



Sanitation policy and spatial planning in urban East Africa: Diverging sanitation spaces and actor arrangements in Kampala and Kisumu



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ABSTRACT

This paper discusses sanitation policies and spatial planning in Kampala (Uganda) and Kisumu (Kenya) from colonial times to date and their implications for the siting of sanitation technologies and involving actors. During colonial times, a strict spatial duality was maintained between immigrants in townships and natives in peri-urban areas, with a sanitary divide between them. Also currently, different urban spaces support different sanitation technologies provided by different actors. Actor arrangements are often viewed as a combination of public, private and voluntary sectors, but households should be considered part of the arrangement. Information on spaces and actor arrangements is imperative for location of sanitation technologies and rebalancing them with actor arrangements.

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Introduction

Many interventions have been sought in the past to address sanitation challenges, but globally, 2.5 billion people still lack access to improved sanitation (WHO/UNICEF, 2012). Hardly have spatial policies and resultant spaces and actor arrangements been addressed as contributors to this poor state of affairs. A number of authors have noted that different spaces require different sanitation technologies. Nielsen and Clauson-Kaas (1980) proposed a plan for Morogoro (Tanzania) in which they proposed three different forms of sanitation for different types of neighbourhoods based on the nature of settlement spaces. Wright (1997) advocated for widening technological options to suit different local conditions like density, income and nature of settlements; coupled with innovative institutional arrangements for service provision. Mara (2008) argues that urban and rural settlements require different sanitation technologies. Three types of spaces relevant for sanitation provision have been identified: urban, peri-urban and rural (Mara, 2008; Nielsen & Clauson-Kaas, 1980; Wright, 1997). However, when settlements are considered, the three types should be further divided into planned and unplanned settlements (Table 2). Although the characteristics of urban spaces seem imperative for

the kind of sanitation technologies to be applied, most urban spaces for sanitation services follow a conventional urban master plan characterised by availing of planned urban settlements to facilitate sewerage connections. Planned urban spaces are accessible and homogeneous in housing stock, density and degree of urbanisation (Letema, 2012; Newman, 2001; Oosterveer & Spaargaren, 2010). However, urban planning in urban East Africa have had limited impact, as about 50–70% of urban population live in unplanned settlements (Kombe, 2005; Nawangwe & Nuwagaba, 2002; Omila, 1993; UN-Habitat, 2008). The existence of planned and unplanned settlement spaces in urban East Africa calls for different sanitation technologies to fit local urban spaces, but such information is not readily available. Therefore, a first goal of this paper is to explore and categorise the different sanitation technologies that are located in the various urban spaces in East Africa.

The second goal refers to the actor arrangements in sanitation service provision. The literature portrays actor arrangements in service provision as a triad – public, market and voluntary sector, with partnerships in-between (Blair, 2001; Claassen, 2009; Cohen & Peterson, 1999; Glasbergeren, Biermann, & Mol, 2007; Picciotto, 1995; Tukahirwa, Mol, & Oosterveer, 2013). The view of provision as carried out by the state, market and voluntary sector is inspired by a rather ideological Western frame of thinking. The majority of African households have always provided their own sanitation such as latrine construction, operation, and emptying, but they are rarely framed as a service provider. Whereas majority of on-site

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sanitation is provided at household level by households and for households, householders are conceptualised as either private within a profit or social context. Within African social context, household is framed as both family and non-family members sharing a housing unit and providing for their daily needs and well-being (Oberlin, 2011). This also entails sanitation provision. The second goal of this paper is thus to explore the actor arrangements supporting the provision of sanitation infrastructure services in urban East Africa with inclusion of the role of households in sanitation provision. The exploration of sanitation technologies in relation to urban spaces and actor arrangements is imperative since if sanitation provision is to succeed where different spaces, technologies and actors exist, it should be based on mixed options at multiple spaces and by multiple actors, which moves us away from one-model-fit-all to multiple approaches to sanitation provision.

The paper is built up as follows. The next section (2) presents the analytical framework and methodology utilised for gathering and interpreting the data obtained in Kisumu and Kampala. In section 'colonial spatial and sanitation policies', the colonial heritage of sanitation planning and provision in Kisumu and Kampala is explored, which offers valuable explanations for today's spatial and sanitary structures. Post-colonial spatial and sanitation policies in Kisumu and Kampala are then discussed in section 'post-independence spatial and sanitation policies', ending with the assessment of spatial diversity and accompanying actor arrangements in sanitation provision. The concluding section 'conclusion' argues that the insights on diversity in spaces, sanitary technologies and actor arrangements form a starting point for intervention strategies towards achieving the MDG goals on sanitation.

Analytical framework and methodology

Urban spaces and actor arrangements supporting sanitation are not well understood as they have not been adequately addressed in literature or in practice in Kampala and Kisumu cities. There has not been a suitable approach to conceptualise and analyse sanitation provision in the context of differentiated urban spaces, with a diversity of sanitation technologies and a multiplicity of service actors as is the case in urban East Africa. The conventional approaches in sanitation provision sketch a dichotomy of large-versus small-scale or centralised versus decentralised actor arrangements, which is not tenable in urban East African contexts. This insight has led to the development of an alternative approach termed modernised mixtures (MM) approach. The approach takes the best features out of both conventional large-scale and centralised and small-scale and decentralised approaches into flexible and diversified arrangements that fit local conditions (Letema, van Vliet, & van Lier, 2012; Spaargaren, Oosterveer, van Buuren & Mol, 2005; Tukahirwa et al., 2013). Urban spaces and actor arrangements are the local conditions that underlie settlement and socio-economic characteristics imperative for local sustainability.

Actor arrangements supporting urban infrastructure provision are often viewed as a triad – public, market and voluntary sector. This way of seeing is in line with colonial and post-colonial policy and planning, but which is not sufficient to understand current actor arrangements supporting sanitation provision in urban East Africa. Especially for sanitation and waste management, households can be considered the fourth actor in sanitation provision. This shifts actor arrangement from being viewed as a triad to a tetragon (Fig. 1). Seeing actor arrangement as tetragon also diversifies the voluntary sector, with those leaning towards non-governmental organisations (NGOs) being welfare non-profit community

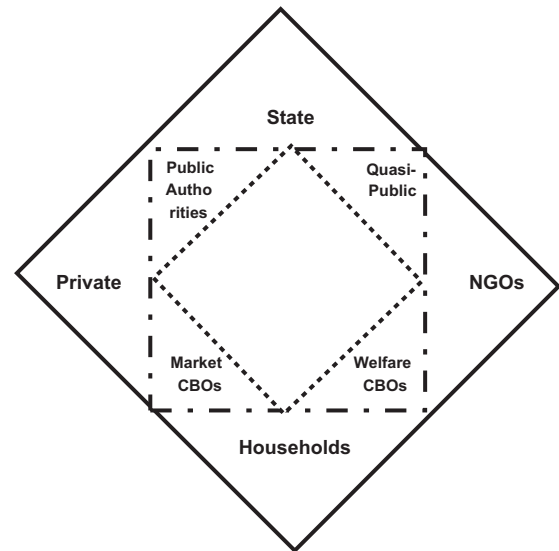


Fig. 1. Conceptualisation of actor arrangement as a tetragon.

based-organisations (CBOs) whereas those towards the market being marketised CBOs within profit social context.

This paper is based on a research carried out in 2008 and 2009 in Kampala and Kisumu. The research aimed to determine and assess (a) sanitation types, location, scales, and performance; and (b) actor arrangements supporting each sanitation technology. Primary data were collected through interviews and observations through site visits. Interviewees comprised of urban sewerage personnel, satellite sewerage operators, onsite sanitation providers, public health officers, officials of voluntary sector organisations, and community and public toilet operators (including householders). Secondary data were obtained through content analysis of service records, technical reports, sectoral reports and archive documents. Secondary data was triangulated with primary data.

To establish the relationship between sanitation and urban spaces and actor arrangements, the findings from Kampala and Kisumu are presented in a tabular form. This enables the merging of information about sanitation technology with actor and space arrangements for sanitation service provision. To depict sanitation provision reality in urban East Africa, actor arrangements supporting sanitation are mapped by way of shading the triangles within the tetragon.

Colonial spatial and sanitation policies

Colonial spatial policies

Colonial spatial policies that have a bearing on sanitation are the designation of townships, zoning regulations and spatial planning. The designation of Kampala township began with the Buganda agreement of 1900, which divided Buganda Kingdom into Kampala (administered by the British Colony), and Kibuga (administered by the King of Buganda) (Nilsson, 2006) and the gazette-ment as a township in 1903 via the Uganda Ordinance of 1903 (UN-Habitat, 2007). Designation of Kisumu in 1903 led to a township administered by a Township Board while African areas were administered by Local Native Councils. Zoning during the colonial period was also used to exclude Africans from townships on sanitary and social grounds. For instance, Kololo, Nakasero and Mbuya in Kampala were zoned for European residential settlements whereas Naguru and Nakawa were zoned for the native Africans, which remained so until independence in 1962. Kisumu was zoned

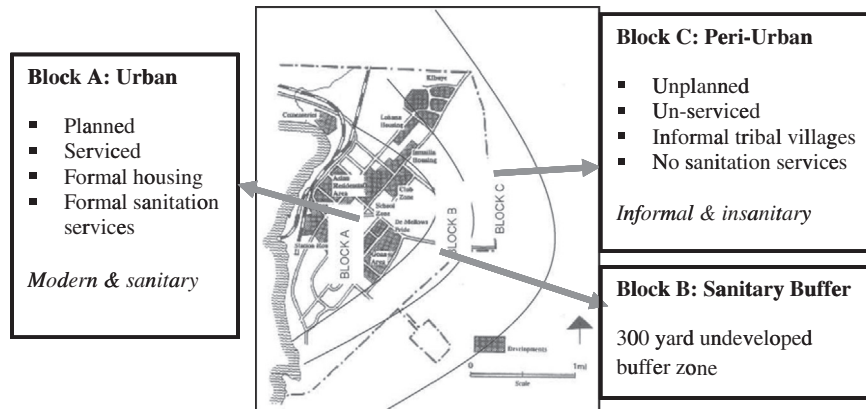


Fig. 2. Spatial planning and sanitation divide in Kisumu colonial town.

in 1908 as a result of bubonic plague into three blocks (Fig. 2), Block A for immigrants, B as a sanitary buffer and C for Africans (Simpson, 1915; UN-Habitat, 2005). Planning was undertaken in the colonial townships; whereas African areas, Kibuga in Kampala and Block C in Kisumu developed without regulation nor planning. European areas were zoned and planned as low density single family settlements in a quarter and half acre plots with an aim of being connected to sewerage. Buffer zones were created not only to segregate races on social grounds, but also to prevent spread of diseases from one zone to the other in case of an outbreak. At independence, Kibuga in Kampala and Block C in Kisumu housed an urbanised African community in unplanned peri-urban settlements (UN-Habitat, 2005, 2007).

Colonial sanitation policies

The first public sanitation scheme for Kampala was a bucket system (Nilsson, 2006), which operated in planned townships along service lanes, and was phased out in the early 1970s. Bucket sanitation was a nuisance, very labour intensive, and unhygienic (Nilsson, 2006). A shift was made towards a public sewerage scheme. The first Kampala sewerage plan was prepared in 1930 targeting 20,000 people in Nakasero and Kampala. This guided sewerage development from 1936–1940 in planned urban areas of Nakasero and Kampala and extended over the planned immigrants population outside the townships in Mulago and Makerere. However, it excluded the peri-urban areas occupied by the Africans, including those connected to water supply of 90 l/ca.d (Nilsson, 2006). The sewerage scheme targeted areas that were planned, occupied by middle and high-income groups, with a piped water supply of 190 l/ca.d, and paying property rates. The sewerage cost was to be recovered through general property rates, but this was later abandoned, and instead provided on public health grounds (Nilsson, 2006). However, a general service charge was levied for conservancy services. A second sewerage plan was developed in 1951 for a population of 100,000 targeting the 1951 town planning area of Kampala, Nakasero, Makerere, Kololo and Kiswa. This guided sewerage developments in 1956, 1965 and 1998. The plan, even after independence, still followed colonial sewerage policy by excluding the former unplanned peri-urban African areas and new unplanned settlements irrespective of their income group, water supply service level or sewer lines passing through or nearby.

The first public sanitation scheme for Kisumu was a bucket system in the township area, excluding the African areas. Township households were provided with buckets that were emptied into oxen-drawn carts, transported out of town at night and buried in deep trenches. The system was sanitised through washing of

buckets and covering of trenches to prevent fly and smell nuisance (MCK, 1958). Bucket sanitation was headed for phasing out as early as 1930s due to the health risks, disposal problems, and lack of social acceptability, but still prevailed 30 years after commissioning of sewerage scheme. Bucket sanitation was financed through conservancy fees lumped together with refuse collections, excreta removal, drainage and malaria, and plague control services. The first sewerage plan for Kisumu was proposed in 1928 after finishing the water supply network in 1927 for 7000 people i.e. 4000 Railway workers and 3000 others. It targeted the planned township in phases. First phase was to cover high density areas, second the low lying areas requiring pumping of sewage to the outfall sewer and third the low density European and Goan residential settlements (Action, 1927, 1928). The plan was to be financed through colonial loans, at full cost recovery repayed through township rates, apportioned on proportion of revenue payable from township land rates per annum by government, private persons and the Railway (Forrest, 1927). The private persons payments rates equaled the conservancy fees they would cease to pay, with financial deficit to be met by a quarter of water revenue (Action, 1926, 1927). It adopted a centralised approach with aid of pumping stations and flushing of sewers twice a day to attain self cleansing velocities. Costs were to be charged from the public water supply (Action, 1926). However, this plan was not implemented due to 1930 economic recession and the second World War. A sewerage plan was developed in the early 1950 targeting the planned township area. It was implemented between 1955 and 1965, and expansion and maintenance programmes were undertaken between 1965 and 1975. The sewerage plan was an extension of the 1928 sewerage plan, but excluded unplanned peri-urban African areas even after independence. Generally in Kenya, including Kisumu, the water supply service level for sewerage connection was 220 l/ca.d, which was the case for immigrant population in planned townships. By contrast, peri-urban African areas were supplied with 44 l/ca.d (Nilsson & Nyanchaga, 2008).

Sanitary divide

Colonial spatial and sanitation policies created duality between immigrant areas in townships and native Africans in peri-urban areas. Duality was characterised by differences in administration, planning, and service provision; resulting in a sanitary divide throughout the colonial period. Townships were administered by councils, with a mandate to provide sanitation and town planning services. Town councils charged property tax and service charges supplemented by financial allocations and loans from the colonial government for provision of sanitation services. African areas were

administered by non-urban native councils. The Africans lived a semi-rural lifestyle, had no or low wages, and were not charged property tax or service charge. Native councils were mandated to provide sanitation services, but lacked organisational, financial and technical capacity, thus were unable to provide them. A sanitary divide, consequently, emerged between immigrant and African areas in townships and peri-urban areas respectively. The divide created was not only about sanitation, but also applied to broader aspects of urban planning and governance. The townships were well planned and serviced, and enabled formal modern sanitary systems whereas African areas remained unplanned and un-serviced, leading to informal and unsanitary conditions (Fig. 2).

Sanitation provision in townships during the colonial period was a public service provided by local authorities (Town/Municipal Councils) and the state (Public Works Departments) (Fig. 3). The same framework prevailed after independence in Kampala until 1972 and in Kisumu until 2003 where the Water and Sewerage Department was split from the council, leaving councils with the responsibility for on-site sanitation. Market and voluntary sector provision were absent during colonial period since housing was the responsibility of either national housing and local authorities. The spaces during colonial period were either planned urban for the immigrants, undeveloped sanitary buffers or unplanned peri-urban areas for the Africans. Sanitation technologies available during colonial period were buckets, septic tanks and urban sewerage (Fig. 3). These were the acceptable sanitation technologies that serviced the planned urban areas both in practice and policy (Kenya, 1954).

Post-independence spatial and sanitation policies

Post-colonial integrative spatial policies

After independence, segregation policies were lifted followed by integration of townships with African areas in order to control

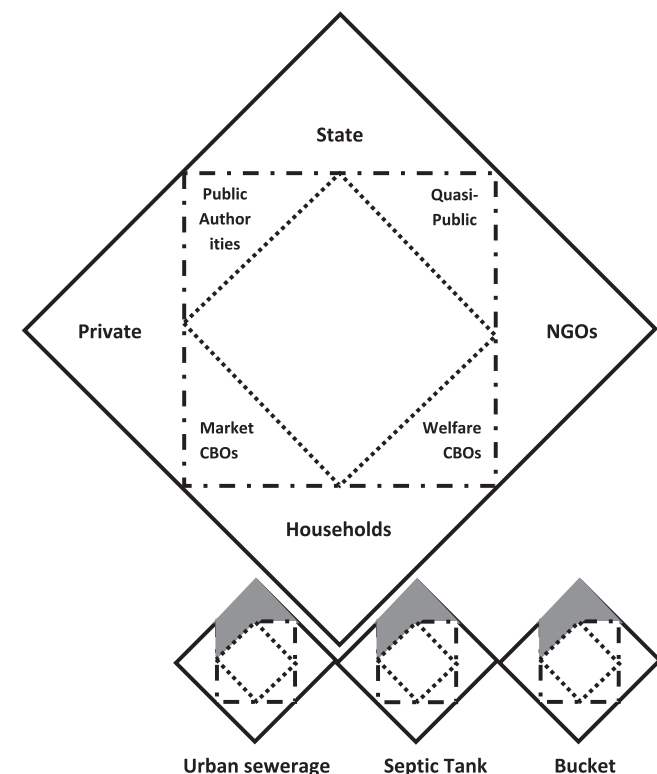


Fig. 3. Actors (shaded triangles) supporting sanitation in colonial Kampala and Kisumu.

development, harmonise planning regimes and provide formal services through extension of urban boundaries and integrative spatial plans. In Kampala, five administrative units were merged to form Kampala City Council in 1968: Kampala Municipality, Mengo Municipality, Kawempe Township, Nakawa Township, and urban areas in Kyadondo County.

The administrative areas had different planning and service standards. This was followed by integrative spatial plans in the Kampala Transport Master Plan (1968), Development Plan (1972), and Structure Plan (1994). However, the 1972 and 1994 plans were never implemented leading to continued prevalence of different urban spaces, service levels, and planning standards. Nawangwe and Nuwagaba (2002) attribute to the failure of Kampala's integrative spatial plans to:

- Subdivision and sale of small pieces of land by private owners and lease of land by Buganda Land Board without provisions for planning standards, control and infrastructure levels.
- Multi-form natures of tenure regimes e.g. lease, private, public and customary, which complicated planning and enforcement processes as some were rural oriented yet applied in urban contexts.
- The temporary nature of some land ownership that comes as gift, rent, borrowing, squatting, and tenancy, which lack certifying documents and security of tenure.
- The 1970s and 1980s political instability.
- Lack of public finance to acquire land and service plots.

Kisumu's integrative spatial policies include the Short-Term Development Plan of 1969, the 1972 boundary extension, and the 1983 Structure Plan. After independence Block B was planned and merged with Block A; whereas a small part of Block C was upgraded through World Bank 2nd Urban Project and the rest developed informally. Failure of integrative spatial policies led to multiple urban spaces in Kisumu and Kampala that can be categorised into planned or unplanned urban, peri-urban and rural settlements (Table 2). For instance, Kisumu spatial structure contains 42 km² of urban and largely planned lands, 53 km² peri-urban and largely unplanned slum settlements and 202 km² of rural lands, which is a mixture of planned suburban and unplanned rural settlements. Anyumba (1995) and Omila (1993) attribute the failure of Kisumu's integrative spatial plans to the following issues:

- Neither plans envisaged any peri-urban type development in their scenarios despite proposals being made on already developed peri-urban areas.
- Any mechanism by which the plans were going to be effectuated was lacking.
- Financial and political will for acquisition and planning on private tenure was not put in place.
- Structure of land tenure where the majority of land incorporated through boundary extension comprised of about 88% private land.

Other factors that we think might have contributed to the failure of integrative spatial policies in Kampala and Kisumu are the weak planning capacity, political interference, corruption, and lack of respect for professional planning services by those elected to the council.

The failure of large-scale integrative spatial plans led to development of planned satellite and unplanned informal settlements in peri-urban and rural parts of Kampala and Kisumu (Table 2). Satellite areas are decentralised planned, homogeneous, and serviced settlements in peri-urban and rural areas outside Colonial Township and sewerage area. It targets a small population

(1500–14000), small area (17–330 ha) and a specific function, e.g. residential, campus, stadium, industry, barracks, prison, and airport. They are developed for middle and high income groups, endowed institutions, and government facilities (Letema et al., 2012). Fieldwork in Kampala revealed that there were 9 satellite sewerage areas and 5 in various stages of development. Informal settlements are located in peri-urban and rural parts of the city with varying densities, ranging from very high densities in peri-urban slums to low densities in rural settlements. Some informal settlements are located in reclaimed wetlands, with a high water table and unstable soils. Generally informal settlements are occupied by the poor with inadequate housing structures. Only few are occupied by the rich with high value housing structures (Kaggwa, 1994).

Post-colonial sanitation policies

The post-independence sanitation plan for Kampala, the Kampala Sanitation Strategy and Master Plan (Fig. 4), was drawn in 2003, 40 years after independence. The plan is characterised by a shift in sanitation provision. Firstly, a shift from centralised to multiple approach to sanitation provision through development of semi-centralised urban sewerage, satellite sewerage (referred to as 'Other sewerage catchments' in Fig. 4) and on-site sanitation. Secondly, it is a shift from state and public utility authorities to multiple service providers within urban boundary jurisdiction. Thirdly, public urban sewerage developments do not extent over the whole urban jurisdiction boundary as in the previous plans,

but fragmented over catchments and envisage covering 25% of the population and land by 2033. Fourthly, unlike the previous plans, it established sewerage thresholds based on population of 200 p.e./ha and base flow density of $10 \text{ m}^3/\text{d ha}$ in order to attain sufficient sewage flows for gravity sewers to function sustainably (NWSC, 2004). Despite that the plan acknowledges the use of population and base flow density as determinants of public sewerage areas, some areas have been included that do not meet the criteria. These areas are the planned urban and peri-urban areas occupied by the middle and high income residential groups or strategic and sensitive areas i.e. commercial centres, government installations, industrial zones and major institutional areas like universities, armed forces installations and institutes. Besides, informal slum settlements have been surpassed despite meeting the criteria for sewerage e.g. the white pockets in urban spaces within Nakivubo catchments; white pockets within peri-urban spaces between Nakivubo, Kinawataka and Lubigi; or the white pockets between Nakivubo, East Bugolobi and Kinawataka sewerage catchments (Fig. 4).

The third sewerage plan for Kisumu was prepared in the early 1970s and implemented between 1975 and 1985 in response to the growth of developments to the East of the township. Although the plan was to benefit mostly the unplanned peri-urban slum settlements of Nyalenda and Manyatta, it benefited planned peri-urban settlements occupied by middle and high income, government installations and institutional housing beyond the slums. For instance, the plan benefited Migosi site and

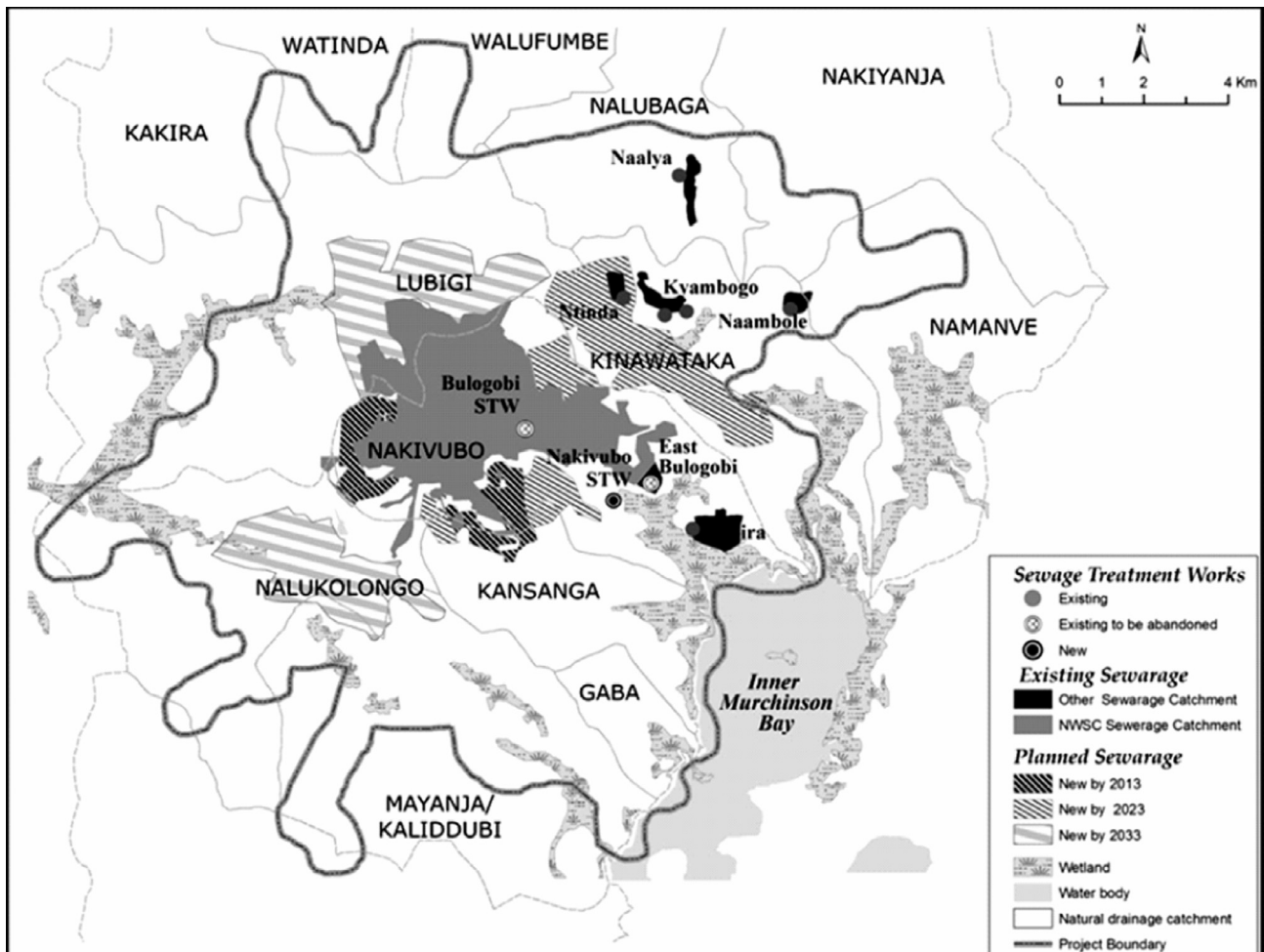


Fig. 4. Kampala 2033 sanitation structure (NWSC, 2004).



Fig. 5. Kisumu 2030 sanitation structure.

Table 1
Spatial policies for onsite sanitation location in Kampala and Kisumu.

| Sanitation type | Location requirements | Reference |
|----------------------|--|--|
| All onsite latrines | <ul style="list-style-type: none"> • Not within about 60 m of public sewer line • Density <120 population/ha • Density <200 population/ha | Uganda, (2000) and Kenya (1986) MWI (2008) NWSC (2004) |
| Pit latrines | <ul style="list-style-type: none"> • Rural areas, except where soils does not allow • Peri-urban areas where piped water is not available • 30 m from a well and 10 m from a dwelling unit • 15 m from downstream water abstraction point • 30 m from a dwelling • 30 m from existing sewerage lines • Designated by council physical development plan • Lining of pit latrines in unstable soils • Not where water table is within 1 m of ground surface | MoH (1987) MWI (2008) MoH (2000) MCK (2008) MCK (2008) MWI (2008) MWI (2008) |
| Septic tank latrines | <ul style="list-style-type: none"> • Urban, peri-urban and rural areas with water supply • 30 m from wells and embankments and 3 m from building lines, water points, footpaths and trees | MoH (1987) MCK (2008) |
| Eco-san latrines | <ul style="list-style-type: none"> • Peri-urban and rural areas • Groundwater is high and soils are shallow or loose • High poverty areas, shared sanitation, and local support | MoH (2000) MoH (2002) KCC (2004) |

service scheme, Lake Basin Development Authority installations, municipal slaughterhouse, Kenya Ports Authority housing, and Kenya Reinsurance housing. Thus it surpassed the slums with sewer lines passing through without making any connections. The fourth and fifth sewerage plans are the 1998–2015 and 2008–2030 sewerage improvement plan and the long term action plan respectively (JICA, 1998; LVSWSB, 2008). The former has not been implemented and the latter is the current plan (Fig. 5).

The fifth plan retained the components of the fourth plan. The plan is characterised by shifts (Fig. 5) in sanitation provision:

- Semi-centralisation of wastewater management to three sewerage catchments – Central, Eastern and Western.
- Application of conventional sewerage in planned urban and peri-urban areas with water supply of 100–250 l/ca.d and condominial sewers in unplanned peri-urban slum settlements with water supply of 50–60 l/ca.d.
- Promotion of lined ventilated improved pit (VIP) latrines that can be emptied in unplanned high density peri-urban settlements and unlined VIP latrines in unplanned low density peri-urban and rural settlements.

Table 2
Actor and space arrangements supporting sanitation provision in Kampala and Kisumu.

| Sanitation type | Actor arrangement | | | | Settlement spaces | | | | | |
|-------------------------|----------------------|----------------------|----------------------|-------------------------|-------------------|-----------|------------|-----------|---------|-----------|
| | Developer | Ownership | Operator | Form of provision | Urban | | Peri-urban | | Rural | |
| | | | | | Planned | Unplanned | Planned | Unplanned | Planned | Unplanned |
| Traditional pit latrine | Household | Household | Household | Household | | | | ✓ | ✓ | ✓ |
| | Landlord | Household | Landlord | Private-household | | | | ✓ | ✓ | ✓ |
| VIP latrine | Household | Household | Household | Household | | | ✓ | ✓ | ✓ | ✓ |
| | Landlord | Landlord | Users | Private-household | | | ✓ | ✓ | ✓ | ✓ |
| Lined VIP latrine | Council | Council | CBO | Public-CBO ² | | | | ✓ | | |
| Septic tank | Household | Household | Household | Household | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Landlord | Landlord | Household | Private-household | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Landlord | Landlord | Private | Private | | | ✓ | ✓ | ✓ | ✓ |
| Eco-san | NGO/CBO | Community | CBO | NGO-CBO ² | | | | ✓ | | |
| | NGO | Household | Household | NGO-user | | | | ✓ | | ✓ |
| | NGO | Community | CBO | NGO-CBO ² | | | | ✓ | | ✓ |
| | Council | Community | CBO | Public-CBO ¹ | | | | ✓ | | ✓ |
| Biogas latrine | NGO | Community | CBO | NGO-CBO ² | | | | ✓ | | |
| Satellite sewerage | State | Institute | Institute | Private | | | ✓ | | ✓ | |
| | University | University | University | Private | | | ✓ | | ✓ | |
| | Company [*] | Company [*] | Company [*] | Private | | | ✓ | | ✓ | |
| Urban sewerage | Public | Public | Public | Public | ✓ | ✓ | ✓ | | | |

Symbol: ✓ denote sanitation technology supported by settlement space; ^{*}Public housing company; Neighbourhood association; ²Pay toilets; ¹shared toilet.
Abbreviation: CBO, Community based organisations; NGO, Non-governmental organisation; VIP, Ventilated improved pit latrine.

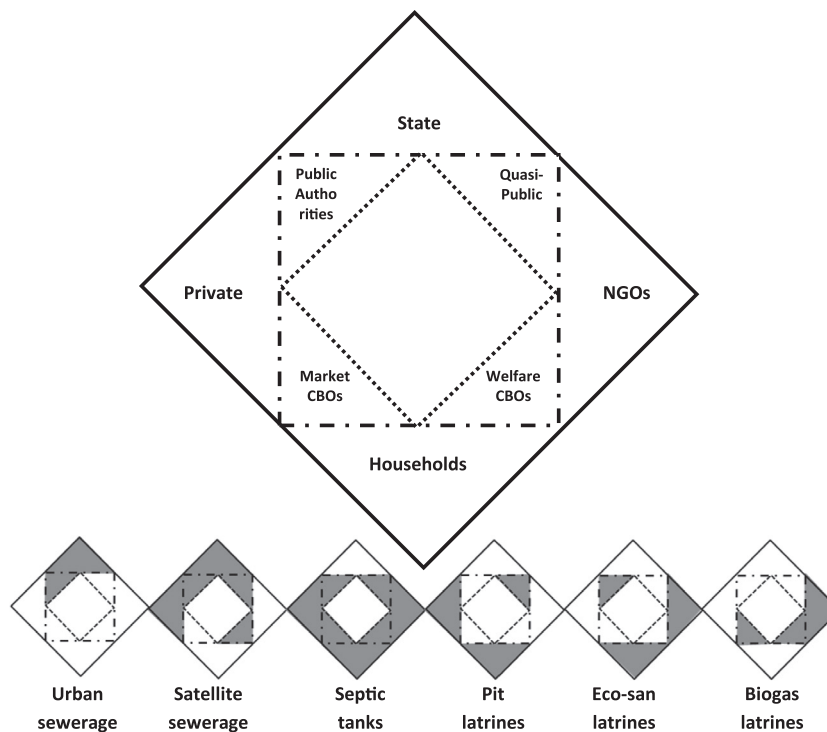


Fig. 6. Actors (shaded triangles) supporting sanitation in Kampala and Kisumu.

- Public control of faecal sludge management practices in both planned and unplanned peri-urban areas whether targeted or not for condominal sewerage and characterised by high density, piped water supply, and high water table.
- Transformation of Water and Sewerage Department into a public limited company for better services delivery.

With dominance of onsite sanitation (90–100%) in urban East Africa (Szántó et al., 2012), spatial policies have been put in place to guide their locations (Table 1). From Table 1, on-site sanitation technologies are considered options for the poor or low density

peri-urban and rural settlements. Apparently in the spatial policies, only eco-san latrines are considered as sanitation options for the poor; yet in practice mainly pit latrines service the poor in urban East Africa.

Different sanitation technologies; different actor and space arrangements

After examining current sanitation provision arrangements in Kampala and Kisumu, it is apparent that different sanitation options have different space and actor arrangements (Table 2).

Failure of integrative spatial policies has curtailed public urban sewerage developments beyond the colonial sewerage target areas. Urban sewerage currently account for about 5% and 10% of the population in Kampala and Kisumu respectively, largely in planned urban settlements, and cover about 10% of urban area (Letema, 2012), with limited extensions to unplanned peri-urban areas. Unplanned peri-urban settlements, which houses about 60% of the population in both cities (UN-Habitat, 2005, 2007), are not serviced by urban or satellite sewerage, though in some areas urban sewer lines pass through without connecting the settlements to them. Thus unplanned peri-urban areas are serviced by pit latrines, septic tanks, eco-san, and biogas latrines. Satellite sewerage systems are implemented in planned peri-urban and rural spaces for the middle and high-income and endowed institutions (Letema et al., 2012). Septic tanks are servicing all spaces; whereas pit latrines (traditional or improved) service peri-urban and rural spaces. Eco-san (urine diverting toilet) latrines are located in unplanned peri-urban and rural spaces whereas biogas latrines are in unplanned high density peri-urban spaces.

Actor arrangements around sanitation in Kampala and Kisumu are diverse (Table 2). Public utility agencies, a corporation in Kampala and a board in Kisumu, provide urban sewerage, and day-to-day operation and maintenance is executed by a public partnership and a public company respectively. Satellite sewerage are developed and operated by the state for state facilities such as armed forces installations, stadia, prisons, universities and institutes; public and private housing companies for middle and high-income residential; and endowed quasi-public institutions (universities and institutes), except one that was operated by a neighbourhood association (Fig. 6). Onsite sanitation – septic tanks, pit latrines, eco-san, and biogas latrines are provided by multiple actors. The actors are local authorities for lined VIP, septic tanks and eco-san latrines, which are operated as community toilets or public pay toilets. Households provide their own septic tanks and pit latrines in owner-occupier housing; whereas in the case of eco-san latrines, NGOs are responsible for the development while households operate these systems. The landlords provide VIP and septic tank latrines for their rental premises; whereas NGOs/CBOs provide septic tanks, eco-san, and biogas latrines as community pay toilets or shared household's sanitation. Some private entrepreneurs in peri-urban slums have emerged that build and operate septic tanks and VIP latrines as private pay toilet enterprises (Table 2). The forms of partnerships are public-public, private-CBO, private-household, NGO-CBO, public-CBO, NGO-household (Table 2; Fig. 6).

Conclusion

This paper has identified the various spaces and actor arrangements supporting sanitation provision in Kampala and Kisumu from colonial times to present. Although the colonial sanitary divide between planned townships and unplanned African settlements has officially dissolved, still a huge variety can be observed between urban centres and unplanned urban settlements in peri-urban areas in terms of sanitation technologies applied. These different sanitation technologies in Kampala and Kisumu cities are linked to different spaces and supported by different actor arrangements. Planned urban spaces are serviced by urban sewerage and septic tanks systems whereas planned peri-urban spaces are serviced by septic tanks and satellite sewerage. Unplanned peri-urban and rural spaces are serviced by pit latrines, septic tanks, eco-san, and biogas latrines. Planned peri-urban and rural spaces areas are serviced by satellite sewerage for middle and high-income settlements groups and endowed quasi-public institutions. Considering sanitation provision as state, market or voluntary provision is biased by a Western policy and planning frame. It is not sufficient

to understand past and current provision arrangements in Kampala and Kisumu cities where households were – and in many cases still are – forced to provide sanitation services on their own. The actor arrangement in Kampala and Kisumu is shaped like a tetragon, with households being the fourth provisioning actor. Viewing sanitation provision as embedded in different urban spaces and actor arrangements helps in fitting sanitation projects with the local conditions, which is imperative for local sustainability. Besides, diversity in technologies and actors can be ingredients for a rapid development of sanitation facilities, and can be part of intervention measures towards achieving the Millennium Development Goal of halving, by 2015, the number of people without improved sanitation.

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