



Urban Water and Sanitation Poverty in Tanzania

Evidence from the field and recommendations for
successful combat strategies

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Abstract

Urban Water and Sanitation Poverty in Tanzania is striking. Recent data suggests that 74% of the urban population in Tanzania's nineteen regional cities and Dar es Salaam lives in so called Low-Income Areas (LIAs). Only an estimated 23% of those have access to reliable water supply according to the national definition of "access" (page 3). As Tanzania has not only one of the highest birth rates, but also one of the highest urbanization rates in the Sub-Saharan Africa (5%-6%²), urban water and sanitation poverty is likely to become worse for the majority of the population.

This paper gives an overview of data collected through a recent Baseline Survey in Tanzania and makes recommendations for combating urban water and sanitation poverty based on lessons learned from years of GIZ work in the country.



Introduction: Low income urban areas in Tanzania

In most large and small urban settlements in Tanzania 74% the population live in Low-Income Areas – in many cases over 90 %. Often unplanned inhabitants of these Low-Income Areas in most cases have inadequate access to basic services such as safe water and adequate sanitation. Poor environmental health and hygiene are chronic features of Low-Income Areas, contributing significantly to poor living condition and high mortality rates. In contrast to slums in e.g. in Kenya or India, Low-Income Areas in Tanzania can be defined as mixed settlements. They comprise mainly poor households, but also a number of middle-income households set within the same geographical location.

The Baseline Survey On Low Income Underserved Urban Areas

GIZ, on behalf of the Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (BMZ) commissioned the survey in cooperation with the Ministry of Water (MoW) and the Energy and Water Utilities Regulatory Authority (EWURA) in November 2009. Data on water and sanitation services in LIAs was collected from February 2010 to September 2010 in the 19 regional towns and Dar es Salaam through household interviews, focus group discussions and interviews with Informal Service Providers. Moreover, GPS data was collected including coordinates and pictures of water points and sanitation facilities as well as administrative boundaries.

The objective of the study was to provide detailed information on the water and sanitation situation in LIAs to relevant water sector institutions to allow for better targeting of funds, to make informed decisions on infrastructure development and for the regulatory authority to develop adequate regulatory approaches and monitoring

The exercise resulted in the Baseline Study Database and the Baseline Study GIS, which are hosted at MoW and EWURA and are available to all stakeholders. Georeferenced data is available free of charge using google.earth:
<http://www.ewura.go.tz/waterbaselinestudy.html>

Characteristics of a Low Income Area as present in Tanzania are:

- High incidence of economic poverty accompanied by poor living conditions and other forms of non-economic poverty.
- Limited access to adequate and affordable safe water supply and basic sanitation services.
- Households depending on on-site sanitation facilities.
- Lack of adequate housing and limited or no access to other infrastructure and services such as solid waste, storm water drainage, street lighting, roads and foot-paths.
- Areas can be planned or unplanned.
- Low-income households may be confined to specific areas, but may also occur as small size slum dwellings that mix with higher income household areas (pocket areas).
- A haphazard layout, and/or difficult geographical and environmental conditions.
- Prevailing high population densities.
- Low and unpredictable incomes (earned daily mainly through informal activities) with a high level of socio-economic differentiation going hand in hand with high unemployment rates (particularly of the youth).
- A devastating public health situation.





Increasing population growth and urban density increased service gaps

According to the Baseline Study 6.86 million people lived in a total of 550 Low-Income Areas in 2010. The total population of all 20 urban centres was estimated to be around 9.2 million people in 2010. This marks about 2/3rds of the estimated entire urban population in Tanzania including 109 small towns. For the regional centres and Dar es Salaam, the Baseline Study established a population figure which is 28 % higher than the total population quoted in official government reports such as the Energy and Water Utility Regulatory Authority's (EWURA) annual utility performance report³, which estimates the total population in 2010 at only 7.2 million. Taking into account the high urbanization rate, the population in only the 20 biggest cities in Tanzania will increase from 9.2 million in 2010 to 13.8 million people by 2020 and about 26 million people by 2030. By that time, the total urban population in Tanzania will be at an estimated 37 million people.

With urbanization, the number of high density Low-Income Areas will multiply increasing the pressure on the public system of service provision to deliver reliable and safe services. The 550 Low-Income Areas presently identified cover a total area of 946 km² which is estimated to be around 21% of the total public service providers' service areas (4,426 km² ⁴). The average population-density calculated over all Low-Income Areas is 17,800 people per km² ⁵. It ranges between 1,850 people per km² in Babati and 25,000 people per km² in Dar es Salaam. In comparison Berlin has a population density of 3,881 people per km² ⁶. Approx. 50 % of the people living in unplanned Low-Income Areas is renting their homes and demand is increasing. Although the predominant type of house is still the single-family home in both planned and unplanned Low-Income Areas, landlords have started to put up sub-structures next to their own house on their plots or have constructed multi-family houses where single rooms are rented out. The tenants then share water supply and sanitation infrastructure (e.g. yard taps, latrines).

³ EWURA (2010): Water Utilities Performance Report for 2008/09 taking into account the individual growth rates of each urban centre as stated in the Analytical Report Census 2002, Annex Table 1.A Population by district: 1988 and 2002 by the National Bureau of Statistics (2006)

⁴ EWURA (2010): Water Utilities Performance Report for 2008/09

⁵ Weighted with total LIA population of the 20 towns.

⁶ Population density for 2010 as stated by Amt fuer Statistik Berlin Brandenburg http://www.statistik-berlin-brandenburg.de/Regionales/r_bev_g.asp

The poor state of public water supply

Only 23% of the Low-Income Areas' population receives its drinking water from a public (licensed) service provider (WSSA) and can be counted adequately covered according to the Tanzanian access definition. High population growth, declining availability of water resources, inadequate management and maintenance of existing infrastructure, and the failure to replace assets or extend infrastructure according to needs, impede substantial service improvements especially in the Low-Income Areas.

Water demand in regional centres and Dar es Salaam alone is estimated about double of water supply. In each of the surveyed urban areas, a Water Supply and Sewerage Authority (WSSA) is responsible for the provision of water supply and sewerage services. They produce 569,294 m³ daily with 356,355 domestic connections and a total network length of 813 km.⁷ According to the regulatory authority the total demand is presently at 898,591 m³ per day for the service areas of the 19 regional utilities and DAWASCO in Dar es Salaam. This means supply is only slightly more than half of the water demand and the estimate does not include many of the Low Income Areas that are adjacent to a city but do not fall into public utility's official service areas. The true gap between water production and demand is likely much higher.

Tanzanian Definition of Access To Water Supply Services

A person/household is considered adequately covered if he has access to a household (domestic) connection (no neighbourhood sales) or a public stand pipe (or kiosk) or a bore-hole receiving water from a water service provider acting within the regulatory framework. For collecting water the person/household should not need more than 30 minutes (go, wait, collect and return).

Even though some households in Low-Income Areas have domestic connections they often find them non-functional or only providing poor or intermittent service. 27% of all Low-Income Area households have domestic water connections operated by a licensed public service provider. However, 29% of these connections do not provide water, because they are disconnected, faulty or because they do not receive water due to technical reasons (e.g. low pressure, no water in the distribution network). The share of domestic connections that do not provide water is highest in Kigoma (45%),

followed by Dar es Salaam (44%). The average metering ratio is moderate, with 79% of the domestic connections located in a Low-Income Areas having a meter. In 9 out of 20 survey areas the average metering ratio in Low-Income Areas was below 90 %.

The Baseline Study identified a total number of 1,055 functional and non-functional public water outlets (water kiosks and public standpipes) in the 550 Low-Income Areas surveyed. However, only 4 % of the Low-Income Area population indicated that they fetch their drinking water at a public standpipe or water kiosk. Most water kiosks/public standpipes are located in the Low-Income Areas of Dar es Salaam (in total No. 332 of the ones reported) followed by Tanga (in total No. 100). However, coverage through public outlets is rather low with 0 % in DSM and 10 % in Tanga. Coverage by kiosks/public standpipes is highest in Singida where 25 water kiosks/public standpipes serve 35 % of the LIA population, followed by Tabora where 74 public outlets serve 28 % of the LIA population. 31 % of the Low-Income Areas' population fetches its drinking water at someone else's connection (neighbourhood sales) – often even if public outlets are available in the neighbourhood.

Tariffs for public service providers are too low to allow for cost-recovering operations. At present, none of the total of 139 public utilities in Tanzania fully recovers its cost for operations, maintenance and depreciation on investments from its own revenue generation! Public service providers apply different tariffs at domestic water connections and water kiosks/public standpipes. For the 20 regional utilities domestic tariffs range between a minimum of 300 TZS/m³ in Sumbawanga and a maximum of 720 TZS/m³ in Tabora. Some public service providers apply rising block tariffs. More than half of the public service providers also offer flat rate tariffs, which turn out to be more economic for households with consumptions above 10 – 20 m³/month depending on the public service provider. The average tariffs⁹ range between a minimum of 230 TZS/m³ in Kigoma and a maximum of 689 TZS/m³ in Dar es Salaam. The water tariffs kiosk operators have to pay range between a minimum of 150 TZS/m³ in Arusha and a maximum of 1,000 TZS/m³ in Lindi. In most towns a customer with a domestic water connection has to pay a service charge (fixed position) of normally 2,000 TZS/month (min. 1,000 TZS/month, max. 3,000 TZS/month). Some public service providers charge a meter rent of around 500 TZS/month.



⁷ EWURA (2010): *Water Utilities Performance Report for 2008/09, April 2010*

⁸ EWURA (2010): *Annual Report for the Year Ended 30th June 2010, December 2010*

⁹ EWURA (2010): *Water Utilities Performance Report for 2008/09. The average water tariff shows how much the provider's customers pay on average for each m³ billed. It includes metered and un-metered consumption and therefore also depends on the provider's assumption regarding the consumption of un-metered customers or their "authorised" consumption respectively.*

Informal providers fill the service gap – at a much higher price

The aforementioned service gap of 77 % is to a large extent filled by Informal Service Providers who currently serve around 68 % of the LIA population. In absolute figures this means that Informal Service Providers serve water to approximately 4.65 million people living in LIAs. Based on this figure an estimated 50 % of the total urban population receives drinking water from Informal Service Providers in Tanzania. Informal service provision plays a significant role in delivering water services not only to the poor in urban Tanzania.

Generally, large numbers of people depending on Informal Service Providers correlate with low numbers of people having access to improved sources of drinking water and vice versa. This supports the argument that Informal Service Providers often step in where formal water provision is not sufficient. Persons or households that receive their drinking water from an Informal Service Provider cannot be considered having access to an improved water source as defined by the Tanzanian definition of water supply coverage. Also, the availability of unprotected and freely accessible sources such as rivers and lakes influences the prevalence of Informal Service Providers.

Neighbourhood sales and private run schemes are the most common types of informal service provision, which bares large opportunities for improvement of services as neighbourhood customers are essentially shadow customers of the public service provider and, thus, could and should be integrated into the formal, public service provision. The prevalence of Informal Service Providers varies by type: While – on average – mobile vendors serve 10% of all households, neighbourhood sales and private run schemes are the most predominant serving 31% and 24% respectively. In comparison, the services of water tankers are used by only 3% of the population and NGOs/Community Run schemes serve about 5% of the population. Especially tanker operators often prefer to serve middle- and high-income households to sell larger amounts



Informal Service Providers

WSS supply in the context of service provision in LIAs is characterised by a high diversity of practices. ISPs differ regarding to their size, organizational form, source of water, and way of service delivery: (i) Neighbourhood sales, (ii) mobile reseller / vendor, (iii) private run scheme, (iv) water tanker, (v) community run scheme. Despite of all their differences ISPs have one thing in common: They are informal, meaning that they are not formally recognised or authorised by government.

at once. Efforts to regulate services from water tankers will, hence, have a low impact on improving service provision for the poor. While considerable differences exist between types of Informal Service Providers, the survey data shows that they generally have two things in common.

On average Informal Service Providers' tariffs are 13 times higher than tariffs charged by a public service provider for the lowest block for a house connection. As house connections are predominant in middle- and high-income neighbourhoods, people living in those areas pay less for water than LIA residents. The average price charged for water provided by all types of Informal Service Providers in LIAs is 131 TZS (0.06 EUR) per 20 l jerry can. In contrast, the water tariff charged at domestic connections varies by service provider, for the lowest block many charge around 500 TZS/m³ (0.24 EUR/m³) and for the highest block around 720 TZS/m³ (0.35 EUR/m³). In comparison, the price for water sold by Informal Service Providers converted into m³ is 6,550 TZS/m³ (3.18 EUR/m³). This is about 13 times/9 times higher than the lowest block/highest block tariff for a house connection. Even compared to tariffs at a public water outlet, such as a kiosk, Informal Service Providers' tariffs are still 3-times higher on average. The average retail price at water kiosks is 46 TZS (0.02 EUR) per 20 l jerry can. Besides factors such as price and accessibility, water quality is crucial in determining the water supply situation for the population. Poor water quality is a reason for the transmission of waterborne diseases. Since Informal Service Providers are unregulated it cannot be ensured that they draw water from safe water sources, test the water quality regularly or treat the water they resell. Due to this fact national water quality standards cannot be guaranteed which presents a major challenge for promoting public health in Tanzania.

Water quality delivered by Informal Service Providers is unknown, un-monitored, but assumingly low. According to the data collected 66% of the Informal Service Providers interviewed draw water from a public service provider's connections. Besides, neighbourhood sales (which by definition are water resellers that sell water from their own public service provider's domestic connection), 63% of the water tankers and 49% of the surveyed mobile vendors claimed to receive water from public service provider connections. Contrary only 18 % of the NGO/CBO run schemes and 7% of the private run schemes receive water from the public service provider. Most of them use alternative sources such as private boreholes. The majority of NGO/CBO run schemes and private run schemes are therefore independent providers.





There are substantial differences among urban centres concerning the use of a public service provider's water network as source for Informal Service Providers. In some towns nearly 100 % of Informal Service Providers claim to sell water from a public service provider's connection (e.g. in Moshi, Tanga, Iringa). This relates closely to the high occurrence of neighbourhood sales in these towns.¹⁰ On the contrary, in Kigoma only 9 % of the Informal Service Providers responded to take water from a public service provider's connection for resale. In this town in particular, many mobile vendors draw water from open (unimproved) sources with doubtful quality posing a risk to the health of their customers.¹¹ In Songea 43% of the Informal Service Providers receive their water for resale from a formal water connection.

Sanitation and hygiene

In total more than 667,000 households in the 550 Low-Income Areas do not have access to a sanitation facility that complies with the minimum standard discussed by the government of Tanzania. Sanitation coverage in the 550 Low-Income Areas is 57 %, meaning that 57 % of all households use flush or pour-flush toilets connected to a piped sewer system / septic tank / pit latrine, a ventilated improved pit latrine (VIP), a pit latrine with slab or a composting toilet/ecosan.¹² The majority of households depend on on-site sanitation facilities. According to the Annual Report 2009 of EWURA only 10 out of the 20 public service providers operate a rudimentary sewer system. The respective coverage is presented in brackets behind the name: Mwanza (3.1 %), Moshi (5.8%), Arusha (7.0 %), Dodoma (11.6 %), Iringa (11.9%), Mbeya (0.6 %), Morogoro (1.6 %), Songea (3.7 %), Tabora (1.3 %), Tanga (9.3 %) and Dar es Salaam (4.8 %).

Only 30% of households with on-site sanitation facilities empty their facility relying on contractors or cess pit-emptier. Many households simply shift the facility to another place as long as space is available. Often people refrain from using emptying services, because of the high cost for those services. Open defecation was seldomly (<1%) reported. Households without sanitation facilities rather resort to public facilities.

62 % of all interviewed households indicated that they wash their hands with soap after using the toilet. This figure seems rather high as only few sanitation facilities have hand-washing facilities nearby. Only 7 % of all interviewees replied that they never wash their hands after using the toilet.

Proposed Tanzanian definition of sanitation coverage

Access to improved sanitation is defined as "the percentage of population using "improved" sanitation, meaning facilities that ensure hygienic separation of human excreta from human contact" such as: flush or pour-flush toilets connected to a piped sewer system / septic tank / pit latrine, a ventilated improved pit latrine (VIP) or a pit latrine with slab.

60 % of all interviewed households reported that their children hardly suffer from diarrhoea. In 5 % of all interviewed households diarrhoea occurs frequently. 81 % of the households where diarrhoea occurs frequently do not have a domestic drinking water connection.

Even more striking than the low access rate to basic sanitation is the little attention sanitation and hygiene has been given in official policies and investments. Unlike water supply up to this date there is no official definition for sanitation coverage. While a definition has been proposed for the new national sanitation and hygiene policy, it is not put into effect.

The proposed definition for sanitation coverage has significant shortcomings. Many key issues – such as health risks, insufficient treatment, lack of maintenance, inappropriate construction and design, uncontrolled disposal into neighbourhood ground or surface water, distance from the household, privacy, and incorrect use, cannot be covered by questions related to the type of technology used. As a result, the information obtained will be imprecise and conclusions may be misleading. Issues of privacy and dignity, for instance, influence willingness to use sanitation facilities regularly.

¹⁰ Neighbourhood sales by definition draw water from formal house connections. Therefore the rate of 100% of public service provider connections applies for neighbourhood sales.

¹¹ Many of the mobile vendors draw the water from springs like the Nyakageni and Rutale springs. These springs are partly protected.

¹² Tanzanian coverage definition for sanitation (Please refer to Chapter Definitions)

Challenges of water supply and sanitation provision specific to low income urban areas

The surveyed LIAs in Tanzania clearly lack adequate access to basic services such as safe water and sanitation (thus being underserved). Poor environmental conditions and an inadequate hygiene situation are prevalent and contribute to health problems and high mortality rates. Providing water supply and sanitation services to Low-Income Areas raises specific challenges for service provision and regulation:

- Lack of a commercial corporate culture and approach as well as entrepreneurial spirit, which keeps utilities from operating efficiently.
- Lack of local knowledge and perception that Low-Income Areas are not a business opportunity but rather a burden or a risk.
- Lack of a customer care concept that is adapted to the needs of the residents of LIAs, which would need some degree of service decentralisation and presence in the concerned areas.
- Poor service levels result in low customer satisfaction levels and low collection efficiencies. Low collection efficiencies tend to strengthen the conviction among a public service provider's management staff that LIAs are best ignored.
- Missing sustainable strategy toward the low-income clientele rooted in realistic tariffs. Domestic tariffs are often kept too low for utilities to cover costs, whilst embracing the adage 'the poor should not pay more', instead of taking into account willingness and ability of customers to pay for water and sanitation services and provide incentives accordingly.
- Little information on the urban poor¹³ such as their service levels and modalities, their demand and perceptions has led to insufficient planning and targeting of investments.

The way forward – suggestions to reduce urban water supply and sanitation poverty in Tanzania

With the given urbanization rate, the above-mentioned challenges will increase. Development partners and their governments collectively make available funds worth over US\$ 1 billion for investments in the water sector from 2007-2012 and beyond. But economic modelling shows that this amount is not nearly enough to compensate for the explosive urban growth. Hence, a successful strategy combating urban water and sanitation poverty needs to apply additional measures.

- **Put the poor on the map and target funds effectively:** A first important step in successfully combating poverty is to put the poor onto the map of government officials and development partners alike. With the baseline study completed, detailed social-economic and geospatial data is available, such as the location of LIAs and their respective service levels etc. With this data, funds from the aforementioned basket are prioritised and used for investments specifically



targeting those urban areas where the needs are the greatest and investments yield the biggest impact.

- **Recognizing the poor as valuable customers:**

Utilities, government agencies and development partners often do not consider the poor as valuable customers, but as recipients of subsidized water. Therefore service providers often avoid investments into LIAs. They consider those as a strain on their revenue generation and cost recovery. The baseline study provided empirical evidence that the poor households actually pay up to 13 times more for water and sanitation services than middle- or high-income households do. Contrary to common belief, for a public service provider it could actually pay to serve the poor. However, public service providers need to adapt their billing to the often-volatile cash flow situation of poor households. For example service providers should charge for water from a household connection on a weekly instead of a monthly basis, or introducing pre-paid meters. Generally utilities need to implement service and payment options

adapted to the situation of the poor. If done well, serving the poor can be of great financial benefit for a service provider.

- **Adjust the average tariff to reflect the true cost of service:** In Tanzania, as in many developing countries, water tariffs are kept artificially low. Water is a politicized good and politicians sometimes avoid raising water tariffs for popularity reasons. However, tariffs that do not reflect the true cost of service deny a public service provider the revenues necessary to operate and make the necessary investments to maintain and extend its existing network. In Tanzania, for example, tripling the current average tariff for water of about 500 per TZS/m³ would allow cost recovering of service provision, but only set the tariff at about 23 % of the average price charged by informal service provider for the same amount of water. While poverty is often seen as reason to keep tariffs low, only cost reflecting tariffs allow a public service provider to provide potable water and good services especially to the poor.

- **Pro poor regulation:** For most of the recommendations mentioned above, regulatory involvement is required. For example, tariffs should not be set without regulatory consent; a discussion about cost recovery should involve regulatory expertise. In that sense, pro-poor regulation encompasses some of those recommendations. But it does even more. A regulatory concept that is pro poor will also monitor utilities' investments and performance and will set performance targets and indicators that take into account service provision to the poor. Besides target setting, performance monitoring and tariff reviews, pro-poor regulation will generally assure that the needs of the poor are considered in any aspect of regulatory activities, since the impetus to recognize the poor as valuable customers usually starts with the regulatory authority. Also the high incident of neighbourhood sales in Tanzania's urban areas bares a strong opportunity for the public service providers to increase their formal customer base. A successful pro poor regulation would abolish flat rates, which create an incentive for neighbourhood sales and implement increasing block tariffs for all public service providers. In combination with financial incentives for neighbourhood customers, such as a first time connection loan, to register with the public service provider this could greatly increase a service provider's revenue collection and cost-recovery.





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