

FINANCING URBAN SANITATION IN AFRICA



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A ROLE FOR SUSTAINABLE
INFRASTRUCTURE FINANCE
AND INNOVATION

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EXECUTIVE SUMMARY

In May 2015, African Ministers responsible for sanitation and hygiene adopted the Ngor Declaration on Sanitation and Hygiene, undertaking to achieve universal access to adequate and equitable sanitation and hygiene services, and an end to open defaecation by 2030. Unfortunately, the current reality is far removed from this, with large areas of the continent, especially Central and Eastern Africa, struggling to provide adequate sanitation services to more than half of their urban population.

Of all urban services, sanitation is notoriously difficult to fund and finance in African cities. Whereas most urban dwellers aspire to have flush toilets and access to sewers, the majority of urban Africa does not have this privilege. A majority rely on on-site sanitation comprising latrines and septic tanks or have no access to adequate sanitation. A significant lack of data in tracking sanitation progress in African countries makes it difficult to determine sanitation situations.

Section 2 of this paper provides context to understanding urban sanitation. While the number of African people with adequate sanitation is on the rise, this progress is not keeping pace with urbanisation trends. Small and medium towns tend to have worse coverage than larger cities, as well as more challenging institutional contexts. In larger cities, the spatial, societal and political contexts in which informal settlements flourish pose specific challenges to a service that is extremely sensitive to developments in each. Sanitation is positioned as a subset of a broader sector, known in development circles as the water, sanitation and hygiene sector. Despite institutionally being an appendage of water institutions, sanitation is a cross-cutting issue spanning across areas of public health, education, social welfare, urban planning and the environment, and an issue in gender-related matters. Recognising that sewerage, being the aspiration of many, is not always appropriate, the goals of the United Nations for sanitation only refer to “safely managed sanitation” (United Nations, 2017:6). To achieve this requires not only access to an acceptable toilet or other sanitation facility, but also that the waste is disposed of or recycled safely. The advent of the Sustainable Development Goals of the United Nations in 2015 emphasises how sanitation chains could be developed to achieve this, stressing the importance of a systems approach and the validity of a diverse range of technological options.

In Africa, estimates suggest that far more than half of the human waste generated in cities reach the environment untreated. In a recent report by the World Resources Institute, 15 cities across the Global South were under study, including five cities in Africa. This suggests that since 2019, more than 50% of urban residents in these cities lacked access to safely managed sanitation (Satterthwaite et al., 2019). The toll this imposes is significant, with the African Union agreeing that “poor sanitation discourages investment and economic development, undermines tourism, and damages the natural environment and the water resources that support human life” (AMCOW, 2021:3).

Section 3 explores how this plays out across the sanitation chain. In sub-Saharan Africa, 65%-100% of sanitation access in urban areas is provided through on-site technologies, rather than through large-scale networked systems. The service chain for sanitation can be complicated, particularly when viewed through a financing lens. In contrast to sewerage networks, which are generally provided by water and sanitation utility companies, large parts of the off-site economy are often the preserve of informal providers.

In recent years, hybrid approaches to providing sanitation have increasingly become the recognised way of conducting business, whether by multinational donors or international non-governmental organisations. In 2021, the African Union officially adopted an approach called City-Wide Inclusive Sanitation, adding another approach to this list. The new paradigm is based on the recognition that the traditional, formal means of providing sanitation, in other words, sewers and wastewater treatment plants, is not reaching the majority of urban dwellers in Africa. City-Wide Inclusive Sanitation is, therefore, aimed at combining centralised networked infrastructure with approaches that embrace and transform existing, often informal, decentralised approaches to providing sanitation.

In doing so, authorities responsible for sanitation need to support various components of the sanitation value chain, spanning the capture, collection and containment, emptying and transport, and treatment and reuse of waste. This means integrating specialised pit-emptying services alongside utility provision approaches to wastewater treatment and sewerage provision. It means addressing many urban latrines being the preserve of informal emptiers or direct draining to the environment. It further means balancing incentives and sanctions in order to see more waste treated adequately before being released into the urban environment. As urban populations grow and surface waters become more polluted, with the challenge of groundwater contamination becoming more troublesome. As an example, groundwater in most large African cities, for example, Dakar, Abidjan, Lomé, Lagos and Dar es Salaam, is contaminated with human waste and is highly polluted.

Section 4 of this paper presents the challenge of financing sustainable sanitation. By exploring three diverse entry points, insights into the broader financing situation are possible. The starting point is one of a disabling environment, exacerbated by fragmented responsibilities and unclear opportunities. This makes financing urban sanitation more complex than financing water supply, despite the economic and social returns of doing so being estimated to be more than double (Hutton, 2013). Across Africa, households fund most sanitation expenditure. In poorer African countries, donor commitments cover a significant minority. Unfortunately, subsidies into the sector are overwhelmingly captured by the better-off, with findings in a recent study suggesting a mere 6% of these reaching the poorest quintile (Andres et al., 2019).

One approach that is gaining traction is to use microfinance, revolving funds and similar financial mechanisms to support households in order for them to deal with the full costs of providing safely managed sanitation. Left to their own devices, households are reluctant to cover the costs of treatment and safe disposal, leading to corners being cut and the environment suffering. Carefully designed programmes to address this problem, as initiated in Ghana, Vietnam and Bolivia, can support the protection of the public well without crowding out private investment or dissuading household expenditure. One of the primary challenges of sanitation is to increase demand, whether within communities or among local politicians. Investing in shared facilities can spur such demand and support broader community initiatives on sanitation and hygiene, as has been shown in Mozambique and Ethiopia, among other countries. Such facilities can support underserved communities to move away from open defaecation and provide a valuable lifeline to those who do not have access at household level.

Traditional wastewater treatment plants face a range of challenges across urban Africa with regards to treating waste. A lack of capacity to run systems or source spare parts is often problematic. Small-scale decentralised systems for treating wastewater can overcome a number of these challenges, providing a “viable alternative to conventional systems for contexts such as large residential buildings, compounds, peri-urban areas, communities and small rural settlements” (Reymond et al., 2020:2). Such systems can offer an important point of difference for would-be financiers, for instance, the ability to work through one or two national suppliers, rather than dealing with a fragmented local government context. In lessons learnt from Asia, successful scaling up entails more than replicating a large number of discrete projects; it also requires attention to management and governance arrangements.

In terms of policy direction, which is addressed in the final section of this paper, guidance is offered on how and why local political will should be built around sanitation improvements, especially for poor urban settlements. A case in point concerns building a strong business case, which is notably easier when not only the various co-benefits can be identified, but also if they can be quantified and monetised, for which the environmental sector offers several global lessons. Integrating sanitation in broader initiatives, such as slum upgrading, can also be helpful, while localised investment in shared sanitation can promote a virtuous circle. Circular economy approaches, while attention-grabbing, likely need additional support to become scalable. They also need to be adapted to the context of small- and medium-sized settlements where the bulk of African urban growth is forecast. These smaller conurbations may present specific challenges, tied to institutional capacity or mandates, for instance, but also new opportunities partly linked to local political dynamics and spatial development patterns.

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ABBREVIATIONS AND ACRONYMS

AfDB:	African Development Bank
AU:	African Union
CBSA:	Container-Based Sanitation Alliance
COP26:	26th Session of the Conference of the Parties
CWIS:	City-Wide Inclusive Sanitation
DAWASA:	Dar es Salaam Water and Sewerage Authority
DAWASCO:	Dar es Salaam Water and Sewerage Corporation
ESAWAS:	East and South African Water and Sanitation Regulators Association
FSM:	Faecal sludge management
GDP:	Gross domestic product
INGO:	International non-governmental organisation
JMP:	Joint Monitoring Programme
MOU:	Memorandum of Understanding
NGO:	Non-governmental organisation
ODI:	Overseas Development Institute
OECD:	Organisation for Economic Cooperation and Development
PPP:	Public-private partnership
SDG:	Sustainable Development Goal
SSA:	Sub-Saharan Africa
TWP:	Thinking and working politically
UN:	United Nations
UNICEF:	United Nations Children's Fund
WASH:	Water, sanitation and hygiene
WHO:	World Health Organisation

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1 INTRODUCTION

Of all the urban services, sanitation is notoriously difficult to fund and finance in African cities. Partly as a consequence of this challenge, at present, the minority of urban dwellers in African cities benefit from sewerage systems and flush toilets, with the majority relying on what is called on-site sanitation, in other words, latrines and septic tanks, sharing sanitation facilities with neighbours or other tenants in the same building, or having no access to sanitation. A significant lack of data in tracking sanitation progress in African countries makes it difficult to determine sanitation situations.

This dire situation is in stark contrast to stated policy aspirations and economic logic. Most countries on the continent have signed up to the SDGs of the UN. These goals call for countries to aim for universal access to sanitation by 2030. The goals also refer to safely managed sanitation through sewerage systems or safe on-site approaches. Sanitation is only safely managed once waste has been disposed of or recycled in ways that do not cause harm to people and the environment. This is far from commonplace in Africa, with the vast majority of human waste produced by urban dwellers leaching untreated into the environment and polluting watercourses and underground reserves. Among other externalities, this pollution has knock-on effects for the cost of treating water for consumption and has a negative impact on ecosystems. In 2013, the WHO estimated that every US\$1 invested in sanitation brought corresponding benefits worth US\$5.5 – more than double that of narrower water supply investments (Hutton, 2013).

In most cases, sanitation projects are not intrinsically financially profitable. To promote financial equilibrium, the right institutional framework must be found and financing mobilized (local communities, State grants, grants from private operators) while creating an economic model that makes it possible to improve direct and indirect benefits in the short, medium, and long terms (AfDB, 2015:29).

Despite its critical importance, sanitation has not attracted significant investment from the private sector. Traditionally, the vast majority of funding to the sector is public funding. This funding, whether from national governments or development aid, has overwhelmingly been channelled to expanding or maintaining networked sewer systems despite poor results in terms of households being connected to sewers and waste being treated by them. The funds being directed into sewer systems sees them expanding slowly across the continent, albeit not keeping pace with urban population growth. Sewers are the preserve of a water utility or municipality that often benefits from State guarantees. Conversely, the removal and transport of waste from septic tanks and latrines, upon which most urban dwellers across the continent rely, is dominated by the informal private sector, is more difficult to engage and finance. Sewerage is not appropriate in all settings, which is partly dictated by geographical location, spatial patterns of urban growth and limitations on the water resource, which, together with affordability issues, present consistent challenges in the sustainability of providing sanitation via a centralised system. Decentralised approaches are, therefore, frequently touted as a viable alternative, even though they have their own challenges, particularly relating to breakdowns between different parts of the system and overlapping or unclear mandates in public policy or institutional responsibilities.

Given that neither centralised, nor decentralised approaches provide all the answers, particularly when a city or a town is considered as a whole, key players in the sector are coalescing around an alternative investment future; a hybrid approach that balances centralised approaches with decentralised investments and technologies. Investors and policymakers are being encouraged to rebalance their priorities, putting significant emphasis on non-sewered approaches and technologies despite the risks and complexities. The goal is that all human waste streams, however collected, should be transported, treated and disposed of safely. Investments are, therefore, needed to ensure that alternative methods of delivery are undertaken in ways that are more effective, affordable and sustainable. Whether these investments should be intended as interim measures while large networked systems can be developed, or as long-term alternatives to such approaches, remains debated.

Nevertheless, investment in large sewerage systems and alternative value chains and technologies provide scope for exploring more sustainable approaches. This is particularly true owing to the interconnected nature of sanitation with other urban systems, most importantly water systems that become polluted by poor waste treatment or improper disposal and strained by the water demands of flushing toilets.

2 UNDERSTANDING URBAN SANITATION

This section presents the impact that rapid urbanisation in Africa is having on sanitation, especially the manner in which there is a struggle in towns and cities to expand sanitation services in order to keep up. It not only explores where this growth is happening, but how it links to the requirements to not only safely manage human waste via sanitation services, but the challenges in providing these services in a holistic and sustainable fashion.

2.1 Importance of informal settlements and small towns

The urban population in Africa is estimated at roughly 567 million people. By 2050, Africa's cities will be home to an additional 950 million people, which is almost a tripling in the next 30 years. In cities in low- and middle-income countries, this influx has been "accompanied by the rapid growth of highly vulnerable urban communities living in informal settlements, many of which are on land at high risk from extreme weather" (IPCC, 2014:538).

More than many other services, such as transport, energy and health care, the scope for sanitation solutions is greatly shaped by spatial living patterns, slopes and type of soil. The density of dwellings is also an important factor, given the space needed for sanitation infrastructure, which creates problems in many poor urban areas where sanitation infrastructure is often retrofitted after settlements have developed and densified. For these two reasons, where urban growth occurs and how this growth is distributed spatially between and within urban areas is important.

Much of this growth is already taking place in small- and medium-sized towns; a share forecast to increase further (OECD/SWAC, 2020). This pattern has significant implications for the delivery of sustainable sanitation. Small and medium towns are much less likely to have a dedicated water and sanitation utility or a municipal sanitation department. Their tax base and municipal budget, on a per-capita basis, tend to be smaller than in larger conurbations with direct implications regarding how investments in infrastructure can occur.

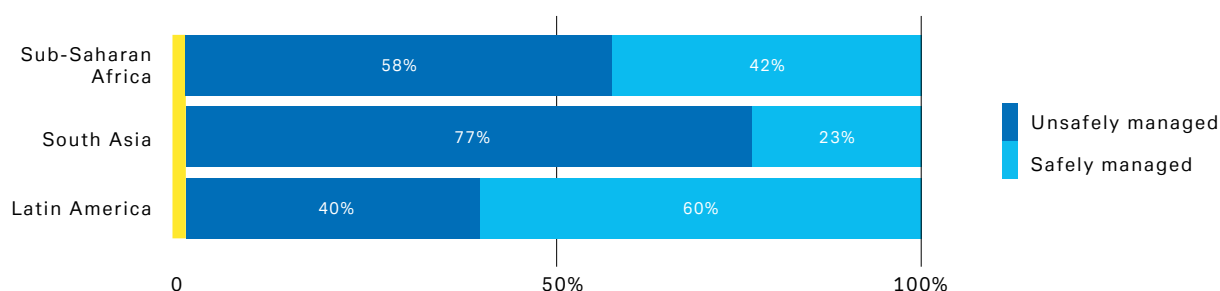
In larger cities, challenges regarding sanitation are faced mostly in informal settlements, which usually bear the brunt of internal migration. Informal settlements can pose significant technical, legal and social challenges to the expansion of sewerage networks, which is the historically preferred form of sanitation for governments and investors. Many small or medium towns lack waste treatment facilities, while the siting of informal settlements and the nature of the waste they generate can make it difficult to transfer waste out of the settlements to any treatment facilities nearby.

2.2 Safely managing sanitation waste

In Africa, more than half of the human waste collected by sewers reach the environment untreated (WWAP, UNESCO, 2017). The figures for on-site sanitation, where waste is stored in septic tanks or latrines first, are worse. This has serious impacts, with the AU being in agreement that "poor sanitation discourages investment and economic development, undermines tourism, and damages the natural environment and the water resources that support human life" (AMCOW, 2021:3). The goals of the UN for sanitation, therefore, refer to safely managed sanitation, which requires not only access to an acceptable toilet or other sanitation facility, but that the waste be disposed of or recycled safely. It is important to note that sewerage is not a requirement.

Unfortunately, there are no robust statistics for sanitation provision. In a recent report by the World Resources Institute, 15 cities across the Global South were studied, including five in Africa. It was found that, since 2019, more than 50% of urban residents in these cities lacked access to safely managed sanitation (Satterthwaite et al., 2019).

FIGURE 1: PROPORTION OF SANITATION UNSAFELY VERSUS SAFELY MANAGED ACROSS 15 REPRESENTATIVE CITIES IN THE GLOBAL SOUTH (SATTERTHWAITE ET AL., 2019)



2.3 Defining sustainable sanitation

Sustainable sanitation has been defined as a situation where “systems need to be economically and socially acceptable, technically and institutionally appropriate and protect the environment and natural resources” (SEI, 2016:1).¹ A sustainability issue frequently raised by those who favour this definition is the use of potable water to flush toilets. The availability of water varies widely across African cities, but in more arid countries, the availability of water in sufficient quantities to enable waterborne sewerage and the impact on the environment to provide it, is frequently called into question.² An important aspect of this definition is invoked by the suggestion that systems must be economically acceptable, which partly concerns whether the systems in place are financially viable; something that has proven to be a challenge for many infrastructure projects on the continent despite efforts to add sanitation charges to water bills.

Institutionally, sanitation is most often positioned within a broader sector, known in development circles as the WASH sector. This is the default by which the sector is governed and regulated, as well as how infrastructure is financed. Despite being institutionally an appendage of water institutions, sanitation is a cross-cutting issue in areas of public health, education, social welfare, urban planning and the environment, and issues related to gender. In 2010, sanitation was also recognised as a basic human right.

Lastly, an important part of the definition relates to the term ‘institutionally appropriate’. Institutions play a role in delivering urban sanitation services across the continent, which is diverse, particularly when the important role played by the informal private sector is included. Dealing with the funding and financing of sanitation is not always straightforward, particularly when the entire sanitation chain is taken into consideration, which will now be explored in more detail.

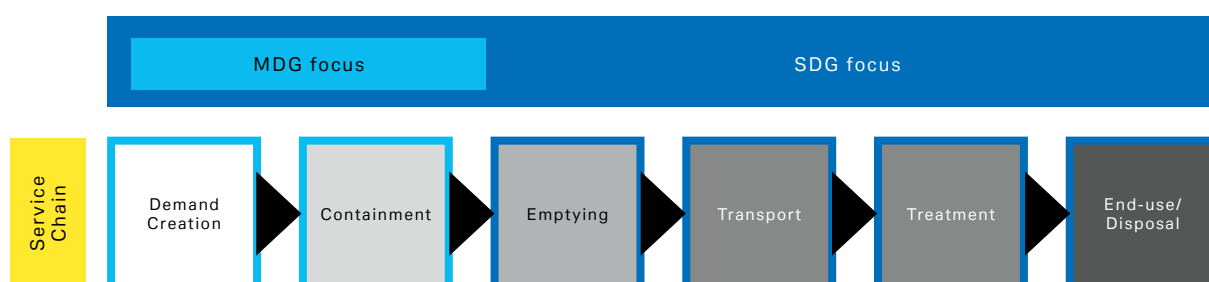
¹ In the sanitation sector, the term ‘sustainable sanitation’ has a particular connotation and is strongly aligned with the green movement in the Scandinavian countries and in Germany. Even though not all sector practitioners are fully aligned with the goals of this movement, the definition they advance for ‘sustainable sanitation’ has some merit.

² A situation which will worsen if full flush toilets and sewerage provision were to expand to levels typical of OECD countries; hence, the interest in using greywater (water already used once at household level) in order to flush toilets and move waste.

3 SANITATION CONFIGURATIONS IN AFRICAN CITIES

The year 2015 saw an important shift in how sanitation was conceptualised, and progress measured in countries in the development sector. Prior to 2015, the focus was on household access, specifically whether households had a properly constructed toilet. Since then, the advent of the SDGs has assisted in shifting the focus to the entire sanitation chain.³ This reframes the sanitation issue, emphasising a systems approach and the diversity of technological options that can be used to address the challenge of sustainable delivery.

FIGURE 2: STYLISTED VERSION OF THE SANITATION CHAIN (WORLD BANK, 2016)



The service chain for sanitation can be complicated. Not only do technologies vary, but the nature of the customer relationship tends to be different across the different links in the chain, as does the means of accessing and paying for the service. For instance, sewerage charges are applied monthly, and the service is automatically provided in formal settings alongside the water supply. In contrast, those needing to have full latrines emptied are more likely to rely on informal emptying services, with a once-off payment being charged every year or two.

The way each link is financed is also highly diverse. A range of sanitation providers across the continent deals with different aspects of the chain in each city, with a range of actors intervening at different parts of the sanitation chain. Generally, [utility companies](#) or authorities manage sewers, partly as they rely on the water supplied by those utilities to flush them and partly as the nature of the infrastructure mirrors that of the water distribution system. Even if sewers exist, recalling that in most towns they do not, [municipalities](#) often retain certain responsibilities for sanitation, relating to all aspects that do not involve sewers. This can include providing an emptying service for septic tanks, although this is restricted to institutional customers at times. Local bylaws may govern which sanitation infrastructure is required in rented accommodation or in retail or industrial facilities.

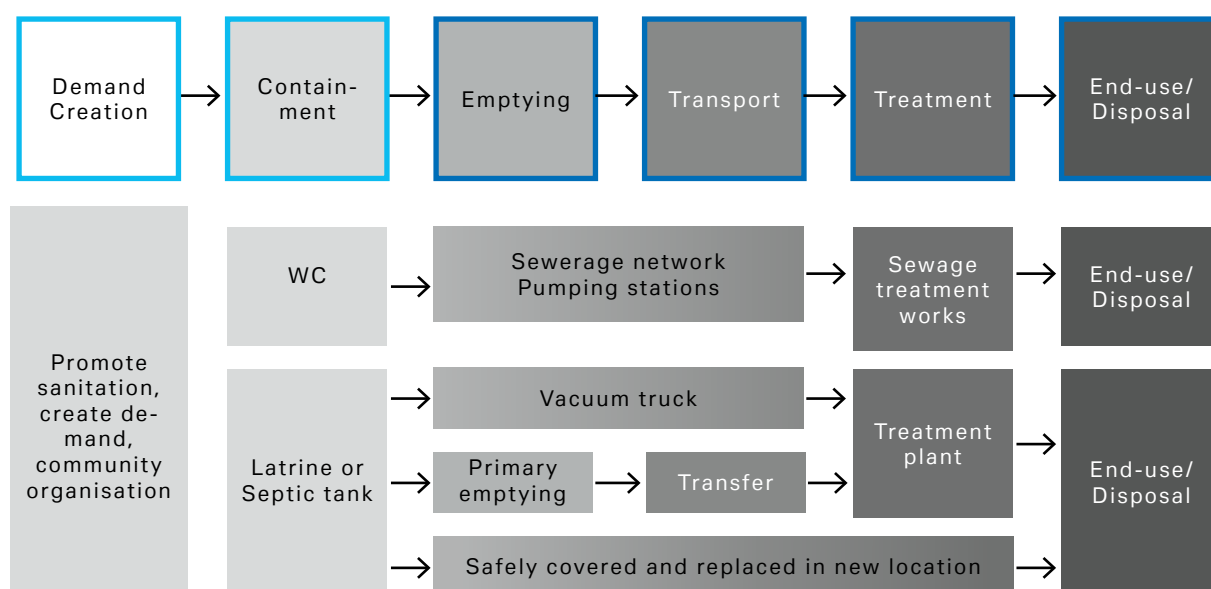
The [private sector](#) plays a major role in sanitation, particularly in building toilets, septic tanks and latrines. Regarding emptying on-site sanitation, the private sector is also in the ascendancy compared to municipal or utility provision, although providers are often [informal](#). This is particularly the case in manual emptying, with those emptying with vehicles requiring more capital and more likely being registered businesses facing

³ Indicator 6.2.1 of the SDGs is the "Percentage of population using safely managed sanitation services, including a handwashing facility with soap and water" (UNICEF/WHO, 2017:27) with the rider that a safely managed sanitation facility is one "where excreta are disposed of in situ or transported and treated off-site" (ibid). In Target 6.3, the following is stated: "By 2030, improve water quality by reducing pollution, eliminating dumping and minimising release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally" (UNICEF/WHO, 2017:7). For more information, see <https://sdg-tracker.org/water-and-sanitation>.

a type of regulation. Privately run wastewater treatment is much rarer, although it exists in several countries, either via contract with the municipality or utility, or more often in relation to industrial or residential compounds. Manufacturers of sanitation equipment are also important players.

NGOs are more significant players in respect to informal settlements, occasionally supporting households to access sanitation, building shared sanitation facilities or supporting the development of small businesses. Their role often overlaps into hygiene education and occasionally their interest emanates from broader programmes, with slum upgrading being one such example. An important role for NGOs also lies in demand creation and sanitation or hygiene promotion. Lastly, households are not only customers, but, where accommodation is rented, they can act as providers of sanitation. Many poorer residents rent their accommodation and there is a complex relationship between access to adequate sanitation infrastructure by tenants and rental costs, with one tending to deliver a low equilibrium solution to poor sanitation provision.

FIGURE 3: DIVERSITY OF SANITATION SOLUTIONS AT DIFFERENT PARTS OF THE SANITATION CHAIN (ADAPTED FROM: TREMOLET ET AL., 2016)



From a financing perspective, a key difference is in the nature of the institution that provides the service. Sewers are run by a water utility, if there is one, or the municipality in the absence of one. If sewers are absent, with waste still needing to be transported, the providers are more likely to be in the informal sector, with the exception of a number of municipally run vacuum trucks. Informal markets are important, not only for constructing latrines, but for emptying them. Manual emptiers tend to occupy the lower rungs of the social ladder, with emptying often being done at night and social stigma being commonplace.

At the other end of the spectrum lies sewerage and the provision of a fully reticulated system, as found in European cities. Such systems are widespread across Africa, but in very few cities more than 80% of the population is covered. In the majority of African countries, significant sewerage networks are limited to the largest cities. A constraint on their expansion is the relatively high cost of sewerage approaches and the poor record of sewerage investment on the continent.

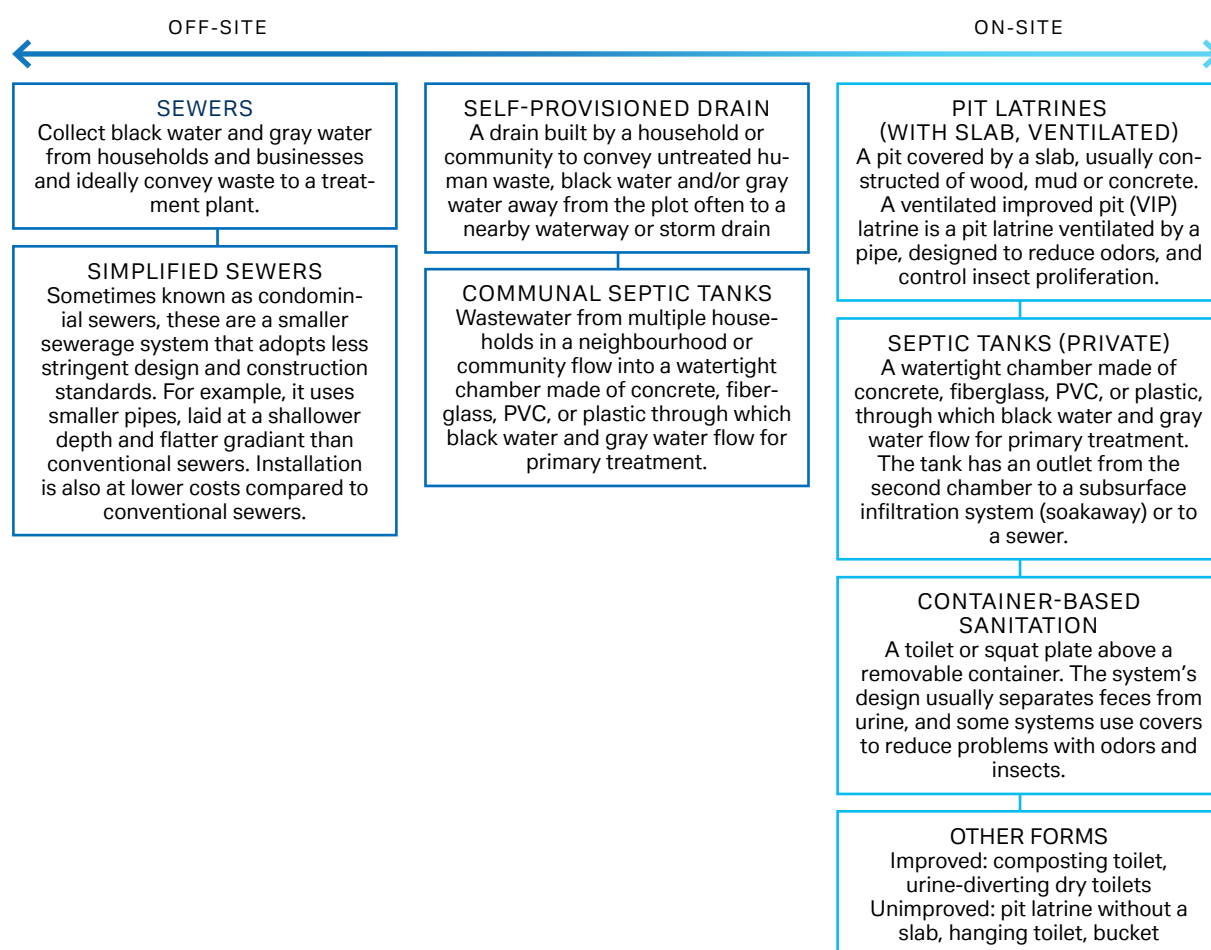
CITY-WIDE INCLUSIVE SANITATION

The prevailing paradigm for sanitation investment and policy formulation is known as CWIS. Promulgated as recently as 2016, it has since been adopted by influential organisations such as the World Bank, the AfDB, the AU and the Bill & Melinda Gates Foundation. CWIS is based on the recognition that the traditional, formal means of providing sanitation, in other words, sewers and wastewater treatment plants, is not reaching the majority of urban dwellers not only in Africa, but also in Asia and large parts of the Global South.

The response is to adopt a more inclusive approach, namely a hybrid approach that combines a centralised networked infrastructure with one that embraces and transforms existing informal markets for sanitation, namely on-site sanitation and faecal sludge management. CWIS requires more than a significant shift in business as usual; it is arguably a radical departure from how the water and sanitation sector has organised itself over many years. Hence a ground-breaking article setting out the approach followed by the World Bank was titled 'Citywide Inclusive Sanitation – Business as Unusual: Shifting the Paradigm Shift by Shifting Minds' (Gambrill et al., 2020).⁴

In order to appreciate the opportunities and challenges regarding financing the improvement of sanitation, it is important to discuss the various components of the sanitation value chain.

FIGURE 4: COMMON EXAMPLES OF CAPTURE, COLLECTION AND CONTAINMENT
(AMENDED FROM SATTERTHWAITE ET AL., 2019)



⁴ Most water engineers study sewerage in their academic curricula, with the suggestion being that FSM and related on-site sanitation approaches take equal prominence.

3.1 Capture, collection and containment

This is the first step in the sanitation value chain, where people first interface with sanitation systems. Across the majority of African countries, flush toilets are preferred in households, whether these be fully flush or pour-flush toilets. Nevertheless, more people have latrines than any other sort of system, which are more often than not dry, with water not being poured in after each use. Latrines and septic tanks constitute on-site sanitation in that the waste is not removed directly. Sewerage is considered off-site sanitation, while simplified sewers are a variant of the type most often encountered in OECD countries. The expectation in most urban areas is for households to self-invest in toilets or latrines.

3.2 Emptying and transport

Containment is not a permanent state in that on-site sanitation requires a type of emptying once the receptacle fills up. How often this is required is a culmination of factors, including the number of people using it, the volume of the container, whether or not the receptacle is lined, whether flushing is used and the soil conditions, among other factors. Septic tanks are often emptied with the use of specialised vehicles, whereas latrines feed into pits that are more often emptied manually or via managed flooding. Septic tanks and latrines may provide partial treatment of the waste in-situ, but will still need emptying, albeit only after several years in various cases (Eales, 2005).

The associated cost is usually met by the householder. Regarding tenants, it may either be their responsibility or the cost falls to the landlord. Most households in African cities cannot afford the full cost of formal safe emptying services. Moreover, formal emptying services may not be able to reach their dwellings or administrative hurdles may restrict access. In a number of cities, for example, in Addis Ababa, vacuum trucks are subsidised, but in many they are not. Cartels are relatively commonplace, hiking up prices, exacerbating issues of affordability and often bypassing regulations around safe disposal. Manual emptying often does not lead to formal treatment and disposal.

3.3 Treatment, disposal and reuse

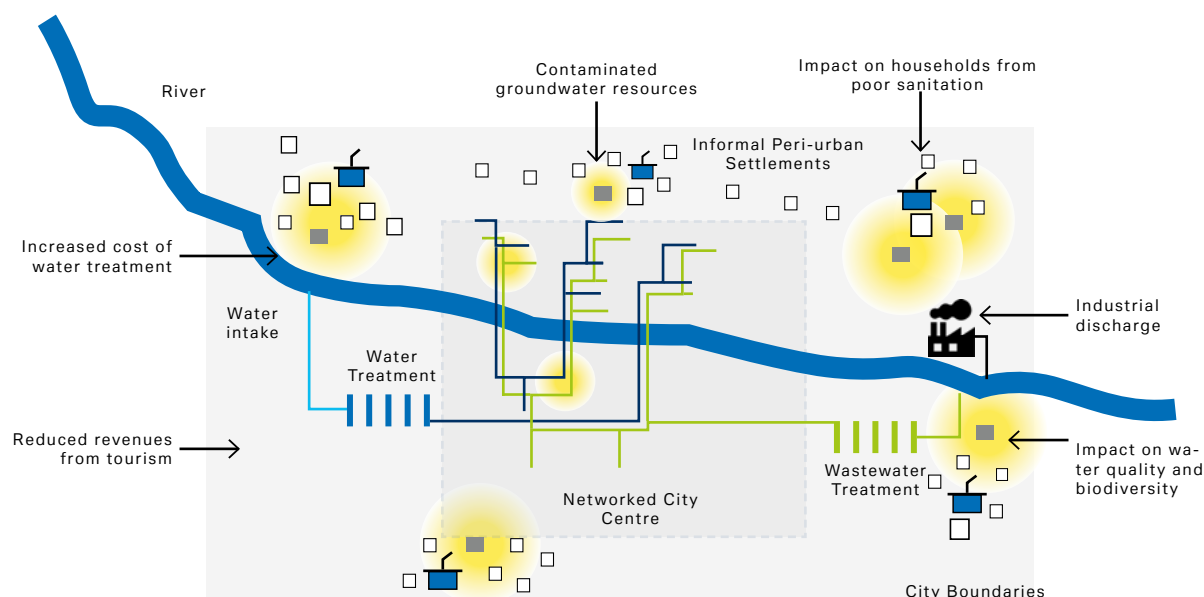
Not all major cities have treatment facilities, with these being rarer in small or medium towns. As such, much of the human waste collected by sewers in the Global South still finds its way into the environment without adequate treatment.⁵ Even less of the waste collected from on-site sanitation is safely managed to the end of the cycle, partially due to wastewater treatment plants often not being designed to accept waste from latrines.

[U]rban water sources are being polluted by inadequate sanitation, poor wastewater management and human activities. The groundwater in most large African cities (e.g. Dakar, Abidjan, Lomé, Lagos, and Dar es Salaam) is contaminated and polluted mainly by the discharge of untreated wastewater and unregulated industrial pollution (AfDB, 2015:8).

This is a crucial challenge for public authorities as the negative impacts of inadequate sanitation on health are important and are wider-ranging than many realise (Schmidt, 2014). Moreover, a knock-on effect impacts the cost of water treatment for utilities in African cities.

⁵ Not only are sewers failing to close the sanitation gap, but approximately half of all sewerage is not getting treated - WRI found a 50/50 split in the 15 locations they studied in depth in 2019. In a recent article in a South African newspaper titled the Daily Maverick, it was suggested that more than half of all South Africa's sewerage treatment works are failing (Kretzmann et al., 2021).

FIGURE 5: COSTS AND CONSEQUENCES OF POOR SANITATION
(ADAPTED FROM: TREMOLET ET AL., 2016)



Although there are significant externalities in relation to wastewater treatment, as depicted in Figure 5 above, the cost of treatment is usually directed toward users of the system. Sewerage charges are meant to cover the costs of treatment, while providers using vehicles to deposit waste at treatment facilities are usually charged a fee. Unfortunately, the costs of properly treating waste very often exceed the revenues. If a utility is managing the system, there may be potential to cross-subsidise with revenues from water sales, which is not always possible. Importantly, households relying on on-site sanitation are often reluctant to pay for the full costs of the sanitation chain, with adequate treatment not being a priority. Hence, providers may charge fees that are only feasible if the waste is dumped illegally, or treatment otherwise avoided.

4 OPPORTUNITIES AND CHALLENGES IN FINANCING SUSTAINABLE SANITATION

As detailed above, the sanitation service chain is complex, with interconnected services being provided along the chain and a multitude of actors and funding sources involved in the chain. As such, the enabling context for financing is a disabling environment, exacerbated by fragmented responsibilities for service delivery and weak operators, fragmented responsibilities for sector supervision and a lack of clarity on what funds can be used for and how financing can be channelled.

Moreover, sanitation delivery is dogged by insufficient financing being allocated for the sector. This partially stems from sanitation being under-prioritised by politicians, municipalities and even communities; of which an important factor is the taboo element of human waste. The socio-economic impact of poor sanitation is often underestimated, with it being difficult to charge for a service with low or unexpressed demand. Financing urban sanitation, therefore, tends to be more complex than financing water supply, despite the socio-economic returns being estimated as more than double (Hutton, 2013).

4.1 Sanitation financing gap

To achieve basic sanitation across Sub-Saharan Africa would require, on average, 1.1 percent of GDP and for safe sanitation, 2.5%—around 70% of these costs are estimated to be for urban areas. Even where the capital costs to be forthcoming – circa US\$10 billion per year - these would generate operation and maintenance costs almost as high – US\$7.2 billion per year (UNICEF/WHO, 2020).

UNICEF and the World Bank have estimated the regional costs of achieving basic and safely managed sanitation as a proportion of gross regional product as the highest in SSA compared to all other regions on the globe (UNICEF/WHO, 2020).⁶ However, detailed data on sanitation spending by governments and external donors are in short supply. In reporting, countries often do not separate sanitation spending from broader funding on WASH. In 2019, globally, 60 countries provided information on government budgets for WASH, yet only 30 were able to provide information on their government budget for sanitation, with less than 10 of them in Africa. Of the countries that provided reports, the average sanitation budget per capita was US\$1.43, less than one-quarter of the overall WASH budget per capita. A funding gap of nearly 75% was declared for urban sanitation. This gap is likely to be larger in SSA.

Globally, donors have begun to increase their sanitation portfolios relative to their water investments. It is estimated that support for sanitation has increased since 2010, and in 2018, it was more than US\$1 billion, approximately half of the support reported for drinking water.⁷ This external money is estimated to provide, on average, 42% of non-household expenditures for low-income countries.

Collectively, these statistics show that 1) more money is allocated to urban water supply than to sanitation, despite sanitation coverage lagging compared to that of water, and it costs more; 2) regarding current trends, government and donor funding combined is not likely to close the gap; and 3) the expectation remains that households will self-fund the vast majority of their sanitation expenditure, failing which, unsafely managed sanitation will remain the norm.

⁶ Although the costs of either off-site or on-site sanitation are mostly borne by households, the overall costs of the two approaches differ. In a research study conducted in Senegal in 2012 a comparison was made of the cost per person annually in terms of providing different types of safely managed sanitation and how these costs were apportioned. Not only was the cost of sewers almost five times greater, but that cost was almost entirely passed to the subsidised utility as opposed to being borne directly by the household for non-sewered methods (Dodane et al., 2012).

⁷ In a report by the UN on 'The State of Sanitation', it was found that while "investments from external sources, such as donor grants and funds from non-governmental organizations and foundations, amounted to only 1 per cent of the total investment in sanitation... (they do) however contribute, on average, 42 per cent of non-household expenditures in the 11 low-income countries that reported sanitation expenditure data" (UNICEF/WHO, 2020:59). The dataset is poor, but it is evident that in the poorest countries that report on their sanitation spending, external investment covers nearly half of the total that households are not providing themselves. Notably, most sanitation donors have found it easier to work with water and sanitation utilities, and independent regulators compared to amorphous municipalities and ministries of provincial and local government. This has shaped governance and financing arrangements in the sector.

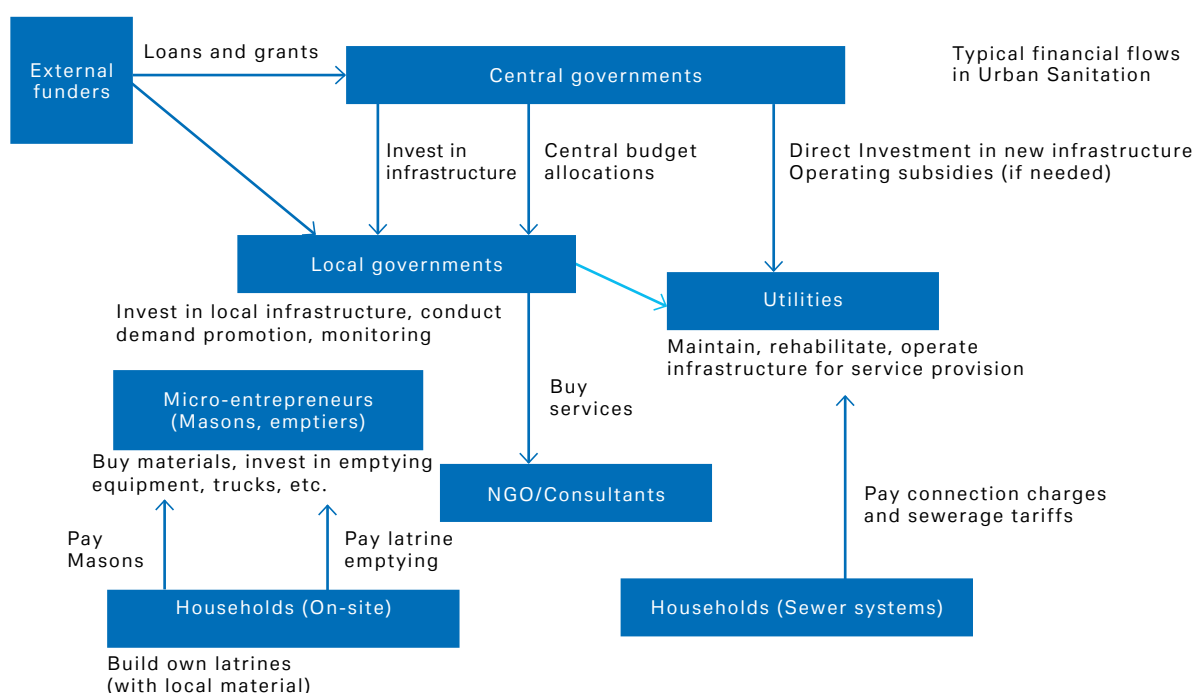
A PROBLEM OF INEQUITY IN EXISTING FINANCING

A recent World Bank study looked at government and utility spending on water and sanitation across the globe (Andres et al, World Bank, 2019). In low- and middle-income countries, it is suggested that between 1.59% and 1.95% of GDP was being spent on subsidising the sector, of which the majority was spent on capital subsidies and only for maintaining existing infrastructure, not subsidies to expand it. In the same study, in an analysis of data from 10 countries, with five of them being in Africa, it was suggested that more than 50% of these subsidies reach the wealthiest quintile and only 6% of these reach the poorest quintile. Meanwhile, to ensure that everyone has access to basic sanitation, a global seven-fold increase in existing expenditure is needed. For Africa, this ratio is larger.

4.2 Fragmented sector with multiple entry points

The fragmentation of a sector has important consequences. One outcome is to reduce the average size of investments sought for each part of the system, which is made worse by the fact that sanitation is a local concern, in other words, one town at a time, rather than opening up national or regional financing opportunities. This fragmentation acts as a brake on investment, dissuading many financiers from the outset. This is because most financiers, particularly concessional lenders, prefer to deal with one borrower, preferably ones with State guarantees, such as State-owned utilities. They also tend to prefer one large investment to many small ones owing to the relatively lower administrative costs of the former. A further challenge for those that would finance the sector is the multitude of possible entry points, as indicated in the diagram in Figure 6 below.

FIGURE 6: DIVERSE SET OF ACTORS INFLUENCING HOW FINANCE FLOWS IN URBAN SANITATION (ADAPTED FROM: TREMELOT ET AL., 2016)



As one moves away from reticulated approaches, in other words, sewerage, a multitude of factors take effect, which entails dealing with the complexity of the sanitation service chain where different services interconnect. For sustainable sanitation to be a reality, each link in the chain must be robust. However, the providers tend to differ, as do the sources of funding available to support each link, which complicates matters significantly.⁸

TANZANIA: INSTITUTIONAL COMPLEXITY

The administrative structure of the sanitation sector varies between countries and evolves over time. Tanzania is fairly representative of related matters in SSA countries. In 2013, WaterAid analysed the administrative structure of sanitation in Tanzania, of which the highlights are presented here. Two ministries share responsibility, namely the Ministry of Water and Irrigation, and the Ministry of Health and Social Welfare. Although they have signed an MoU to coordinate their actions, no discrete legislation guides how environmental services are provided. In 2012, a national sanitation campaign was launched, supported by \$20 million in funding from the AfDB. Service provision on the ground is a municipal function; however, semi-autonomous utilities are used in larger cities. In the capital, DAWASA is in charge of capital investments and the rehabilitation of infrastructure, while DAWASCO provides water and sanitation services under a lease contract. Municipalities retain responsibility for environmental health and, therefore, for on-site sanitation. Sanitation and hygiene promotion also fall under their remit, but in practice, they struggle to fulfil it and households are responsible for most on-site sanitation and the sanitation chain (Tremolet & Mansour, 2013).

4.3 Opportunities for financing

In a context of underwhelmingly low investment in the sanitation sector across the board, there is a real lack of clarity on where the existing scarce resources should be targeted. There may be a broad consensus that hybrid approaches are required, there is less consensus on where to invest public money.

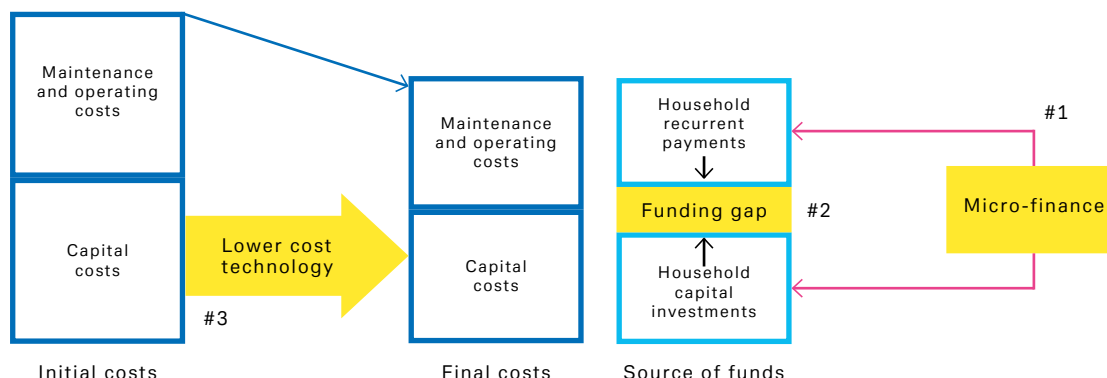
There are important vagaries of context in Africa, with a solid business case for sewerage in a number of locations, while in others on-site sanitation evidently works. Such specificity may pose challenges for investors; however, the reality is that the physical realities of terrain and spatial layout are as influential as the socio-economic context, and non-negotiable. As such, the requirement that local context dictates the eventual form that sanitation hybridity takes is probably unavoidable.

In such circumstances, trying to cover the universe to finance a possibility is an impossible task. On the other hand, it is instructive to select a few components of the sanitation chain and explore the role of new financing modalities further. In the following graphic from the World Bank in Figure 7 below, a few issues are highlighted, with one being the preponderance of household payments in covering costs and another the need to reduce costs through technology and innovation, including process innovation and not only technology innovation. A third is the idea that there is still a funding gap, opening up the possibility of public funding or external investment.⁹ Three possible interventions are explored below, corresponding to the numbers in the graphic in Figure 7 below. What is notable is that, given that households provide the majority of funding for sanitation services, but are typically reluctant to cover the full cost of the service chain, it is important to find ways to reduce the overall costs of sanitation services and remove affordability barriers.

⁸ In a traditional investment context, a letter of comfort is a written document that provides a level of assurance that an obligation will ultimately be met. In the sanitation sector, such comfort comes in part from the role that the State plays in the oversight and regulation of the sector, as well as the risk guarantees that any prospective investee can provide. Unfortunately, the fragmentation of responsibility for service delivery with regards to on-site sanitation is mirrored in respect of oversight, supervision and regulation. This serves only to further reduce the comfort of prospective investors.

⁹ Regarding cheaper technology, some advocate condominal sewerage or simplified sewerage, for example, WRI (2019) – a cheaper, communitarian approach of shared sewers – despite the mixed track record on the African continent.

FIGURE 7: WAYS TO REDUCE THE COSTS OF SANITATION SERVICES AND REMOVE AFFORDABILITY BARRIERS (ADAPTED FROM TREMOLET ET AL., 2016)



4.4 Supporting urban households with the full costs of on-site sanitation

Historically, on-site sanitation has suffered relative to sewerage in terms of public investment (Gambrill et al., 2020). The full chain of on-site sanitation is more complex in terms of funding requirements, with large infrastructure being easier to finance than private markets for pit emptying, as an example. The various links in the on-site sanitation chain require different types of capital investment, including in vehicles, rather than pipework, and have quite a different balance between capital and operational costs.

Regarding on-site sanitation, households also pay for the cost of building a toilet. Merely installing urban toilets can be expensive. In Ghana, the construction costs were estimated between USD\$1 000 and USD\$1 500 (Tremolet et al., 2016). Households are also expected to cover the lifecycle costs of safe sanitation; however, many are reluctant to pay the full cost. This lowers the willingness and ability to pay, something that providers deal with by cutting corners and lowering costs, helping to maintain demand for their services, but harming the public good.^{10,11}

Even if households are willing to pay for sanitation, they are not able to pay the lump sums involved in on-site sanitation (Mansour & Tremolet, 2014).¹² However, frequently, a no-subsidy policy is in place for on-site sanitation, particularly in respect of new or improved household level infrastructure.¹³ While there are good reasons to be suspicious of a hardware subsidy for access to sanitation, outright rejection masks several key issues, for instance, significant affordability constraints for poor households and the externalities imposed by inadequate or no access to sanitation.

There has, therefore, been a slight shift in thinking in recent years. In countries ranging from Bolivia to Bangladesh and from Vietnam to Ghana, schemes are underway to support households to spread their payments over time and/or to support sanitation providers; from plumbers to equipment manufacturers (Tremolet et al., 2016). A favoured means of doing this is to offer revolving funds that support loans targeted at low-income households or, occasionally, providers. Other subsidies target the training of providers, educating consumers and broader awareness activities. Supporting such schemes provides a good means of investing in sanitation in recognition of its public good elements. If designed carefully, such investments can be undertaken without crowding out private investment or dissuading household expenditure.

¹⁰ Although many policymakers recognise the limits of relying on household funding, subsidies and public investment in the broader sanitation chain remain rare (UN, 2020).

¹¹ This is a problem given the poorly regulated markets that deal with a lot of on-site sanitation, coupled with an understandable tendency of households ignoring the regulations ('out of sight, out of mind'), encouraging the illegal dumping of waste.

¹² Microfinance is one means to address the problem concerning sanitation payments, which is a real barrier to poor households. Microfinance can help spread payments for capital or operational expenditure over time, making them more manageable for those with limited means, in other words, the urban poor in Africa.

¹³ Unfortunately, this sector orthodoxy reflects poor experience in the rural sector without due consideration of the complexity and differences of urban sanitation.

4.5 Investing in shared facilities to spur demand

Communal sanitation blocks can act as a highly visible landmark in poor communities. In Kenya's slums, multistorey blocks have been built that not only stand out from the surrounding single-storey structures, but provide space for community meetings on the top floor. In Mozambique, the process of siting, designing and building facilities has spurred wider community initiatives on sanitation and hygiene (WSUP, 2021). In Ethiopia, policymakers have recognised the public good contribution of shared facilities, supporting access to them by averaging out fees for servicing them across a city, whether the facility is connected to the sewerage network or requires a vehicle to be emptied, which is typically a more expensive approach. The operation of such facilities not only creates revenue for community-based organisations that often run them, but they can provide a rallying point for advocacy, as well as a hub for sharing hygiene education information. For those with no access at household level in underserved communities, the use of these facilities means that they can avoid open defaecation. During flooding events or disputes with landlords and neighbours over household access, these facilities can provide a valuable lifeline to affected households. Collectively, these arguments form a strong case for public investment in shared facilities, especially in poor urban communities. This includes the bulk infrastructure, such as sewers, which can then service blocks.¹⁴

FIGURE 8: SHARED SANITATION BLOCK IN MAPUTO, MOZAMBIQUE – AN EXAMPLE OF HOW A PHYSICAL INTERVENTION CAN SUPPORT COMPLEMENTARY SOCIAL INTERVENTIONS IN POOR URBAN NEIGHBOURHOODS (WSUP, 2021)



4.6 Promoting decentralised wastewater treatment

Traditional wastewater treatment plants face a range of challenges across urban Africa. A lack of capacity to run systems or source spare parts, among other difficulties, is often problematic. The lack of a stable energy supply can hamper operations. Wastewater treatment plants are often regarded as having high capital and operational costs. This partly explains the interest in small-scale, decentralised systems for treating wastewater.

“Decentralized” or “distributed” sanitation systems - for instance wastewater treatment systems serving from 10 to 1,000 households - “have proven to be a viable alternative to conventional systems for contexts such as large residential buildings, compounds, peri-urban areas, communities and small rural settlements” (Reymond et al., 2020:2).¹⁵

¹⁴ For this reason, with a bulk sewer in place, it will be easier to connect other nearby locations to the same pipes. If the municipality or utility also assumes a proactive role in servicing the facility via water or sewer connection, or regular emptying, it also makes the community a valid customer, which will otherwise not always be the case.

¹⁵ When combined with the appeal from an oversight and governance perspective, for example, making such units mandatory for new-build housing estates, it is understandable why and how they have spread so rapidly in these large emerging economies.

From a physical and technical perspective, a strong argument in favour of such systems is that they reduce the need to transport wastewater over long distances, which costs money not only in respect of the larger bulk infrastructure, which is required, but also in terms of operational costs, especially pumping. Moreover, the flexibility and modularity of such systems offer certain advantages, among others, to the possibility of matching investment with need and not having to build rapidly well in advance of anticipated urban growth. From a non-technical perspective, such systems, known as DEWATs, also enable governments in middle-income countries to pass some of all of the investment costs of wastewater treatment to the private sector, particularly to real estate developers. While deployment of these at scale is better known in Asia, DEWATs have been installed in high numbers in South Africa, Tanzania and Uganda, among other African countries.

There are certain attractions from a financing perspective. If subsidies are deemed necessary, these can benefit local municipalities, but be routed via the suppliers of such systems, which often include large-scale manufacturers who provide a clear point of contact and a different degree of accountability. With a certain standardisation of units, budget projections and subsidy programmes are rendered simpler than for certain other parts of the sanitation chain.

Nevertheless, problems have arisen. The wide-scale implementation of such systems, whether in India, China or Indonesia, has often delivered a significant number of failed systems as effluent standards go unmet after a few months or years of operation (Reymond et al., 2020). In part, this is because the governance arrangements and monitoring have not been able to keep up with the rapid spread of such units. Indeed, observers have noted that successful scaling up entails more than replicating a large number of discrete projects. It requires innovative management and governance arrangements, financing plans and an ability to engage with the private sector across many micro PPPs (Eales et al., 2013).

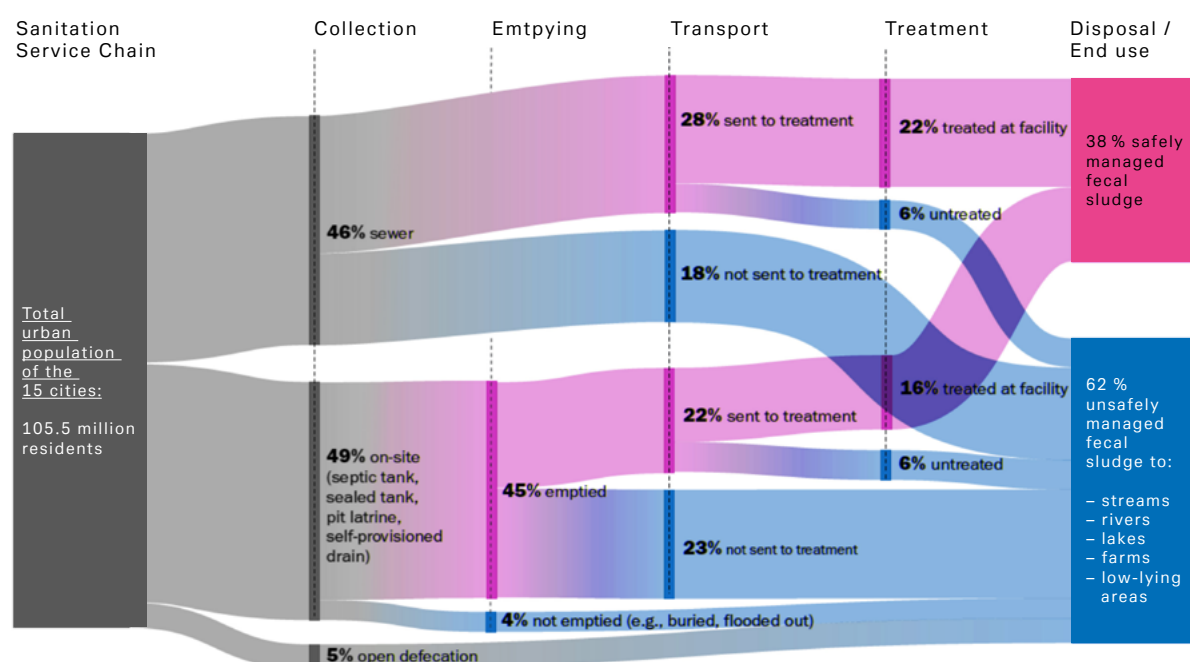
4.7 Environmental costs and risks of different technologies and approaches

From an environmental perspective, the primary challenge facing urban sanitation in Africa is the need to improve the treatment of waste and reduce the proportion that, untreated, returns to local waterways or to groundwater. The impact is felt by nature and people in reduced freshwater biodiversity and in poor health and unsanitary living conditions.

As can be seen in Figure 9 below, it is not as simple as the waste from sewers being sent for treatment and waste from on-site sanitation not. The sanitation chain is such that technology options transfer and treat the waste found in on-site sanitation systems, overcoming the challenge that its physical, biological and chemical make-up differs from typical wastewater. In the cities studied by WRI, almost half of the waste captured by on-site sanitation went for treatment, even though not all of it was safely disposed of.

Similarly, many sewers across the continent either do not connect to wastewater plants or connect to plants that are not functioning properly. In a recent report in a South African newspaper, based on data shared by national government, it was found that “more than half of all South Africa’s sewage treatment works are failing” (Kretzmann et al., 2021:1).

FIGURE 9: FLOWS OF WASTE THROUGH THE URBAN ENVIRONMENT OF 15 REPRESENTATIVE CITIES IN THE GLOBAL SOUTH (ADAPTED FROM: SATTERTHWAITE ET AL., 2019)



In essence, in a laboratory setting, a number of sanitation technologies perform in such a way as to meet national environmental standards. The challenge arises when this technology is deployed at scale, with capacity gaps, weak incentive structure, poor enforcement and financial challenges all conspiring to lead to poor performance and damage to the environment. Theoretically, the environment should be most at risk from services provided by the informal sector, who, almost by definition, live outside the regulatory frameworks. However, the challenges with the DEWATS technology in Asia or with expensively built wastewater treatment plants across Africa show that services provided by formal entities, using globally recognised technology, do not necessarily lead to better outcomes (WaterAid, 2020).

A further environmental challenge is linked to climate change. Reduced rainfall and increased drought pose challenges to systems that rely on valuable water resources to dilute and move waste. Increased flooding threatens fixed infrastructure, as well as contaminating the urban environment with untreated waste and threatening public health. Finally, sanitation systems have been identified as potentially important contributors to methane emissions, which is a recent focus of attention, as evident in Glasgow during COP26 when several influential parties signed a pact on methane reduction (Dickin et al., 2020).

4.8 Challenges to financing sanitation

Historically, putting household payments aside, investment in sewerage has dominated other forms of sanitation investment. This has deep roots, relating to institutional mandates, the complexity of dealmaking and the fact that water utilities have a financial track record compared to the informal sector.¹⁶ By using the CWIS and adopting other hybrid approaches, it can be challenged, with significant new investment being made in decentralised approaches.

Three options are explored above, which vary broadly in whom they target, how any financing can be structured and on which aspect of the sanitation value chain they focus. These are certainly not the only possible or sensible investments to be made to support urban sanitation, but they shed light on differing aspects of the challenge. Table 1 below summarises this analysis with a view to informing the broader debate about what to fund, why and how.

¹⁶ Utilities may also benefit from State-backed guarantees, which do not cover informal sanitation providers. Water utilities often also have a mandate for sewerage, not always for sanitation, although there is a trend in that direction.

TABLE 1: BROADER INSIGHTS FROM THREE SANITATION FINANCING OPTIONS

	Why would this be appealing to investors?	Challenges to overcome	Insights into broader issues of financing sanitation
Microfinance for household facilities or emptying	In theory, microfinance de facto targets the poor, dealing with a key barrier to them accessing sanitation goods and services (lumpy payments). Often an established microfinance or small loan industry can be harnessed. Rules around what qualifies for support can be relatively easily laid out, implying that market disruptions can be kept to a minimum.	In research studies, it has been suggested that microfinance does not always reach the poorest, partly due to social or political barriers, such as illiteracy and reluctance to include areas with no land tenure. The administrative costs can be high, relative to the overall size of the programme, and in some countries, microfinance has a mixed reputation.	Households tend to provide the bulk of investment across urban Africa, but affordability, particularly of lump-sum payments, can be a barrier to accessing goods and services. Households are rarely motivated to cover the full costs of the sanitation chain, with a type of public subsidy to deal with externalities possibly being justified. Microfinance or revolving funds may be one means of solving this problem.
Investing in shared sanitation	A range of work has been done into planning where in cities such facilities should be deployed. A range of management models have been tested across Africa, including small-scale PPPs. The cost profiles of building and operating such facilities are relatively well understood. In some contexts, loans can be an appropriate tool, perhaps by adopting social impact approaches.	It has been found that, on their own, shared sanitation blocks are insufficient in bringing about improved health outcomes, although they offer a range of other benefits, for example, WSUP research in Mozambique. Municipalities and parastatals have a mixed record in building and operating similar facilities satisfactorily	Decisions around the design, operating model and pricing for shared sanitation solutions can bring forth interesting insights into how sanitation is currently provided in urban areas, who benefits and who does not. The social capital involved in successfully operating such models can support broader changes in sanitation, with cross-subsidy models being applied in Ethiopia, as an example. Financial support for such approaches can open up useful dialogue with local government and politicians.
Supporting decentralised wastewater systems	The decentralisation of treatment systems can radically reduce the investment required in transporting waste, allowing small-scale local networks to develop. The technology and operational parameters required to be successful are relatively well understood, while subsidy can be routed via manufacturers or installation companies, rather than via local government structures. PPPs are possible. Building codes can be amended to promote the approach.	Experience in Asia suggests that attention must still be paid to governance and oversight, with a more hands-off approach via PPPs possibly not delivering the desired outcomes. These systems only address the last link in the chain and are susceptible to weaknesses in upstream links, whether on-site or off-site sanitation. Technology alone has not proven to be a 'silver bullet'.	PPPs cannot exist in a vacuum, and it is important to support the development of social, political and institutional capital with regard to urban sanitation. PPPs in one part of the sanitation chain remain highly vulnerable to other parts of the chain. Discrete, decentralised infrastructure delivery can lend itself to financing models and projections that the investment community is familiar with, as well as opening up new partnership possibilities, for example, with real estate developers.

The three areas focussed on, as summarised in Table 1 above, bring forth a range of issues that also apply to other financing options. These include the role of households in financing improvements in sanitation, the difference between dealing with owner–occupiers versus landlord–tenant models and the ability to work with or around local institutions and political structures. The rationale for investing in sanitation is also brought to the fore and begs the question of whether it is to reduce inequities, support health improvements, protect the environment or support the local economy. Lastly, the availability and willingness of prospective partners is a consideration, whether it applies to microfinance agencies, organisations willing and able to construct and operate shared sanitation blocks, the private real estate industry and, in all cases, national and local government bodies, whether they are ministries, municipalities, regulators or others.

5 POLICY DIRECTION TOWARDS MORE SUSTAINABLE INVESTMENT

Given the diversity of the sanitation chain and the varied contexts of urbanisation across Africa, it is difficult to provide policy direction that works in all circumstances. Nevertheless, a few broad approaches can be explored in order to make hybrid sanitation approaches easier to deliver and finance. Sometimes this involves recognising that narrow technocratic approaches to sanitation have, more often than not, been part of the problem in the past. The following section presents issues concerning political will, the development of social capital, ways to improve the business case for sanitation, and the importance of developing policy and approaches that better fit the reality of small and medium towns on the continent.

5.1 Option 1: Creating local level political will

An open secret in the sanitation community is politicians' tendency to prioritise other, more visible sectors. In part, this is due to citizens' demand for sanitation services being weak. In 2016, a large NGO in the United Kingdom, named WaterAid, chose to address this matter, seeking to find a recipe for overcoming the "low priority given to urban sanitation, particularly when it comes to meeting the needs and rights of marginalised and excluded people" (Tiberghien & Hueso, 2016:4). In doing so, they decided to look deeper into how three cities in the Global South, namely India, Ghana and the Philippines, known for adopting an inclusive approach to sanitation, had achieved this. This required confronting a longstanding challenge for urban sanitation, namely the tendency of many decision-makers to view sanitation through a technocratic lens first and not paying enough attention to the politics. It was recommended that "to escape empty rhetoric and actually deliver results on the ground, would require the prioritisation of sanitation to cascade to all levels of government" (Abey Suriya et al., 2019:915).¹⁷

Recently, progress has been made at the pan-African level and in some African countries at generating political will, as evidenced by the recent publication of the African Sanitation Policy Guidelines by the AU. Nevertheless, this momentum is arguably less evident at the local level.

5.1.1 Why local political will?

Influential voices argue that results on the ground require more than national level rhetoric, but sanitation prioritisation to be cascaded to all levels of government. This is based on bitter experience in Asian countries, where without a roadmap of how to generate political will locally, promising reforms have stalled. Unfortunately, citizen demand for sanitation is not always high, which has knock-on effects on political will. This influences decisions around how funds are allocated and without major change, existing inequities will remain or even worsen. An important question is how much local political capital is needed to support the required transition at the local level, particularly in a context where municipal budgets are important drivers of progress.¹⁸

¹⁷ While each of the three cities in the study was deemed to be performing well, "sanitation developments ... were not so much the result of thorough planning processes as haphazard or organic advances made by seizing emerging political opportunities, through increased private sector engagement, or as a by-product of wider urban development programmes" (WaterAid, 2016:15).

¹⁸ This thinking aligns well with a growing movement in donor circles, known as TWP, which attempts to address the challenge of external donor programmes failing to scale up following on encouraging pilots, especially when engaging in longstanding and intractable challenges. It is recommended that donors adopt the following principles, namely i) applying iterative problem solving or stepwise learning; ii) supporting ways to broker constructive relations among key players to discover shared interests and smart ways of dealing with vested interests; and iii) relying on initiatives being locally led, addressing problems that are salient for domestic actors, rather than selected by donors (ODI, 2014).

One way to generate more political will may be to make existing failures more visible. It is evident that sanitation has often risen up the local political agenda following bouts of cholera. In the solid waste sector, which has many parallels with sanitation, there are frequent instances of solid waste becoming a political issue, particularly when existing services start to fail. In reality, the failure of the sanitation chain lacks the visibility of solid waste management.

Rather than piles of rubbish in the streets, we have invisible contamination of the aquifer, easily ignored pollution of local watercourses and a drawn-out public health crisis. The key may lie in making the invisible visible, something with which campaigning NGOs, community organisations and academics have some track record. Examples range from the scorecard pioneered by PAS in India, to the sanitation advocacy around the Duzi canoe race in KwaZulu-Natal, one of the provinces in South Africa, to civil society's work helping to resuscitate the green drop programme in South Africa.

Unsurprisingly, donors and INGOs often appear reluctant to become involved in matters of local politics (Booth & Unsworth, 2014). INGOs are more prepared to engage over matters of inequity and undertake advocacy, but are more inclined to do so at a country or even global level, feeling less comfortable engaging in municipal level politics. Arguably, this reluctance from all parties has associated costs. While the top-down strengthening of accountability is undeniably part of the solution, experience suggests that this is insufficient in isolation. Without counterpart efforts from the bottom up through channels such as citizens' voices, results are likely to remain frustratingly elusive.

5.2 Option 2: Investing in social capital

Recent research conducted by ODI focused on whether governments take into consideration evidence linking sanitation to development outcomes (Booth & Unsworth, 2014). The observation was confirmed that purely evidence-based policymaking is unrealistic and naive. However, it was also revealed that when the generated evidence assisted policy deliberations in a way that did not challenge powerful political-economic interests or was built into a well-designed decision-making process, it could be an effective tool for unblocking or revising policy decisions and budget allocations.

A good way to support this is by investing in social capital. According to ODI, making sanitation a local political priority has historically involved "forming a coalition of local actors who are able to generate enough pressure and create sufficient incentives to change the status quo" (Cummings et al., 2017:5). The suggestion is that such outsiders can "be particularly well placed to stimulate change and facilitate constructive local problem-solving, providing that they combine technical knowledge with politically smart ways of working and look for opportunities to make strategic use of aid" (Booth & Unsworth, 2014:vi). However, the cautionary rider is that "politically-smart, locally-led approaches will not work if they are under-resourced or pursued half-heartedly" (Booth & Unsworth, 2014:vi).

Slum upgrading is an approach that has had significant spill-over benefits for urban sanitation as it is not only a highly participatory process that coalesces community drive and focusses it, but requires engaging civic authorities. Moreover, it cuts across sectors, focusing not only on how to improve housing conditions, but also drainage, street lighting, water supply, sanitation and public safety. In such a context, where sanitation improvements are a package of other interventions and are tightly tied to drainage improvements, the benefits of following participatory approaches are evident (Satterthwaite et al., 2020).

THE IMPORTANCE OF SHARED SANITATION SYSTEMS

Shared sanitation refers to individual facilities shared by two or more households, as well as community or public toilet blocks. Notably, shared sanitation is not considered in the SDGs as it is not regarded as safe sanitation. The JMP, jointly run by UNICEF and WHO, is the ultimate arbiter in the WASH sector of what counts and who has done what. Nevertheless, in the JMP annual report of 2017, it is suggested that “while universal use of private toilets accessible on premises remains the ultimate goal, high-quality shared sanitation facilities may be the best option in the short term in some low-income urban settings” (UNICEF/WHO, 2017:15). In this report, a new category of sanitation is introduced, namely limited facilities that are shared between two or more households. Although not the first choice in households, both types offer a significant improvement over receiving no sanitation services.

In certain cities around the world, the development of shared public facilities in residential areas, at transport nodes, and around markets and other economic hubs provides a welcome and desperately needed service to those who do not otherwise have access. Even if households can afford and choose to invest in an individual or shared facility closer to home, offering shared facilities gives poor households options. Not only can the facility be used if financial constraints interrupt access to sanitation at home, such as a full pit or container service that cannot currently be afforded, but as climate change brings increased flooding, well-designed communal facilities with raised access walkways can provide options when informal neighbourhoods flood.

5.2.1 Improving accountability in the sector

National water regulators have increasingly taken a more proactive approach to sanitation, often expanding their remit to include on-site sanitation (WSUP & ESAWAS, 2020). In some instances, they have intervened in the mandate afforded to water utilities, pushing them to take responsibility for on-site sanitation or changing their tariff model to promote non-sewered approaches. Yet, as indicated in a document co-authored by ESAWAS, “the sanitation sector has a rich tradition of developing frameworks, plans, standards and regulations which are never implemented or enforced” (WSUP & ESAWAS, 2020:2). Indeed, in Mozambique, a sanitation surcharge has been under discussion since at least 2013, but has still not been implemented fully (WSUP & ESAWAS, 2020).

As such, there is a strong argument for not relying solely on top-down approaches, but on allying these with pressure from the bottom up. Citizens’ voice initiatives are a model of how to do this and is a good example of working with social capital to hold the powers-that-be to account, including around the delivery of water and sanitation services. However, regulatory oversight and citizens’ voice initiatives work better when they complement each other, as stated in an article in the World Development journal in 2015, “voice needs teeth to have bite, but teeth may not bite without voice” (Fox, 2015:357).

5.3 Option 3: Bolster the circular economy business case

What about the circular economy? Some point to the value inherent in waste and suggest that this can be monetised in order to offset the costs partially. This may be a seductive argument and, at least in rural areas, there may well be strong arguments for technologies and the associated practices that dispose of human waste locally and in a safe, organic manner. However, in an urban setting, where local disposal is less viable, the question arises whether the circular economy is able to offset high treatment and transport costs. The experience of the best-known sanitation entrepreneurs on the African continent has proven that, for now, business models predicated entirely on circular economy thinking are unviable.¹⁹

CONTAINER-BASED SANITATION ALLIANCE

CBSA was formed in 2016 and provides something of an umbrella organisation for organisations that base their business model on the circular economy, including Sanivation and Sanergy in Kenya, and SOIL in Haiti. CBSA has had success raising the profile of approaches that provide a household or community a service that safely captures human waste, hygienically removes it, transports it off-site and then treats it. However, the reality is that 10 to 15 years after their founding, none of the members of CBSA are active in more than one country.²⁰ It can, therefore, be debated whether their experience demonstrates that urban sanitation providers that rely on circular economy business models are viable or, indeed, quite the opposite. Similarly, failure to replicate at scale the circular economy innovations trialled in Durban, which is a frequent recipient of the most innovative utility in Africa, show the difficulties inherent in making the circular economy a reality for urban sanitation in Africa.²¹

Typically, the value of treated and recycled sanitation waste is not sufficient to provide a full circular economy model. Without external subsidy, the markets for the collection and transport of human waste break down, with concomitant costs for human health and environmental protection. If this is viewed as an investment project, the return on investment is less than one.

This challenge is familiar to environmental champions, with the environment suffering greatly from externality costs and the tragedy of the commons. An approach called payment for environmental services has been an important response. Such approaches have been used to improve water security through the Water Fund Model, which has been proven in more than 40 locations across five continents. Downstream water benefits are monetised in order to finance upstream protection of the water catchment and, by extension, terrestrial and freshwater ecosystems. Water funds rely on an anchor tenant, which will be motivated and able to pay, over a long-time period, for ongoing quantifiable benefits. They are underpinned by a robust business case that clearly articulates how these benefits will be delivered and monitored. By quantifying and then stacking various co-benefits of water security, the return on investment rises above one, even as not a single benefit would justify external investment.

Such a stacking of co-benefits may be promising for the sanitation sector, helping to strengthen business models for emptying and treating on-site sanitation waste. The key would be to recognise and then assign a monetary value to positive sanitation contributions, such as the health benefits to poor communities, the societal benefits of job creation and the avoided externality of water pollution. A hybrid model would hitch these co-benefits to circular economy approaches, creating investable propositions and making the most of any public subsidies.

¹⁹ Nevertheless, the circular economy remains an alluring prospect, driving significant funding, energy and capacity towards those seeking to harness it. The concern is that this attention comes at the cost of support to less glamorous, but perhaps more effective approaches, which could also bring dynamism and oversight to elements of the sanitation service chain. Or even that circular economy arguments distract from the case that sanitation requires public support and subsidy.

²⁰ Only Sanivation appears to have expanded their operations outside the town in which they started. The reality is that the business models of the members of CBSA appear to rely on significant outside donations made possible by being social enterprises with a certain cachet in the sanitation sector.

²¹ Even eThekweni Municipality, exceptional in respect to its capacity, professionalism and financial resources, has withdrawn from a number of its early experiments.

5.4 Option 4: Investing in smaller towns

The fact that smaller urban centres are forecast to bear the brunt of urbanisation patterns offers a silver lining. These locales typically offer more space and do not suffer as badly from unhelpful political dynamics, dense urban slums and rigid land-use allocation. On the other hand, very few of these smaller towns have any sewers or wastewater treatment at present. While this could offer a blank slate, the reality is that political leaders in small and medium towns also aspire to modernity, which, for most people, still means networked sewerage and flush toilets.

While small and medium towns offer specific challenges, one hypothesis is that small towns offer opportunities that larger conurbations do not. The key is to create the local political will to drive this and then to pair it with catalytic funding. Land will be more available in smaller towns and there will be more space between dwellings. This permits a proactive municipality to act quickly to reserve land for future service needs, either by buying it or protecting it through zoning and rigorous enforcement. Being more spaced out, dwellings permit easier regularisation of areas and the installation of crucial trunk infrastructure. Rarely having any existing sewerage network or wastewater treatment may offer a silver lining. Local leaders can sidestep the technology trap that has seen many wastewater treatment plants built only to fall into disuse or disrepair, and possibly tap into new streams of funding targeting nature-based solutions.

Importantly, small towns also offer potential to apply the other policy recommendations made in this paper. That the local political situation is likely less complex may make it easier to generate local political will, especially with regards to promising financing or regulations. Social capital may be easier to generate too, partly owing to the more homogenous nature of society in smaller settlements. Finally, given that, in smaller locales, the tragedy of the commons can be more difficult to overcome and it may be easier to build a viable business case for sustainable sanitation interventions.

6 CONCLUSION

Despite the compelling economic case for investing in the improvement of sanitation, of all urban services, sanitation is notoriously difficult to fund and finance in African cities. The reasons for this are complex, but are linked to societal taboos around human waste, the invisibility of the sanitation crisis (at least as compared to solid waste or drainage challenges) and the public good challenge of providing safe and sustainable sanitation. Sanitation, often an appendage of water institutions, is also a cross-cutting issue, with all its benefits and disadvantages.

The advent of the SDGs has changed the way progress on sanitation is measured, entailing a shift away from mere access to a toilet or latrine, to cover the broader sanitation chain, with a concordant emphasis on the safe treatment and disposal of human waste. This clarifies the benefits of progress and the costs of inaction, but also reflects how complicated it can be to ensure that all links in the chain work together. Well over 50% of urban residents across Africa are not where they need to be in terms of sustainable sanitation services.

Hybrid approaches to sanitation provision, namely the blending of centralised and decentralised approaches, has moved centre stage relatively recently, as reflected by the CWIS approach, espoused by organisations as dissimilar as the AU, the World Bank, the Bill & Melinda Gates Foundation and WaterAid. However, this seeming consensus masks a wide range of differing opinions on the best way to proceed, perhaps most of all in respect of the rationale for investing in new sewerage networks across urban Africa.

From a financing perspective, there are clear reasons why investment in sewerage has predominated linked to institutional mandates, the complexity of dealmaking and the financial track record of those seeking support. Decentralised approaches to sanitation must still take into account local context in order to succeed, which could make it difficult to structure financial support in a way that offers sufficient size and simplicity to appeal to those who could offer funding or finance. Microfinance for household facilities or emptying, shared sanitation and decentralised wastewater systems offer three different ways for would-be investors to engage in the matter. Analysing how such investments would work offers insights into other financing options.

Regardless of which aspect of the value chain is addressed, seeking sustainability means that it is not only the technical and societal aspects of sanitation delivery that need to be addressed, but also the business case for capital investments or operational subsidy. While the circular economy offers an alluring prospect to building such a business case, the record of initiatives on the ground suggests that this alone will be insufficient. Allying such thinking to lessons from other sectors, such as environmental protection, particularly with regards to the value of co-benefits, can provide new solutions. To create an enabling environment, it is also important to work on building local political will, something that can benefit from supporting initiatives that also build social capital, especially in poor urban settlements. It may, therefore, help to invest in shared sanitation or slum upgrading. Lastly, with the majority of urban growth on the continent expected to be in small or medium towns, it is important to recognise the specificity of the sanitation approaches required in such settings, some of which offer clear challenges, for example, no urban water utility, while others have promising aspects, for example, more space for new-build infrastructure.

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