



Financing sanitation and cost recovery in the slums of Dar es Salaam and Kampala



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ABSTRACT

Improving sanitation for the poor requires better governance, more finance and mechanisms to generate revenue from sanitary facilities. There are a number of innovative approaches to sanitation in developing countries. Private pit latrines still provide 85% of the sanitation solutions for households in the slums of Dar es Salaam and Kampala. A distinction is made between household and shared toilets. Small scale entrepreneurs, Community Based Organizations (CBOs) and Nongovernmental organizations (NGOs) build maintain and sometimes empty usually shared sanitary facilities in a situation where the government is not able to provide sanitary services. Household level and private sector solutions are common in sanitation and can be encouraged. The repayment mechanisms in slums in the capitals of Tanzania and Uganda, the current mechanisms of financing sanitary facilities and recovering the cost using different governance structures are analyzed. Solutions are suggested based on the current practices. Governments could recognize the importance of what we call household level or private solutions and support them, for example by promoting more appropriate governance structures, cost recovery systems and reorganizing the emptying system to bring down the cost of emptying and involving small scale producers. It is recommended to promote more appropriate financing and governance mechanisms in the sanitation sector.

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Introduction

The Millennium Development Goal (MDG) for sanitation is to halve, by 2015, the proportion of people who have no access to basic sanitation. Most of the two billion people currently lacking access to improved sanitation are poor and need a safe place to defecate. Giving the financial and institutional bottlenecks for the fulfillment of the Millennium Development Goals in the water and sanitation sector in Africa, Latin America and Asia necessary funds estimates it will cost more ranging from US\$ 2.1 to 23 billion per year and when going beyond the more basic definition of urban service provision will cost even more. The Camdesus report already ten years ago suggested that an additional US\$ 32 billion per year would be needed. If the broader definition of sanitation would be used (including treatment of all municipal and industrial waste water and solid waste) US\$ 100 billion a year would be necessary

(Winpenny, 2005). Financially the first option translates into a doubling of investments from \$15 billion to \$30 billion per year for water supply and sanitation alone. The required long term investments (50–100 years) are difficult to finance because in most developing countries a capital market for long term finance does not exist.

Gurria (2006) emphasizes the need for more financial means for the water and sanitation sector but also encourages developing countries to look at other ways of financing this sector. To achieve the MDGs and the Johannesburg Plan of Implementation with respect to sanitation, a different approach is required (Van Dijk, 2012a). Technological development, unbundling of activities and competition between different sanitary options are important steps in that direction (Schouten & Hes, 2009). There are major developments taking place in the sanitation sector and their effectiveness can be enhanced through more government support and appropriate financing mechanisms (WSP, 2011). Initiatives at the household level and private finance can be an alternative for inefficient public schemes to provide sanitary facilities in the slums of African capitals, which rarely achieve cost recovery (WSSCC, 2011).

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Financial challenges in the case of sanitation

People should not live in filthy and unhealthy environments. The poor and vulnerable should be helped to obtain sanitation services in ways that are people-centered, participatory and affordable and promote social equity. According to [ADB \(2007\)](#) the financial challenges in the case of sanitation are:

1. Inadequate resources for sanitation
2. Low or non-existent tariffs for using sanitary facilities
3. Lack of financial sustainability of existing sanitary solutions.

A full fledged sewerage system in every African city would contribute to an even higher debt in foreign currency in many African countries, given the steel and cement to be imported. Different ways of financing sanitation for meeting sanitation and hygiene challenges are keys. It is often noted that it is more difficult to recover the cost in the case of sanitation than in the case of drinking water. However, facilitating the supply of finance is important for users as well as the small scale providers of these sanitary facilities and the different forms of finance always require some kind of cost recovery. For that reason we will first present the current ways of financing and cost recovery for sanitation in two African slums and then suggest how to improve them.

Usually the supply of tapped water and the presence of piped sewerage is limited to the center of Third World cities and some of the better off neighborhoods ([Isoke & Van Dijk, 2013](#)). This implies that in the slums and in the periphery of these cities people have to look for their own solutions. Given the specific nature of these often 'informal' solutions, they deserve special attention in our study of sanitary practices in African cities.¹ The households, Non-governmental organizations (NGOs), Community Based Organizations (CBOs), or Small-scale private individual providers or operators (SSIP) provide basic infrastructure services in slums in developing countries ([Collignon & Vezina, 2000](#)). [Table 1](#) gives an overview of the types of sanitary facilities, the ownership and governance structure and some other characteristics of toilets, which in slums are often not linked to the existing sewer system. Another distinction is between one, two, three and six pits latrines, but this is mainly important in the case of shared facilities, which were not very important in these slums.

The emphasis in this study is on the individual households and the toilets they share. Limited information has been collected about the importance of communal or public toilets. Once a decision has been taken what will be solved by the public sector and what will be left to individuals or their organizations, the private sector, including households, CBOs, NGOs and informal enterprises can execute a number of the required activities and will probably become more efficient than the government in supplying these services. In practice they are already responsible in most African capitals for the larger part of the supply of sanitation services.

Latrines need to be built, maintained and emptied. The final product can be used for composting, biogas or as fuel, but rarely the activity is considered as a value chain ([Van Dijk, 2012a](#)), where each stage built on the previous one and the advantages need to be distributed over the chain in case the chain is upgraded and where private actors play an important role ([WSP, 2004](#)). Upgrading means stimulating the local construction of certain types of toilets, facilitating emptying services and promoting the processing of sanitary products. There are places in the world where there is a whole economy around sanitation.

Table 1

Ownership, governance and other characteristics of toilets.

Ownership and governance structure	Type of toilet, payment and location	Characteristics: technology & condition
Households own and manage the facility	One stance, no payment, located nearby, in the backyard	Simple pit latrine, usually poorly maintained and not linked to sewer system
Shared toilets, still privately owned, used by several households operated by informal concord between a landlord or the households involved	Shared simple toilets, no daily payments, located at different places in the neighborhood	Simple and some improved toilets shared by several neighboring households, but usually poorly maintained (Tumwebaze, Niwagaba, Gunther, & Mosler, 2014), and not linked to sewer system
Shared, communal or community toilet, used by several households and managed by a community based organization (CBO)	Somewhat improved toilets, owned by NGO, CBO or the community, usually closer to the residential area of the community members, who should pay something	Open to a limited number of people being member of that community and contributing something to the community based organization (CBO) responsible for maintenance
Shared, owned by the government or a private firm, which everyone can assess with a publicly approved governance structure	Public toilets, close to a market or another public places (a roundabout or station), which require regular payment	Open to everyone, management may or may not take good care of cleanliness of toilets. Efforts are made to link facility to sewer system

There are some limits concerning the role of the private sector in relation to achieving the Millennium Development Goals in sanitation. The private sector can never take over the total responsibility of the government for sanitation. They can also not take the decision to go for large scale centralized or even for decentralized waste water treatment facilities. Government intervention is desirable in the case of a monopoly, market failure or externalities (such as improved health and more dignity and security for women and children). In case of important externalities, there is the need to assure investments in sanitation, over and above what private initiative is doing because the socioeconomic benefits are larger than the cost according to the cost benefit analysis. Externalities may lead to formulating clear aims for sanitary systems, such as being attractive and hygienic. The challenge is then to make them also affordable to the population and easy to maintain. In practice it boils down to the government investing in sewers and treatment plants, while in most cases slum dwellers have to rely on themselves, small enterprises or NGOs for their individual or collective sanitary facilities ([Mehta & Knapp, 2004](#)). The government may try to regulate and incidentally subsidize the private initiatives.

A subsidy from the government for sanitary systems raises the question is what are the principles used for the allocation of public funds? Subsidizing ([WSSCC, 2011](#)) may be unaffordable for most governments in the long run; hence designing appropriate schemes which would be self financing is much more relevant though challenging. The debate focuses mainly on one particular form of subsidy: hardware or infrastructure subsidy. It is important to get clarity on the many types of subsidies that are currently used in

¹ Informal in the sense of not complying with current legislation and regulation ([Van Dijk, 2006](#): 137).

sanitation, for developing appropriate toilets, for covering the cost of O&M or the cost of emptying toilets. Subsidies are based on two assumptions: first, that it is lack of funds that forms the primary barrier to access for the poorest, and second, that the use of hardware subsidies is an effective way of removing this barrier.

WSSCC (2011) has developed a primer, called 'Public Funding for Sanitation: The Many Faces of Sanitation Subsidies'. It aims to assist the reader to understand the global debate on subsidies and sanitation financing; and to provide guidance on how to select the most appropriate funding arrangements in different situations: To begin with, there is a need to better understand how public funding of sanitation works (OECD, 2011). What needs to be financed? What are the main sources of financing? What is meant by finance and by subsidy? Are there some broad concepts and principles for the allocation of public funds that all can agree to? WSSCC (2011) suggests taking as a starting point the principle that the most efficient use of public funds is to maximize public benefits (those that are shared by everyone), and that public funds should not be used to finance essentially private elements (such as soap, individual latrines, etc.) for which people are willing and able to pay and when private and market-based funds are available.

The discussion on appropriate sanitation financing mechanisms for the poor should go beyond the use of subsidies, and take into account all aspects of hardware (the type of sanitation system being built) and software (the ownership and governance structure), capital and operational expenditure, and the ultimate users of the sanitation system. Without this, the discussion risks becoming oversimplified and based on emotion rather than rational arguments.

Research methodology

The objective of this research is to investigate the financial mechanisms used to provide and operate excreta disposal facilities in slums in Kampala and Dar es Salaam in order to come up with sustainable financing approaches. This paper is about who finances and who bears the cost of sanitation? What investments are required for different sanitary options, ranging from sewer systems to collective facilities? Is cost recovery taking place and are the funds used to improve the current system? Small amounts can support small systems. Sanitation is embedded in a governance structure and different countries have selected different solutions (Van Dijk, 2012b).² Which structures work and why? How does the utility responsible for sanitation cooperate with the (local) authorities dealing with the 'informal' solutions? In Uganda the National Water and Sanitation Company (NWSC) is responsible for sewers, while the City council (KCC) is involved in toilet projects with all kinds of NGOs. Is this working and what can we learn from such experiences? We will explore real-life examples of sanitation and study the options for financing, building and operating pit latrines in a situation where people have little money to spend.

We started with making an inventory of the existing excreta disposal facilities (toilets) in a selected slum in each of the two cities, to identify the current financial mechanisms and their functionality in the provision and operation of excreta disposal facilities in Uganda and Tanzania. The objective is also to explore the potential of alternative financing mechanisms in the two selected slums. The following research questions guided the research:

1. Which types of excreta disposal facilities are available in the two selected in slums in Uganda and Tanzania and are these types of excreta disposal facilities in the two slums financially and institutionally sustainable?
2. How much has been invested in toilets in the two selected slum areas and how were the investments financed and which organizations were involved?
3. What is spent on, and who is responsible for the operations and maintenance of excreta disposal facilities in the selected slums?
4. What potential alternative financing mechanisms for excreta disposal facilities exist in the two selected slums?

One slum was selected in Kampala and one in Dar es Salaam based on the prevalence of waterborne diseases in these cities. Qualitative (stakeholder interviews) and quantitative (household surveys) data collection methods were used.³ Based on an inventory of facilities available in these slums a sample of excreta disposal facilities was drawn to study the economics of pit latrines, improved toilets, communal toilets and privately operated facilities. The other unit of analysis is the household. Data concerning the household's use of toilets became available from the household survey and information was collected concerning the context of the issue: which organizations are active in the slums and which financial institutions are active in this field?

After identifying the institutional network for providing water and sanitation to these slums we looked at the role of the government, of household and the private sector (small scale providers and NGOs). If the impact of the government is limited, private solutions will dominate and the willingness to go for collective solutions needs to be studied. Etajak (2010) carried out five focus group discussions to get the opinions of different stakeholders and did 250 household interviews, while Mwalwega (2010) interviewed 380 households in four different wards (95 in each ward) and collected information on NGO interventions in Dar es Salaam.

Current financing practices for sanitation

Table 2 distinguishes three types of expenditure needed (initial investment, operations & maintenance cost and emptying cost) and lists the six types of sources of finance which can be available:⁴

1. Private investment by the households, what we call in this paper 'private solutions'
2. Funds provided directly by the government and paid for by the taxes collected by the government
3. Money provided indirectly by the government through subsidies to different institutions or organizations
4. NGOs and Community based organizations (CBOs) also play an important role, but tend to finance communal sanitary facilities
5. International donor organizations and bilateral and multilateral aid, but only available to a limited extent
6. Private Sector Investments can make a contribution to the achievement of the Millennium Development Goals.

In practice there are only few options which are actually used to finance sanitary investments in Temeke and Bwaise (see Tables 5 and 7 respectively).

³ The research in the two slums was carried out by Etajak (2010) and Mwalwega (2010).

⁴ Any investment made must be rational and weigh the resources necessary (capital, labor, raw material, etc.) to assure the optimal use of such resources. Tools developed for this purpose are cost benefit analysis, life cycle costing and multi criteria analysis.

² One way to achieve satisfactory results is to follow the methods suggested by the European Union Water Initiative (EUWI). It is suggested to involve as many parties as possible in the construction, operation and financing of the required facilities and to bring them together before actually starting to identify possible bottlenecks.

Table 2
Different expenditure categories and their potential source of finance.

Type of expenditure	Private investment households	Provided directly by government	Indirect govern. subsidy	NGO & CBOs	International donors	Private sector investments
Initial investment	Savings, sometimes loans	Grant based on tax income	Idem	Grants or loans	Often grants	Through instruments in box 1
Operations & maintenance	No money	No	No	No	No	If responsible
Emptying cost	No savings	No	On municipal trucks	No	No	If profitable

Table 3
Possible options for recovering cost and different ways of collecting.

Source of revenue & collection	Collected by: household	Sanitary users committee	Private company	Local government	Higher levels of government	NGO or CBO	By a utility
User charge	Sometimes	Yes	Yes	Through committees	No	Sometimes	Sometimes
Subscription	Sometimes	Yes	Yes	Through committees	No	Sometimes	Sometimes
Tax on water/land	No	No	No	India		No	No
Surcharge on water bill	No	No	If utility is under private manage	No	No	No	China

Different options for recovering cost of sanitation

Cost recovery should generate a cash flow allowing to repay loans or to service bonds used to finance the sanitation project. Projects need to be powered by sustained cash flows instead of taxes. Charging a realistic tariff for sanitation services is necessary to be able to repeat the necessary investment. Hence, paying realistic prices for sanitary services and involving the private sector where and when adequate are important. There is a need for sufficient revenue to deliver sanitary services in the long-term. Sufficient revenue is needed to support improved quality of services and to extend service coverage to low-income consumers.

Cost recovery is more than collecting money for capital costs and operation and maintenance (O&M). It is also about institutions and processes. It implies considering the costs to maintain the institutions and support the services necessary for service sustainability and increased coverage over time and space. Institutional arrangements are necessary and development of capacities to put into practice the strategy adapted to the needs of the poorest. By using private construction firms, and local small enterprises for building, O&M and for emptying and finally for recycling of liquid waste products, local employment effects would be maximized.

Cost recovery means using economic or financial instruments to recover all costs associated with a sanitary policy, program or service. It means making the effort to ensure long-term (economic, financial, environmental, institutional, etc.) sustainability. A system is only financially sustainable if a real cash flow is generated and the investments for expanding services can be attracted and paid back through the returns. The different options for recovering cost, or the potential sources of revenue of sanitary project are presented in Table 3 and defined here:

1. User charges: contributions from the people benefiting from the system, possibly in kind

Table 4
Types of household level toilet in the two slums (%).

	Unimproved pit latrines	Flush toilets	Improved ^a , but not shared
Temeke Dar es Salaam	85	15	0
Bwaise Kampala	84.8	14	1

^a Defined as having a washable slab.

2. Subscription rates, the same but then on a monthly basis and for one individual or a family
3. Tax on property or land, this tax is supposed to capture the increased value of the land or property due to the presence of a sanitary facility, which is the case in India (Van Dijk, 2006)
4. Surcharge on water bill, linking sanitation to drinking water, or by charging connection fees, eventually linked to micro savings and micro credit. This requires utilities which are able to collect bills, which is the case in China (Browder, 2007).

The potential sources of finance can be collected by the household, the sanitary users committees, private companies, local or national government, NGOs or CBOs or by a utility. Households would be asking small contributions for the investments made or the O&M or emptying cost, using private construction firms, and local small enterprises for building, O&M and for emptying and finally small enterprises for recycling the liquid waste products. Local government can charge a fee or a tax.⁵ Finally a utility can charge for water and sanitation through one tariff for consumers. A surcharge on the water bill would be necessary (Pagiola & Platais, 2002). Otherwise we may have to rely more on small-scale independent providers in the case of sanitation, who will collect their revenue themselves.

A comparison of the two slums: types of toilets in the two neighborhoods

Different sanitation options are available for the inhabitants. Some have been introduced in low-income neighborhoods through the government, NGOs or CBOs and by local small scale private sector entrepreneurs. The research showed the following types of toilets in the two neighborhoods studied:

1. Unimproved pit latrines
2. Flush toilets

⁵ Tariff setting is part of the process of assessing, planning, implementing, monitoring and adjusting services delivery. This implies a number of steps such as setting cost recovery targets, analyzing the ability and willingness to pay, calculating affordability, setting service objectives, calculating the basis for charging. Then the tariff setting is possible, taking all this information into account and arranging a good billing and collection and book keeping systems while using financial control and monitoring, which requires measurable indicators

Table 5
Different expenditure categories and their source of finance in Temeke.

Type of expenditure	Private landlords or owners	Provided directly by government	Indirectly through subsidy	NGOs & CBOs	Donor organization	Priv. sector invest.
Initial investment	350,000 to 500,000 T.Sh. ^b	Percentage of communal toilets		&NGO &CBOs	Via NGOs or governments	No
Operation maintenance	Household have no money	No, but shared responsibility	For communal toilets ^a	Shared responsibility	No	No
Emptying cost	70,000 to 110,000 T.Sh.	No	No	No	No	No

^a There could be an element of subsidy if government trucks do the emptying.

^b 1,574.39 T.Sh. = US\$1 (23-1-2013).

Table 6
Types of revenues and collecting organizations in Temeke.

Source of revenue & collection	Collected by households	Sanitary users committee	By a private company	By local government	By higher levels of government	By a Utility
User charge	No	No	No	No	No	No
Subscription per month	No	No	No	No	No	No
Tax on land, property	No	No	No	No	No	No
Surcharge on water bill	No	No	No	No	No	No

Table 7
Different expenditure categories and their sources of finance in Bwaise.

Type of expenditure	Private investment households	Provided directly by government	Indirect through subsidies	NGO & CBOs	International donors	Private sector investm.
Initial investment	Yes	No	No	No	No	No
Operation & maintenance	Not enough money for it	No	Yes ^b	No	No	No
Emptying cost	Average 70,000 UGSh. ^a	No	No	No	No	No

^a 2,641.88 UGSh. equal US\$1 (23-1-2013).

^b Some subsidy because government trucks may do the emptying.

3. Improved toilets, in which category we include VIP, urine dry and biogas toilets.

Except for the different types of improved toilets in use in the two slums, the percentages are very similar in the two slums! The use of unimproved toilets dominates. These toilets may not be safe or hygienic and contribute to the spreading of diseases. They are low on the sanitation ladder, which goes from open defecation, via unimproved to shared and finally improved.

Financing and cost recovery in Temeke

About 70% of the settlements in Temeke municipality are unplanned. People living there are poor and use mainly unimproved pit latrines. However, the household survey shows that most of them are willing to contribute to improving sanitation in their area (35% of the people interviewed). Another 40% is willing to contribute labor to such efforts. The initial investment for an unimproved toilet is substantial and most often between 350,000 and 500,000 Tanzanian Shillings, which are usually invested by the landlord (in case of renting), or financed by owner of the house.⁶

Although there are five communal toilets in this neighborhood, the households interviewed usually use unlined pit latrines, just a hole in the ground (Table 4). They often do not have enough money for operations and maintenance, let alone for emptying. In the case of the communal toilets the municipal council, an NGO or CBO may

⁶ For community toilets the investments may be between 9 and 27 million Tanzanian Shillings, depending on the number of stances.

be responsible for maintenance and may have created a users committee for that purpose. The Environmental Engineering Pollution Control Organization (EPCO) is a local Non Government Organization NGO responsible for training masons on construction of cheaper, affordable and sustainable toilets. It also conducts awareness campaigns and informs communities inputs in order to increase access, acceptance and use of environmental services and local available materials to make cheap and sustainable sanitation for all ages. The organization offers a community-based environmental solution program so as to make water and sanitation services more accessible by providing efficient, effective and appropriate technologies. After training a water, health and environmental sanitation committee, EPCO conducts a meeting with the community in each street under local government leaders to introduce the latrine construction technology. Each committee has to contribute local material e.g. space, sands and masonry. Demonstration latrines are constructed.

Sludge emptying methods used by the interviewed households are manual discharging in a new pit dug nearby (60%), vacuum tank and MAPET (25%), 10% use soak away and 5% release the sludge to natural water ways during the rainy season. Emptying cost can range from 70,000 to 110,000 depending on the technology (Mwalwega, 2010: 50). If the faeces is put manually in another pit it may cost between 50,000 and 70,000 T.Sh., while services by a motorcycle with a 50 liters tank would cost 70,000 T.Sh., while a truck with a vacuum tank (20,000 l) would ask between 100,000 and 120,000 T.Sh. for emptying.

Table 5 shows that the alternative ways of financing listed in Table 2 are hardly used and there is no alternative to paying the emptying cost for a landlord or a house owner. The bottleneck is not so much the original construction cost, as well as the O&M and

emptying cost. These problems have a lot to do with the lack of a cost recovery system as we can see in Table 6.

According to Mwawlega (2010: 39) most of the people living in Temeke are too poor to pay for sanitary services. This results in a whole series of No's in Table 6 and indicates that it will be difficult in the current situation to come with a financially sustainable system. The situation in Bwaise is slightly better and will be shown in Table 8.

Financing and cost recovery in Bwaise

The situation in Bwaise is not very different from Temeke. Etajak (2010: 6) notes that every household constructs and maintains a sanitary facility for itself. However, "these sanitary facilities do not make up to the required stance ratio of 40 people per stance". This means there are not enough toilets and that is related to the initial investments which are most often paid for by the house owner or the household occupying the plot.

Table 7 gives the different expenditure categories and their potential source of finance in Bwaise. Based on the focus group discussions and interviews Etajak (2010: 33) concludes that 87.2% of the respondents financed the construction of their own sanitary facilities themselves. The other investments were funded by NGOs, CBOs or local government. 52.4% of the respondents were not willing to pay for the construction of improved facilities because they are poor and most of them are tenants, who may move on. Those who are willing to pay want to pay 5000 Ugandan shillings or a smaller number between 5000 and 10,000. This is not much given an unimproved toilet would cost 1 million U. Sh. (Günther et al., 2011: 4).

Table 8 gives the sources of revenue and the different collection modes in Bwaise. Operations and maintenance cost are also a problem in Uganda and emptying cost are even higher than in Tanzania. 75.2% of the respondents said that they did not pay for the use of sanitary facilities. The others paid as user fees per visit. The 25% paying belong to four groups

1. Fee per visit (17.7%)
2. User fee per month (16.1%)
3. Pay as part of the rent (32.3%)
4. Pay through a contribution to the emptying cost (33.9%).

According to Etajak (2010: 38) 74.8% empty the sanitary facility whenever it is full. In 29.6% of the cases that is every six months. 27.2% has to empty once a year and 8.4% every two years (36.8% others). In Bwaise 64.8% of the people interviewed claim it happens through a cesspool. 28.8% does it manually and 6.4% admit 'hammering'. The cost of emptying is between 20,000 and 100,000, with the median between 61,000 and 80,000 UGSh. (more recent data in Murungi & Van Dijk, 2013).

Table 8 shows that the most important source of revenue is user charges and the fees are usually collected by households, sanitary user committees, the government or the utility. A study is undertaken to see whether the utility could do more by including the cost of sanitation in the tariff for water.

Table 8
Possible different types of revenues and collecting institution in Bwaise.

Source of revenue & collection	Collected by households	Sanitary users committee	Private company	By local government	By higher levels of government	By a Utility
User charge	Yes	Yes	No	Yes ^a	No	Yes ^b
Subscription	Yes	Yes	No	No	No	Yes
Tax on water/land	No	No	No	No	No	No
Surcharge on water bill	No	No	No	No	No	No

^a Via users committee.

^b Under study.

Discussion

We have emphasized the importance of taking a value chain perspective and recognizing private solutions to problems which are of considered to be the responsibility of the government. The two case studies used show an interest in the health consequences of poor sanitation and have identified the willingness to pay for better sanitary services by the poor. This suggests that there is a demand for these services, which would allow more cost recovery, in particular in Tanzania.

The challenge is to close the sanitation cycle. However, in both cities there is not sufficient capacity in centralized waste water treatment plants. There is not enough capacity but also a sewer system is not available in these slums and the planned plants are focusing on the better off neighborhoods. This is an argument to look for more appropriate and cheaper solutions for evacuating the faeces from the slums and to promote decentralized waste water treatment.

In both slums the initial investments for toilets have been financed by house owners, inhabitants, NGOs or the government but the problem is to generate enough revenue for O&M and eventual emptying the toilets. In Temeke the institutional weaknesses observed by Mwalwega (2010: 57) are the lack of a national sanitation and hygiene policy, low public expenditure on sanitation and the fact that sanitation is a cross-sectoral issue because the responsibility is shared by a number of ministries. Factors hindering an optimal functioning of the sanitary system in Kampala according to Etajak (2010: 44) are:

1. The cost of emptying the sanitary facilities
2. Weak substandard pit latrine structures
3. Lack of access roads to sanitary facilities
4. Improper use of the sanitary facility.

The role of sanitary user committees is more important in Uganda than in Tanzania. In fact more than one fifth of the people interviewed in Kampala confirm that there is a sanitary user committee for their collective facility (22%). Etajak (2010: 41) found that respondents reported having a sanitary user committee were two times more likely to be willing to pay for operations and maintenance of the sanitary facilities, compared to respondents who reported not having such committee. This shows some confidence in the positive effect of a committee. Users of toilets pay 100 T. Sh. per visit which is often considered expensive, in particular in the case of big families. Public facilities also charge per visit (Etajak, 2010: 43). In sum there is a real cost recovery system in Uganda, which allows toilet owners to finance additional investments. However, the cost of emptying also tends to be higher in Uganda than in Tanzania.

Conclusions

The issues of low income, low social status and a limited degree of organization are linked with measurable consequences in terms

of surface water pollution, poor sanitation and health and a large number of children dying under such circumstances, unless more realistic systems can be put in place or their development is encouraged by the government (WSP, 2011).

Different types of toilets are available and different technologies have been suggested for waste water treatment. Also more communal and public toilets become available. The problem does not seem to be technological options, but rather institutional and financial issues. The choice of financing mechanism depends on the type of sanitation system that is being put in place. Envisaging a piped sewer system in these slums does not seem realistic in the short run, but the household solutions also need some government interventions, such as recognizing the informal operators trying to bring the price of emptying down and taking care of waste water treatment.

Large scale infrastructure related sanitation activities are difficult to finance, given the large amounts needed and the lack of cost recovery mechanisms. The private sector can get in if the projects are really conceived as economic investments with a return. This requires an emphasis on ways and means to recover the cost. We have suggested different ways of financing sanitation to allow more poor people to gain access to it. However, what stands out in particular is the need for a governance structure required for maintenance, in particular emptying, and cost recovery and the need to introduce realistic tariffs. In most Third world cities sanitary facilities have to move to full cost-recovery but it should happen at a realistic pace.

Governments should recognize the importance of what we called 'private (or household level) solutions'. The value chain approach emphasizes the role of CBOs, NGOs and small enterprises. Their role can be recognized officially and supported, for example by introducing adequate financing systems and reorganizing the emptying system to bring down the cost of emptying. This is called incorporating informality and would lead to competition in the supply of sanitary services and eventually a dynamic small scale private sector of service providers in the sanitation sector.

Many alternative financial solutions have been suggested, ranging from cross subsidies to using micro loans to pay for connection fees (Winpenny, 2005). The bottom line is that some subsidy can be provided (for example cross subsidies for the poor), but if there is not enough money in the system, it will run dry. Sustainability involves not only the economic and environmental conditions, but also the institutional and financial setup.

Finally, the importance of governance structures needs to be emphasized. User committee's could play a more important role in cost recovery, but their financial systems should be transparent and organized in such a way that the money collected is stored in accounts which can only be used for emptying or other major investments. Other informal arrangements may also be encouraged and recognized.

Recommendations

It is important to pay attention to hygiene promotion and the enabling environment, for a different approach to sanitation. Improved facilities have the potential to encourage a large increase in both market-based and household/community spending, as illustrated by approaches such as community-led total sanitation (CLTS) and sanitation marketing.

We suggest different ways to finance sustainable sanitation services:

1. Encourage new investments in sanitation from the (inter) national private sector

2. Develop pricing and charging schemes that will ensure the financial sustainability of investments in sanitation
3. Facilitate poor countries' access to funds for sanitation and develop local finance mechanisms, for example micro credit mechanisms to facilitate paying the connection fee to a sewer system
4. Encourage local development banks to invest in sanitation.

The 'private' solutions that people have chosen have their cost and need support from new sources of finance, such as the ones mentioned in Box 1. However, the government needs to invest in and maintain the sanitary infrastructure, insist on cost recovery systems and assure quality and transparency through appropriate regulation.

Box 1 Different ways of financing infrastructure including sanitation

Contributions in kind, through providing their labor
 Link payments for sanitation to the drinking water bill
 Subsidies could come from higher levels of government, financed out of tax revenues
 Project finance, with loans or bonds are possible for major infrastructure works
 State Level Finance Institutions, or Municipal Infrastructure Development Funds: investment, capital funds, trust funds, or endowment funds may finance investments
 Non-governmental and Community based organizations (NGOs and CBOs)
 Private sector involvement through Public Private Partnerships & joint ventures
 Concessions, BOT (Build Operate Transfer), Design, Finance, Build and Operate (DFBO) and ROT (Rehabilitation Operate Transfer)
 Microcredit to finance sewerage connections, and/or using rotating savings and credit associations (ROSCAs) linking savings with credit
 Cross subsidies from drinking water or other public utilities

Source: Van Dijk (2006).

Local governments, NGOs and utilities often share the responsibility for sanitation and waste water treatment. Too often they do not link the idea of collection, transport and treatment. It should be considered a value chain where money can be made instead of spent. It is expected that an integrated approach as practiced in a limited number of Third world cities would produce better results (Van Dijk, 2012a).

Capacity building is extremely important, to allow local organizations and local firms to carry out most of the construction of toilets, their maintenance and emptying and to assure the necessary investments will have a maximum effect on the local economy and that they will also be maintained locally. Sanitation users committees are one of the possible appropriate governance structures, if they can function in a more transparent way, rendering regularly account of their financial situation and ability to achieve financial sustainability.

In the final analysis there is no single 'right' answer to the design of financing arrangements for sanitation. The argument put forward is that the design of financing arrangements (including subsidies in all their forms and cost recovery) should be based on sound empirical evidence and clear policy objectives. Investing in an informed policy debate up front may result in a much more efficient use of scarce public funds later and ultimately achieve better access to sanitation for all. Finally, it is important to learn from Asian experiences (Sijbesma, 2008).

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References

- ADB. (2007). *Smarter sanitation, how to clean up your sanitation and waste water mess*. Manila: Asian Development Bank.
- Browder, G. J. (2007). *Stepping up, improving the performance of China's urban water facilities*. Washington: World Bank.
- Collignon, B., & Vezina, M. (2000). *Independent water and sanitation providers in African cities, full report of a ten-country study*. Washington: Water and Sanitation Program.
- Etajak, S. (2010). *The financing of sanitary facilities in urban slums in Kampala. A case study of Bwaise slum*. MSC thesis. Kampala: Makerere University.
- Günther, I., Horst, A., Lüthi, C., Joachim, M. H., Niwagaba, B. C., & Tumwebaze, K. I. (2011). *Where do Kampala's poor "go"? Urban sanitation conditions in Kampala's low-income areas. Research evidence for policy No. 1*. Zurich: ETH.
- Gurria, A. (2006). *Task force on financing water for all*. <http://www.financingwaterforall.org/> Accessed 22.01.13.
- Isoke, J., & Van Dijk, M. P. (2013). Factors influencing selection of drinking water technologies for urban informal settlements in Kampala. *Water and Environment Journal*, 1–12. <http://dx.doi.org/10.1111/wej.12058>.
- Mehta, M., & Knapp, A. (2004). *The challenge of financing sanitation for meeting the millennium development goals*. Nairobi: Water and Sanitation Program.
- Murungi, C., & Van Dijk, M. P. (2013). Emptying, transportation and disposal of faecal sludge in informal settlements of Kampala Uganda: the economics of sanitation. *Habitat*, 42(April), 69–75.
- Mwalwega, B. (2010). *Analysis of sustainable sanitation options for peri-urban areas, a case study of Temeke municipality*. MSC thesis. Dar es Salaam: University of Dar es Salaam.
- OECD. (2011). *Benefits of investing in water and sanitation, an OECD perspective*. Paris: OECD.
- Pagiola, S., & Platais, G. (2002). *Payments for environmental services. Environmental strategy notes*. Washington: IBRD.
- Schouten, M., & Hes, E. (Eds.). (2009). *Innovative practices of African water and sanitation providers*. Johannesburg: Sun Media.
- Sijbesma, C. (2008). *Sanitation and hygiene in South Asia: Progress and challenges*. Background paper for the South Asian Sanitation and hygiene practitioners' workshop in Dhaka: BRAC, WaterAid and IRC.
- Tumwebaze, I. K., Niwagaba, B. C., Gunther, I., & Mosler, H. J. (2014). Determinants of households' cleaning intention for shared toilets: case of 50 slums in Kampala, Uganda. *Habitat International*, 41, 108–113.
- Van Dijk, M. P. (2006). *Managing cities, the theory and practice of urban management*. Cheltenham: Edward Elgar.
- Van Dijk, M. P. (2012a). Sanitation in developing countries: innovative solutions in a value chain framework. In Hongyi Sun (Ed.), *Management of technological innovation in developing and developed countries* (pp. 65–83). Rijkeka: Intech.
- Shifts in urban water governance paradigms. Special issue Van Dijk, M. P. (Ed.). *International Journal of Water*, 6(3/4), (2012b), 137–344.
- Winpenny, J. (2005). *Guaranteeing development? The impact of financial guarantees*. Paris: OECD.
- WSP. (2004). *Sanitation is a business, Approaches for demand-oriented policies*. Nairobi: Water and Sanitation Program.
- WSP. (2011). *The political economy of sanitation: How can we increase investment and improve service for the poor?*.
- WSSCC. (2011). *Public funding for sanitation: The many faces of sanitation subsidies, a primer*. Available at www.wsscc.org Accessed 22.01.13.