Johannessen *et al* 2013; Water and Sanitation for the Urban Poor 2012). They provide a coordinate enabling environment for stimulating demand and supply and enable consumers to hold service providers to account. The availability of microfinance and /or savings and loans clubs for households and community groups to purchase sanitation and for formal and informal sector business investment is seen as necessary (Chatterley *et al* 2013; Sijbesma 2011; Tremolet 2011). Donors and NGOs can support MFIs in developing the loan market and small entrepreneurs in preparing business plans. Households and communities often reduce the costs of providing sanitation by using their own labour but still need to be able to purchase materials.

However, an analysis of the key lessons from the literature on financing sanitation for the urban poor (Water and Sanitation for the Urban Poor 2012)

concludes that while public and donor investment remains essential, there is a need to ensure that it is invested in real improvement of sanitation for the poor. They recommend: a life-cycle approaches so that all costs of infrastructure and delivery services are taken into account; service delivery by local small-scale private-sector providers supported through appropriate microfinance services and capacity building; cross-subsidising sanitation from water revenues; output-based financing by development partners, with disbursement dependent on demonstrated delivery of infrastructure services by government; and that concessional financing for the private sector should be dependent on the service provider demonstrating capacity to deliver commercially viable service to low-income households. UN-Habitat (2014) point to the importance of a range of other factors, including sanitation microfinance, public-private partnerships, subsidies to leverage investment by the poor, the use of appropriate low-cost technologies that are easy to service and maintain, cooperation between ministries, and the participatory engagement of all stakeholders including residents living in informal settlements.

1.3. Bringing the State Back in....

While all these factors are undoubtedly important, structural causes related to the role of the state also play an important if not critical role (African Ministers' Council on Water 2012; Oosterveer 2009); governments together with other development partners have failed to deliver. It is not just issues of market failure and affordability that are important; existing relations of power are also an important part of the explanation for the failure to deliver improved sanitation to residents in informal settlements (Harris and Wild 2013; Harris *et al* 2013; Jones *et al* 2014; Kooy and Harris 2012). There is a need for governments not just to regulate but to play a role in actively organising and coordinating the sanitation market (Harris *et al* 2013). However, the various initiatives that have been taken to overcome the lack of service provision have been scattered and isolated, and despite some positive results they have not offered structural solutions. It has become recognised that it is necessary to bring the state back in (Fritz and Menocal 2006, 2007; Mkandawire 2001; World Bank, 1994, 2005; Water and Sanitation Programme 2008). It is necessary to build a state that works (Giddens 1994); a state that is committed to development (Castells 1992, 2000) and has the capacity to promote sustained economic development and structural transformation and, critically, to regulate the market (Fligstein 2001).

One response has been to argue for a network approach to governance whereby government at different levels sets targets facilitating, regulating and collaborating with the private sector, NGOs, CBOs landlords and residents in designing and implementing urban environmental infrastructures and services – what Giddens (1998) has called the social investment state (see also van Buuren *et al* 2014; Oosterveer 2009; Spaargaren *et al* 2006). Advocates of this approach suggest

that it is more likely to deliver to the poor than neo-developmental approaches where the government is strengthened so that it can plan and implement the provision. It will, they argue, reduce reliance on government and make services more responsive to specific local conditions and public demand allowing a better synergy between technological solutions, their management and prevailing societal circumstances (Isunju *et al* 2011; Otsuki *et al* 2013; Patkar and Gosling 2014; Paterson *et al* 2007). African governments have themselves endorsed this approach (African Ministers' Council on Water 2011a).

Others, however, have argued that if Sub-Saharan African governments are to deliver then there needs to be a return to a form of developmental state; the state is central, they argue, to economic and social development (e.g. Kelsall 2011a; Reitz and Menocal 2006, 2007). They stress that states and their political economy matter for social and economic development and that there should be an emphasis on improving the role of the state and an acceptance of good enough governance (Grindle 1996, 2004; Khan 2006) in other words, of a capable state that can deliver development for the benefit of its citizens. They argue that a strong state is necessary to provide guidance and coordinate the private sector and NGOs (Reitz and Menocal 2006, 2007). There have been and still are developmental neo-patrimonial states in Africa where state resources have been used to invest in social development rather than to 'buy' the loyalty of potential rivals and supporters and where corruption is rigorously controlled (see e.g. Booth and Golooba-Mutebi 2012a, 2012b; Kelsall 2011a, b). They argue that such states are able to deliver development in the interests of all citizens because they are able to build the administrative capacity to penetrate civil society and ensure the implementation of policy across the country.

2. Situational Analysis: Informal Settlements in Kigali, Kampala and Kisumu

The cities selected for this research are all located in East Africa, the most rural and fastest urbanising region in the world (African Regional Conference on Population and Development 2013) and the region with the lowest proportion of households with access to improved sanitation. Already fast urban population growth is predicted to accelerate, with rural-urban migration resulting in the further growth of informal settlements. The population of Kigali, for example, grew from around 6,000 in 1960 to 1.1 million by 2012 and is estimated to grow to three million by 2020 (Rwanda Environmental Management Agency 2013). All three cities already have well over half their urban population living in deplorable insanitary and over crowded

conditions in informal settlements⁴ - 60 per cent in Kisumu, 63 per cent in Kampala and 62.5 per cent in Kigali - with high levels of rented accommodation and high population turnover. In Kigali, for example, 40.5 per cent of housing is rented (Joshi *et al* 2013), while in Kisumu only six per cent of residents live in a house they own (Karanja 2010) and in Kampala approximately a third of residents move every year (ROM Transportation Engineering Ltd *et al* 2012). Poorly managed infrastructure, unsustainable water and sanitation systems, inadequate investment and informal service provision operating outside a framework of basic standards and regulations have all contributed to this situation (ROM Transportation Engineering Ltd *et al* 2012; Joshi *et al* 2013; Rwanda Environmental Management Agency 2013). Residents in these settlements are left basically to their own devices to make provision for sanitation, with no access to centralised sewerage systems even where they exist⁵. There are NGOs and CBOs in Kampala and Kisumu but there is no coordination (see e.g. Tukahirwa *et al* 2010a, b, 2014).

Access to sanitation in all three cities is high, even in the informal settlements, but conditions are insanitary, with high levels of sharing, poor hygiene practices and illegal dumping of sludge (Joshi *et al* 2013; Murungi and Dijk 2014; Okot-Okumu 2009; 2010; Rwanda Environmental Management Agency 2013). In Kigali, for example, 43.8 per cent of households in informal settlements share facilities and 6.3 per cent practice open defecation (authors' own calculation from the 2012 Housing and Population Census), and in Kampala 75 per cent of residents use shared or public toilets (Tumwebaze *et al* 2013a). Even where there are emptying services residents rarely use them, and sewage is often buried next to the emptied pit. Research in Kampala and Kisumu has found high levels of dissatisfaction (Tumwebaze *et al* 2013b). There has been little change since 1990 in the proportion of households with access to improved sanitation, using the JMP definition: a marginal improvement in Kenya, from 26 per cent to 31 per cent, no change in Uganda and a marginal decline in Rwanda from 64 per cent to 61 percent (WHO/UNICEF 2013). Access to improved sanitation in rural areas has also increased only marginally in Uganda and Kenya, but in Rwanda it has increased dramatically, to the extent that the 2015 MDG target was achieved ahead of time (Abbott and Rwirahira 2014).




























All three countries have policies in place for sanitation and legal and regulatory frameworks (see African Ministers' Council on Water (AMCW)(2011 b, c, d) and work with development partners in a sector-wide approach. Sanitation is

⁴ Informal housing is often associated with squatting but in Kigali most owners of housing (owner occupiers or landlords) own the land on which the house is built, having been given title during the land tenure regularisation process that took place following the passage of the 2005 Organic Land Law. In Kampala and Kisumu the occupants of the unplanned settlements/their landlords do not generally have title to the land.

⁵ Kigali has no centralised sewerage system and the one in Kampala serves only about 10 per cent of the population (ROM Transportation Engineering Ltd *et al* 2012).

generally conceived of as a shared responsibility between a ministry responsible for infrastructure and a ministry of health responsible for health promotion and public health, with delivery devolved to a regulatory authority and local government. Consumers are expected to pay for sanitation facilities and services (AMCOW 2011a, b, c, d) with roles envisaged for the private sector, NGOs and CBOs. Policies and city plans (KCAA 2010; Joshi *et al* 2013) emphasise the importance of providing hygienic sanitation to all citizens including those in informal settlements. However, to date they have singularly failed to do so and there is a funding gap, although Rwanda is meeting the eThekwini commitment of 0.5 per cent of GDP being allocated to sanitation (AMCOW 2011a, b, c, d; WaterAid 2013a, 2013b, 2013c; WashWatch⁶). The results scorecard for the ability of the three countries to deliver improved sanitation shows that the basic building blocks for enabling, developing and sustaining service delivery are not adequately developed (Table 1). With the notable exception of policy in Rwanda, planning in Kenya and expenditure in Uganda, most of the building blocks are a drag on development, with planning in Rwanda, budget, equity and markets in Uganda and output and uptake in Kenya needing urgent attention.

Table 1: Country Score Card Results for Urban Sanitation - Kenya, Rwanda and Uganda

	Enabling			Developing			Sustaining		
	Policy	Planning	Budget	Expenditure	Equity	Output	Markets	Uptake	Use
Kenya	2.2			1.2			1.2		
									
Rwanda	1.7			1.3			0.8		
									
Uganda	1.2			1.5			1.2		
									

(Source AMCW 2011a)  Barrier  Drag  Driver

There is one important difference between the three countries and that is the role the government plays in organising community involvement in the development process, including improving service provision. While Kenya and Uganda envisage a role for CBOs in the development process⁷ and expect the private sector to deliver services, Rwanda actively coordinates the different sectors and ensures that the very poorest are able to access basic services (Abbott *et al* 2014; Abbott and Malunda 2014; Ministry of Local Government 2013, 2012, 2011, 2008). Key elements of this policy in Rwanda include: elected volunteers taking on responsibilities for health promotion in each village (community health workers); organised community work (Umuganda); social protection for the very poorest identified through a participatory

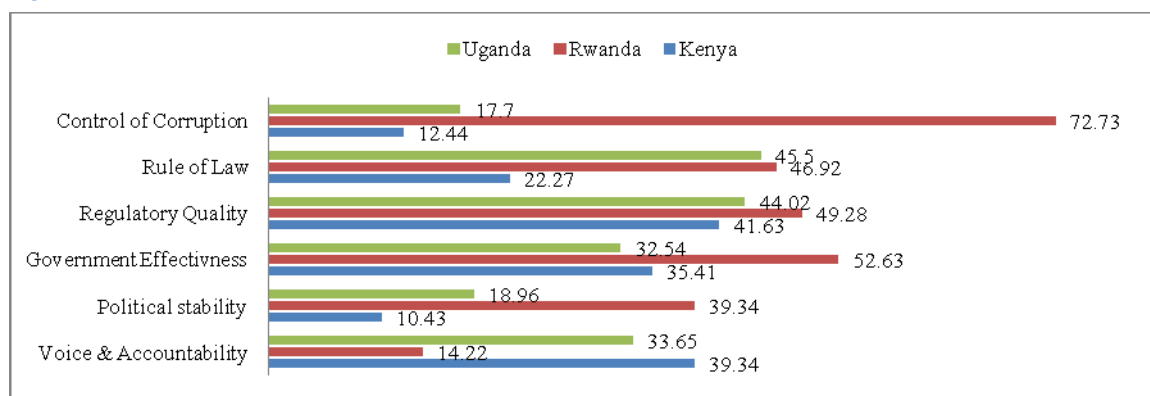
⁶ <http://washwatch.org/?p=455>, last accessed 09/03/2014

⁷ Outsuki *et al* (2013), for example, point out that the law requires cooperation between the government and CBOs but a lack of an official institutional and implementation frameworks results in a lack of accountability.

poverty process (Ubudehe); the provision of formal financial institutions in every sector (Umurenge SACCOS); a commitment to contribute to the development process (Imihigo) at every level from the individual to central government; and the coordination of the contribution of the private sector, NGOs and CBOs at national, district and sector levels through joint advisory committees .

The success of this developmental neo-patrimonialist strategy is evidenced not just by strong economic growth but by the fact that despite the setback of the 1994 Genocide Rwanda achieved most of its MDG targets (Abbott and Rwirahira 2014), something that was less certain for Uganda (Ministry of Finance, Planning and Economic Development 2013) and extremely unlikely for Kenya⁸. Another clear indicator is the World Bank’s assessment of Rwanda’s state effectiveness, which compares favourably with other countries in Africa including Uganda and Kenya (Figure 2). Notable are Rwanda’s high score for control of corruption and government effectiveness, although it scores poorly on voice and accountability. By contrast Kenya and Uganda score very poorly on control of corruption and have significantly lower scores than Rwanda for government effectiveness. We might therefore expect development outcomes to be different in Rwanda if this argument has validity.

Figure 2: State Effectiveness –World Bank Governance Indicators - Rank-2012



(Source: <http://info.worldbank.org/governance/wgi/index.aspx#home>, last accessed 24/05/2014)

⁸ <http://www.finland.or.ke/public/download.aspx?ID=107036&GUID=%7BF224E5C0-16F2-499D-9C95-0D206D49E370%7D> last accessed 29/05/2014

3. Methods and tools

This paper addressed the following research questions:

1. What is the situation in informal settlements regarding sanitation and public health issues that arise from poor sanitation?
2. How do households in informal settlements meet their needs for sanitation facilities and services?
3. What barriers do households in informal settlements face in meeting their needs for sanitation facilities and services and related public health problems?
4. How can a sanitation market be organised and financed so that it meets the needs of households and residents in the informal settlements?
5. What do the findings from the research add to our understanding of hybrid sanitation markets as the way to ensure that everyone is able to exercise their right to access to hygienic sanitation?

To answer these questions this paper draws on data collected for a broader project on developing catalysing, self-sustaining sanitation chains in informal settlements in urban areas in three East African countries, Rwanda (Kigali), Uganda (Kampala) and Kenya (Kisumu). The informal settlements were chosen purposively to be representative of the most deprived communities in the three cities with the poorest levels of service delivery, including sanitation. Two communities were selected in Kigali and three in each of Kampala and Kisumu. The project was informed by a human rights perspective, was participatory and used a mixed methods approach.

The research combined the strengths of qualitative and quantitative research. This paper draws on the data collected as part of a participatory rapid appraisal (a household survey, transit walks, focus group discussions with residents in the settlements and key informant interviews at community, city and national levels) and deliberative forums involving residents, landlords, CBOs, technical experts, NGOs, development partners and government officials. The participatory rapid appraisal was designed to provide a detailed understanding of the current situation and the deliberative forums to bring together the stakeholders to agree marketing and financing strategies for delivering hygienic and sustainable sanitation to residents of informal settlements.

The survey utilised two-stage probability sampling with the sample proportionate to the population in each settlement. The first stage was the selection of sample villages and then households were selected for inclusion in the survey using a random route technique. The questionnaire was administered face to face by

trained interviewers in the preferred language of the respondent. The head of household was asked to respond on behalf of the household or, in the case of his/her absence, another member of the household. Three call-backs were made before a household was recorded as a non-response. Quality assurance included a check on ten per cent of each interviewer's completed questionnaires and a ten per cent call-back. The questionnaire was developed by the team, piloted in each country and amended as necessary following feedback from the pilots. Following the pilot the questionnaire was translated into local languages. On completion of the survey all questionnaires were checked and any that had more than 10 per cent of questions unanswered were rejected. The data were then entered into SPSS in preparation for analysis. The sample size was determined by the importance of being able to look at subgroups within the population across and within the case studies and the achieved sample was 5,387 households (93.4% response rate) – 1,794 in Kigali, 1,666 in Kampala and 1,927 in Kisumu.

Participants for inclusion in the FGDs were selected purposively to ensure that all sections of the community were represented, including women and girls and vulnerable groups. FGDs were held with men and women separately and facilitated by a trained researcher of the same gender as far as possible. Key informants were identified and agreed by the research team, taking account of the different stakeholders and employees in the sector in the three countries. FGDs and KIIs were carried out by trained researchers in the preferred language of the group/key informant, with the support of note takers. Notes were transcribed and then analysed thematically using themes that had been agreed by the research team at a workshop. Additional themes were added during the charting phase as they emerged.

The deliberative forums were designed to bring together the various interest groups and stakeholders in service delivery and finance and were sampled purposively. Each DF consisted of between 12 and 16 participants, representing residents (including women and people living with disabilities), landlords, technical experts, CBOs, NGOs, government officials (central and local) and regulatory authorities, the private sector (formal and informal), sanitation products and service providers and financial services). The agenda for the deliberative forums was agreed by the research team and one forum was held in each city. The DFs were facilitated by trained researchers assisted by research assistants. The notes from the DFs were transcribed in full and analysed thematically.

All researchers involved in data collection were trained, with the lead researchers attending joint training sessions and other researchers being trained by them in country. Ethical approval for all phases of the research was given by the Research Ethics Committee of the University of Surrey. All participants gave oral

informed consent and the consent of parents or a legal guardian was obtained in addition for young people under the age of 18. Respondents and informants were assured of anonymity and confidentiality. All data were stored in such a way as to preclude data linkage.

The survey data were analysed using SPSS and the qualitative data were analysed thematically. We constructed a deprivation scale to measure the underlying phenomena and to even out random variation from a number of variables measuring respondents' ability to afford a range basic goods and services always, sometimes or rarely: basic food, essential cloths and shoes, lighting after dark, fuel for cooking, potable water, medical care and medical drugs. We constructed the scale using factor analysis with varimax rotation; the variables formed one factor and explained 75.5 per cent of the variation and the reliability of the scale was acceptable, with a Cronbach's Alpha of 0.95. Our analytical framework used place (the three cities) and composition variables, including gender of head of household, education, marital status, age, occupancy status (tenant/owner occupier), length of residency and type of sanitation (improved/not improved, based on JMP definition). We tested the significance of differences using Cramer's V and ANOVA. We use logistic regression to determine the relative contribution of a number of variables that all correlated with a given phenomenon. We control for place in logistic regression by adding it on step 2 so that we can determine the impact of place after controlling for the characteristics of people living in the informal settlements.

4. Findings

4.1. Introduction

In this section, we report on the findings from the empirical research in the informal settlements in the three cities. We consider the relative importance of place and composition in explaining the sanitation facilities to which residents have access, the existence of sanitation markets and the ways in which sanitation is financed. We then discuss the innovative solutions for creating self-sustaining sanitation chains in informal settlements in the three cities that the various stakeholders agreed were technically feasible, acceptable and affordable. We conclude by considering how this adds to our existing understanding and the implications for policy.

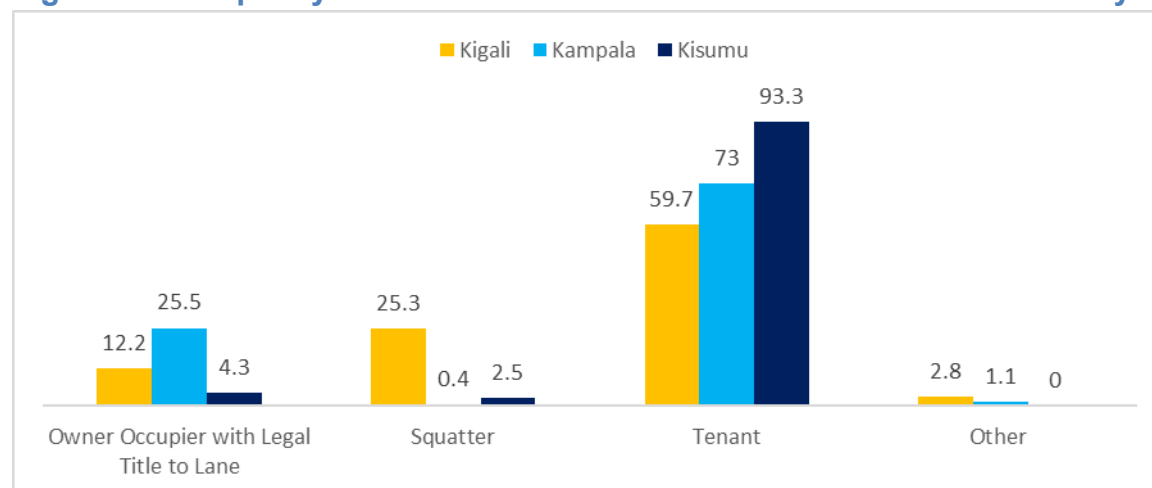
4.2. Demography and the Socio-economic Situation of Residents

This section looks at the demographic characteristics and socio-economic situation of the residents of the informal settlements in the three cities. The analysis looks mainly at the information provided by heads of household. This ensures that

we give full consideration to the characteristics of households in the informal settlements, especially in terms of age, gender, marital status, educational level and employment status of the heads of household and their socioeconomic situation. In total 52 per cent of respondents in Kigali said that they were the head of household, 61 per cent in Kampala and 48 per cent in Kisumu. Our sample of heads of household under-represented male heads in Kigali (54.5 % compared with 71% of household heads being reported as male in the survey) and Kampala (49.4% compared to 63%) but seemed representative in Kisumu (84.4 per cent compared to 87%). This is likely to mean that our analysis over-represents households headed by divorced/widowed women, who are likely to be, on average, older than male heads of household and more deprived.

In general, households in Kisumu were more deprived and more likely to rent their accommodation than those in Kampala and Kigali, while households in Kigali were noticeably less deprived than those in the other two locations. A majority of households in the informal settlements across the three cities were tenants (Figure 3). However, this varied by location, with over three quarters being tenants in Kisumu and nearly as many in Kampala, compared with 60 per cent in Kigali. A quarter of householders are owner occupiers with legal title in Kampala, and 12 per cent in Kigali. A quarter of owner occupiers in Kigali said that they did not have legal title to the land their house was built on⁹.

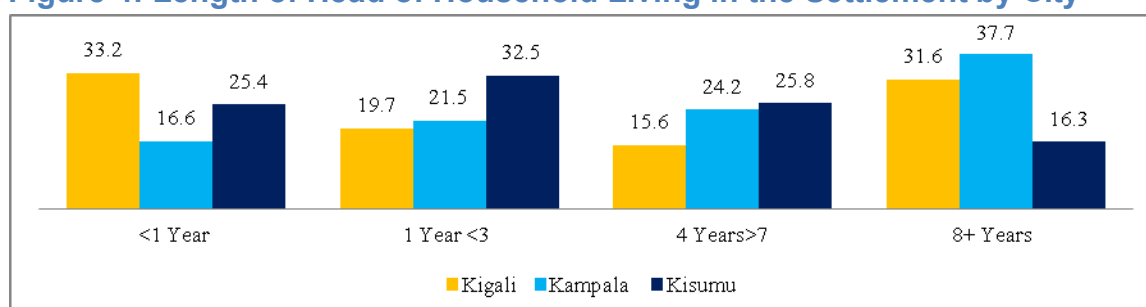
Figure 3: Occupancy Status of Households in the Informal Settlements by City



⁹ It is unclear if this is because a high proportion lived on marsh land, that they do not hold customary title to the land, or at the time of the survey they had not registered their land. Under the 2005 Land Law all those with customary title to land, except marshland which belongs to the state, are able to register it and according to the land office in Kigali this means that most land in informal settlements has now been registered (personal communication).

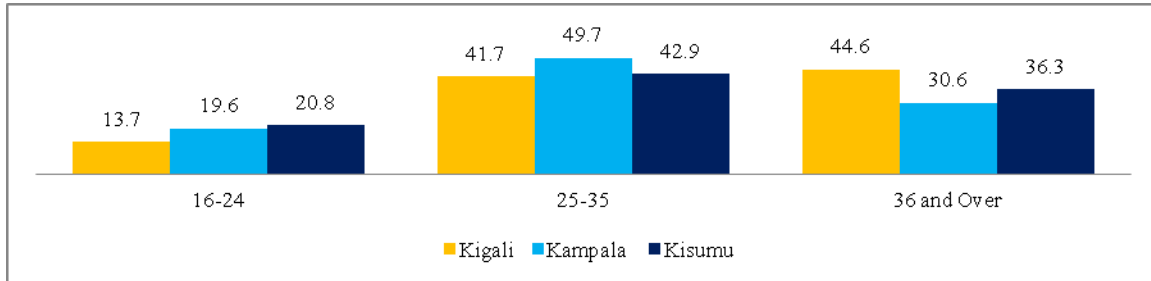
The length of residency of the heads of household in the informal settlements differed by location, with over half having lived in the settlement for less than three years in Kigali and Kisumu but only just over a third in Kampala (Figure 4). In Kigali and Kampala there is a sizable minority that are long-term residents. This seems to relate to occupancy status, 72.6 per cent of owner occupiers had lived in the informal settlement for eight or more years compared with only 15.3 per cent of tenants. Conversely 60 per cent of tenants had lived in the informal settlement for three years or less and half of these for one year or less compared with 14.3 per cent of owner occupiers.

Figure 4: Length of Head of Household Living in the Settlement by City



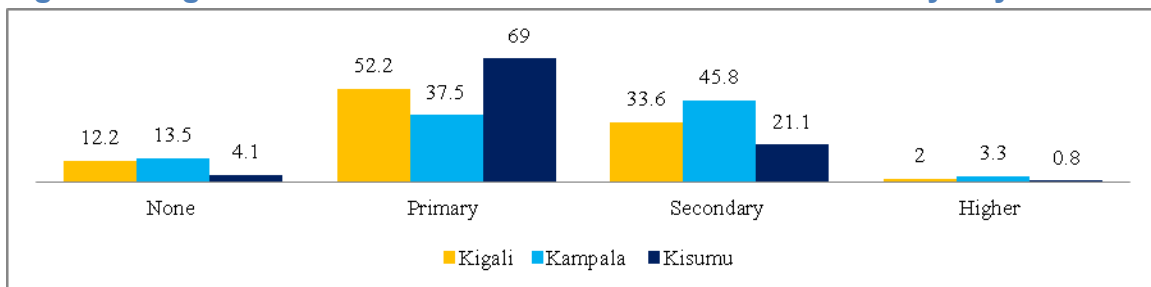
The mean age of the heads of households was much the same across the three cities, in the mid-30s, and with little difference between male and female (Figure 5). The mean age was 37 years in Kigali (M 36, F 38), 33 years in Kampala (M 33, F 34) and 34 years in Kisumu (M 34, F 33). This suggests that heads of household in the informal settlements are somewhat younger than the average for all heads of household for example in Rwanda the average age of a head of household is 45 years nationwide, 42 years in urban areas and 40 years in Kigali (authors own calculation of EICV3 data). Looking at the information provided by all the respondents confirms that the adult population living in the informal settlements is predominantly young with three per cent or less being 65 years and over. The population with mobility problems also seem to be relatively small; between two per cent (Kampala) and three per cent (Kigali) of respondents to the survey reported that a member of their household as having a mobility problem.

Figure 5: Age (grouped) of Head of Household by City



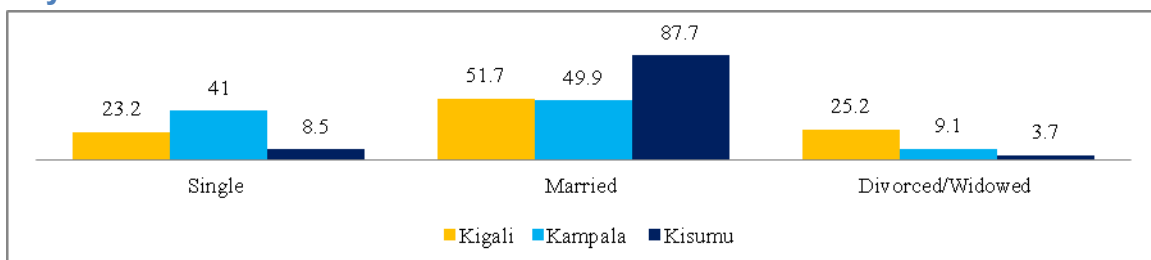
Education levels of the head of household are relatively high compared with the levels reached by adults across each of the three countries, although somewhat lower in Kisumu (Figure 6). Over 50 per cent of heads of household had secondary or higher education in Kampala and over a third in Kigali but only just over a fifth in Kisumu.

Figure 6: Highest Level of Education of Head of Household by City



There are more households headed by a single person (single/divorced/widowed) in Kigali and Kampala, with around 50 per cent of households headed by a lone adult. In Kisumu, by contrast, 88 per cent of households are headed by a married person.

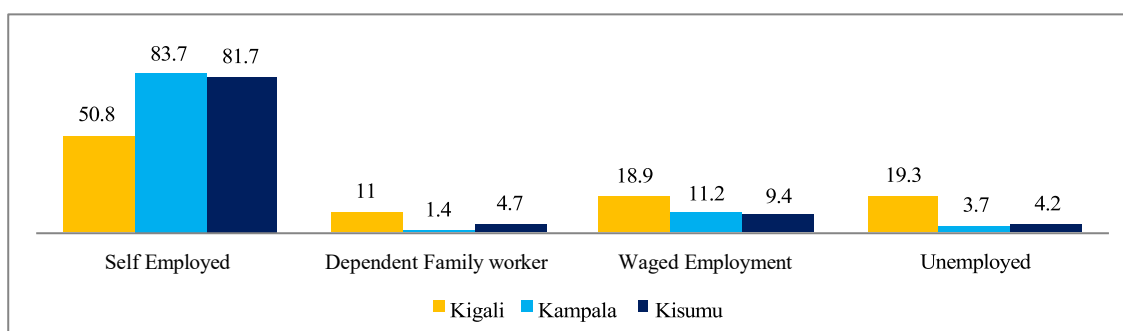
Figure 7: Marital Status of Heads of Household in the Informal Settlements by City



The sanitation needs of young children are of especial importance and a relatively high proportion of households have at least one child under the age of five: 52.3 per cent in Kigali, 43.7 per cent in Kampala and 59.5 per cent in Kisumu. Young children need supervision when using latrines, especially if they are not on-site, requiring that parents and older siblings spend time supervising them. Adults, usually mothers, also have to (or should) ensure the safe disposal of faeces if they defecate at home. Older children may come into contact with contaminated water, drinking it or even bathing, as we have observed, in polluted streams.

The majority of the heads of household were self-employed (Figure 8), generally in the informal sector as small traders/running household enterprises. However, in Kigali a fifth are employed in the formal sector and a fifth reported themselves as unemployed.

Figure 8: Employment Status of Head of Household by City

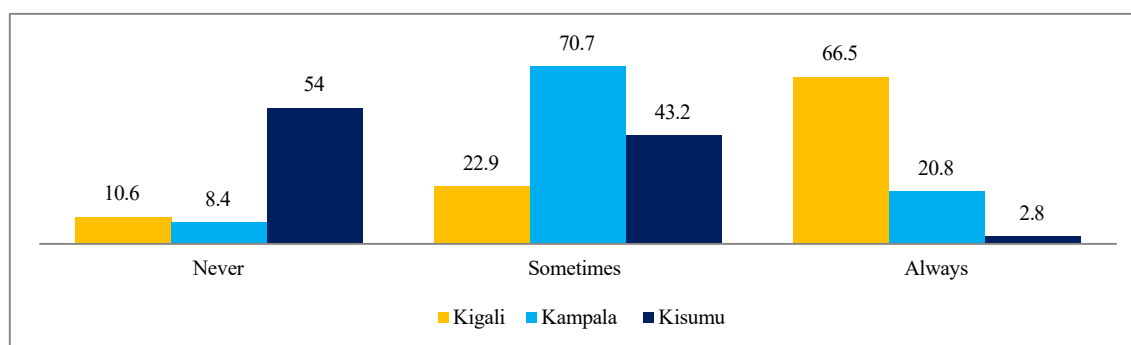


Poverty is clearly related to the ability to pay for goods and services and the poor often have to make difficult choices between paying for basic food, paying for other household essentials, buying medical care and investing in education for children. Sanitation is often a low priority compared with other pressing needs, especially as residents of informal settlements may not be aware of the benefits of investing in sanitation. Poverty can also make it difficult for the poor to save and to get credit to invest in sanitation. In fact, most poor people do save, but their saving is mainly for risk mitigation (unexpected emergency such as illness) or anticipated expenditure such as costs associated with children's schooling. However, not all residents in informal settlements are poor; residents end up there because it is the only place where they can find affordable accommodation when they migrate to the city.

We were not able to collect detailed information on poverty but we did ask a series of questions enabling us to measure deprivation. The inability to purchase sufficient food to meet minimum needs is generally seen as an indicator of extreme

poverty. As Figure 9 shows, the households in Kisumu are much more likely to be in extreme poverty than those in the other two cities. Also of note is that two thirds of households in the Kigali sample are always able to meet their food needs, compared to a fifth in Kampala and only three percent in Kisumu. The broader deprivation measure confirms this analysis, showing that while two thirds of households in Kigali are not deprived, in Kisumu just over 50 per cent are very deprived and 82 per cent deprived in total. ANOVA confirmed that the differences are significant across the three cities ($F=2876$ with 2 d.f., $p<0.001$) with the post hoc test showing that the households in Kampala are significantly less deprived than those in Kisumu and that those in Kigali are less deprived than those in Kampala. The mean score on the 14-point scale was 5.4 in Kisumu, 7.5 in Kampala and 11.0 in Kigali.

Figure 9: Ability to Afford Basic Food as Reported by Head of Household, by Country



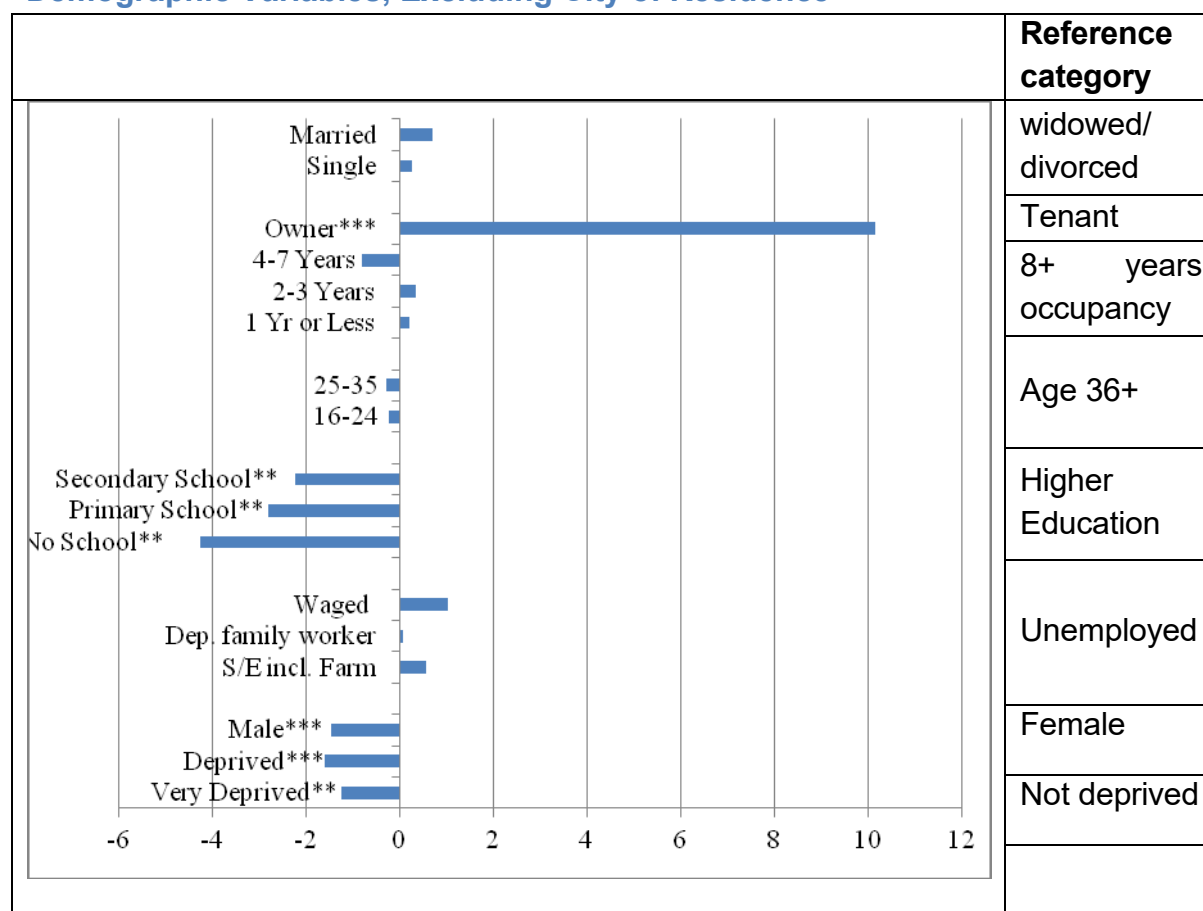
4.3. The Sanitation Situation of Households in the Informal Settlements

Households generally have access to poorly maintained sanitation facilities that do not meet the JMP definition of improved sanitation. Latrines are a mixture of private on-site facilities, communal facilities (shared by more than one household) and public facilities, generally pay-per-usage. Servicing and maintenance of facilities is poor and environmental pollution high. Tenants in general have poorer access to improved sanitation and experience more problems than owner occupiers, but poverty and lack of education are also important factors. However, even allowing for differences the characteristics of residents, place is also important, with access to improved sanitation being lower in Kisumu and other sanitation problems generally worse.

The majority of households have access to a pit latrine, improved (61.9%) or unimproved (20.5%) or public (13%), with only 6.3 per cent of households reporting they have no access to a latrine and that household members practice open defecation. The majority of households share facilities, with only 26.7 per cent of

those in Kigali, 11.6 per cent in Kampala and one per cent in Kisumu having their own private on-site latrine. According to the JMP definition only 18.4 per cent of households in Kigali, 11.3 per cent in Kampala and 0.8 per cent in Kisumu have access to improved sanitation. The main factor explaining the difference in access is occupancy status; owner occupiers are significantly more likely to have access to an improved facility than tenants. Logistic regression shows that when other characteristics that influence access to improved sanitation - including poverty, gender, age, education and marital and employment status of head of household - are controlled, the most important predictor of access to improved sanitation is being an owner occupier (Figure 11). Education, deprivation and gender make a significant but a much smaller contribution. When city is added to the model it makes the most contribution, with households in Kampala being significantly more likely to have improved sanitation than those in Kisumu and those in Kigali than those in Kampala. The other variables, including residency status, make a reduced contribution (Figure 12).

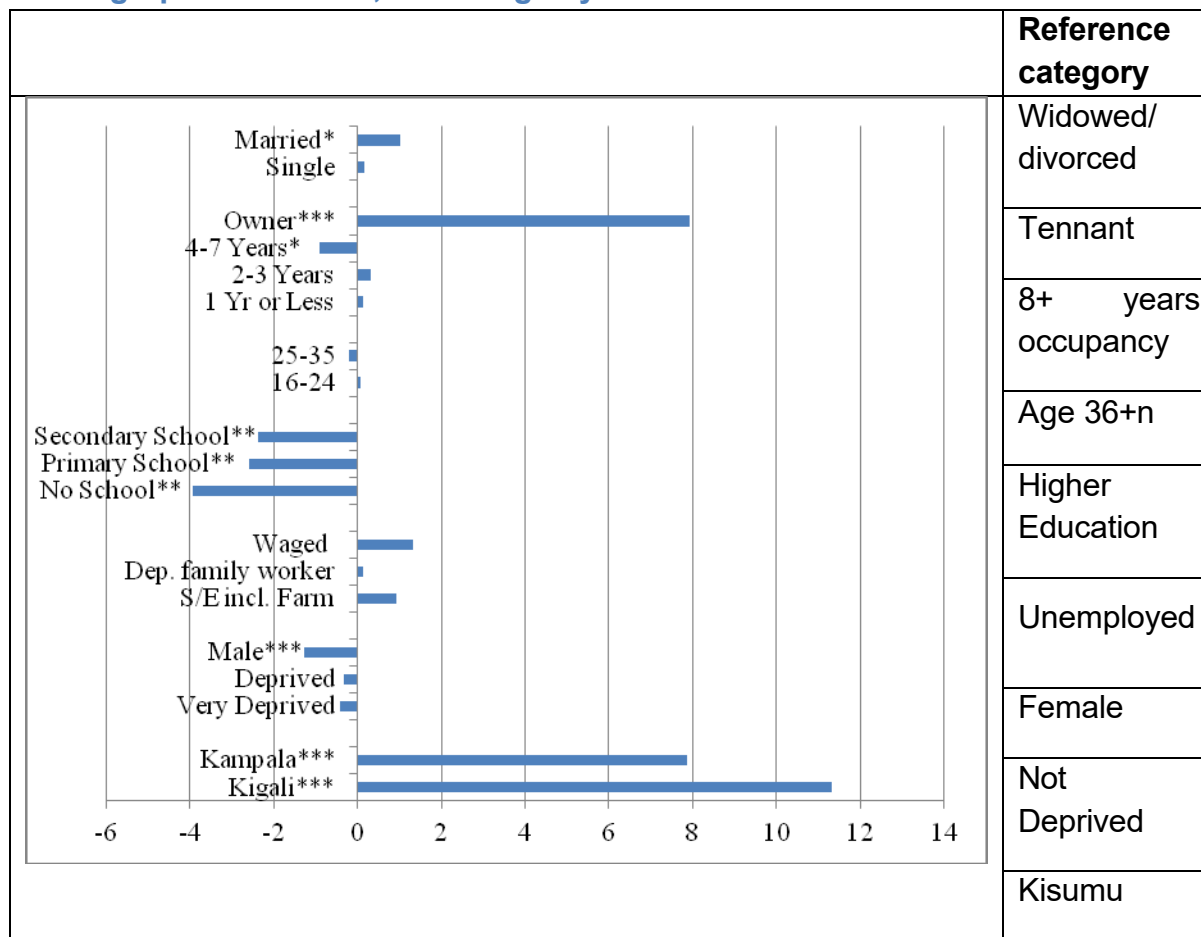
Figure 10: Drivers of Access to Improved Sanitation: Odds ratios for Main Demographic Variables, Excluding City of Residence



Notes:

- The bars in the Figure represent the amount that the odds of having access to improved sanitation are increased by falling in the category on the left of the Figure, as compared with the reference category on the right. For example, a married person is 1.7 times as likely to have access to improved sanitation as a widowed/divorced person, and a single person 1.26 times. The actual likelihoods have been reduced by 1 so that 'no difference' (odds of 1:1) appears as a zero on the graph for purposes of display.
- Ratios below 1.0 (i.e. below zero on the graph) have been reversed to show the likelihood of *not* having improved sanitation and appear on the left of the graph.
- Statistical significance: *: $p < .05$. **: $p < .01$ ***: $p < .001$

Figure 11: Drivers of Access to Improved Sanitation: Odds ratios for main demographic variables, including city of residence



Notes:

- The bars in the table represent the amount that the odds of having access to improved sanitation are increased by falling in the category on the left of the Figure, as compared with the reference category on the right. For example, a married person is twice as likely to have access to improved sanitation as a widowed/divorced person, and a single person 1.17 times. The actual likelihoods have been reduced by 1 so that 'no difference' (odds of 1:1) appears as a zero on the graph.
- Ratios below 1.0 (i.e. below zero on the graph) have been reversed to show the likelihood of *not* having improved sanitation and appear on the left of the graph.
- Statistical significance: *: p<.05. **: p<.01. ***: p<.001.

However, problems with sanitation go beyond access to a facility. The transit walks revealed high levels of environmental pollution and insanitary conditions due to a number of factors including higher incidence than would be expected of levels of

open defecation, water ingress and flooding of facilities and lack of maintenance including the periodic emptying of full pits. According to the survey a quarter of households had members that could not access the household's latrine and nearly a third had members for whom it was not safe to use. Few households had their own own-site private facility (1% Kisumu, 11.7% Kampala, and 26.7% Kigali). Only 11.8 per cent of shared toilets were available 24 hours a day 365 days a year, only one per cent had separate facilities for men and women, and only 18.8 per cent afforded privacy, and there was little variation by location. The mean distance to a facility varied from nine meters in Kigali to 33 meters in Kisumu to 54 metres in Kampala, with some residence having to walk as much as 800 meters in Kisumu. Forty-four per cent of respondents reported that their latrine filled up quickly, 11 per cent had latrines that collapsed and 35 per cent had latrines that are affected by flooding.

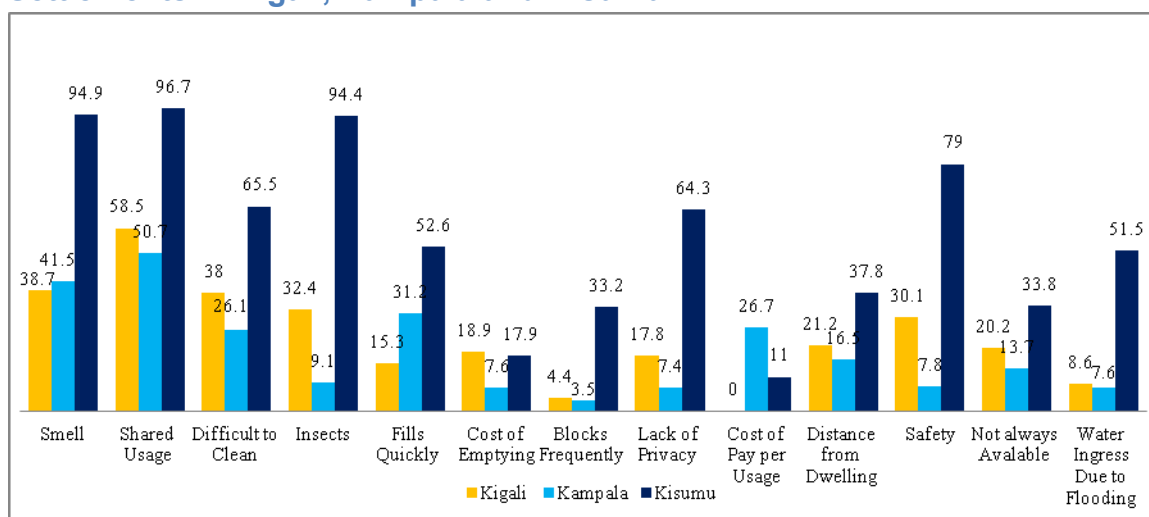
Sanitation facilities were generally poorly maintained. Only a third of respondents said that the facilities they used were regular emptied, but this varied from just over one per cent in Kigali to 30 per cent in Kisumu and 66 per cent in Kampala. There appeared to be a total lack of awareness of the possibility of treating sewage for reuse as an organic fertilizer. Even when pits were emptied the sludge was frequently buried next to the latrine or dumped illegally.

In the FGDs residents reported a number of problems with access to and use of toilets, and this at least partly accounts for the much higher occurrence of open defecation than would be predicted from the proportion of households that do not have access to a latrine; access to a sanitation facility does not guarantee that it is used. Reasons for this include: distance to the latrine; accessibility; concerns about safety of the latrine; latrines not always being available; water ingress; privacy; and safety concerns, especially at night, that deter women and girls from using shared facilities; the unhygienic conditions of shared latrines; and cultural values. In Kigali informants reported resorting to open defecation when the latrine were full and in Kampala and Kisumu because of the distance to a facility. Disabled people found it difficult to use the public toilets in Kampala and the high cost of public pay-per-use toilets, including charging for children, deterred use in Kampala and Kisumu. Informants in Kisumu also said that there were too few latrines and that they were closed at night.

Residents noted a number of challenges they experienced, with 80 per cent of respondents reporting experiencing at least one problem, with little variation by location (80% Kigali, 74% Kampala and 82% Kisumu - Figure 13). However, residences in Kisumu were more likely to report multiple problems. The two most frequently mentioned problems in response to the survey questions across the three cities were smell and shared usage, but problems with insects, concern about safety and lack of privacy, filling quickly and water ingress were also reported by more than

50 per cent of households in Kisumu. This is likely to be at least partly due to the number of households and, more importantly, people that share communal facilities in Kisumu - 39 in Kisumu compared with 29 in Kampala and 22 in Kigali.

Figure 12: Challenges Residents Experience with Sanitation in Informal Settlements in Kigali, Kampala and Kisumu



One of the main problems identified with shared usage is hygiene. With a large number of people sharing a facility it is difficult to keep them clean, as an informant in an FGD in Kisumu pointed out:

We share toilets with so many that it is hard to keep hygienic conditions and this is not only common for our neighbourhood. It is everywhere here (K-FGD-TF-N2).

A number of factors seemed to explain why residents in Kisumu had more problems, including lack of enforcement of the law and regulations in informal settlements, but it is undoubtedly also due to the much higher proportion of tenants and the large numbers using shared facilities. The latter may also be exacerbated by corruption as informants told us that government officials demanded bribes when applications are made for constructing latrines. Another factor may be the extent to which residents are sensitised to the hygienic use of sanitation. This role is undertaken by community health workers (CHWs) but the residents did not report them as being very active or supportive.

Furthermore, in Kigali the residents commit themselves to the achievement of tasks like upgrading sanitation through Imihigo (annual commitments made at every level from individual households to government ministries to contribute to development in line with government policy). However, a problem with maintenance

noted in Kigali was the lack of emptying services. Nevertheless, problems were experienced across the three cities and we noticed problems related to the maintenance of sanitation during the transit walks across all the settlements.

Residents were well aware of the consequences of poor sanitation. People with disabilities found it especially difficult using dirty latrines and children were thought to be especially vulnerable, as the respondents in a FGD in Kisumu explained:

Our children frequently fall sick now, for example after it has stopped raining you find the children drinking the water or eating the soil but people take advantage of the rainy season to dispose of waste. If there were more toilets such practices would not occur as frequently and our children's health would not be at risk. (K-II-RL-M1)

Other problems that residents noted were lack of privacy, safety concerns and flooding. Again, noticeably more residents in Kisumu experienced problems. Women were also concerned about facilities where they could not lock the door and feared that men would walk in on them while they were using the latrine. Lack of privacy was generally because of the ways in which the latrines had been constructed, as a resident in Kigali explained:

My toilet is OK, the only problem is that it is not properly constructed and does not give me privacy when I use it. People can see me while I am using it. (RKGFGD TF1).

Poorly constructed facilities also caused safety concerns, and during the transit walk in Kigali we saw examples where poor construction had caused the pit to collapse and we were told about poor construction in the other locations. Poor construction was said to be due to poverty, with facilities being constructed at the lowest possible cost (Tsinda *et al* 2014). One of the consequences of safety concerns was that young children were not allowed to use the latrines and even adult practised open defecation as a resident in Kigali explained:

I am frightened to use our toilets because I fear that the toilets will collapse at any time and I will fall down the hole; so I prefer other alternatives such as using a bucket or open defecation. (RKKFGD TM2)

Lack of lighting deterred residents using sanitation facilities at night. In Kampala poorly constructed toilets resulted in effluent not being contained and escaping into waterways, while in Kisumu residents were concerned about slipping on wooden floors. There are also problems with sanitation in all three cities due to water ingress and topographical conditions, more so in Kisumu and Kigali than Kampala. As one resident in Kigali explained:

The depth of our latrines are not sufficient because of the high water table or rocky soil. This means our facilities fill up quickly but there is no emptying service and we do not have room to build another latrine. (RKGFGD UF2f)

Flooding was said to occur in all three locations in the rainy seasons and was attributed to poor design and maintenance. Sewage gets washed into houses and shops, onto open ground and into waterways. In Kigali we saw children playing in a stream into which heavy rains wash sewage.

4.4. Marketing and Finance in the Informal Settlements

Two important issues that have an impact on sanitation facilities and the situation we have described is the availability of finance for purchasing, servicing, building and maintaining sanitation facilities and the availability of the necessary goods and services – the extent to which there is a sanitation market. Finance is also necessary for service providers to invest in starting and running businesses; to operate efficiently, markets, including financial markets, require that there is adequate demand for the product or service and that there are private-sector or other providers such as non-profit or social marketing organisations prepared and able to meet the demand. It is of course possible for residents to provide services for themselves, but even then there is a need for materials, products and equipment. How aware, informed and interested in purchasing sanitation goods and services are the residents in the informal settlements - owner occupiers, tenants and landlords?

We have already pointed out that a hybrid sanitation market is an approach to providing affordable, acceptable and appropriate sanitation, with the state, development partners, NGOs, CBOs, the private sector and residents/landlords all playing a role. We found no evidence of a coordinated market in any of the settlements but rather a fragmented network of informal service providers. There was also a lack of infrastructure; apart from the poor provision of dumping sites for the safe disposal of faecal sludge, the poor roads made it difficult for emptying services, with most houses not being accessible to trucks and services having to rely on hand pumping. As we noted during the transit walks, most pathways in the informal settlements are narrow, winding and poorly maintained.

Some settlements are very congested and accessibility to the toilets is almost impossible so that the vehicles that empty toilets cannot get to them. (RKKFGD UF1);

We do not have roads leading to our houses because of poor planning; people have built all over the place and close to each other, leaving no space for a road. (U/II/RLF5)

The state's main role is to stimulate demand, regulate practice and provide skills training for service providers and facilities for the safe disposal of sludge. Central to the state's role is stimulating demand and enforcing regulations. A majority of respondents in the survey were aware that the local authority has some responsibility for enforcing sanitation regulations, varying from 85 per cent in Kisumu to 66.7 per cent in Kigali (including CHWs) and 63 per cent in Kampala. However, in Kisumu only 18 per cent and in Kampala only 26.8 per cent of survey respondents said that their sanitation facility had been inspected by a public official. In Kigali, by contrast, 58 per cent said it had been inspected by at least one official, mainly a CHW and/or a local government health official. As a government official told us:

They (CHWs) police everything and when they find someone dumping faecal sludge in a drainage channel they report it to the authorities and that is why the practice of dumping waste everywhere has reduced significantly because those caught are fined RFW 30,000 (US\$ 64). (RK KII MOH).

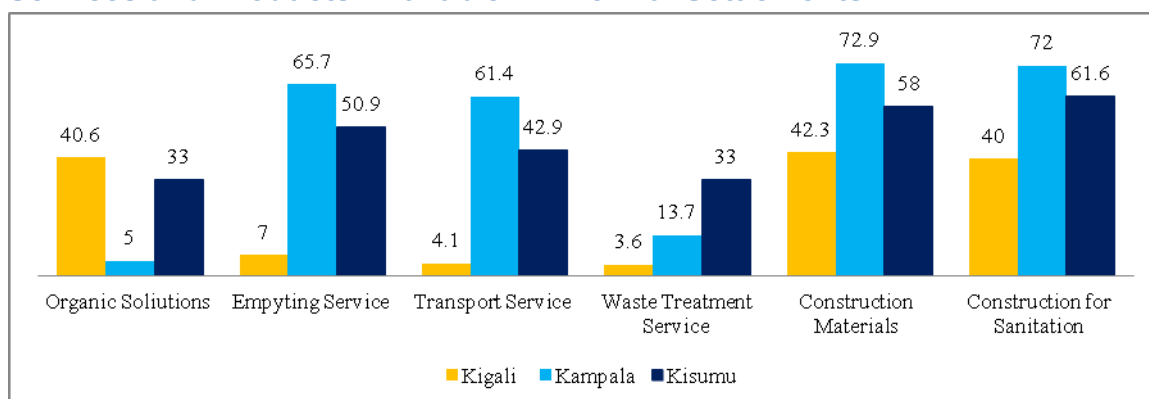
The state is also expected, to stimulate demand by making citizens aware of the importance of investing in sanitation. Only a minority of residents said that they received information on improving sanitation, with the proportion being noticeably smaller in Kisumu, 5.9 per cent, than in Kampala, 28 per cent or Kigali, 31 per cent. However, the proportion of respondents that had been given information by government health workers on improving sanitation was only 1 in 5 in Kigali and even lower in, Kampala, where it was just over 1 in 10, and in Kisumu it was less than 1 in 20. The main source of information in all locations was the media, with around a quarter of respondents in Kigali (26.8%) and Kampala (23%) obtaining information on sanitation improvements from the media but only five per cent in Kisumu. The sanitation market literature also points to the important role that CBOs and NGOs can play in markets in certain circumstances as well as the government. The findings from the survey and qualitative research are somewhat contradictory on the importance of NGOs and CBOs. The qualitative research findings suggest that NGOs and CBOs are making a significant contribution to improving sanitation in the settlements. However, in the survey the owner occupiers reported that they had received little support related to the provision of sanitation from government, CBOs or NGOs. In Kigali and Kisumu less than one per cent said they had received support but in Kampala 19 per cent said that they had received support from local government, six per cent from central government and seven percent from NGOs. The numbers are small and therefore the analysis is only indicative, but in Kampala and Kisumu the support was mainly for communal/public toilets while in Kigali it was help with a private latrine. A small number in Kampala reported help with the emptying of sludge and transport and in all three locations a few mentioned help with organic solutions. However, in Kigali residents are organised during Umuganda to build toilets, and organic solutions are subsidised for the very poor by the City of Kigali and the Ministry of Health.

In the FGDs, residents in Kisumu and Kampala frequently mentioned the presence of NGOs and generally thought that they were doing a great job, providing support to the community. For example, residence in Kampala told us:

Yes some NGOs like the Touch Namuwongo project came and educated us about sanitation and even came and put up a sanitation facility. There is also a project called Hope for Children which is involved in improving sanitation on an ongoing basis in this area and has provided a dump for rubbish collection and unblocks the drainage channels. (U/FGD/TM4).

Another NGO, Living Earth Uganda, was reported to provide training for local NGOs/CBOs in business skills so that they could provide sanitation services. In understanding the market within informal settlements it is important to consider both what services are available, the demand for the services, including willingness to pay, and the barriers to the uptake of and supply of services. Owner occupiers are the residents that are most likely to have to provide and service their own sanitation; tenants are likely to have sanitation provided by landlords. There is an interaction between demand and supply; private enterprises will only provide a service if they think that there is a demand for it and consumers may not demand services that are not readily available. The availability of products and services in the informal settlements, according to our survey respondents, varies across the three cities, with services and products being much less accessible in Kigali, with the partial exception of organic provision, than in Kampala and Kisumu (Figure 14). What is especially noticeable is the virtual absence of emptying, transporting and treatment services in Kigali

Figure 13: Owner Occupiers Reporting on the availability of Sanitation Services and Products Available in Informal Settlements



Even if services and products are available they may not be used. In fact, the purchase of products and services is generally low. More than half the owner

occupiers across the three cities said that they had been responsible for the construction of their sanitation facility (70% in Kigali, 63% in Kampala, 56% in Kisumu) but it was only in Kampala that a majority had paid a private contractor to build the facility. In Kigali and Kisumu most had built it themselves. Even if owner occupiers build their own facilities they need building materials, but numbers reporting that they had purchased building material were negligible across the three cities. In terms of other services the demand was relatively low even taking account of the availability of the service/product. The highest use was of emptying services, which 49 per cent of owner occupiers in Kampala and 45 per cent in Kisumu used. A third of owner occupiers purchase organic solutions in Kigali and 23.9 per cent chemical solutions in Kampala. The patterns of use of products and services was generally much the same although even lower for tenants than owner occupiers, with landlords most frequently said to be responsible for paying. The one exception was emptying services in Kampala, where tenants' latrines were more likely to be emptied than owner occupiers', 66 per cent compared to 49 per cent, and landlords were said to pay for the service by only half the tenant households. In Kigali more than half of the 18 per cent of tenants who said they used organic solutions paid for them themselves and in Kampala 22 per cent of tenants paid for emptying services.

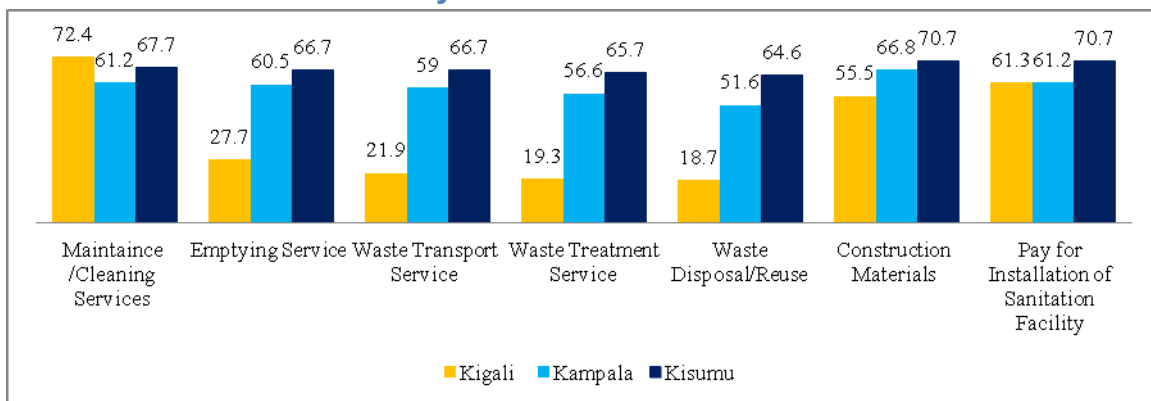
The findings from the qualitative research suggest that the main providers of services are informal sector workers, shopkeepers selling building materials and artisans offering building and emptying services. Generally the materials required for building a facility were available in the informal settlements although materials were said to be very expensive in Kigali because most building materials are imported. There were artisans available to build latrines but they were general builders rather than specialists in sanitation. In Kigali they were organised into cooperatives but not in the other two cities. There was also said to be a serious deficit of trained workers in Kigali, which meant that charges were high. Emptying services were available in all three cities but only operators with vacuum trucks provided the service in Kigali, restricting use to better-off households living in accessible locations and not those living in informal settlements. In Kampala and Kisumu manual and mechanical emptying services were available, although the former was the more frequently available. However, in Kisumu the informal manual emptiers pointed out that they did not advertise their services because they are operating illegally and in all three cities service providers were said not to advertise but to rely on word of mouth.

The main reason given by owner occupiers for not using services and products was cost, although this varied across the three cities and they spoke of different products/services. In Kigali and Kisumu, for example, cost was said to be the main barrier to building an improved sanitation facility; two-thirds of owner occupiers gave this as the main reason in Kigali and three-quarters in Kisumu. However, in Kampala the main reason was said to be topography. It was only in

Kigali that a noticeable number of owner occupiers said that lack of construction materials was a problem, with nearly a third doing so.

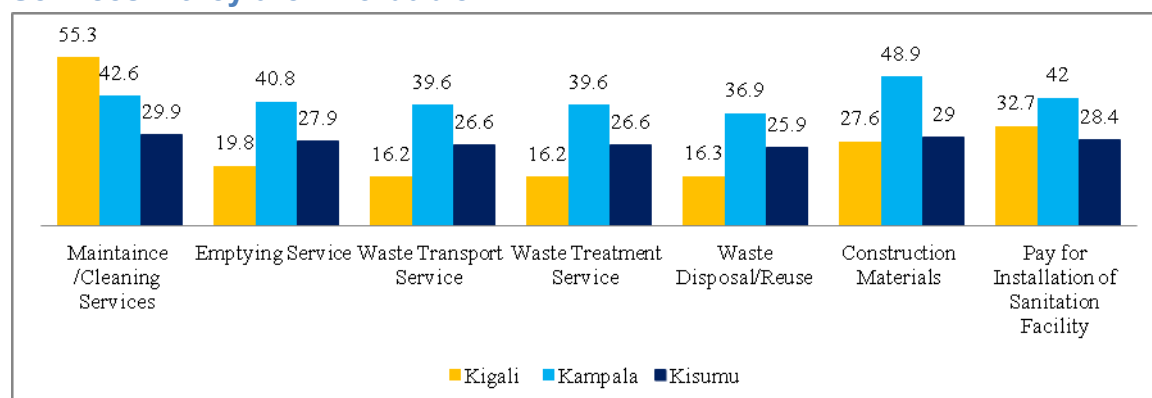
There is however, evidence of demand for products and services provided the price is right, with around two-thirds of owner occupiers being prepared to pay for maintenance and cleaning services, construction materials and the building of a facility, although those in Kigali were noticeably less willing to pay for construction materials. Owner occupiers in Kampala and Kisumu also showed a relatively high level of willingness to pay for emptying, transport and treatment of sludge but only around 1 in 20 were willing to pay for these services in Kigali. This may well be because the services have not been available and so there is less understanding of the benefits of using them, or it may be that because of the lack of services the local authorities have been promoting organic solution.

Figure 14: Owner Occupiers saying they are willing to Pay for Sanitation Products and Services if they are Affordable



Tenants may also be willing to pay for some services, although they may well expect landlords to provide them. The latter's willingness to provide sanitation and services will be influenced by a number of factors including how strictly the government enforces regulations and the rent that tenants are able to afford. However, a noticeable proportion of tenants said that they would be prepared to purchase services and products if they were affordable.

Figure 15: Tenants Saying they are Willing to Pay for Sanitation Products and Services if they are Affordable



Most residents/landlords across the three cities reported using their own money to fund sanitation, generally using savings. The only exceptions were households in the bottom two participatory poverty categories in Kigali, who are helped to meet costs under the social protection policy (Ministry of Local Government 2011- also mentioned in Key Informant Interview with representative of Kigali City Council and official from Organic Solutions Rwanda Ltd). In FGDs and interviews they said that they found it difficult to access credit and get loans from formal financial institutions. In terms of financial services they used a range of formal and informal financial intuitions generally seeing these as complementary and meeting different needs. In some cases, especially in Kigali, tenants would pay for improvements and then deduct the money from the rent due or agree to pay an increase in rent if the landlord made improvements. Service providers were sometimes prepared to extend credit to customers that they knew and trusted and other residents/landlord borrowed through membership of savings and loans clubs. In Kampala and Kisumu NGOs had played an important role in organising residents in starting up revolving funds, in some cases providing start-up funding for a sanitation fund.

Formal loans from MFIs and SACCOs are generally used for starting up businesses rather than investing in home improvements, including sanitation. However, in Kisumu there are some formal financial institutions that provide sanitation loans. Also, residents that take out small loans with formal financial institutions to start small businesses are able to invest in improved sanitation from the profits they generate. In all three cities MFIs were reported as providing loans for shops and merchants selling construction materials and sanitary ware. In Kisumu and Kampala entrepreneurs providing services were also said to be able to get loans, mainly from NGOs, but in Kigali they had to rely on informal loans from relatives or friends and local credit from shops and merchants. Some small service providers, landlords and owner occupiers, are able to generate income from the sale

of solid waste as fertilizer to invest in the maintenance and improvement of their facilities and/or businesses. The ability to sell waste products is important for the sustainability of service delivery as entrepreneurs in Kigali told us:

We are using eco-toilets to access composted feces and urine, which has market value and can be a source of finance for our businesses. (RK KII REC)

Self-help is an obvious strategy, with households providing their own labour to build facilities; however, in Kigali we found that there is community support. This took two forms: firstly, two or three residents would come together and build a latrine to share, and secondly the community would be organised to contribute finance and labour to build facilities for the very poor and other vulnerable households. In the former case it was generally because of lack of space and/or to be able to meet the cost of providing the facility. In the latter case the village leaders would organise collecting voluntary financial contributions and labour would be provided by community members either as part of Umuganda or the Vision 2020 Umurenge Programme (a programme of public works to boost the incomes of the poorest members of the community by funding public works).

In Kampala and Kisumu, NGOs and CBOs were actively involved in providing facilities and services but in Kigali they are crowded out by government encouraging government-coordinated community action. They provide education and sensitisation for residents and skills training for entrepreneurs encouraging them to see sanitation as an income-generating/business opportunity. NGOs have also financed the construction of public /community toilets, generally either on land donated by the city or on land provided by a landlord. In the latter case the full benefit to the community of the investment has not been realised because landlords restrict use to their own tenants. NGOs have also built biogas toilets in the informal settlements in Kisumu and these are seen as an important way of overcoming the need for residents to pay for emptying and safe disposal services as well as generating income. However, where NGOs provide free services and hardware it may be welcomed by residents but officials point out that it is not sustainable in the longer term and sets up expectations that services will be provided free.

However, while landlords and residents talk about financial constraints it is evident that the main barrier is willingness to invest in sanitation; for most people investing in sanitation is not a priority and tenants are not willing to invest in a property they do not own. Businesses and entrepreneurs find it difficult to access credit, and NGOs and CBOs are generally dependent on donor funding. Sanitation is said to be a low priority for government, with most of the funding for water, sanitation and hygiene going to water. One key informant in Kigali likened it to a child with a parent; no one wants to take responsibility for it. Interestingly, in all three cities, to the extent that improving sanitation was seen as important by residents, it was

women that initiated discussions about improving it, suggesting that sensitising men to the importance of sanitation should be a priority as it is they who generally make the financial decisions in households.

4.5. Innovative Solutions for Sanitation Markets and Financing Them

In this section we discuss the findings from the deliberative forums where we asked stakeholders to discuss how self-sustaining sanitation markets can be developed to serve the residents of the informal settlements and how they can be financed. Two key concerns underpin this. Firstly, it is imperative to ensure that residents in informal settlements are able to exercise their right to hygienic sanitation that is affordable, acceptable and practicable. Secondly, there must be an understanding of the roles and responsibilities of the key players, governments and development partners, technical experts, NGOs, CBOs, the private sector, landlords, owner occupiers and tenants. How sanitation is financed is of course inextricably tied to the perceived roles of the different players. The starting point for the discussion was that market-based solutions have failed to deliver; without government and others intervening in the market the residents of informal settlements will not be able to claim their rights to hygienic sanitation.

Although the term 'partnership' was not frequently mentioned in the DFs it was clear that participants recognised that any solution required all the stakeholders taking on different responsibilities so that together they ensure that residents in informal settlements has access to hygienic sanitation and live in a safe, clean and healthy environment. The participants in the DFs generally took it for granted that the private sector would be the main provider of goods and services and homeowners and landlords the main purchasers. The discussion therefore mainly focused on the role of government, although implicitly the role of the private sector, landlords, homeowners and tenants were considered. The need for technical experts was acknowledged and reference was made to community action but there was only one reference to NGOs and none to DPs. In the case of the latter this may well be because all three countries have a sector wide-approach to sanitation. However, there was reference to the role of CBOs and to community action more generally. There was general preference for communal toilets to be managed by community groups and that residents (tenants and owner occupiers) had to take responsibility for hygiene interpreted to mean containment and disposal.

Although the technical and logistic solutions that were recommended varied somewhat across the cities there was general agreement as to how a hybrid sanitation market could be made to work and deliver. Participants were generally aware of the importance of ensuring sustainability and of sanitation as a public good, recognising that having access to a toilet is only an output; the goal is to ensure that everyone uses, cleans and maintains their facility appropriately. They were also

recognised that improving sanitation in informal settlements was a long-term commitment and that improvement would be incremental.

It was clear that participants saw government intervention in sanitation markets as important; without such intervention market forces would not result in residents in informal settlements exercising their right to hygienic sanitation. Four main roles were envisaged for government. Firstly government was seen as the provider of infrastructure including roads and dump sites. The funding of this was not explicitly discussed but it is clear the assumption was that this would be paid for from the government budget that is from general taxation and / or development assistance. Government was also seen as responsible for regulation and the enforcement of regulations, including inspection of facilities. Participants stressed that regulations should include account having to be taken of topography when siting sanitation and of maintenance. In the DF in Kigali participants suggests that a legally binding contract between landlords and tenants should be required, setting out the rights and responsibilities of both parties for the provision and maintenance of sanitation. In the other two cities there was clear recognition that government should play a role in ensuring landlords make adequate provision.

It was generally seen as a government responsibility to raise awareness about the importance of sanitation and hygienic practices and encourage residents to make adequate provision. Education on sanitation should start in childhood and by implication be included as part of the school curriculum. The participants stressed that the role of government was to raise community awareness. In Kigali it was suggested that local leaders could organise the community to provide their own sanitation and help the poorest and most vulnerable members of the community. In Kampala it was suggested that community leaders can collect contributions from those that use communal toilets to ensure that the funds are available for emptying.

There was a perceived need for building the technical and financial skills of the private sector and recognition that the informal sector had to be recognised as important providers of services as well as the formal sector. Investment in research and development so that affordable, appropriate and acceptable products are available was seen as essential. While some argued that this was a role for governments, other argued that the government should encourage the private sector to take on this role. Those that took the former position also recommended that government set up demonstration sites so that landlords and residents can see the range of products that are available. There was clear recognition that solutions to the immediate problems of residents had to be found while waiting for the rehabilitation of the settlements. In Kigali, for example organic solutions are seen as critical because they reduce the need for emptying latrines. In Kampala and Kisumu, securing land for communal toilets and finding ways of managing these so that they

met the needs of all residents and are properly maintained was seen as especially important.

More contentious was the extent to which the government should subsidise or even directly provide services. It was argued by some that government needs to reprioritise their spending on sanitation and move from subsidising the rich (through the provision of sewerage) to helping the poor. However, the general view was that subsidies are not sustainable in the long term, although in Kigali the very poorest are supported through the social protection policy in gaining access to essential goods and services. The donation of land by the government so that landlords could build facilities for tenants was also seen as a way of leveraging investment from landlords. However others argued that landlords should make land available either for the government or the community to build sanitation. In Kigali it was recommended that the Government should require the Umurenge SACCOs to make sanitation loans available to the private sector and landlords and homeowners.

5. Discussion and Conclusions

While all three cities have policies for sanitation that assume a market solution, there was little evidence of a sanitation market operating in the informal settlements and no evidence of any clear strategy for ensuring that residents of informal settlements could exercise their human right to decent sanitation. In particular there was little evidence of any consideration being given to the different responsibilities of tenants and landlords, something that is evident in the sanitation market literature more generally. Technical issues including policies, implementation strategies, the stimulating of demand, the availability of appropriate, affordable and acceptable goods and services and the enforcement of laws and regulations is clearly important. There is clearly a complex relationship between composition, place and finance for improving sanitation. The very poorest, tenants, people living with disabilities and women and children face different problems from the better off, owner occupiers and able bodied men. Place is also important; topography, the layout of settlements, the available space for latrines and the availability of services in a given location also pose challenges to providing adequate sanitation. Place and space interact in complex ways; providing decent sanitation for homeowners when space is limited, for example, is not the same as putting in place strategies for providing sanitation for tenants. In Kigali the virtual absence of emptying services and the lack of a habit of emptying full latrines pose especial challenges, as does the high cost of imported goods and the lack of trained technicians. In Kampala and Kisumu space is critical, requiring strategies for obtaining land on which communal toilets can be built. The demographic composition of different settlements is also an important factor, in Kisumu, for example, a very high proportion of residents are

tenants, while in Kigali and Kampala there are significant proportions of owner occupiers.

Financing sanitation also relates to what solutions are seen as realistic and implementable. There is broad agreement that the private sector should be the main provider of sanitation goods and services and that owner occupiers, landlords and tenants should be the main purchasers, including paying for communal and public facilities. There is also general agreement that the government is responsible for the legal and regulatory framework and its enforcement, for providing skills and business training for sanitation service providers and for sensitising people to the importance of hygienic sanitation and sanitation practices. There is also general agreement that microfinance products need to be developed for the sanitation market, both for service providers and for those wishing to purchase services and products. What is less evident is how the process of financing communal facilities will be organised - who will take on responsibility for this. There are four possibilities: the government funds the toilet blocks, the private sector invest in building them, landlords finance them, and/or they are provided by CBOs. It is also evident that even before the question of the initial financing of communal facilities is determined there is the issue of land on which to build them. The other issue is how the very poorest are supported in accessing improved sanitation. It is evident that they do not have the resources to provide it for themselves.

However, what this research demonstrates above all else is the importance of political economy; decent sanitation for all is dependent on government commitment to a decent society and a decent economy. While Rwanda may not yet have provided decent sanitation for residents in informal settlements it clearly has in place thought-out strategies indicating a commitment to provide a decent society for all; a way of life that people value (Abbott *et al* 2014). The state has to be responsible not just for regulation and policy but for managing strategies for implementing the policies so that all citizens are able to exercise their individual and collective human rights.

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