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Tenancy and sanitation provision in informal settlements in Nairobi: revisiting the public latrine option

Madeleen Wegelin-Schuringa and
Teresia Kodo

SUMMARY: *This paper describes experiences with the construction or improvement of public latrines in three informal settlements in Nairobi – including the type of latrine used and the organization developed for their maintenance and for cost recovery. It also describes why public latrines are the only possible sanitation solution for most such settlements, given the high densities, the high proportion of tenants and the very low incomes. The paper ends with a discussion on what has been learnt from these experiences, including how best to ensure maintenance and revenue generation.*

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I. INTRODUCTION

INFORMAL SETTLEMENTS IN Nairobi house over half of the city's population, although they only occupy 5.8 per cent of all land area used for residential purposes.⁽¹⁾ Although each of these informal settlements has its own socio-economic, political and ethnic characteristics, they also have conditions in common. All are characterized by very high densities (up to 63,000 persons per square kilometre)⁽²⁾ and all have a history of neglect by public authorities. City authorities have, over the years, not regarded the provision of basic services as their responsibility, as these areas are considered illegal and therefore do not qualify for city services. Thus, water supply services are inadequate; drainage consists of "natural" drainage channels formed in the paths and roads which render the roads impassable during the rainy season; sanitation facilities are insufficient and waste disposal services do not exist. Settlements are often located on land unsuitable for residential purposes, either in flood plains, on steep slopes or near hazardous industrial activities. These characteristics apply to many informal settlements in cities in Africa, Asia and Latin America. A special feature in Nairobi is the very high proportion of tenants, reaching as high as 90 per cent in some settlements.⁽³⁾

1. Matrix Development Consultants (1993), *Nairobi's Informal Settlements: an Inventory*, Matrix Development Consultants, Nairobi, Kenya.

2. Lamba, Davinder (1994), "The forgotten half; environmental health in Nairobi's poverty areas", *Environment and Urbanization* Vol.6, No.1, April.

3. See reference 2.

4. Wegelin-Schuringa, M, J. Gitonga and T. Kodo (1994), "Sanitation in Kibera, a low-income urban area in Nairobi", IRC, The Hague (unpublished).

Land-ownership is a complex issue in Nairobi. Most informal settlements are located on public land but some also exist in pockets of private land. There is no legal system of permanent allocation of land in these informal settlements but the chiefs (appointed by the city authorities) issue temporary occupation licences which can be revoked at any time by the government. The chiefs determine, at their discretion, who may have a temporary occupation licence and at what price, thereby establishing a system of patronage. Because all informal areas are illegal, it is prohibited to build anything other than temporary structures. This usually means mud-and-wattle houses with galvanized iron roofing at best. The most common form of tenancy is illegal room rental from (illegal) landlords.

Most landlords in informal settlements located on public land are absentee landlords. They are basically only interested in optimizing the income from "their" land and hence construct as many rooms for rent as possible. This is clear from the settlement patterns – there is virtually no open space, very few roads and large-scale structures encroach on the roads and footpaths. Compounds consist of barrack-like structures with small rooms of ten square metres each under a common roof. The rooms are often back to back and the distance between one row and the next within a compound may be as little as one metre. This comprises the "outside" space available to carry out activities such as washing, bathing and playing. A single room is generally inhabited by one household, consisting of an average of five people. Because the compounds are used to capacity there is usually hardly any space for latrines and, often, there is only one latrine available for all residents in the compound. The number of residents in a compound varies from 25 to as many as 200 persons. Landlords do not have much incentive to carry out improvements to the dwellings, although this could allow them to increase the rent, as there is the risk that the dwelling may be torn down if the government develops other plans for the area. Improvements of basic infrastructure are even more risky and usually do not generate increased rent. As discussions in several areas revealed, the amount of rent paid is not related to the provision of basic infrastructure such as water or latrines but more to the provision of electricity and the "finish" of the building, that is, cementing of floors and walls.⁽⁴⁾

The lack of sanitation facilities is considered a big problem by the residents of most informal settlements in Nairobi but it is very difficult to improve the situation because of several related issues. First, there is hardly any space for latrines; the compounds are built up to capacity and available empty spaces are becoming encroached. Second, latrines are considered the responsibility of the landlord. Because the landlord usually does not live in the area, s/he is not interested in improving the latrine situation. The tenants are not willing to spend any money as they do not know how long they will be living in the room they are renting. Moreover, the lack of latrines is considered a nuisance but not something for which they would be prepared to pay. Third, tenants also fear that if they themselves construct a latrine, the landlord will raise their rent, thus effectively mak-

5. Syagga, P.M. and J.M. Malombe (1994), "Development and management of informal housing in Kenya: case studies of Nakuru and Kisumu", draft report, University of Nairobi, Land Development Department and Housing and Building Research Institute (HABRI), Nairobi, Kenya.

6. Institute for Housing Studies and others (1993), "Operation and maintenance of sanitation systems in urban low-income areas in India and Thailand", Final report of a research study by HSMI (India), NHA and Chiang Mai University (Thailand), IHS and IRC (Netherlands); also RWSG-SA (1995), "People's participation in improving sanitation, a case of Kanpur slums", Caselet No.1 Ministry of Urban Affairs and Employment, Government of India and Regional Water and Sanitation Group South Asia, UNDP/World Bank Water and Sanitation Programme, New Delhi, India.

7. Author observation.

8. RWSG-WA (1994), "A comparative case study of Ouagadougou and Kumasi sanitation projects", UNDP/World Bank Water and Sanitation Programme.

9. At this time, there were Ksh 24.3 to US\$ 1.00.

ing them pay twice. It should be stressed that for many tenants priority number one is the availability of a cheap room – if there are any savings, these are more likely to be spent on property in the "home" rural areas.⁽⁵⁾

In view of these circumstances, there may be only one option available for the improvement of sanitary (latrine) conditions in these settlements and that is some form of public latrine. However, public latrines are generally considered disgusting, smelly, dirty places, which nobody who can help it wants to use. Experience with the operation and management of public latrines in India shows that pay-and-use latrines can work well for latrines in public places. Community public latrines can work if the user group is defined and involved in planning/management of the facility and employs the caretaker and cleaner. Community and public pay-and-use toilets can function as income generation projects and there is a direct connection between the facility's standard of cleanliness and income provision to the operator, thus providing an incentive to keep the facility clean.⁽⁶⁾ In Indonesia, public community latrines, known as MCK, function well under the same pre-conditions.⁽⁷⁾ In Kumasi, Ghana, residents are willing to pay for public latrines as long as they are well maintained. Revenue from these latrines can be so attractive that the service has been contracted out and the contractor not only pays the municipality to manage the latrines but also the sub-district in which the latrine is located.⁽⁸⁾

When a women's water management group in Kibera, the largest informal settlement in Nairobi, heard about experiences with public latrines/bath houses in other countries, the group indicated that it was interested in operating such a facility. The authors then decided to review the system of public latrines operated under different conditions in three slums in Nairobi. The field visits were made in June 1996 and the experiences in the three areas are summarized in the following sections.

II. KITUI VILLAGE

THE KITUI-PUMWANI community covers a small area in the south-east of Nairobi, near the industrial area. Undugu Society, a local NGO, has helped the community since 1983. After a fire destroyed the houses in the community, Undugu Society acquired a piece of government land and paid for the materials necessary for the 800 displaced households to construct their own mud-and-wattle houses. Each household built a two-room house. At present, most of the households rent out one room and the total number of households is now estimated at about 1,600. About 75 per cent of the households are female headed.

After construction of the houses, Undugu Society received funds from UNICEF to construct latrines. Five blocks of latrines were built in 1990-1991. At the time, each family contributed Ksh 40 to pay for the unskilled labour hired within the community.⁽⁹⁾ There are no water taps in the latrines but water is for sale by jerrycan in a number of water kiosks, generally man-

aged by local water committees. The cost of the latrines could not be ascertained but Undugu field workers assessed that the people themselves would not have been able to construct the latrines without outside assistance.

One latrine block is connected to a main sewer which runs through the area. This block has 20 doors/cubicles, back to back. The latrine system consists of an open trench at the back of each cubicle which is automatically flushed every ten minutes. The water supply is via a piped connection to the Nairobi city council (NCC) water supply. Water is supplied free of charge by the NCC and there are no sewerage charges. If people had to pay any charges, this would be beyond their capacity to pay as the system requires a lot of water. Each cubicle belongs to 20 households who each have a key and clean the toilet in turn. The block has a committee which inspects the latrines every week. In the five years since its construction, this latrine block has never been blocked, mainly because the sewer to which the system is connected is very large.

The other four latrine blocks are not connected to the sewer but each consists of a large pit over which 12 cubicles have been constructed back to back. It is a dry pit latrine system. Each block has a committee which inspects the latrines weekly, for cleanliness. When the pit is full, the committee arranges for the city council desludging truck to empty it, for which they have to pay Ksh 800 per load (5,000 litres). All households contribute to the cost of the desludging. One problem is that it may take some time for the truck to come after the services have been called (and paid) for. Because of the desludging, many of the pits have started to form cracks but so far repairs have not been carried out.

Most committees consist of older women who take pride in keeping "their" latrine block clean and well-organized. Initially, all households were owners, who felt a sense of ownership towards the latrines, and cleanliness was never a problem. With an increase in tenancy, this is becoming more of an issue. Not only has the number of users doubled but the tenants do not feel the same kind of responsibility towards keeping the toilets clean. They feel that they are paying rent and, therefore, are not responsible for maintenance. Undugu Society has tried to convince the users to establish a maintenance fund for the latrines but people prefer to pay when funds are needed.

III. MUKURU VILLAGE

MUKURU KAYABAA SETTLEMENT is located in the industrial area of Nairobi and has a population of 30,000. The land is owned by the government and is illegally occupied. About 60 per cent of the houses are occupied by the owners of the structures, the rest of the rooms are rented out. Usually, there is one household per room with an average of five people per household. A survey carried out in 1994 showed that one of the highest priorities for improvement was the provision of sanitation

services as there were only about 30 latrines for the whole population (or one latrine per 1,000 persons). In 1996, two public latrine blocks were constructed by the community with help from the community development office of a local NGO active in education in the settlement.

In the two clusters where the sanitation problem was most urgent, toilet committees were elected whose task consisted of finding space for toilet blocks and selecting an appropriate type of latrine. One cluster had 506 households, the other 466. The committees were elected from and by the residents and consisted of landlords and tenants, men and women. Engineers from the city council advised the toilet committees and since there were sewers present in the neighbourhood which could be used, a sewer connection seemed to be the best alternative. Pit latrines would not have been possible because the lack of access prevents the emptying of such pits. Thus, the choice of site was dependent on proximity to the sewers; in one cluster, this entailed the demolition of a number of houses. The committee, with assistance from the chief, found an alternative plot for rehousing those whose homes had to be demolished. All the costs of demolition, rebuilding and loss of rent during the reconstruction process came from community contributions.

Plans for the toilet blocks were drawn up by city council engineers in cooperation with the committees and both blocks have eight doors (back to back) and a trench system which gets flushed manually from a central point. There are two 200 litre overhead tanks directly connected to the municipal water system on a metered connection. In addition, there is a 400 litre overhead tank as a reserve supply. Both latrines have an outside tap from which water is sold and, in both cases, the connection to the existing sewer is less than two metres long.

The cost of materials for the latrines was borne by a donor and amounted to roughly Ksh. 350,000 (ca. US\$ 7,000); the community contribution covered the cost of labour (Ksh. 30,000), the demolition of the existing rooms and the construction of new ones. The committee decided that landlords would have to contribute at a rate of Ksh 65 per room. This amount was paid by the tenants who then deducted it from their rent. Thus, in effect, it was the landlords who paid for the latrines. The chief helped by talking to the landlords and explaining the need for the latrines, and explaining the system of contribution collection, ie. through the tenants. Over 80 per cent of the community contribution was actually paid in this way.

Operation and maintenance of the two latrine blocks is carried out by two women from each area, elected by the community and trained by the Department of Public Health in the operation and maintenance of the system and in environmental sanitation and health. Households become members by paying a fee of Ksh 20 per month for use of the latrine. They pay Ksh 0.50 per 20-litre jerrycan of water. The attendants keep the facilities clean and do the manual flushing when necessary. The money collected each day is handed over to the latrine committee. Many people also use the latrine as a bathing place which, in principle, is not a problem except that the floor of the cubi-

cles does not drain sufficiently well towards the trench. Thus, water drains from under the doors resulting in standing water in front of the latrine. It would not be difficult for the community to improve this by either constructing a small drain in front of the doors and connecting this to the sewer or by cementing the floors in such a way that they drain towards the trench at the back.

At the time of the visit by the authors, the latrines had been in operation for more than one month and household membership was not very high. This was surprising to the community development office and the chief, and may have been due to the novelty of the latrines and the fact that, as yet, no follow-up had been undertaken by the committee. Moreover, some landlords had recently constructed individual toilets along the river – to prevent having to pay for the new latrines, and as part of village politics. These self-constructed latrines directly connect to the river thereby polluting it even more.

The latrines are operating at a profit, despite low membership. This is mainly the result of fairly frequent use by non-members (passers-by) and of the sale of water. Already, there are sufficient earnings to pay the attendants Ksh 1,500 per month each and to cover the water bill.

IV. MATHARE VALLEY

MATHARE VALLEY IS a large settlement in the south-east of Nairobi with a total population of approximately 300,000. Mathare 4B is one of the poorest sections of this settlement and has about 30,000 residents. Houses are at best made of mud-and-wattle but many are made of wood and corrugated iron. None of the houses has a latrine. Almost all residents are tenants and 95 per cent of the households are women headed. Employment levels are very low and most women try to survive by selling vegetables or second-hand clothes in the informal sector. Many of the street children in Nairobi originate from this settlement. Residents generally stay a short time in a room; when they cannot pay the rent they shift at night to another part of the settlement. There are no city council services at all in the area. Water is sold by private kiosk owners at Ksh 1 per 20-litre jerrycan.

The Wapenda Afya Bidi Group was formed in 1993 and, at present, has 27 members, 19 women and eight men. With help from a local NGO, they convinced the city council to let them manage the existing public latrine which was not being used because of its very poor state as it was never cleaned. The latrine is a building divided into two sections of 12 open cubicles, one section for men, one for women. The latrine system has a trench at the back of all the cubicles which is connected to the sewage system. When the group began its activities, the sewer inlet was blocked. After much pressure, the city council unblocked it, only to have it blocked again soon afterwards as the sewer is basically too small and connection to the larger pipe

not well-designed. Yet, the group kept the latrine in operation, daily scooping out the trenches with buckets and throwing the contents into the nearby river. When the local NGO ceased to function, the group continued on its own but it was unable to address the latrine's construction and connection problems and was also unable to motivate more people to help with the up-keep. WaterAid, a British NGO seeking activities in the informal settlements, heard of the group and started helping them by conducting training in community mobilization and development. They also funded the reconstruction of the blocked sewer and provided a water connection and water tank from where water could be sold. This gave a large boost to the group's morale, which was quite low because not only had the local NGO taken funds from the group without giving anything in return but they were also plagued by internal problems.

Two members are in charge of the latrine each day and have to keep the facility clean. They earn Ksh 20 per person for this task. When the group started operating the latrine, they assumed that all households in 4B would become members and pay Ksh 10 per household per month towards operation and maintenance. In addition, passers-by could use the latrine for Ksh 2 per time. However, this has turned out not to be feasible. Few households are members and total collection is about Ksh 1,000 per month, while more than 600 people use the latrine daily. It turns out that the few households who have paid their monthly membership are sharing the membership card, which gives free admittance to the latrine, with many other households and, because the population is so transient, the attendants do not know most of the users. In view of the poverty of most residents, even Ksh 10 per month is considered too much money. In addition, the level of knowledge about, and concern for, the health effects of random defecation and an unhygienic environment is very low. This is also evident in the state of the latrine which, despite daily cleaning by the management group, is not a very inviting facility as people do not consistently use the trench but also the rest of the cubicle. The group is still deliberating on better mechanisms for collecting payments and ensuring more hygienic use of the latrine.

The group itself had to organize and pay for the water meter which was to be connected shortly after the authors' visit. Once the water meter is installed, the group will sell water for Ksh 0.80 per 20-litre jerrycan. Because they have a tank and their price is competitive, they have an advantage over most other water kiosks. The group hopes to generate sufficient profit from the water vending to cover the maintenance costs of the latrine. Also, keeping the latrine clean will become a much easier task. The meter will be placed behind the water tank in the latrine so the water for flushing and cleaning the latrine will be free/subsidized by the city council. Two cubicles on each side will be converted into bathrooms with a usage fee for of Ksh 1; water will have to be bought separately.

V. CONCLUSION

IN ALL THREE settlements described here, public latrines are the only possible sanitation solution. The densities are very high which makes it virtually impossible to construct private latrines. The landlords who do live in the area are generally poor but are willing to contribute to the construction of public latrines. The tenants are also poor, to a large extent transient and not willing to make investments in latrine construction. The sustainability of the public latrines depends on the technical system selected but their success is more critically determined by the approach taken for managing their operation and maintenance.

The trench system with automatic or manual flushing connected to a sewer is the most common technical system for public latrines in Nairobi and is found in all three areas. The committees in Mukuru selected it over any other system as they had seen it in operation elsewhere. Yet there are a number of constraints to the applicability of the system. First, it restricts the location of public latrines to where sewers are located and to where connection is allowed. Secondly, there must be an adequate and secure water supply, which is not common in Nairobi informal settlements and which is unlikely to be sustainable if users had to pay for it. Thirdly, a system where faeces is pushed from cubicle to cubicle until the trench ends in the sewer is very basic indeed and has a high probability of becoming unhygienic.

There are positive aspects. The trench system ensures that no blockages occur before reaching the sewer – this is a pertinent issue as different materials are used for anal cleansing which could easily block a pour-flush latrine. Also, a water supply not only facilitates the cleaning of the latrine but also encourages hygienic behaviour by users, especially if the cubicles can be used for bathing.

A dry-latrine system is more appropriate to water supply conditions in most informal settlements and also allows the use of different materials for anal cleansing. Moreover, the location of these latrines is not dependent on the proximity of a sewer and thus has a much wider applicability. However, this type of system needs to be emptied and its effectiveness depends on a reliable desludging service. Experience in Kitui village shows that this is a problem. Moreover, the latrine must be accessible to a desludging vehicle – which usually means a site at the edge of the settlement near the road, which is the most attractive location for income-generating activities. Another constraint is the recurrent costs of desludging which have to be paid by the users. Ensuring this depends to a large extent on the level of organization and management of the facility.

To facilitate desludging in dense settlements, a new desludging vehicle was developed in 1996 and is being tested in Kibera, the largest informal settlement in Nairobi. The pedestrian controlled vehicle consists of a two-wheeled tug unit attached to a 500 litre vacuum tank. A sliding vane vacuum pump evacuates the tank for sucking and pressurizes the tank for discharge wherever gravity discharge is not practical. The five horsepower en-

gine uses a V-belt to drive either the vacuum pump or the wheels of the tug unit as required. In Kibera, the collected sludge is deposited in the sewers which bisect the area; in principle, there is a manhole available within a half-hour walking distance anywhere in the settlement. Apart from testing the technical system, the trial period was meant to establish the average number of pits that can be emptied in a day – this is necessary to calculate the fee that must be paid for a sustainable service. At present this fee (Ksh 250 per load, US\$ 5) is based on an estimated number of pits that can be desludged per day and on the price people have said they would be willing to pay for the service. One of the advantages of the system is that people can opt for any number of loads to be taken out depending on the amount of funds available. The problem with sludge disposal is that it is necessary to have a sewer nearby; if there is no sewer within half an hour's walk, this will not be effective. Methods for temporary storage in mobile tanks need to be looked into. In Dar es Salaam, another desludger was developed in the early 1990s, the MAPET, which is manually operated. Here, the sludge is buried on the plot after it is taken out of the pits. Thus, this system can only be applied where there is sufficient space to dig a pit, which is not the case in most of the informal settlements in Nairobi; if that space were available, public latrines would not be such a necessity.

Two types of management of public latrines can be distinguished. In the first, the public latrine cubicles are more or less divided among the residents, each of whom have a key to their shared cubicle which they have to clean in turn. The users also have to contribute to the maintenance of the latrine when needed. This system seems to work with a clearly defined user group and consistent supervision. However, it breaks down when people do not feel responsible and the level of social pressure to clean the cubicles in turn decreases. This has already started to happen in Kitui Village where the increase in tenancy has had a significant negative effect on the maintenance of the latrine cubicles. Tenants are far less committed to maintaining "their" cubicle and are probably even less committed when it comes to contributing to maintenance costs.

The other system is the more public pay-and-use system (but still for residential use) where users have access to all cubicles and do not bear any responsibility apart from regular payment of fees. Where latrines are the result of a community effort, both in planning and implementation, this may work as the latrine operators tend to be residents from the area. They know the users, know who has paid the (monthly) fee and know who has to pay per use (passers-by). As they are hired by the community there is a level of control on the hygienic maintenance of the latrines. Fees collected are seen to remain within the area (for the salaries of the operators and the maintenance of the latrine). To ensure that the operators keep the facility clean and the user group well-defined and known, a minimum level of social control/pressure is essential. The experience in Mathare 4B demonstrates what happens when this social control is absent. In such a case, where poverty basically prevents pay per use, it

may be better to raise the price of water to cover the operation and maintenance costs of the latrine instead of user fees.

These cases in Nairobi (as well as experiences in other countries) show that the construction costs of public latrines for residential use in low-income settlements have to be subsidized by the government or a donor. The users of these latrines, who are mainly tenants, belong to the poorest sections of society. Residential owners are generally also quite poor and non-residential owners need to be forced to contribute – as was successfully done in Mukuru. Yet, community contributions are necessary to generate a sense of ownership and could cover (part of) the labour costs and costs incurred to make a space available for the latrine. The extent to which owners and/or tenants contribute will depend on the local situation. Household user fees will never cover more than the cost of operation and maintenance and have to be borne by the user households. How these fees are collected (per use, on a monthly basis or through water fees) and whether a subsidy is possible for the poorest households needs to be determined by the resident users who, in most cases, will be tenants. The question of tenant willingness to contribute on a membership basis will depend on the nature of the tenancy. For instance, transient tenants such as those in Mathare 4B are unlikely to commit themselves to anything whereas long-term resident tenants are known to participate in community committees, as in Mukuru Village, and are very likely to be willing to support a service which responds to a felt need.