

## Paper 4: Sustainable financing and funding for on-site sanitation and faecal sludge management in Lusaka

### The challenge

The 2011 Sanitation Master Plan for Lusaka had estimated the investment requirements for improving sanitation in the city to be in the order of €2 billion. Functionality of existing infrastructure was severely restricted due to age and failing condition. Already very low formal service coverage affecting the majority of the city's population required urgent expansion in view of high projected population growth. The National Urban and Peri-Urban Sanitation Strategy concedes that 'the sanitation sector in Zambia has been historically under-funded in terms of capital investments, large maintenance and operating expenditure', and that limited funding has been directed towards low-income areas.<sup>1</sup> Some €240 million are currently being invested in the capital city under the Lusaka Sanitation Programme, co-funded by the European Investment Bank (EIB), Kreditanstalt für Wiederaufbau (KfW), African Development Bank (AfDB), World Bank and the Government of the Republic of Zambia (GRZ), again with much of this funding reserved for conventional sewerage network and wastewater treatment infrastructure project components. Even with this investment, a sizeable financing gap remains to reach universal service coverage in Lusaka.

Financially, Lusaka Water and Sanitation Company (LWSC)<sup>2</sup> ranks amongst the better performing Commercial Utilities (CUs) in Zambia. It is currently achieving 95% full

cost coverage by collection (110% by total revenue), but meeting its targets for operations and maintenance costs remains a challenge.<sup>3</sup> Customer tariffs for water and sewerage were last reviewed in 2016, and adjusted to reflect rising operational costs, resulting in multi year tariff adjustments for the period 2017-2019. The company charges a sewerage tariff set at 30% of the water bill for domestic customers (45% for commercial and industrial customers). In accordance with the regulator's tariff setting guideline, tariffs follow a rising block structure, with a below-cost 'lifeline' band of 6m<sup>3</sup>/month, added to a fixed meter charge of 10 Zambian Kwacha (ZMW) (€0.61).<sup>4</sup> In 2019, charges therefore started at 5.93 ZMW/m<sup>3</sup> (€0.37) for water and, where applicable, 1.78 ZMW/m<sup>3</sup> (€0.11) for sewerage in the first band, rising to 11.64 ZMW/m<sup>3</sup> (€0.72) for water plus 3.49 ZMW/m<sup>3</sup> (€0.22) for sewerage for the highest block (>170 m<sup>3</sup>/month).<sup>5</sup> CUs are expected to ring-fence at least part of their sewerage revenues for capital investments, though in practice they can be diverted to the water side of the business.<sup>6</sup>

In 2007, the National Water Supply and Sanitation Council (NWASCO) introduced an additional sanitation surcharge in an effort to enable CUs to invest in adequate sanitation services. LWSC was allowed to charge an additional 2.5% on all water bills, irrespective of whether a customer was connected to sewerage services or not. This sanitation levy is explicitly earmarked for funding sanitation extensions, and

- 1) NUSS 2015-2030. p.18. The NUSS developed and costed two different scenarios (for the entire country): the 'status quo'/NUWSSP scenario would require a total investment of US\$5.8 billion (€5bn), an alternative 'low-cost' scenario US\$4.8 billion (€4bn).
- 2) All commercial utilities in Zambia were officially renamed 'Water Supply and Sanitation Companies' in 2019
- 3) Source: NWASCO, 2018. Total revenue includes net billed amounts and other income from fees, interest, subsidies and recurrent grants.
- 4) The tariff structure also includes provisions to estimate consumption for unmetered customers, as well as an approved tariff for water kiosks and public taps (5 ZMW/m<sup>3</sup> (€0.31)). NWASCO acknowledges the difficulties utilities face in isolating costs relating to sewerage services, but asks that proposed percentage tariffs are justified in terms of reflecting O&M costs.
- 5) NWASCO. 2019. Approved water supply and sewerage tariffs February 2019. Available from <http://www.nwasco.org.zm/index.php/media-center/publications/booklets/send/13-approved-tariffs/62-2019-approved-water-supply-and-sewerage-tariffs>.
- 6) According to LWSC, neither its sewerage tariffs nor dumping fees charged to vacuum truck operators at treatment plants are ring-fenced to be reinvested into wastewater treatment. (LWSC/LSP. 2019. The FSM Service Delivery Business Model for Lusaka. Presentation given at Knowledge Exchange Lusaka, 8 May 2019)

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proposed projects must be submitted to NWASCO for approval every year.<sup>7</sup> Since the introduction of the surcharge, LWSC has collected a total amount of 24.3 million ZMW (€1.51 m), of which 13.7 million (€0.85 m) had been spent by the end of 2018.<sup>8</sup> The sanitation levy was suspended in 2017, with the suspension expected to be lifted pending some clarification of sanitation expenditures. In any case, current investment needs for improving sanitation far outstrip the revenues generated by the company, given that sewerage tariffs are only a small percentage of the total water bill. As a result, the level of self-financing through customer payments is lower for sewerage than for water supply, despite the high capital intensity of networked sewerage services.

Key stakeholders, such as Lusaka City Council (LCC), are held back by a lack of resources, including equipment and facilities. Service providers rely on external funding to complete vital works and to fund capacity development activities. Pit-emptiers report access to finance and high interest rates as key constraints to expanding their services. There is without doubt a large potential market for on-site sanitation services, yet many low-income households find the construction costs for improved toilet facilities prohibitive.<sup>9</sup> In addition, the situation is complicated by the fact that many properties in peri-urban areas are rented and facilities are often shared between two or more households. Subsidy or discount mechanisms geared towards the construction of household toilets are required to enable first-time access to safe sanitation, which cannot be delivered and sustained without a viable business model that spans the entire sanitation chain.



*Innovative and sustainable financial mechanisms need to be in place. Building on Lusaka Sanitation Programme (LSP) experiences LWSC is proactively exploring ways to secure the long-term financial sustainability of the full range of sanitation services.”*

Chronic underinvestment, especially in the sanitation sub-sector, raises questions over planning and prioritising of investments at the national level. It is from here that clear and strategic direction for the mobilisation and allocation

of resources should emanate, to secure the long-term sustainability and resilience of the sector. Zambia has adopted policies aimed at reducing the dependency on external funding sources (note the prominence given to commercial viability as a key reform principle and regulatory mandate). Investments have successfully been channelled into low-income areas, though the involvement of the Devolution Trust Fund in sanitation remained relatively limited and it has recently ceased operations without being replaced or superseded. Strategic guidance and nationally coordinated investment planning, let alone monitoring of investments or subsidy mechanisms to accelerate take-up, are yet to be put in place. This represents a limiting factor for developing safe, equitable and climate-proof sanitation services.<sup>10</sup>

### Activities, progress and challenges

The main contribution of the Climate-Friendly Sanitation Services in Peri-Urban Areas of Lusaka (CFS-Lusaka) project towards a more sustainable approach to sector financing has been through supporting LWSC in exploring and developing business models for faecal sludge management (FSM) that integrate the private sector. Above and beyond this, GIZ has been engaged in various tangential activities not necessarily directly related to CFS-Lusaka that also address the wider challenge of leveraging funding. There is potential to raise the level of sector self-financing through tariffs and scope for building on pro-poor approaches that originated in Zambia. Given the fundamental importance of financing strategies and mechanisms, the following discussion will also consider the wider context to extract lessons and recommendations for sustainable financing, especially in view of emerging threats to national development, such as climate change, that transcend city boundaries.

### Developing a sustainable business model for FSM – lessons from the LSP

The Lusaka Sanitation Programme comprises an on-site sanitation (OSS) component that aimed to construct 12,000 improved household toilets – a figure that has since been revised down to 5,500 due to construction costs

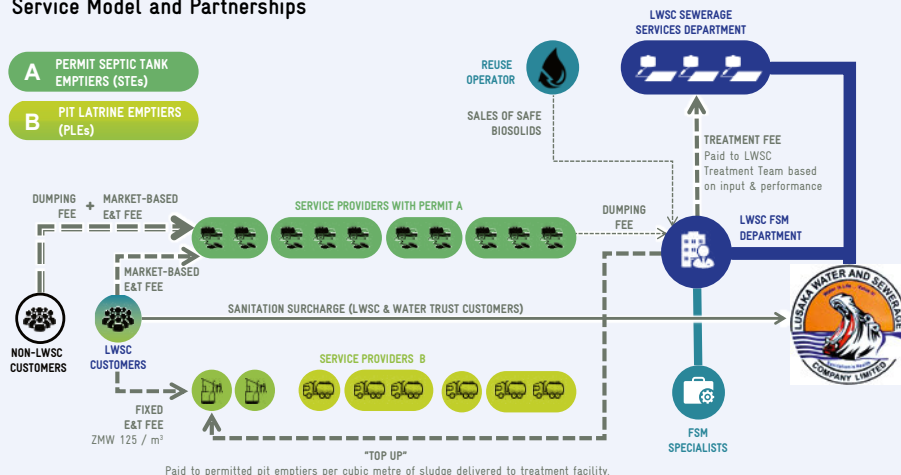
7) Note that the current tariff guideline states that the ‘Sanitation Surcharge is charged at between 2% to 5% of the water bill in order to accumulate funds for investments in rehabilitation or new installations of sewerage infrastructure.’ (emphasis added)

8) NWASCO. 2018. Urban and Peri-Urban Water Supply and Sanitation Sector Report 2018. NWASCO: Lusaka.

9) A willingness to pay study carried out in LSP project areas showed that although the full price for an improved toilet is unaffordable for many residents, there are also many ‘won’t pay’, i.e. residents that could afford but aren’t willing to invest such a high amount in sanitation.

10) The Capacity Development Strategy notes that ‘GRZ has setup the national programmes and how they will be funded. However, the absence of a financing strategy to holistically operationalise the financing components of these programmes, which together with inadequate tariff level setting, results in current financing efforts being unable to mobilise sufficient funding for achieving the WSS goals. Paradoxically, there is, in some cases, limited absorption capacity as well.’ (MLGH, 2015, p.17) performance of the emptying businesses.

## Service Model and Partnerships



### LWSC planned service model for emptying services

exceeding initial assumptions – which were to be connected to formal OSS/FSM treatment systems. Planned interventions to increase FSM infrastructure and formal emptying services were envisaged to benefit close to one million residents of peri-urban areas in Lusaka.<sup>117</sup> To build a successful business model, LWSC needed to assess the market potential for OSS, choose or adapt suitable technologies and design a service model that would fit with the new regulatory framework.

CFS-Lusaka facilitated knowledge exchange visits and information sharing events that helped stakeholders to develop integrated FSM and decentralised water treatment options. Baseline mapping of existing facilities, providers and users then offered LWSC a reliable picture of the existing FSM landscape in peri-urban areas (PUAs), which fed into a comprehensive study of possible business models.<sup>88</sup> Considerations needed to include all elements of the sanitation chain, starting with the construction of OSS facilities as the very basis for a thriving FSM business (i.e. ensuring there would be sufficient demand for services). The model would need to include (i) funding modalities and financing mechanisms for low-income households, (ii) efficient and effective business processes for FSM, (iii) marketing of emptying services to secure customer buy-in and sustainable operations, and (iv) a local supply chain network. The intention was to involve the local private sector in providing transport services, with plans to later extend licensing to

operation and maintenance of treatment facilities.

Low profitability of emptying services had been identified as a key constraint. The takings of 'Water Trusts' emptying teams barely covered costs and there was concern that revenues would struggle to support an effective management structure further along the sanitation chain.<sup>12</sup> Private operators tended to concentrate on serving the upper end of the market, including commercial customers, due to low margins for emptying pit latrines. As noted before, the absence of enforceable construction standards for latrines significantly added to the cost of emptying. Considerable support would be needed to professionalise the formal and informal sector, yet current revenue levels constrained investment in market strengthening activities, such as training, innovation or customer awareness campaigns. LWSC had limited in-house expertise regarding decentralised faecal sludge treatment, and there was considerable uncertainty surrounding cost recovery of faecal sludge treatment plants (FSTPs), though there was scope to maximise value from the treated sludge.

Based on the various assessments and recommendations, LWSC has chosen a business plan starting with a 'light touch' phase. Between 2020 and 2024, the company plans to cooperate with the private sector under a permitting system, before moving on to a more complex franchising model during the next phase. OSS services will be separated

11) Planned investments in 18 professional emptying teams for OSS facilities were projected to reach 50,000 latrines or 900,000 users over the project period.

Two new FSTPs are being built under the LSP, and one will be refurbished. The capacities of these are: 1) Pit latrine sludge = 25m<sup>3</sup> per day with a population equivalent of 81,000, and 2) Septage = 192m<sup>3</sup> with a population equivalent of 373,500. This would mean that 450,000 people would be covered if FSTPs under the LSP are running at full capacity. These capacities are expected to be exceeded in 2025, though these predictions need to be taken with care as it depends heavily on the 88) A 'consultancy for the development of faecal sludge management in Lusaka under the Lusaka Sanitation Programme' was carried out by WSUP Advisory in 2018, which proposed partnership arrangements with the existing OSS market and business plans to help LWSC move towards launching formal FSM services. CFS-Lusaka outputs fed into these business development activities, and CFS-Lusaka advisors were actively involved in quality assuring the consultants' work.

12) Under the Water Trust model, Water Trust employees also operated treatment facilities, so there were no distinct cost centres and mixed revenue streams. Cf. Sanitation Solutions. 2017. Testing of Pit Emptying Technologies – The Gulper in Lusaka, Zambia. Final Report.

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into two business segments: emptying and transportation, and treatment/reuse. Tendering of performance-based FSM contracts.<sup>13</sup> The FSTP design is informed by the two smaller plants in Kanyama and Chazanga – hence a mixture of anaerobic baffled reactors and sludge drying beds. The dried sludge will be used as a soil conditioner for non-edible plants, such as lawns or palms. Contracts have been awarded to six private operators, four private firms and two community based firms.

Managers are aware that moving into the OSS market carries risks, and despite all efforts to estimate costs there will be an element of trial and error before tariffs will be set at the right level. The impact of recent cholera outbreaks has instilled a sense that while financial sustainability is critical to ensure services can be provided, the company is also driven by a social imperative.<sup>14</sup> For the time being, emptying services for pit latrines will be supported through Lusaka Sanitation Programme (LSP) counterpart funding to create incentives for customers to switch to formal services, as illustrated below. Septic tank-emptying will essentially continue as a ‘free market’ service, with fees reflecting the operators’ costs, a substantial proportion of which goes towards fuel. Permitting and enforcement of Zambia Environmental Management Authority (ZEMA) controls will be strengthened.

Tenders for pit-emptying contracts have been essentially for the (undisclosed) ‘top up’ that will be paid by LWSC to the successful bidder on delivery of faecal sludge to the treatment facility. This way, the emptying fee charged to customers can be held the same across the city, irrespec-

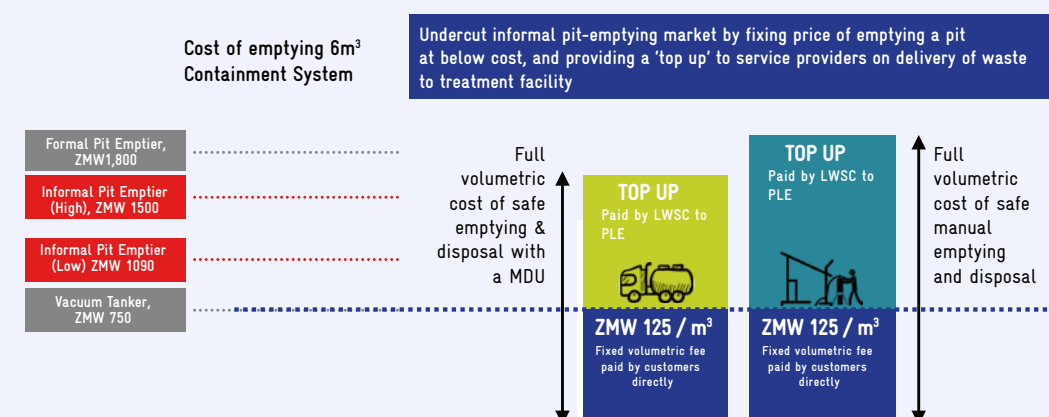
tive of distance to the nearest FSTP. It is currently fixed at a heavily discounted 125 ZMW/m<sup>3</sup> (€7.78) – low enough to undercut informal service providers, but high enough so as to not discourage customers from upgrading pits to septic tanks. NWASCO has endorsed this approach, noting however that from the regulator’s perspective subsidies should preferably be directed towards on-off fees, such as connection charges – or in the case of OSS, toilet construction.

### Funding challenges for sustainable OSS service provision in Lusaka

The initial (funded) contracting period will only cover the first two years. After that, the discount/subsidy will become more difficult to sustain if no further funding becomes available. LWSC is looking to introduce ring-fencing of all sanitation-related revenue to build up its own sanitation fund. This idea will be subject to regulatory approval during the next tariff review, where the company has applied for separate water, sewerage and OSS elements. LWSC is in negotiations with NWASCO over the reinstatement of the sanitation levy to cover at least part of the top up fee, and plans to raise customer contributions for pit-emptying gradually.<sup>15</sup> The FSM unit is also looking to explore marketing of sludge reuse as a potential source of revenue.<sup>16</sup> Ideally, the company would like to move towards scheduled emptying, which would support efficiency and cost effectiveness. For customers, this could spread the cost of mandatory emptying (via a monthly payment), which would have the effect of a more systematic and constant revenue flow for LWSC.

#### Business Plan [2020 – 2024]

The top up has been provided as a temporary subsidy under the World Bank support to the LSP.



13) The World Bank has committed US\$800,000 (€730,000) in grant funding to performance-based contracting for improved FSM services in Lusaka.

14) The strong inclination towards sewerage within the company appears to be giving way to an equally strong commitment to embrace the pioneering role in OSS that has fallen to LWSC, even in the face of the uncertainty that lies ahead. Taking a longer view, it is acknowledged that protecting resources through better sanitation makes business sense even purely from a finance perspective.

15) It is unclear whether emptying tariffs might vary depending on location, or how soon fully cost-reflective charges might be introduced.

16) The analysis by WSUP Advisory suggests that certified biosolids and compost are likely candidates for profitable sales. WSUP Advisory. 2018. FSM Business Model Final Report D-08. Vol.1.

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However, given that only a fraction of the planned toilets has been built under the LSP so far – 330 at the time of writing – the main focus remains on increasing uptake at this end of the service chain.<sup>17</sup> Under the LSP scheme, households contribute US\$213 (€194), approximately one quarter of the actual cost of a toilet facility.<sup>18</sup> LWSC has introduced payment terms in one of the PUAs that allow customers to add a small amount to their water bills as a way of saving towards an improved toilet. These monies are held in a dedicated reserve account until a threshold is reached and construction can start (this also illustrates the unseen costs of OSS, e.g. accounting and social marketing). The whole business model hinges on enough standardised facilities requiring emptying, and initial construction is where the financing gap is likely to become most difficult to bridge. Also, distance to a faecal sludge treatment plant is a decisive cost factor that LWSC is keen to minimise to support the viability of OSS services. However, due to funding (and land) restrictions not all FSTPs thought necessary can be built or upgraded at this point in time, again highlighting the importance of upfront investment.

### Towards sustainable sanitation financing across Zambia

Zambia has experimented with pro-poor financing mechanisms and now needs to focus on rolling out services at scale. The role of the Devolution Trust Fund (DTF) in scaling up access to improved services in peri-urban areas has been well-documented.<sup>19</sup> The Trust Fund gained experience in managing project finance that helped CUs to direct investments towards underserved people. PUAs had previously been neglected not least because of perceived business risks, though they presented many technical, social and operational challenges. Disbursements channelled through the DTF could better accommodate the more complex and time-consuming aspects of working in PUAs. Critically, CUs were offered detailed implementation assistance, such that the DTF became an interface between technical and financial cooperation. While more than a million Zambians were reached with safe water supply, the DTF was wound down before it could make similar inroads into sanitation. Unable to overcome conflicts of interest arising from its

institutional set-up as a basket fund under NWASCO, funding partners discontinued future support. Another basket fund created under the National Urban Water Supply and Sanitation Programme (NUWSSP) was phased out in 2014, due to lack of funding.

Though closure of the DTF leaves less of a gap in terms of the overall volume of investments it brought into the sector, its departure is most keenly felt in terms of the pro-poor momentum and expertise that is in danger of being lost. NWASCO is promoting the idea of a new national financing mechanism to preserve the institutional knowledge and reviewing DTF-developed tools that still hold much promise for serving urban low-income communities.<sup>20</sup> The Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP) and its predecessors have been reviewing possible options for a sustainable sector financing mechanism. Proposals put forward by a UNICEF-funded review<sup>21</sup> are still under consideration.

Given the difficulties encountered by the DTF, the precise institutional arrangements for any future financing mechanism merit careful consideration. There is evident scope to improve the coordination of investment allocations that ultimately flow into the sector through various ministries and government budget lines. This may be another argument in favour of strengthening central oversight by creating a dedicated fund or treasury account, possibly with different financing ‘windows’ that would enable the Ministry of Finance to track all funding flows into the sector. Such ring-fencing could also act as a safeguard, as all disbursements could be audited to ensure that resources are optimally utilised. In view of the generally difficult fiscal situation in Zambia,<sup>22</sup> external funding will remain an important source of financing contributions, and a financing mechanism would seek to minimise any risks and governance issues that could undermine confidence in the sector.<sup>23</sup> While any new arrangements will need to take into consideration taxes, tariffs and transfers from funding partners, clear monitoring and evaluation as well as transparency and accountability would be desirable on both sides.

17) The comment ‘We’ll get there for reuse, but how am I going to talk about value at the end of the chain, when I haven’t got the toilet?’ sums up the predicament.

18) Rather than receiving a direct subsidy payment, toilets are offered to households at a heavy discount.

19) GIZ, 2015. Closing the Last Mile for Millions. GIZ: Bonn.

20) NWASCO. 2018. Urban and Peri-Urban Water Supply and Sanitation Sector Report 2018. NWASCO: Lusaka.

21) Findings and recommendations of the review drew on feedback from a wide range of sector partners and stakeholders. GIZ advisors were able to share some insights derived from long standing support to the Kenyan Water Services Trust Fund.

22) It is widely acknowledged that under current conditions the Government of Zambia will be unable to meet its minimum 25% contribution into any financing mechanism.

23) GIZ’s ‘Access Study’ notes that ‘[i]nvestment allocations are made through government structures and are subject to political influence. But, the DTF developed clear and effective mechanisms for pro-poor and competitive investment allocation for a small share of the total investments. The DTF is no longer active.’

Periods of institutional uncertainty (for instance, when CUs temporarily operated without a functioning Board) have also affected funding flows in recent years. Finally, there is the question of absorption capacity, which needs to be addressed. Eberhard, R. 2019. Access to Water and Sanitation in Sub-Saharan Africa. GIZ: Eschborn.

## Lessons learnt: insights and recommendations

- CFS-Lusaka focused on supporting capacity development as an indirect means of improving financing; the aim was to create a ‘complete package’ that provides tangible evidence how LWSC can feasibly enter the OSS market and manage (or oversee the management of) the complete service chain. Having a proven concept for FSM in hand puts the utility in a better position to persuade potential funders of the merit of on-site options as means of accelerating access to safely managed sanitation.
  - Investing time and resources in understanding the market for OSS services not only provides the basis for developing a successful and sustainable business model. An OSS customer service database can also facilitate payments and improve collections, for instance by offering different payment terms more suited to a customer’s circumstances.
  - A viable business model needs to be complemented with accountability mechanisms, for regulatory purposes as well as to reassure external funding partners. Ring-fencing of all sanitation-related revenue is a good start.
  - The FSM business model relies on subsidies to create a solid customer base for emptying and treatment services. To become sustainable, guaranteed funding streams need to be accessible, ideally without over-reliance on donors. Government and utilities should collect more data on the actual beneficiaries of subsidy schemes; development agencies should strengthen the capacity of service providers to design subsidies that reach those who need them first.<sup>24</sup>
  - The self-financing potential of the sanitation sub-sector has not yet been fully explored, let alone exploited.
- There is good reason to believe that tariffs can be raised and all customers should pay into a sanitation fund via a sanitation surcharge on bills. LWSC would now be able to demonstrate the impact of sanitation expenditures, which goes well beyond benefiting individuals in their own homes.
- Even as priorities and commitments are changing, there are still some strongly held preferences for sewerage connections as the ultimate industry standard. Even in the flagship LSP, on-site sanitation has been allocated only 10% of the overall programme budget, which is relatively small, reflecting slow change in donor inclination towards large-scale capital investment projects.
  - Scaling up access to sanitation and reaching Zambia’s national targets for universal service provision requires a comprehensive sanitation concept and a national funding and financing mechanism. Investments can then be allocated and monitored according to agreed sector priorities. Funding partners could then become better aligned behind a national strategy.
  - A national financing mechanism can be an effective means of ensuring complementarity of funding contributions and mutual accountability of government and development partners. It should consider all ‘three Ts’: tariffs, taxes and transfers – for sustainability reasons preferably in that order.
  - Pro-poor basket funds have a proven track record of increasing sustainable access to water and sanitation in low-income areas. Zambia is in the fortunate position to be able to draw on a wealth of institutional knowledge that can be integrated into a national financing mechanism to support scaling up of sanitation and replicate the success of the water kiosk model for sanitation.

24) Mballo, D. and Rossmann, R. 2019. Sharing GIZ’s experience with accelerating access to sanitation through household toilet subsidies.

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