IMPACT OF PRICES AND TARIFFS ON FECAL SLUDGE MANAGEMENT IN AFRICA

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ABSTRACT

The social and economic benefits of providing quality sanitation to the poor are colossal, but such benefits are realized at very high costs on investments or utilities. Tariffs and prices/charges are the means by which private and public utilities achieve fiscal sustainability. Just like in most sectors, cost recovery is crucial for investments in the sanitation sector. African utilities (both private and public) operate in a high-cost environment. These high costs, occasioned by the need to recover investments and cover at least partial operation and maintenance costs, make sanitation prices and tariff higher in the continent.

How do these high or low prices and tariff affect fecal sludge management in Africa? This paper investigates this issue based on a recent urban sanitation price and tariff benchmarking case studies carried out in six countries of Africa by WSA and other partners. The research process involved six major stages including development of data collection tools, preliminary exchange meetings, field data collection and analysis, national validation workshops, cross-country validation workshop and report writing.

We examined the impact of prices and tariffs using five major criteria: equity, economic efficiency, fairness, affordability, cost recovery and incentives for scale up. The results from the analysis of the six country case studies indicate that social welfare is not maximized when it comes to economic efficiency of the models under investigation. None of the models examined were found to have incentives which ensure that, for any sanitation supply cost, the poor obtains the largest possible aggregate economic benefits.

In terms of equity/affordability, existing models do not perceive a reliable and sustainable sanitation as a basic right or entitlements when compared to its role in promoting and sustaining acceptable public health and poverty alleviation. Moreover, most of the price/tariff models exhibit incorrect pricing signals in terms of cost recovery. Full costs are not recovered through sanitation tariffs/prices.

Keywords: AFRICA, PRICES, SANITATION, TARIFFS, POOR

INTRODUCTION

The Millennium Development Goals (MDGs) identified sanitation services as key factor in lifting people out of poverty. However, despite all efforts (human, material and financial) that have been made, Africa is off-track. Sanitation is a complex and multifaceted sector with a wide range of service providers, technologies and approaches interwoven with distinct cultural, institutional and sectoral environments. These variants can be viewed as being comprised of three main components; supply chain, user demand and policy environment (see **Error! Reference source not found.**).

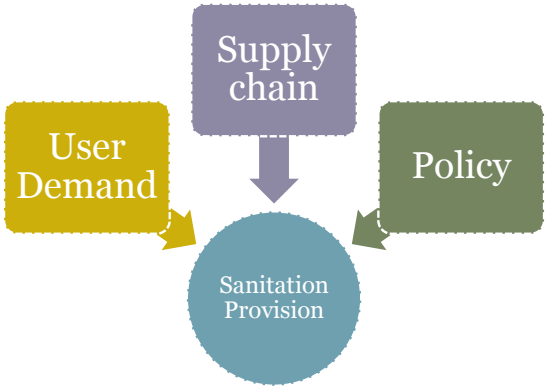

Figure 1: Component of sanitation provision

The glaring lack of progress is directly linked to the challenges facing policy makers, development organizations, utilities and scientists in financing sanitation infrastructure and service provision in the continent. In fact, the Camdessus Report estimated that financial flows to the sector must at least double to achieve the MDG […] sanitation target (Trémolet, 2007) and most importantly to extend the services to the poor who are the un-served.

Financing sanitation has well-known resulting benefits on health, education and economic activity, but such benefits are realized at very high costs on investments or utilities - considering the context of global poverty observed in Africa. Many countries in the region are still struggling with their desire for economically and financially viable public and private institutions and companies/enterprises that are able to deliver and extend sanitation services to the majority of the poor. Only 9% of utilities are meeting O&M costs plus a part of their capital costs (Banerjee & al., 2008).

Among the various channels that are used to levy money, tariffs are the most common way for doing so and are aiming to: (i) provide services that are safe, desirable, and affordable to consumers and (ii) ensure an institutional and commercial system capable of actually recovering costs (Stalker & Komives, 2001 *in Cost Recovery, Equity, and Efficiency in Water Tariffs: Evidence from African Utilities*).

The research was carried out to examine the impact of prices and tariffs on fecal sludge management along the sanitation value chain. How tariffs are calculated, how they are agreed and how they are implemented are all the important questions to this research.

METHODOLOGY

The research was a benchmarking of urban pricing and tariff structure in Africa. To carry out the research six countries (Burkina Faso, Cameroon, Ghana, Mozambique, Kenya and Senegal) were selected for investigations based on their specific experience in sanitation tariffs and pricing.

The research process

The research process involved five major stages including development of data collection tools, preliminary exchange meetings, field data collection and analysis, national validation workshops, cross-country validation workshop and report writing (Figure 2).

Figure 2: Research process

Initial Scoping and desk based study. This first stage consisted in identifying key actors and the specific, the current policy environment, and the global environment on which sanitation functions in each target country.

Scoping Study. The scoping study analyzed sanitation systems from an institutional process perspective, specifically service provision, regulatory environment and business opportunities. This study also investigated the relationship between service providers, customers and intermediaries and the institutions of urban government.

Research Methodology Workshop. The methodology workshop helped to capture and synthesize the knowledge and lessons from the above mentioned stages. During this stage, common research questions, data collection tools, methodologies were developed as well as national comparators (verifiable indicators) of performance and service delivery, capacity and institutions including governance, administration, and accountability thereby developing a benchmarking system for sanitation pricing and tariff.

Primary Data Collection. The baseline information collected in the scoping study was used to explore the key issues and/or drivers of the existing tariff and pricing structures in urban sanitation service delivery.

Country Level validation and Reporting. Each country consolidated information collected in the desk based study, scoping study and data collection to develop a national level report.

Regional validation workshop. Participants from all six countries including representatives from local government, water utilities, regulators and sanitation professionals were invited (5 participants from each country) to a regional workshop to discuss the consolidated findings, assess commonalities, typologies of models and specificities across countries and sub regions in Africa.

SANITATION TARIFFS AND PRICES

While they seem to depict the same reality, it is important to understand the distinction between the two concepts of price and tariff.

The global concept of price relates to the sum of money, or its equivalent, for which something is bought or sold. Sanitation pricing depends on a number of factors such as investment costs, costs of acquiring capital, design life, depreciation, reinvestments, operation and maintenance costs, and profits. Theoretically, the price is computed by comparing the revenue collected with the different expenditures (Figure 3).

The concept of tariff in the sanitation sector, according to the research, suggests that a tariff is a regulated price. Tariffs are approved by regulatory bodies, consulted with politicians, citizens and their representatives and implemented through legitimate service providers, such as local governments, water utilities and approved non-state actors, such as NGOs. Tariffs can be set at a lower or higher level than actual pricing. In the sanitation sector, tariffs are typically kept low for “social” or political reasons (e.g. fear of triggering social unrest, losing elections). The research suggest two definitions according to the type of sanitation, either sewerage system or on-site sanitation. The common definition appears with the sewerage system where a ‘sanitation tariff’ is a one-off connection fee and regular sanitation charges (usually charged in the water bill), approved by a regulator, and paid by users to an authorized service provider. However, in some countries, tariffs are also applied for on-site sanitation related services (e.g. public toilet use, pit emptying services), and paid to the provider of the service. Tariffs also exist between different levels of service providers, e.g. final disposal charges paid by sludge emptying service providers to government.

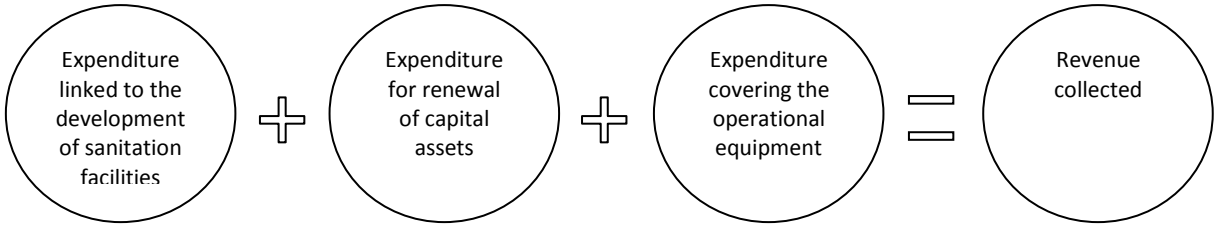

Figure 3: Price calculation diagram

THE CASES

Public toilets from Kumasi

Kumasi has Ghana's most organized sanitation system in the form of public toilets. Local government is responsible for sanitation policy, regulation and services, including public toilets. While on-site sanitation for all households is the long term goal, 35% of the population in Kumasi mainly lives in low-income areas and relies on around 400 public toilets. The business of public toilet is organized around three types of ownership; the private sector ownership (25%), the public-private partnership (25%) and the publicly owned by the Kumasi Metropolitan Assembly (KMA).

The tariff range for each user trip is set by the KMA, with regulatory approval, but without consulting operators and users. For privately-owned and PPP facilities, tariffs are set within this range at the discretion of the operator. Ownership does not significantly affect tariffs which are more influenced by capital costs, operation & maintenance, taxes, profit motive, location and users' ability to pay. Tariffs are less affordable for the poorest users, some of them claiming to spend up to 43% of the household budget in this way. Price variability and cost of emptying due to inflationary increases is a major concern for users and providers.

In the medium term, there is potential for public toilets to deliver sanitation services at scale in low-income areas. The Kumasi tariff system provides a good business model for private providers and gives them a major role in scaling up sanitation. This can be enhanced further by providing central support for the capital costs of construction and operation.

It should be noted that scaling up public toilets increases the need for other aspects of the sanitation value chain, such as emptying services. Innovative methods are needed for the collection and disposal of liquid waste and the treatment and reuse of by-products.

Sewerage system and on-site sanitation from Dakar

In Dakar, less than 10% of inhabitants are served by the sewerage system. Connection costs are borne by householders and are one-off fee. Usually these are prohibitive cost for the poorest that are the most in need. Beside this one-off fee, regular sanitation tariff is charged in the water bill. In Senegal, the tariff applied is set at a lower rate than the actual price computed. Domestic users living in areas served with sewerage network pay a volumetric sanitation tariff with their water bills, whether they have a network connection or not. Users are not consulted for tariff setting. Tariffs are set by regulators.

The proceeds of the sanitation tariff are fully absorbed by the operating expenditure of the National Office for Sanitation (ONAS), primarily expenditure on the sewerage network and wastewater treatment plant. Over the period 2003–2006 only about 78% of ONAS's operating expenses were covered.

Drawing from the billing system, users of on-site facilities pay more for sanitation services. Indeed, as the sanitation tariff is applied to all water subscribers (though at different rate) in areas where the network exists, there is no distinction between direct beneficiaries of ONAS services and non-beneficiaries. Therefore, they not only pay for emptying services, but also the sanitation tariff, which is perceived as an injustice.

One of the main challenges for scaling up on-site sanitation is regulation. There are no formal controls of the private sector, with prices set by operators. Mechanical emptying is charged according to the truck volume, and can be twice the rate of manual emptying. This is unaffordable for the poor, who then rely on manual emptying. The maximum rate (US$ 42) disbursed for the service of manual emptying is equivalent to the minimum rate that must be paid for the service of mechanical emptying. However, according to Gning, J.B. (2009) an average cost of latrine emptying between US $32 and $53 is sufficient to ensure the viability of the companies […].

The growing demand for sludge emptying services is for those not connected to the sewers, and represents profitable business opportunities.

Cross-charging from Ouagadougou

Ouagadougou demonstrates the potential to reach sanitation at scale through sewerage and stand-alone systems, using subsidy schemes, together with cross-charging through a sanitation tariff. In order to finance the sanitation services in Ouagadougou, a fee for sanitation services is levied on the water bill issued by the National Office for water and sanitation (ONEA). Cross-charging happens to be the core domestic financial leverage for sanitation investments. Household connected to the network - considered the richest customers - pay more (US $0.123/m3) than those who are not connected (US $0.042/m3) – considered the poorest customers. The rich pay for the poor. The sanitation surcharge is charged in the bimonthly water bill.

ONEA's annual proceeds from sanitation tariff is approximately US$ 2 million (Zabsonré, F., 2012), 72% of which is spent on social marketing of sanitation (including training activities), reflecting an increased focus on "soft" aspects of sanitation (up from 53% in 1999). Some of the fund has also been spent on subsidy support for onsite sanitation facilities as well as connections to the sewerage network.

Through this system, more than 500 households (5,000 persons) were connected and more than 7,000 facilities were constructed between 2009 and 2010.

It is therefore clear that cross-charging system can be a sustainable way of levying funds for sanitation but still depends on the number of customers paying for the services. The need for finance in the sanitation sector is sizable; on the one hand to cover the cost incurs in sanitation service provision (fecal sludge management) for both the sewerage network and the on-site sanitation and on the other hand to enhance service provision to extend it to the maximum of the poor.

Lessons from Kenya, Cameroon and Mozambique

Kenya

Water utilities have been unsuccessful in reaching the poor as conventional water borne sewerage systems do not serve urban centers. The main barrier to expansion is the high sewer connection tariff. More affordable connection options could deliver sustainable services at scale. On the other hand, public toilets in Nairobi provide an effective business model for private operators. In addition, sludge emptying for on-site sanitation is a potential growth area, with innovations in emptying technologies. These services need to be more affordable for those in low-income areas.

Cameroon

The institutional framework for sanitation is unclear with responsibility shared by several ministries, impeding effective service delivery. To increase private sector involvement there needs to be sludge treatment and re-use plants, improved sector organization, greater support to municipalities, and research on innovative solutions to different stages of the sanitation value chain. Sanitation service tariffs also require attention as poor urban households can pay more for on-site sanitation and emptying services than is paid by those with sewer connections.

Mozambique

There is little formal provision of sanitation services in the bairros of Maputo, particularly in low-income peri-urban settlements. Here the householder makes arrangements for procuring and servicing latrines, and sludge emptying, although some subsidies are available. Sludge emptying is carried out by small scale private operators, mainly CBOs, who set the charges.

Charges for conventional sewerage systems and for emptying, transport and disposal of sludge do not cover operation and maintenance costs. Some innovative partnership models exist for water supply

between regulators, the implementers, NGOs and the community which could be applied to sanitation service delivery.

DISCUSSION

Each of the individual country case studies has its own issues relating to sanitation provision and to a greater or lesser extent, its particular solutions. Some themes, however, are common across the study as a whole.

The regulated and unregulated services

The studies have shown a mix of regulated and unregulated services. In Dakar and Nairobi, official sanitation tariffs are regulated at national level. In Ouagadougou and Yaoundé, construction costs are largely based on historical prices. Sludge emptying service tariffs in all the case study cities are at the discretion of the operator. Regulation of a tariff does not ensure its affordability for users, or that this will act as an incentive for private investment into sanitation services.

Existing models are not scalable and affordable

Existing business models meet the needs of the location and some of the users but are not always scalable and affordable. Examples of this are mechanical emptying trucks that cannot access the narrow lanes of many informal settlements and are too expensive for low-income users to hire, as in Nairobi and Dakar. In Accra and Yaoundé investment in networked services does not benefit the poor who live in very dense informal housing areas with poor accessibility. On-site sanitation can be a better option such as in some of the bairros of Mozambique that has a high water table.

The lack of consultation of users in prices and tariff setting

The lack of user consultation on service provision and pricing is a common failing and can be demonstrated in Dakar, Ouagadougou, Yaoundé and Nairobi. This leads to prices that are unaffordable to low-income users for services such as networked sewer connections, sewerage tariffs, public toilet user fees, and sludge exhaustion and disposal tariffs.

Subsidy to improving access

There are examples of subsidy systems for low-income users, providing connections to sewer networks or assistance for procuring and constructing the necessary sanitation technology. Subsidy schemes in Ouagadougou and Dakar show an increase in coverage

Services along the sanitation value chain

The sanitation value chain is not always complete, and improvements in coverage prioritize the development of the final stages of the chain, to prevent indiscriminate dumping of waste. Adequate and accessible wastewater treatment facilities need to be available at a reasonable cost to incentivize providers to use them. Innovative solutions are also needed for the collection and disposal of liquid waste and the reuse of by-products, such as the biogas digester sanitation ablution blocks in Nairobi.

CONCLUSION

Well-structured and clearly-defined tariff structures for urban sanitation services are in their infancy in many African countries.

- Both Senegal and Burkina Faso use subsidy systems for users of collective and on-site sanitation. Dakar has increased coverage through subsidized connections to the sewerage network and for on-site household technologies. Ouagadougou has collective and stand-alone sanitation systems that combine subsidies with cross charging of a sanitation tariff on water bills.

There are a variety of different models in the case study countries that have the potential to deliver sanitation services at scale in terms of excreta capture, although this study confirms that the urban poor are frequently excluded.

- The Kumasi public toilet business model in Ghana is attractive to private providers.
- Networked services often do not reach informal housing areas that are also excluded from the subsidy program in Ouagadougou.
- In Nairobi, water utilities have been unsuccessful in reaching the poor in urban centers with conventional waterborne sewerage systems.

Parts of the value chain are missing in the study locations and those services that exist downstream of the excreta capture stage are beset by problems of technical and financial sustainability that are closely related to the lack of adequate tariff structures and affordability by consumers.

There is a notable lack of any overarching management structure to envelop the sanitation service chain, with no examples of coherent regulatory regimes or service standards particularly for the those parts of the value chain downstream of excreta capture.

The fragmented nature and lack of managerial and regulatory frameworks for urban sanitation services means that important potential economies of scale are not being realized. This in turn impacts on the nature and magnitude of the tariffs charged by service providers and the low levels of affordability particularly amongst the urban poor.

Sound and affordable tariff structures offer a key means to achieving sustainable urban sanitation; unblocking the barriers to achieving greater economies of scale will help to realize this.

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