



**THE
IMPACT
PROGRAMME**

URBAN SANITATION MARKET OVERVIEW

KENYA

ATHENA
INFONOMICS



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These institutions along with a few others will form a key part of our endeavour in the coming phases of our tool development. The list of stakeholders consulted through the course of this market research and for further engagement in the upcoming phases of our study is provided in the Annexure.

The team would like to acknowledge its appreciation to the authors and experts who have supplied information, published and unpublished material, opinions and advice; that are listed as footnotes and are duly referenced. This report has drawn extensively, for its secondary research, from studies published by, including but not limited to, Water & Sanitation for the Urban Poor (WSUP), Aquaya, the Kenya Institute for Public Policy Research and Analysis (KIPPRA) and the Water Services Regulatory Board (WASREB).

EXECUTIVE SUMMARY

This market research report, and its companion report focused on India, submitted under the IMPACT Programme, aims to build evidence about the investability of private urban sanitation markets. This report focuses on the urban sanitation market in Kenya and systematically studies the potential for investments in private enterprises along the sanitation value chain.

The report is the output of the first of three phases and will help enable investors to understand barriers that currently exist in deploying commercial and development investments into urban sanitation. It reviews key attributes unique to sanitation business models that help or deter their access to finance. Insights and findings from this report will inform the development of our investment tool¹, the second phase of our work. The tool will be tested and refined using real-world data from shortlisted sanitation businesses in the third phase. Ongoing engagements and consultations with businesses and investors through the three phases will inform the core functionalities integrated into the tool.

This Market Research Report is primarily intended to act as a reference for investors to understand the investment potential within urban sanitation markets in Kenya and attempts to bridge gaps in information about the risks within the sector. Private investment is critical for the Kenya sanitation sector to meet SDG 6.2 since public funding historically has been insufficient to meet the sector needs. Increased sector investment is expected to positively impact the lives of the poor through overall improved urban sanitation, from which low-income populations and vulnerable communities disproportionately benefit. Public water utilities, Water Service Providers (WSPs), which are mandated to provide sanitation service delivery by law, have limited coverage and have focused primarily on the provision of sewerage solutions. As a result, a range of Small and Medium Sized Enterprises (SMEs) are filling the gap in sanitation service provision. In addition, there is a growing untapped market opportunity across containment, emptying and transport and treatment and reuse for SMEs to fill service provision gaps.

The majority of SMEs are in the emptying and transport segment of the value chain with a handful of innovative business models in containment, and treatment and reuse. As a result, these small-scale players in the emptying and transport value chain make up a critical segment of the sector. Through safe disposal, they are fundamental in ensuring improved sanitation to a wide portion of the population and have the potential to support more innovative treatment and reuse models which have emerged in recent years. To unlock impact capital, there is opportunity to support them articulate the social and environmental impact of their operations and help them further formalize operations. Key trends across sanitation business models such as increasing use of technology in the sector are driving a more robust sanitation sector that fosters private sector involvement. The

¹ The expected outcomes of the investment tool are –

- a) Enable investment decisions
- b) Enable access to innovative finance within sanitation businesses
- c) Improve visibility of the sector as an impact investment destination

business models and market gaps seen in Nairobi, the main urban centre in Kenya, are quite like those seen in other markets such as Nakuru town, which has a significantly smaller population and lower sewage coverage.

Historically, private investment in the sector has been minimal, with sanitation being viewed as public good to be financed by the government and external financing typically of a philanthropic nature. However, there has been a shift in recent years with development partners providing concessional debt financing while private financiers have made several sanitation investments. Development Finance Institution blended financing has been vital in moving the needle for commercial investors, particularly banks, who commenced sanitation lending as a result of partnerships with development partners. Impact-oriented investors have made several deals into the sector with the most notable being into Sanivation and Sanergy, treatment and reuse business models, which have received funding from numerous impact investors, indicative of the perceived market and impact opportunity for these business models.

Part of this increased commercial investment has been facilitated by an improved enabling environment. As the public sector works to expand access, there is an increased recognition that non-sewered solutions and private sector have an important role to play in sanitation service provision. This has led to Nakuru county to be the first to develop a county-level Sanitation Bill in 2016 and a Sanitation Strategy in 2019.

Despite remaining investment barriers in the sector such as lack of reliable business data and limited disruptive innovations, these positive trends are encouraging more investment into the sector and are expected to continue. To facilitate the scale of service provision, these barriers need to be addressed from a holistic approach, integrating key sector stakeholders including regulators, development partners, and other market enablers. The investment tool, expected to go 'live' in February 2021 aims to start addressing some of these barriers such as greater visibility into investable businesses to enhance an understanding of the sector and data available and to build in regulatory risk in evaluation of businesses.

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Abbreviations

BoP Base of the Pyramid	BOT Build, Operate and Transfer	DFI Development Finance Institution	FSM Faecal Sludge Management
IFC International Finance Corporation	KIFFWA Kenya Innovative Finance Facility for Water	MFI Micro Finance Institution	M4D Mobile for Development
NAWASSCO Nakuru Water and Sanitation Services Company	NAWASSCOAL Nakuru Water and Sanitation Services Company	NSE Nairobi Stock Exchange	OBA Output-Based Aid
OPIC Overseas Private Investment Corporation	OSM Off-site Sewage Management	OSS Onsite Sanitation Systems	PE Private Equity
SACCO Savings and Credit Cooperative Organizations	SME Small and Medium Enterprise	SPA Service Provision Agreement	SPV Special Purpose Vehicle
SWM Solid Waste Management	USAID United States Agency for International Development	VC Venture Capital	VIP Ventilated Improved Pit
WASH Water, Sanitation and Hygiene	WSP Water Service Provider		

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1. Context

The report is a 'building block' to enable investors to understand barriers to deploying commercial and development investments into urban sanitation as well as highlight the encouraging trends we are seeing in the sector. It studies the key attributes unique to sanitation business models that help or deter their access to finance. A similar report has been developed for the Indian context and the insights and findings from both reports will inform the development of an investment tool for urban sanitation enterprises that will facilitate the flow of capital to sanitation enterprises in both Kenya and India, and will be 'live' by February 2021.

The investment tool will be built for and refined using empirical data from sanitation businesses in consultation with various investors. The investment tool will be anchored with development funders, investors, and will help them make investment decisions in the private sector sanitation businesses, considering the following three dimensions –

Figure 1: Investment Appraisal Dimensions



The tool will additionally enable sanitation businesses to signal their investment potential better, thus opening additional formal sources of financing, freeing up scarce public resources with other competing priorities.

The tool accounts for the integral role played by governments in facilitating sanitation service delivery and focuses on deploying investment capital to complement public spending. This is critical to investor perceptions of higher levels of risks in sanitation investments. The tool will quantify and adjust for additionality effects arising from existing policy environment and current and forecasted public spending in sanitation.

Expected outcomes of the investment tool are as follows –

- a) **Enable investment decisions via support tool**
- b) **Enable access to innovative finance within sanitation businesses**
- c) **Improve visibility of the sector as an impact investment destination**

The intended audience for the Market Research Report is primarily investors to understand the investment potential within urban sanitation markets in Kenya and attempts to bridge gaps in information about the risks within the sector. The report especially attempts to distinguish between

private service delivery and public service delivery, and we believe this distinction must be better represented to different categories of investors to understand the potential in private sanitation markets.

How we define sanitation enterprises, sanitation investors and sanitation value chain segments for both this report as well as the India report is outlined below.

Sanitation Enterprises – SMEs

The study will focus on private sector business models within the urban sanitation value chain. We broadly classify the businesses as SMEs which range from early stage, growth to mature stage businesses. Details regarding the various business models, types of financing needs and potential financing sources is documented in subsequent sections.

Sanitation Investors – Commercial, Social-impact oriented, Solutions-focused²

A key constraint in defining sanitation investors is the relatively nascency of investor interest within the sector. The focus of this report is exclusively on market-based mechanisms but given the nature of underlying product/service, development capital (including grants and viability support) deployed within sanitation that does not necessarily intend to generate at-market or risk-adjusted returns must be considered.

Commercial Investors are closest to the ground and typically cater to most SME-financing needs. However, the overall risk perception of the sector naturally makes them lean towards specific asset-classes that can absorb this type of risk.

While the risk appetite is slightly higher for **impact-oriented investors**, deploying capital efficiently and at low transactions costs is a key consideration to generate maximum impact.

Solutions-focused investors are categorized as those institutions that focus on social impact and almost exclusively use fund and non-fund mechanisms such as guarantees to exclusively mitigate risks in such investments.

This categorization of investors is adapted from GIIN³, IMP⁴, and Omidyar Network⁵ classifications of impact investors and assumed to be the most representative of a relatively complex financing landscape for urban sanitation.

² Definition of Investor Categories –

Commercial – at-market financial returns;

Impact-oriented – below-market financial for greater social impact;

Solutions – negotiable market returns with key emphasis on scalable solutions with social impact

³ Global Impact Investing Network. (2018). *Impact Investing Guide*

⁴ Impact Management Project. Website. *The Impact Classes of Investment*.

⁵ Omidyar Network. (2020). *Across the Returns Continuum*.

Sanitation Value Chain

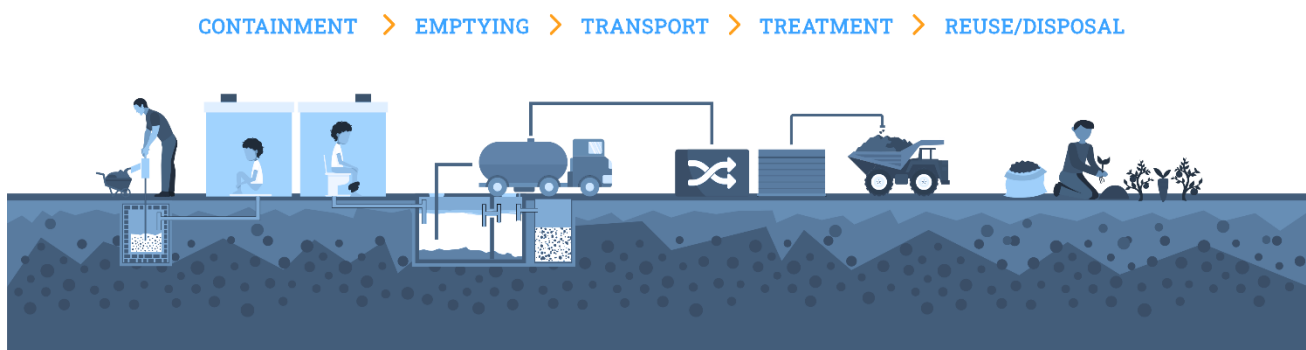
As this research focuses on the state of urban sanitation, this report covers Faecal Sludge Management (FSM) and Off-site Sewage Management (OSM) given their widespread usage among the urban population in Kenya.

- FSM entails management and disposal of human excreta through Onsite Sanitation Systems (OSS) such as Ventilated Improved Pit (VIP) latrines and manual and mechanical emptiers
- OSM entails management and disposal of human excreta through sewerage systems (sewers). Within OSM also exist hybrids containing elements of both FSM and OSM, for instance where human excreta are collected from OSS and transported to another location for its re-use

Across both FSM and OSM, the Sanitation service chain comprises five main segments – containment, emptying, transport, treatment, and reuse as shown in the figure 1.2 below.

- **Containment:** This value chain segment addresses access to toilet infrastructure and safe storage of human waste.

Figure 2: Sanitation Value Chain



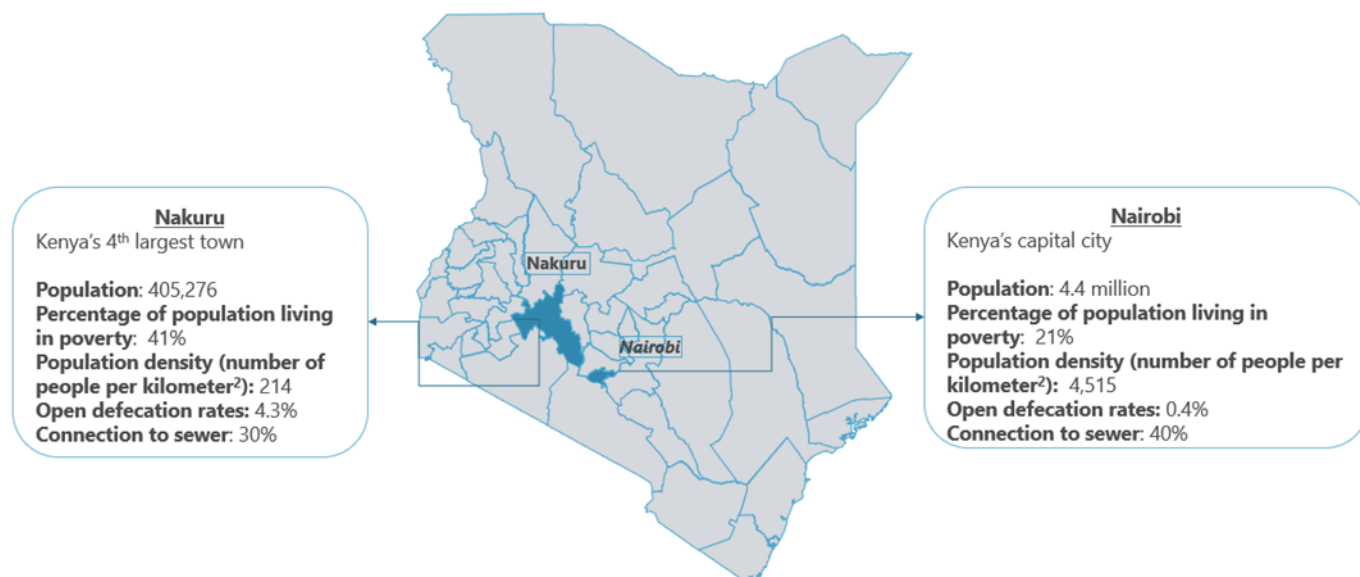
- **Emptying and Transport:** This value chain segment focuses on private service providers that empty the containment units and transport the faecal sludge to treatment units
- **Treatment and Reuse:** The final stage in the sanitation value chain, scope involves treating of the wastewater and faecal and converting the same into end products that feed into various other sectors such as agriculture, industry and energy generation.

Geography

To map the complex economic, social and political factors that influence sanitation service delivery in Kenya across the urban population, we have picked two large urban centres – Nairobi and

Nakuru with key demographic and sanitation features summarized in the figure below for contextualization.^{6,7}

Figure 3: Key demographic and sanitation statistics for Nairobi and Nakuru



The choice of these centres reflects a high prevalence of small-scale sanitation enterprises operating across the sanitation value chain, significant market need, conducive policy environments and government focus towards delivering sanitation outcomes.

We believe that focusing our study on the two counties will allow us to sufficiently document the following –

- a. Overall sanitation market potential by emphasizing gaps in existing service delivery and role that sanitation enterprises could play in filling the gap
- b. Significance of operating environments by highlighting enabling policies and concerted attention towards integrating private service delivery
- c. Examples of key business models operational in these counties

The following visualisation summarises our overall approach to the market research –

⁶ Njuguna J. and Muruka C. (2017). Open Defecation in Newly Created Kenyan Counties: A Situational Analysis. Pg 74, link.

⁷ Aquaya. (2019). Sanitation Policies, Practices and preferences in Nakuru, Kenya. Link

Selection of geographic scope of the research

Focus on two geographies in Kenya i.e. Nairobi and Nakuru counties based on relatively more conducive regulations and policies, existing gaps in sanitation, a relatively large size of informal settlements, and a significant presence of sanitation enterprises with innovative business models.

The two geographies are representative of the high rate of urbanization in Kenya: Nakuru is Kenya's fourth largest town, while Nairobi is the capital city and accounts for the largest urban population in Kenya.

Market research (desk research)

Secondary research including analysis on relevant sector reports and publications, and specific investor and business publications.

Investor consultations

Consultations with investors selected based on their investment thesis and sector interest. The investor types include commercial, impact and solution focused to provide a diverse mix of investors.

Business consultations

Consultations with businesses selected to provide a diverse mix of businesses operating across various segments of the sanitation value chain.

Structure of the report

The remainder of the report is structured as follows:

- **Section 2** evaluates the urban sanitation market in Kenya including the market potential, private sector business models across the sanitation value chain, the levels of formality, regulation and key trends
- **Section 3** assesses the urban financing landscape including an overview of investors, innovative financing structures and barriers to investment
- **Conclusion** provides a summary of the key enablers that will directly address the investment barriers including but not restricted to the use of our investment tool

2. Urban Sanitation Market in Kenya

There is an opportunity for increased private sector participation both in terms of financing and service provision to meet the 2030 target for universal coverage.

Out of an urban population of over 14 million people in Kenya, fewer than 20% have access to sewerage services and of the sewage collected, only 5% of it is effectively treated.⁸ Furthermore, informal settlements have much lower access, with majority of the population using shared facilities. A study of Mathare (a Nairobi slum) found that on average 85 households shared one toilet.⁹ Kenya is also yet to entirely eradicate open defecation, with 3% of urban dwellers still practicing it.¹⁰

Kenya's Vision 2030, the country's long-term development blueprint, stipulates that every Kenyan should have access to clean, safe water and improved sanitation by the year 2030. Yet historically, government funding has been insufficient in meeting the needs of the sector to reach 2030 goals as well as maintain current infrastructure. For example, in 2016, there was a financing deficit of 36% in the overall Kenyan WASH sector including both urban and rural areas amounting to USD 187 million, up from a 16% deficit of USD 71 million in 2012.^{11,12} Additionally, the WASH sector budget has historically been a small percentage of the national budget averaging at only 2.2% between 2014 and 2018, accounting for 0.6% of GDP.¹³ Out of this WASH budget, the allocation to the sanitation sector has been much lower, with only 9% allocated to sanitation (6%) and sewerage (3%) for the 2016 – 2018 period with the bulk of funding directed instead towards water supply and resource management.¹⁴ Limited funding in the sector is further exacerbated as disbursement and absorption of public funding has historically been significantly lower than the allocated budget due to factors such as delays in disbursement by the National Treasury, poorly planned and slow implementation of projects, and inefficient procurement processes. Therefore, there is need for private sector financing to meet the 2030 target.

Service provision, broken down into the five steps of the value chain, is provided by both public and private players within single or multiple segments of the OSM and FSM value chains as shown below.

⁸ World Bank. (2019). Urban Population – Kenya. link

⁹ Mansour G., Oyaya C. and Owor M. (2017). Situation analysis of the urban sanitation sector in Kenya. London: Water & Sanitation for the Urban Poor (WSUP). Pg 12, link

¹⁰ Mansour et al. (2017). Situation analysis of the urban sanitation sector in Kenya. London: Water & Sanitation for the Urban Poor (WSUP). Pg 12, link

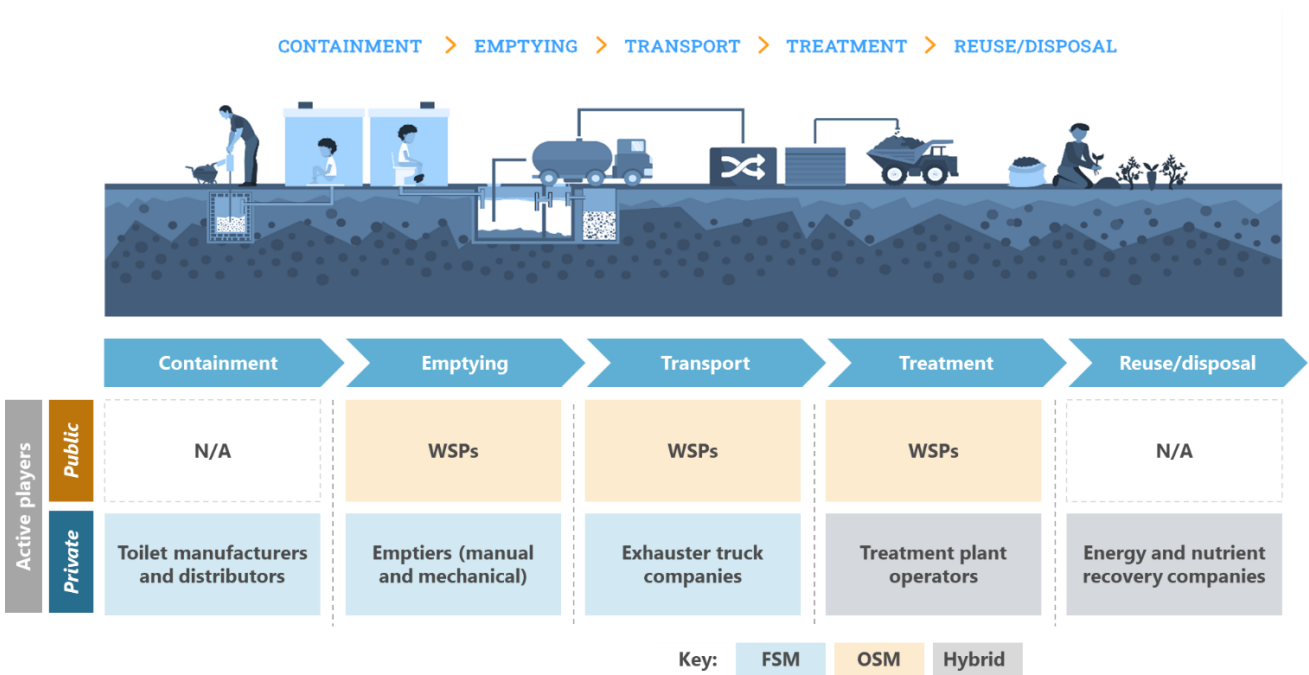
¹¹ The Kenya Institute for Public Policy Research and Analysis (KIPPRA). (2018). Water and Sanitation Budget Brief. No. 66/2018-2019. Pg 6, link

¹² Conversion rate used for 2012 is USD/KES 84.4937 and for 2016 is 101.5045 based on the average exchange rate for each year respectively

¹³ The Kenya Institute for Public Policy Research and Analysis (KIPPRA). (2018). Water and Sanitation Budget Brief. No. 66/2018-2019. Pg 7, link

¹⁴ The Kenya Institute for Public Policy Research and Analysis (KIPPRA). (2018). Water and Sanitation Budget Brief. No. 66/2018-2019. Pg 8, link

Figure 4: Key service provision players in the OSM and FSM value chain



Water Service Providers are mandated by law, through Service Provision Agreements (SPAs) with Water Service Boards to provide WASH services throughout Kenya. With the devolved government function, they are overseen by county governments. Out of 100 WSPs, only three are privately owned while the rest are public entities which are structured to be autonomous but there remains significant political involvement in decision making.¹⁵ WSPs provide a sanitation coverage of only 16% of their respective service areas through sewered connections, leaving a significant gap in sanitation service delivery which are filled by small and medium enterprises.¹⁶

Across most counties in Kenya, including Nairobi, there has been a lack of political prioritization of sanitation, with a greater emphasis on access to water which has historically received the bulk of financing within the WASH sector. Nakuru has stood out as an exception as the first county to pass a Sanitation Bill in 2016 and a Sanitation Strategy in 2019, following the realization that the national Sanitation guidelines borrowed heavily from the Public Health Act, provided limited clarity relevant to local contexts, particularly around Fecal Sludge Management. The Sanitation Bill is presently at an advanced stage before the County Assembly of Nakuru and is on track to receive assent to become law.¹⁷

Counties have historically been focused on OSM through Water Service Providers (WSPs), providing an opportunity for private businesses, particularly in FSM. The focus on OSM, has partly been driven by the lack of regulation on onsite solutions, highlighted by the fact that the national regulator does

¹⁵ Water Service Boards (WSBs) were created under the Water Act of 2002 to oversee water and sanitation service provision through the delegation of asset operations and maintenance to WSPs within their regional jurisdiction

¹⁶ Water Services Regulatory Board (WASREB). (2015). Kenya Water Service Provider Creditworthiness Index Report. Pg 9, Link

¹⁷ Nakuru County Assembly. (2020). Bill Tracker. Link

not have a framework in place to regulate WSPs tariffs for FSM. Again, Nakuru is ahead of the curve, with fecal sludge management regulations drafted to manage onsite sanitation methods and in tariff pilots with the regulator which will can as a proof of concept for the rest of the country.¹⁸

As a result of the gap in service provision by WSPs, a majority (>73%) of Kenyan urban residents use onsite sanitation, with estimates showing that 18% use unimproved facilities, 21% use pit latrines with slabs, 16% use Ventilated Improved Pit latrines, 13% have a toilet facility with septic tanks, about 5% use flush/pour flush pit latrines and 0.5% of the population use composting toilets.¹⁹ The limited scope of coverage by WSPs has led to the emergence of commercial and social SMEs to fill the service delivery gap. The role of SMEs in the sector has grown over the past few years with the emergence of more players and innovative solutions, a trend that is expected to continue in future. FSM and OSM models employed by SMEs are explored in further detail in the key business models section.

Other players in the FSM and OSM space include NGOs and other not-for-profit organizations such as civil society organizations, which have stepped up efforts to fill the sanitation gap through activities such as health education, promotion of affordable sanitation products and technologies, as well as policy advocacy.

2.1. Opportunity in the Sanitation Market in Kenya

There is a growing market opportunity across containment, emptying and transport and treatment and reuse for SMEs to tap into. Achieving 100% access to improved sanitation by urban residents specifically, as outlined in the Kenya Water Service Strategic Plan 2009, requires more than USD 2.5 billion annually considering population growth. In the following sections, we delve into each value chain segment assessing the market potential that could be unlocked through investment.^{20,21}

i. Containment

For non-sewered sanitation solutions, SMEs can play a major role in providing improved facilities for approximately 70% of urban residents utilizing FSM sanitation. The stage of containment, in the sanitation service value chain, depends on the availability of toilets and safe storage of human waste. Given that both Nairobi and Nakuru are yet to be declared Open Defecation Free, there is a clear need for improved and increased access to containment products. In addition, with an urban population growth of 4% in Kenya as at 2019, driven in part by rural to urban migration, the need for containment in urban areas is rapidly increasing.²² This is even more so for low income populations, with majority of the population in informal settlements using shared facilities with an average of 83 households sharing one toilet in a Nairobi slum, Mathare as mentioned in Section 2 above.²³ It is

¹⁸ Aquaya. (2019). Sanitation Policies, practices and preferences in Nakuru, Kenya. Link

¹⁹ Mansour et al. (2017). Situation analysis of the urban sanitation sector in Kenya. London: Water & Sanitation for the Urban Poor (WSUP). Pg 13, link

²⁰ WASREB. (2014). National Water Master Plan 2030. Link

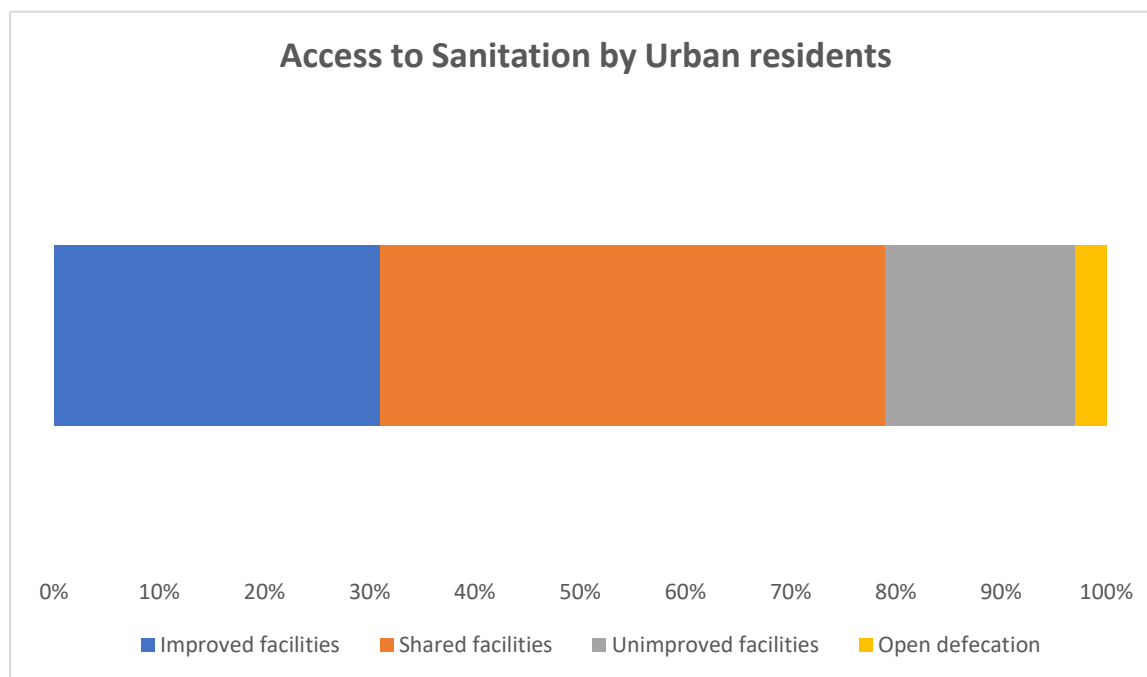
²¹ World Bank Group. (2019). Scaling sanitation and promoting the circular economy top priorities for Kenya 2030 WRG governing board. Link

²² World Bank. (2018). Urban population growth (annual %) - Kenya. Link

²³ Mansour et al. (2017). Situation analysis of the urban sanitation sector in Kenya. London: Water & Sanitation for the Urban Poor (WSUP). Pg 12, link

estimated that 56% of the urban population in Kenya lives in informal settlements and only 31% of urban residents have access to improved facilities.^{24,25} As such, there remains a need to ensure availability of containment options to not only eliminate open defecation but to increase access to improved sanitation.

Figure 5: Access to sanitation by Urban residents²⁶



ii. Emptying and transport

With more than 70% of Kenyans using onsite sanitation, emptying and transport is critical for an effective value chain, representing a market of more than USD 33M annually in Nairobi and USD 4M in Nakuru. Emptying and transport service forms an integral segment of the sanitation value chain, with most FSM operators largely comprising small scale informal players providing pit emptying and transport services broadly classified under manual and mechanical operations (use of locally fabricated or second-hand imported trucks). In Nairobi, mechanical supply caters to less than 10% of demand while manual supply covers close to 40% of demand demonstrating that a large unmet need exists for further provision of FSM services.²⁷ Based on an average exhaustor truck’s capacity and the transport fee charged according to the Kenya Septage Association, the deficit

²⁴ UN-Habitat. (2016). UN-Habitat Support to Sustainable Urban Development in Kenya: Addressing Urban Informality. Pg v, link

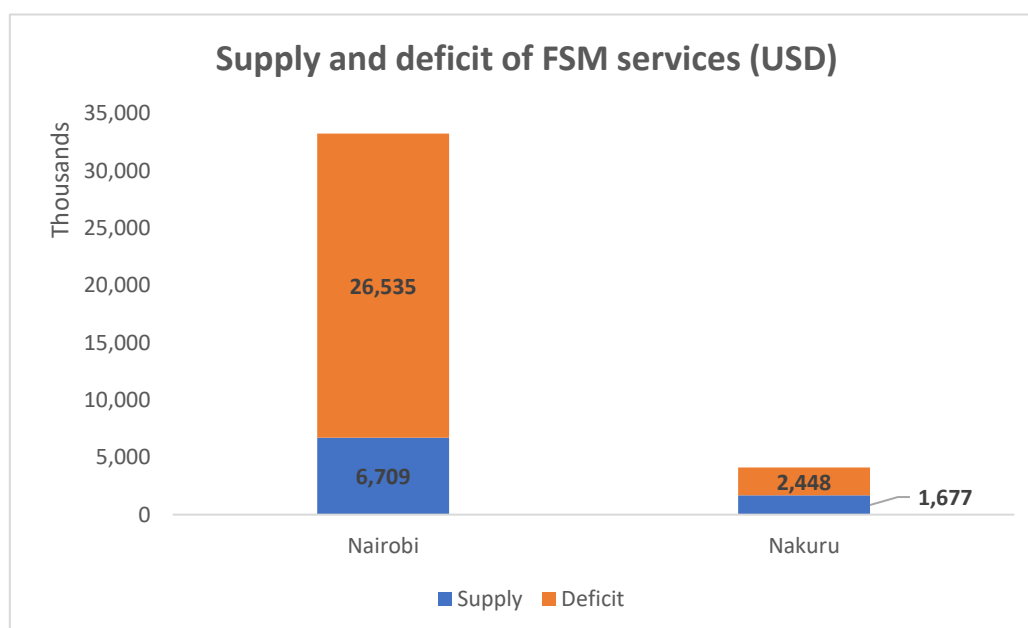
²⁵ Mansour G., Oyaya C. and Owor M. (2017). Situation analysis of the urban sanitation sector in Kenya. London: Water & Sanitation for the Urban Poor (WSUP). Pg 12, link

²⁶ Mansour et al. (2017). Situation analysis of the urban sanitation sector in Kenya. London: Water & Sanitation for the Urban Poor (WSUP). Pg 1, link

²⁷ The Bill & Melinda Gates Foundation. (2011). Landscape Analysis and Business Model Assessment in Fecal Sludge Management: Extraction and Transportation Models in Africa – Kenya. Pg 3-103, link

across manual and mechanical emptiers is estimated at an annual value of USD 26 million in Nairobi.

Figure 6: Supply and deficit of FSM services



iii. Treatment and reuse

Less than 30% of wastewater generated in both Nairobi and Nakuru is treated, presenting a need for sustainable treatment and reuse business models. There is a significant gap in treatment of waste in Kenya across both OSM and FSM models. As mentioned in Section 2 above, of faecal waste collected in OSM, only 5% of it is effectively treated due to failures in the sewerage system which are twofold: poor operation and maintenance, and lack of sufficient treatment plants, resulting in discharge of raw sewage into the environment and the endangering of public health.^{28,29} In addition, most wastewater treatment plants are operating below their capacity at about 20% efficiency and are in need of rehabilitation.³⁰ Nairobi City is estimated to generate approximately 400 million litres of wastewater per day. However, the capacity of the two OSM treatment plants used to treat this waste have a capacity of only 192 million litres per day and operate at only 120 million litres.³¹ In addition, according to the Kenya Septage Association, only 14 million litres of waste in FSM is collected by exhaustor trucks daily and is supposed to be transported to only one discharge point that covers Nairobi and its surrounding areas. However, due to the costs charged for discharge, often exhaustor trucks do not typically utilize the discharge points, instead illegally dump it, usually in water bodies. In Nakuru, it is estimated that the Water Service Provider serves less than 30% of the population in treatment of waste and over 65% of excreta from on-site sanitation methods ends up

²⁸ Mansour et al. (2017). Situation analysis of the urban sanitation sector in Kenya. London: Water & Sanitation for the Urban Poor (WSUP). Pg 13, link

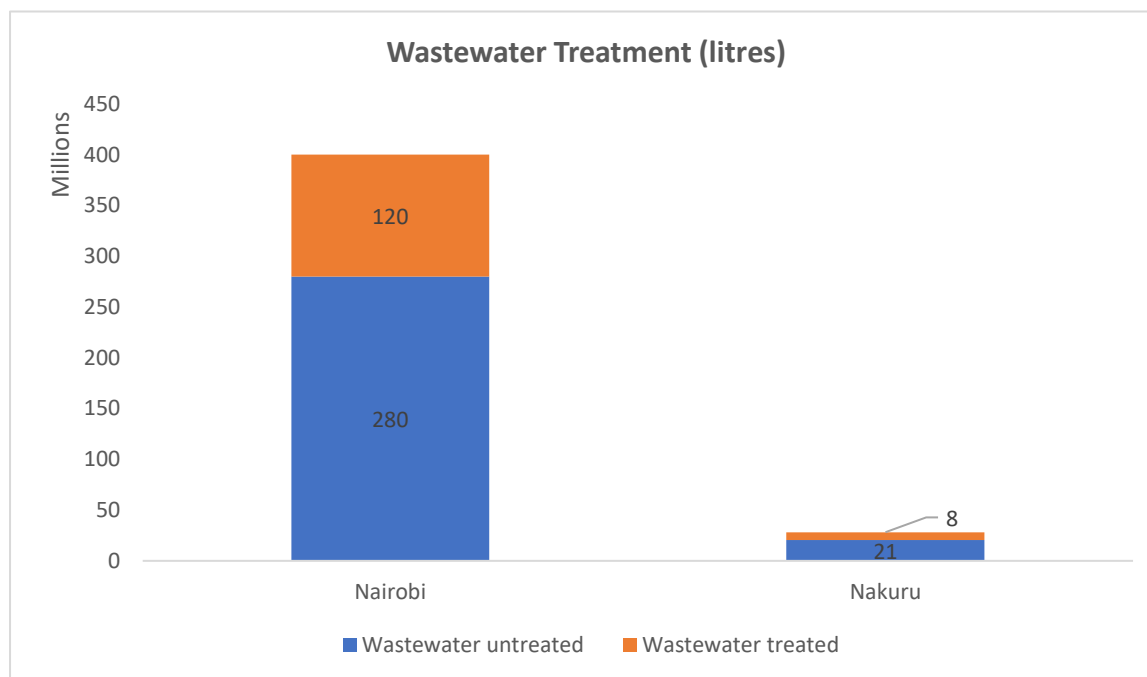
²⁹ The Bill & Melinda Gates Foundation. (2011). Landscape Analysis and Business Model Assessment in Faecal Sludge Management: Extraction and Transportation Models in Africa – Kenya. Pg 2-15, link

³⁰ Water Sector Trust Fund. (2017). Up-scaling basic Sanitation for the Urban Poor. Pg 12, link

³¹ World Bank Group. (2019). Scaling sanitation and promoting the circular economy top priorities for Kenya 2030 WRG governing board. Link

in the environment untreated.³² In the past few years, treatment and reuse models employing various innovations have emerged, a model that is expected to continue to grow in future.

Figure 7: Wastewater treatment market potential



The market potential across the three segments of the value chain is higher in Nairobi compared to Nakuru purely due to the higher population size despite higher sewage coverage in Nairobi. However, the enabling political environment in Nakuru, which is the first county to pass a sanitation bill as mentioned in the section above, has fostered private sector participation resulting in multiple innovative treatment and reuse companies in the county.

2.2. Key Business Models

The majority of SMEs are in the emptying and transport segment of the value chain with a handful of innovative business models in containment, and treatment and reuse. Across FSM and OSM service delivery, most SMEs in the Kenya sanitation space operate within FSM, attributable to the capital-intensive nature of setting up sewerage systems and maintaining operations. Only a handful of SMEs in Kenya operate within the OSM segment and those typically undertake treatment and reuse hybrid models.

Key Business Models by Value Chain Segment

Containment

³²Nakuru County Government. (2019). Nakuru Countywide Strategic Sanitation Plan: Countywide Inclusive Sanitation Strategy. Pg 11, link

Select businesses are exploring route to market partnerships to reach Base of the Pyramid (BoP) customers and combining containment infrastructure with other revenue generating activities. For most business models in containment, these are numerous players in FSM, both skilled and unskilled, involved in the construction of simple pit latrines and septic tanks, which involves a one-time infrastructure construction. Some companies are exploring ways to scale improved pit-latrines within low income communities in Nairobi through partners to extend customer reach. For example, Silafrica (a mature stage plastics packaging business with a WASH department in Nairobi) is exploring partnering with organizations that largely employ unskilled staff who typically reside in low income areas. Other companies such as Global Innovative Sanitation Environmental Solutions construct biodigester septic tanks for households and apartment complexes.

In OSM, there are only a few players in the containment value chain. In our research, we identified one Nairobi-based SME, Ecotact, which through their product, 'IkoToilet', combines the main function of a public toilet (which utilizes a pay per use business model under containment) with additional social amenities. These amenities are stations attached to the main toilet structure that hold shoe-shine stations, convenience stores, salons and other services that bring a social dynamic that helps change the poor perception of public toilets whilst creating additional employment. Revenue generation is therefore from both use of the toilet facilities, as well as rental income from leasing out the adjoining stations. They operate on a build-operate-transfer model, in which they enter 5-year contracts with local authorities that entitles them to construct on public property. At the end of the period, authorities have the option of renewing the contract or taking over the project. Current financing has been through funds generated from operations as well as support from various investors such as the Acumen (with more details in the overview of investors section further below).³³

Figure 8: Case Study of route to market partnerships for Silafrica

Case Study: Silafrica



Background

Founded in 1986, Silafrica is involved in the manufacture of high-quality packaging products for FMCG in Kenya, Tanzania and Ethiopia, with 10% of its operational capacity dedicated towards social impact within the WASH sector. One of their social impact solutions is the SATO toilet pan (SATO is a leader in sanitation solutions and part of the LIXIL group, which is a Japanese manufacturing company focused on water and housing products). It is an improvement to the Ventilated Improved Pit latrine that has a cover at the bottom of the latrine, eliminating the need

³³ Acumen. (2008). New on the Acumen Fund Web Site: Ecotact Investment and Story. Link

for ventilation pipes and effectively prevents the exit of flies that are the key cause of spread of disease.

Route to market partnerships:

Given the price sensitive nature of its target BoP customers, Silafrica has come up with a solution that includes both the cost of the SATO toilet pan and installation. During a prior partnership with World Bank to trigger behaviour change by making pit latrines more affordable, one of the route to market challenges identified is installation. As a result, Silafrica partnered with the Jua Kali Association to engage their artisans to provide an inclusive solution to the customers which includes the installation cost at USD 20 - USD 22 per installation. Contracting the association artisans also ensures quality control. Silafrica is also considering partnering with organizations that employ large numbers of unskilled workers who typically reside in low income areas for offtake of the product.

Emptying and Transport

Numerous small-scale players in the emptying and transport value chain, who made up a critical segment of the sector, are starting to organize themselves through various organizations presenting the potential for increased formality. These FSM players providing pit emptying and transport services are broadly classified under manual and mechanical operations. Under manual emptying operations, typically informal players, the most basic collection method involves climbing into a pit with shovels and buckets and hoisting the sludge up and into some container which is then dumped untreated due to lack of designated dumping sites as they are not licensed or regulated. Under mechanical operations which are typically licensed, trucks are used for emptying – the two main types of trucks available in Kenya are those locally fabricated and second-hand imports of specialized trucks. Despite presence of official dumping sites and wastewater treatment plants, many private exhaustor operators discharge the waste illegally into open water surfaces to reduce the operational cost of transporting it to designated sites.³⁴

Most of the mechanical operators have formed Savings and Credit Cooperative Organizations (SACCOs) to improve their access to financing.³⁵ Additionally, in a bid to improve organization within the FSM space and advocate for the interests of these players in sector policy formulation, the Kenya Septage Association was formed in 2019 and is lobbying to bring together manual and mechanical emptying businesses. The association estimates that there are about 200 exhaustor trucks in Nairobi and 50 trucks in Nakuru. The truck owners typically own one to five trucks and many of these businesses are profitable and easily replicable. These truck owners are typically seeking capital to purchase additional trucks, tools and inputs to facilitate provision of their services.

³⁴ Water Sector Trust Fund. (2017). Up-scaling basic Sanitation for the Urban Poor. Pg 12, link

³⁵ A Savings and Credit Cooperative Organization (SACCO) is a member owned financial institution offering savings and credit facilities to members

Treatment and reuse

Though only a handful in Kenya, two of the treatment and reuse businesses in Kenya have received the most impact investing financing in the sanitation sector, indicative of the perceived market and impact opportunity for these business models. Treatment and use business models, which also include hybrid business models have been set up in recent years and thus are only a handful in Kenya. It is expected that as the sector grows, there will be similar innovative business models emerging and expansion of the current businesses. We identified two SMEs in Nakuru county, that is, NAWASSCOAL and Sanivation (operating in Naivasha town), and two in Nairobi, Sanergy and Rootzone Africa. NAWASSCOAL employs an energy recovery model, which uses domestic sludge that has been collected from both onsite management systems and sewers connected to Nakuru Water and Sanitation Services Company's (NAWASSCO's) domestic sewerage plant, using it to create and sell briquettes for domestic use. NAWASSCOAL, being a subsidiary of NAWASSCO (a public WSP), has obtained majority of its financing from its parent company to date. Sanivation utilizes a similar model partnering with local governments to build treatment plants for the transformation of fecal sludge into biomass fuels. Both possess high capacity treatment plants, with the machinery capable of serving as collateral. Another player, Sanergy, combines both containment within the pay per use model as well as the reuse nutrient-recovery model in which it collects sanitation waste from the community through their low-cost high quality sanitation facilities named "Fresh Life." Sanergy's revenue lines include the sale of its toilet, which is sold to entrepreneurs within communities to run as businesses, as well as the sale of organic fertilizer and insect-based animal feed manufactured at a centralized facility from the waste collected from the toilets sold. Sanergy intends to expand its processing facility to increase production capacity in both organic fertilizer and animal feed, as well as testing the potential of biogas production for which they require financing.³⁶ Both Sanivation and Sanergy have received funding from various impact oriented investors which is will be discussed in more detail in the overview of investors section further below. Rootzone Africa, a subsidiary of a Denmark company - Transform, treats wastewater using environmental technologies that enable them to construct wetlands, using reed bed systems that transform and remove a range of contaminants from wastewater. The company either charges an upfront purchase fee for the wastewater system which ranges from USD 1,000 – USD 4,000 or a monthly lease / rental fee of USD 10 – USD 30 a month. They also charge an ongoing maintenance fee for the system. The company has set up operations in Uganda and is currently in the process of setting up in Kenya.

Figure 7 highlights these business models including a snapshot of their revenue models, key capital and operating costs, assets available for collateral and typical sources of financing. While Nairobi has a larger urban population and as such has more sanitation businesses across FSM and OSM, the number of businesses per capita may be higher in Nakuru. For example, according to estimates provided by the Kenya Septage Association, one exhaustor truck serves approximately 8,000 people in Nakuru compared to 22,000 people in Nairobi. In addition, the establishment of NAWASSCOAL

³⁶ Energy and Environment Partnership. (2019). Next Round of Investment to Scale Sanergy: Building healthy & prosperous communities through affordable and hygienic sanitation. [Link](#)

as a treatment and reuse business model which is a subsidiary of the Nakuru WSP, demonstrates public sector commitment to commercial businesses in the sanitation sector.

Figure 9: OSM and FSM business models

	Value chain participation	Business models identified	Key capital & operating costs	Revenue model/ streams	Assets available for collateral	Typical sources of external capital
OSM	Containment	Pay per use model with added social amenities: involves charging of fixed fee for use of toilet facilities, but also comes with added social amenities connected to the structure for varied services such as convenience stores and shoe shine centres (e.g., Ecotact)	Construction of the facility Overheads such as electricity, employee salaries	Pay per use, lease or rent for adjoining facilities	None (Government owns the land)	Debt, donations and grants
	Emptying, Transport, Treatment and Reuse	Energy Recovery: involves use of collected domestic sludge to manufacture materials such as bio-fuel (briquettes and pellets) e.g., NAWASSCOAL	Treatment plant construction, Equipment e.g. dewatering equipment Overheads e.g. labour, variable costs e.g. chemical treatment inputs	Sale of domestic briquettes	Treatment equipment	Funding from WSP (parent company), debt, equity, quasi equity, grants
FSM	Containment	Improved pit-latrines design for households: involves the implementation of improved design to reduce spread of diseases (e.g. cholera), and incorporating cost of installation (e.g., Silafrika)	Equipment for manufacturing plant Overhead costs e.g. employee salaries	Sale of improved latrine (price inclusive of installation cost)	Manufacturing equipment	Debt, equity, grants
	Emptying and Transport	Manual emptiers: entails the most basic collection method, which involves climbing into a pit with shovels and buckets and hoisting the sludge up Mechanical emptiers: makes use of trucks, with those available in Kenya being the locally fabricated and specialized second-hand imports	Manual emptiers: Inputs such as disinfectant, and emptying tools (e.g. shovels) Mechanical emptiers: Purchase of truck/s Labour, fuel, inputs	Payment for service	None for manual emptiers; truck for mechanical emptiers	Asset-backed debt (for mechanical emptiers), SACCO financing for both
	Treatment and Reuse	Wastewater treatment services: makes use of environmental technology to create constructed wetlands for domestic waste treatment (e.g., Rootzone Africa)	Research (lab tests for treatment), treatment technology Labour, chemical treatment inputs	Sale or rental option	None	Debt, equity, quasi equity

2.3. Business Levels of Formality

Pre-investment support to improve the formality of semi-formal businesses could help unlock impact investment for sanitation businesses. This would include implementing systems to improve capturing of data such as financial information, building in strong internal controls, among others. There is significant variation in the sanitation sector of levels of formality of businesses as summarized in the figure below, despite most businesses being formally registered. The levels of formality typically influence the type of financing available to a business. For instance, in a 2016 World Bank survey of informal businesses in Kenya, an overwhelming majority of informal firms surveyed (87%) use their own funds to finance working capital requirements, followed by money from friends and relatives (35%), credit and advances from suppliers and customers (19%), micro-finance institutions (16%), moneylenders (9%), and banks (9%).³⁷ These

³⁷ World Bank Group. (2016). Informal Enterprises in Kenya. Pg 7, link

businesses tend to be in the early stage of the business cycle. More formal businesses tend to be in the mature business stage and therefore can secure more sophisticated forms of funding such as equity largely tied to their record keeping, internal systems and processes and governance. By maintaining their financial records, they can articulate and demonstrate their track record as well as projected performance. They also tend to have internal controls, clear reporting structures and skilled management teams instilling investor confidence.

Figure 10: Summary of levels of formality across key business features



Most sanitation businesses ranging from sole proprietorships to limited liability companies are registered and have the relevant licensing documents for statutory compliance, meeting the minimum formality requirements. Since the sanitation sector in Kenya is still nascent, most businesses are early stage and thus though they meet the minimum formality requirements, they typically do not keep proper book of accounts such as mechanical exhauster businesses. However, there are more formal businesses such as the players in the treatment and reuse value chains.

In cases where there are semi-formal businesses who have a sound business model and strong management team, investment coupled with pre-investment technical assistance could assist in helping to formalize operations (such as implementing internal controls) and enable them to unlock their growth potential.

Since exhauster businesses comprise a large segment of the sector, there is potential for more impact investment into this value chain to drive the sector. With majority of urban residents using onsite sanitation, safe collection, emptying and disposal by exhauster trucks is a critical element in

the sector. In addition, safe disposal has the potential to support more innovative treatment and reuse models which have emerged in recent years, a trend that is expected to continue in future. As a result, these companies have large impact, but few view themselves as “impact” businesses or have developed ambitious growth plans. To unlock impact capital, there is potential to help them articulate the social and environmental impact of their operations, accompanied with the expected financial returns. They are often semi-formal businesses that are registered but do not maintain any books of accounts neither do they have any internal controls. While they have started organising themselves as mentioned in the key business models sections, they require pre-investment support to assist with formalizing operations such as systems to assisting with capturing information such as financial and impact data, implementing internal controls such as cash controls, among others.

2.4. Key Trends in Business Models

Key trends across sanitation business models are driving a more robust sanitation sector that fosters private sector involvement. We identified these trends as discussed further below from consultations with businesses in both OSM and FSM across various segments of the sanitation value chain.

Incorporation of technology: Some players have introduced technologies for service delivery to improve environmental outcomes, reduce operational costs, and/or introduce new revenue streams. However, currently this is limited to a small number of firms with most sanitation SMEs still relying on basic practices. An example of incorporation of technology for new revenue streams and environmental impact is Rootzone Africa which provides treatment of wastewater using environmental technologies that enable them to construct wetlands, using of reed bed systems that transform and remove a range of contaminants from wastewater. We are also seeing increased use of mobile technology to make waste collection more efficient. An example is the work by Sanergy, using mobile enabled sensors to record activity in their Fresh Life Toilets and estimate fill levels, for which they received the Mobile for Development (M4D) Utilities grant in 2015.³⁸ Most of these innovative businesses are yet to break even and therefore require patient capital from investors with a high risk appetite.

Pricing considerations: Given many solutions within the sector are targeted towards price-sensitive BoP customers, some sanitation businesses have refined their revenue models to accommodate the underserved. For instance, Rootzone Africa has adopted a rental model for customers that are unable to outrightly purchase their wastewater system which ranges from USD 1,000 – USD 4,000, to allow them to make monthly payments of USD 10 – USD 30 a month. This has enhanced the affordability of its product, driving greater customer uptake. However, this model protracts the process of getting a return on the investment, making it better suited for patient capital.

Increased use of partnership models: We have observed from consultations the adoption of mutually beneficial partnerships by various SMEs and other market players to enhance route to

³⁸ GSMA. (2017). Sanergy: Exploring the use of mobile-enabled sensors to optimise sanitation waste collection in Kenya. Link

market within the BoP for better service delivery. For instance, in an effort to increase uptake of their pit latrines, Silafrica have partnered with the Jua Kali Association to work with masons across Kenya to facilitate installations and provide transparency on related costs.³⁹ In this partnership model, the association helps Silafrica identify skilled masons to install their pit latrines in grassroots areas. Silafrica then provides the mason with fixed payments for a given number of installations in a day, thereby providing them with a stable source of wages. As such, the mason can charge a fixed amount for their services, which leads to transparency in pricing and reduces the chances of exploitation by masons operating independently with an unstable stream of income. This in turn translates into greater visibility and affordability for Silafrica and their product offering, while also empowering the gig economy creating a strong case for impact investment.

Creation of subsidiaries by WSPs: Given that WSPs are mandated not to conduct business for profit (but rather reinvest surpluses into the expansion and improvement of service provision) under Kenyan law, some players have begun establishing for-profit subsidiaries that can take advantage of attractive market opportunities. This is the case for Nakuru Water and Sanitation Services Company (NAWASCO), which created a subsidiary called NAWASSCOAL which converts treated waste into briquettes for domestic use. Given affiliation with public utilities, such subsidiaries need to demonstrate a high degree of autonomy in business decision making to boost investor confidence given the potential for political interference.

Increased government participation: Counties are increasingly appreciating the significance of private participation to help them mobilize resources and achieve Kenya's Vision 2030 goal of improved sanitation to all. This is being done by engaging private companies through offtake agreements, evident in the case of Nakuru where Sanivation has partnered with Naivasha Water and Sanitation Company and the County Government of Nakuru to establish a faecal sludge treatment plant for the production of biomass fuels with a capacity of 350 tons per month.⁴⁰ Political goodwill demonstrated in counties such as Nakuru towards the sanitation sector foster private sector participation in the form of SMEs and investment.

3. Urban Sanitation Financing in Kenya

Private sector financing is growing in the sanitation sector with development partner funding shifting from grants to repayable capital, demonstrating improving perception of the sector as presenting a commercial market opportunity. Private sector participation globally within the sanitation sector has been minimal, contributing to less than 8% of investments in sanitation infrastructure according to the IFC.⁴¹ However, private investments in the sector have been growing, owing in part to a shift in perception that human waste is a resource that increases with population growth, making it a commercially attractive investment. In Kenya, historically, the government's allocation to the WASH sector has been larger than that of development partners, a trend that

³⁹ The 'Jua Kali' industry refers to the informal gig-based sector characterized by artisans and masons, typically operating in open spaces, hence the name which directly translates to 'hot sun'

⁴⁰ Sanivation. NAIVASHA: Waste-to-energy plant. [Link](#)

⁴¹ International Finance Corporation (IFC). (2015). Leveraging Market Opportunities to Achieve Development Impact: Entrepreneurial Solutions to Improve Access to Sanitation and Safe Water. SSAWA Program Report. [Link](#)

changed from 2014. For instance, an average of the main sources of financing in the WASH sector between 2016-2018 showed that only 39% came from government, with more than 50% being sourced from various development partners such as International Development Association, German Development Bank, African Development Bank, and the governments of Italy, France and Belgium (see Figure 11 for key characteristics and examples of different investor categories operating within the Kenyan sanitation space).⁴² With the support of the World Bank and other development partners, between 2007 and 2017, about 50 transactions were completed in the WASH sector with over USD 25M in private capital raised as of 2018.⁴³ Additionally, the structure of financing from development partners is largely through concessionary loans and not grants (over 80% over the period 2013-2016), indicating that financiers have shifted their perception of the sector from a state-provided public good to be supplemented by philanthropy, to a potentially commercial investment opportunity.⁴⁴

According to a 2015 GIIN report on impact investing in East Africa, almost half of the impact capital in the region was deployed in Kenya. Development Finance Institution (DFI) capital was estimated at USD 3.6 billion while non-DFI capital was estimated at more than USD 650 million in Kenya.⁴⁵ Development partner funding has been largely directed towards government projects. Kenya also recorded the largest number of non-DFI impact capital vehicles in East Africa at 136 as of 2015. This has translated into several deals within the sanitation sector by non-DFIs to private businesses. Despite improving perceptions on the commercial viability of businesses within the WASH sector, based on our investor consultations, investment within the sector, especially for sanitation, is still low. For most investors who fund WASH, sanitation represents less than 10% of their portfolio. Furthermore, investors who are solely focused on the WASH sector such as Kenya Innovative Finance Facility for Water (KIFFWA) tend to gravitate towards the water sector. This has been primarily because they are yet to identify disruptive innovations in the sector like other sectors such as off-grid energy. However, most of the current models are replicable and have the potential to generate steady investment returns. Due to the replicability of the business models, investors are leaning towards providing debt to the businesses in the sanitation sector.

⁴² The Kenya Institute for Public Policy Research and Analysis (KIPPRA). (2018). Water and Sanitation Budget Brief. No. 66/2018-2019. Pg. 15, link

⁴³ World Bank. (2018). Kenya: Using Private Financing to Improve Water Services. Link

⁴⁴ The Kenya Institute for Public Policy Research and Analysis (KIPPRA). (2018). Water and Sanitation Budget Brief. No. 66/2018-2019. Pg 14 , link

⁴⁵ Global Impact Investing Network. (2015). The Landscape for Impact investing in East Africa. Pg 10, link

Figure 11: Investor characteristics by investor type

Investor category	Example investors	Funding instrument	Typical investee business type	Typical financing types	Typical value chain focus
Commercial	Commercial Banks and MFIs	Debt	<ul style="list-style-type: none"> Growth to mature stage businesses with proof of ability to repay 	<ul style="list-style-type: none"> Working capital Project financing Asset based financing 	<ul style="list-style-type: none"> Containment Emptying and Transport Treatment & reuse
	Pension funds	Bonds, equity	<ul style="list-style-type: none"> Mature stage businesses due to risk-averse nature 	<ul style="list-style-type: none"> Infrastructure Project financing 	<ul style="list-style-type: none"> No sanitation investments yet
	Traditional Venture Capital (VC) and Private Equity (PE) firms	Equity, quasi equity, debt	<ul style="list-style-type: none"> VC: early stage businesses PE: Growth to mature stage businesses 	<ul style="list-style-type: none"> Infrastructure Project financing Working capital 	<ul style="list-style-type: none"> Limited investments in the sector, including in treatment & reuse
Impact-oriented	Multilaterals	Grants, concessional debt	<ul style="list-style-type: none"> Mature stage businesses that generate impact with ability to absorb large capital 	<ul style="list-style-type: none"> Seed capital Infrastructure Working capital Project financing 	<ul style="list-style-type: none"> Containment Treatment & reuse
	Bilaterals	Debt, grants, equity	<ul style="list-style-type: none"> Mature stage businesses that generate impact with ability to absorb large capital 		
	Impact funds	Equity, quasi equity, debt	<ul style="list-style-type: none"> Early to mature stage businesses that generate impact and financial returns 		
	Foundations and NGOs	Grants, concessional debt	<ul style="list-style-type: none"> Early to mature stage businesses with a greater focus on impact 		
Investing for solutions	Accelerators, incubators and foundations	Grants, equity	<ul style="list-style-type: none"> Early to growth stage business considered risky with strong impact 	<ul style="list-style-type: none"> Seed capital 	<ul style="list-style-type: none"> Containment Emptying and Transport Treatment & reuse

3.1. Overview of Investors

Most of the private investment in the sanitation sector has been by impact-oriented investors, with development partners partnering with local commercial banks to drive sanitation investments.

Commercial investors

Due to the nascent nature of the sector, there has been little investment by most commercial investors except commercial banks whose initial investments were facilitated by partnerships with development partners. For many commercial investors in Kenya, they largely rely on internal predetermined evaluation structures and criteria which are typically applicable across all sectors to evaluate sanitation businesses. For commercial banks, the level of credit risk analysis depends on the size of the loan. For personal micro loans especially to households through mobile money typically up to USD 1,000 they utilize a digitized system score for potential borrowers while for larger loans, they have a risk unit in place to conduct the assessment. Commercial banks invest through debt in various forms such as working capital financing, asset backed financing and project-based financing. They are motivated by growing their loan book and the company's bottom line. As such, their lending is driven by the ability of the borrower to pay back the loan based on past and projected cashflows. In line with this, they typically invest in established businesses and less so in early-stage businesses that are yet to demonstrate proof of concept.

Commercial banks in Kenya offer interest rates of around 13%, with tenors of up to 5 years and are flexible to provide grace periods on the principal repayment. Key financial metrics assessed focus on the liquidity and levels of leverage in a business, which determine the ability to repay the loan. These metrics include current ratio, Debt-to-Equity ratio (D/E), Debt Service Coverage Ratio (DSCR) and interest coverage ratio. The due diligence process could take as little as two weeks including a site visit by the bank staff as long as a business is able to provide the documentation required such as compliance certificates, tax returns, management accounts, financial statements, among others. Only a few commercial banks in Kenya are lending to the sanitation sector such as Equity Bank, Family Bank and Sidian Bank after building a track record of repayments by sanitation businesses through initial partnerships with development partners (detailed further in the Impact Oriented Investors section below).

There has not been much investment in the Kenyan sanitation sector from the other types of commercial investors. Traditional Venture Capital (VC) funds typically target higher-risk, earlier stage businesses and provide financial and non-financial support in exchange for a share of equity, while Private Equity (PE) firms typically invest in more established businesses using a mix of debt, equity and quasi equity. As mentioned in section 2 above on business models, most sanitation businesses in Kenya require patient capital from investors with a high-risk appetite, demonstrating mismatch between the capital needs of sanitation businesses and the investment criteria of VCs and PEs. On the other hand, pension funds in Kenya have historically focused on low-risk investments such as government securities, quoted equities and immovable property, and are yet to invest in the WASH sector given the mismatch in the risk-return profile.

Impact-oriented investors

Impact investors ranging from DFIs, impact funds, foundations have invested in different business models across the sanitation value chain. For impact investors, their decision to invest is driven by the capability of the business to deliver economic, social and/or environmental impact while earning a return on their investment. In Kenya, impact investors focus on the scalability of the potential investee's business model and typically not proof of concept, as they look for businesses that will ultimately be attractive to private equity firms or other strategic industry partners, allowing them to recoup their investment. As such equity impact investors tend to have a more robust investment criteria and due diligence processes which includes:

- Team: assess company ownership, senior management's sector experience and technical expertise, organizational structure, gaps in management, team talent management (e.g. recruitment, training, retention), and Board composition
- Financial viability: assess key metrics including Operating Cost Coverage ratio, Time to break-even, and Internal Rate of Return (IRR)
- Soundness of lead project developer/investee: assess whether the investee is reputable, understands the market, has strong management skills, strong track record, and whether they have also invested their own funds
- Target market: assess that the product is affordable, that target consumers are creditworthy, and that end consumers have a guarantee
- Social and development impact: look at improved access to water services to the underserved, job creation, gender and social considerations, poverty alleviation, affordability, climate resilience (proofing)

- Environmental: assess whether the technology used is appropriate for the environment
- Legal/ Regulatory: where land is required for the solution proposed, presence of title or long-term lease

Impact investors typically use a variety of instruments, such as debt, equity, quasi equity, and grants, to finance businesses and as such tailor instruments to the needs of the business. The types of businesses selected are closely linked to their investment thesis. Contrary to commercial investors, impact investors are willing to invest in earlier stage businesses offering patient capital for innovative business models that have the potential to disrupt sectors. In Kenya, Sanivation and Sanergy have received funding from numerous impact investors as outlined below and received significant publicity regarding their work in the sanitation space.

DFI funding from multilaterals and bilateral in the sector has primarily been to government projects such as OPEC Fund for International Development (OFID) into the Garissa Sewerage Project. However, these development partners also collaborate with local commercial banks to ensure onward lending to SMEs, given their in-depth understanding of the local context and financing needs. Such partnerships play a key role in the WASH sector to crowd in commercial financing by offering blended finance in the form of technical support and credit enhancement facilities such as guarantees and grants. For example, Sidian Bank has been able to extend concessionary interest rates to sanitation businesses offering services such as exhauster services and garbage collection, as a result of patient capital provided by a development partner. In addition, Equity Bank began investments in sanitation as a result of a partnership with a development partner who provided an 80% cash guarantee on loans for biodigesters installed in institutions such as schools, and have continued offering loans to the sector even after the partnership ended. While the partnership model between the development partners and commercial banks has been prevalent in the Kenyan space, there have been just a few instances where DFIs have invested directly into sanitation businesses such as the USD 5 million debt by Overseas Private Investment Corporation (OPIC) and more than USD 1 million investment by Finnfund into Sanergy, and USAID grant investment into Sanivation.^{46,47,48}

Foundations that have invested in the Kenya sanitation sector include the Coca-Cola Foundation, provided a USD 1 million grant for WASH solutions through the Global Water Challenge, part of which was awarded to Ecotact.⁴⁹ It is also common for foundations to fund NGOs who in turn provide grants and non-financial support such as technical assistance. For example, the Stone Family Foundation has engaged Water & Sanitation for the Urban Poor (WSUP) to assist sanitation enterprises such as Gasia Poa, a waste management company offering pit emptying services to low income households in Kisumu County, develop standard operating procedures to assist pit-emptiers

⁴⁶ U.S. International Development Finance Corporation. Information Summary for the Public. [Link](#)

⁴⁷ Finnfund. Sanergy Inc. [Link](#)

⁴⁸ OECD iLibrary. (2019). Evidence on blended finance in small-scale off-grid sanitation, wastewater collection and treatment. [Link](#)

⁴⁹ Business Wire. (2008). Innovative Projects to Support Water and Sanitation Solutions to receive \$1 Million in Funding from the Coca-Cola Foundation. [Link](#)

in formalizing their operations.⁵⁰ Historically, their support has focused on underserved regions including low income populations and refugee camps.

Figure 12: Case study of investment into Ecotact

Case Study: Ecotact



Background

Founded in 2008, Ecotact's product, the 'IkoToilet', combines the main function of a public toilet with additional social amenities through stations attached to the main toilet structure that provide non-sanitation services (e.g. shoe-shine stations, convenience stores) deriving revenue from both the toilet facilities, as well as income from the adjoining stations. They operate using a build-operate-transfer model, in which they enter 5-year contracts with local authorities to construct on public property, at the end of which authorities can either renew the contract or take over the facility.⁵¹ They also franchise the product to local entrepreneurs, providing much needed employment to the youth. As of 2014, there were over 60 IkoToilet units across Kenya, serving over 10 million Kenyans annually.⁵²

Past financing:

Initially Ecotact relied heavily on charity and government financing. However, the enterprise evolved and was able to access commercial sources of funding.⁵³ Past investors include Acumen, the Global Water Challenge, and the World Bank. For example, Ecotact received USD 757k debt investment from Acumen.⁵⁴ To sustain its operations, it is estimated that the company earns at least KES 100,000 (USD 918) per day.⁵⁵

Key learning:

- Soft capital, such as nonrepayable funding, is critical for early stage companies before they have the capacity to support commercial sources of funding

⁵⁰ The Stone Family Foundation. Gasia Poa: Supported via our strategic partnership with WSUP. [Link](#)

⁵¹ Crossroads' Global Hand. Ecotact's IkoToilet concept – Sustainable sanitation services in Kenya. [Link](#)

⁵² Global Innovation Exchange. (2018). IkoToilet. [link](#)

⁵³ International Finance Corporation (IFC). Safe Water for All: Harnessing the Private Sector to Reach the Underserved. Pg 12, [link](#)

⁵⁴ Acumen. (2008). New on the Acumen Fund Web Site: Ecotact Investment and Story. [Link](#)

⁵⁵ Global Innovation Exchange. (2018). IkoToilet. [link](#)

Impact funds that have invested in the sector include Acumen which invested USD 1.7 million equity in Sanergy and USD 757k in debt in Ecotact, Eleos Foundation (Global Partnerships) which invested more than USD 3 million in the form of quasi-equity in Sanergy, Novastar and SpringHill Equity Partners also invested in Sanergy and FINCA Ventures invested patient capital in Sanivation.⁵⁶ Take-a-Stake is also actively sourcing for investments in the sector, offering working capital, debt and equity and is bundling investment with technical assistance to support sanitation companies in formalizing their operations, filling a key gap in the sanitation sector.^{57,58,59,60}

Figure 13: Case study of investment into Sanergy

Case Study: Sanergy



Background

Founded in 2011, Sanergy provides a sanitation solution in informal settlements in Nairobi through its low-cost Fresh Life Toilets (FLT)s which have waste cartridges which are collected and transported to a treatment facility and recycled to produce organic fertilizer and insect-based animal feed. Sanergy uses a franchise network model, selling the toilets to operators across Nairobi. Since their launch they have deployed over 3,500 franchised toilets in 11 of Nairobi's slum areas, with over 140,000 uses per day and safely removed more than 10,000 tons of otherwise harmful waste annually. Sanergy aims to serve approximately 1 million people throughout Nairobi by 2025.⁶¹

Past investment:

Sanergy has received significant investment from various impact investors. Acumen invested in Sanergy in 2013 with a consortium of investors including CDC (through Novastar) and Eleos Foundation (Global Partnerships).⁶² Acumen also provided technical support in the form of market research grants for branding and marketing of fertilizer. Novastar and Eleos Foundation have made multiple investments over the years. For example, Novastar led two investment rounds into Sanergy as at 2016, citing alignment between the social benefits that Sanergy

⁵⁶ Impact Space. Sanergy. [Link](#)

⁵⁷ Acumen. (2008). New on the Acumen Fund Web Site: Ecotact Investment and Story. [Link](#)

⁵⁸ Novastar Ventures. Portfolio: Sanergy. [Link](#)

⁵⁹ Spring Hill Equity Partners. Sanergy. [Link](#)

⁶⁰ OECD iLibrary. (2019). Evidence on blended finance in small-scale off-grid sanitation, wastewater collection and treatment. [Link](#)

⁶¹ GreenTec. (2020). Case Study: Amitruck and Sanergy. [Link](#)

⁶² Bill & Melinda Gates Foundation. (2017). How We Work: Grant – Sanergy. [Link](#)

produces and the commercial logic of the business.⁶³ In addition, the Eleos Foundation made a series of quasi equity investments from 2011 to date amounting to more than USD 3 million.⁶⁴

Based on the success of their pilot program, Sanergy subsequently raised approximately \$5 million in repayable capital and grants from the Bill & Melinda Gates Foundation and other development organizations.⁶⁵

Sanergy is looking to scale operations through the construction of a factory to increase the production capacity of the Evergrow fertilizer as well as PurProtein animal feed, in addition to increasing their waste management fleet to increase waste collection volumes.⁶⁶

Key learnings:

- Past investment by investors builds investor confidence for follow on investors
- Investors are likely to invest multiple times in an investee when the social and impact returns are aligned with the investor's objectives

Solutions-focused investors

By focusing on mitigating risk either through financial or technical support, solutions-focused investors invest in businesses considered to be risky. Solution-focused investors include accelerators, incubators and foundations which typically focus on social impact and almost exclusively use fund and non-fund mechanisms such as guarantees to exclusively mitigate risks in investments. They provide both financial and non-financial support, with non-financial support coming in the form of technical assistance such as management coaching and investor readiness trainings, which is particularly valuable for less formal businesses. Financial support is typically in the form of grants or equity, usually milestone based. Their investment criteria are similar to those of impact-oriented investors assessing viability and scalability of the business, traction and team competence. For example, Sanergy conceived its business model in MIT's Development Ventures class and received USD 100k from the MIT USD 100k Entrepreneurship competition.⁶⁷ Pangea Accelerator is an example of an investor within the solutions-focused category, which provides both financial and non-financial support to SMEs, typically early stage, in the Kenyan space.

⁶³ GIIN. (2016). Novastar Ventures' Use of Impact Data. Pg 8, link

⁶⁴ Impact Space. Sanergy. Link

⁶⁵ Bertha Centre for Social Innovation & Entrepreneurship. (2016). Innovative Finance in Africa review. Pg 25, link

⁶⁶ Energy and Environment Partnership. (2019). Next Round of Investment to Scale Sanergy: Building healthy & prosperous communities through affordable and hygienic sanitation. Link

⁶⁷ Kibutha S. (2011). Sanergy: An MIT Love Story. Nairobi: Sanergy. Link

3.2. Innovative Financing Structures

Innovative financing structures are still nascent in sanitation in Kenya however, blended finance is gaining traction. Globally, there has been the emergence of innovative financing structures within the sanitation space including blended finance, project financing through Special Purpose Vehicles (SPVs), and green bonds. While innovative financing structures are quite common across other sectors in Kenya, in sanitation they are still in nascent.

Blended finance: the use of concessional financing and credit enhancement mechanisms is critical to mobilizing commercial finance in the sanitation space as it helps mitigate financial risk and, in some instances, resulting in a lower cost of capital. For example, for public water utilities, the use of guarantees and Output-Based Subsidies (OBA), that is, performance-based incentives paid to service providers has enhanced access to infrastructure services for the poor.^{68,69} For SMEs, development partners such the World Bank are increasingly partnering with commercial banks to ensure onward lending to private sanitation service providers.⁷⁰ As highlighted in the *Impact-oriented investors* section above, commercial banks such as Sidian Bank and Equity Bank commenced investments into the sector as a results of blended finance models with development partners who took on the risk to crowd in private sector funding.

Project financing through SPVs: to facilitate project financing in the sanitation sector, co-developers enter into Joint Development Agreements with the project developer to facilitate the formation of an SPV, through which investment is channelled. An example of an investor looking to provide such a structure in the Kenyan space is the Kenya Innovative Finance Facility for Water (KIFFWA), which was launched in 2017. While no disbursements through SPVs have been made at present, KIFFWA currently has two sanitation businesses in the pipeline, one of which has been approved by the KIFFWA board for support. At least one of the businesses falls under the treatment and reuse value chain segment. In addition to providing non-financial support such as training in the preparation of financial models, and support in navigating legal processes (such obtaining relevant licences), KIFFWA provides funding to support project promoters in conducting feasibility studies and technical assistance to get their projects to financial close. The financing will typically be provided as a repayable grant until financial close (likely taking 3-4 years). If the project demonstrates financial viability, the grant can then either be repaid in full including a premium or converted into equity or debt. On the flip side, if the project is unsuccessful, the obligation to pay will be nullified. The provision of affordable, early-stage capital for investment readiness support seeks to help de-risk follow-on funding for project developers, thereby helping to crowd-in investment into the sanitation space. Given the complex nature of SPVs, such a structure will likely be targeted at larger players and might not be a fit for smaller players such as SMEs.

Green bonds: as part of a strategy to diversify financial products in the Kenyan capital markets, key stakeholders in the financial sector including the National Treasury, Central Bank of Kenya and

⁶⁸ OECD iLibrary. (2019). Evidence on blended finance in small-scale off-grid sanitation, wastewater collection and treatment. Link

⁶⁹ World Bank. (2016). Scaling Up Blended Financing for Water and Sanitation in Kenya. Pg 2, link

⁷⁰ World Bank. (2016). Scaling Up Blended Financing for Water and Sanitation in Kenya. Pg 2, link

Nairobi Security Exchange (NSE) jointly launched a Green Bond Programme in February 2019, with water and waste management among target sectors for climate finance.^{71,72} The program highlights the legal frameworks for the issuance of listed and unlisted green bonds, with the aim of mobilizing domestic resources and international capital flows specifically for environmentally beneficial investments, to support Kenya's transition to a sustainable economy. Subsequently, the first green bond, worth USD 40 million, was listed on the NSE and cross-listed on the London Stock Exchange in January 2020.⁷³ While the large ticket sizes associated with bonds makes them exclusionary to SMEs, they are suitable for large infrastructure projects, which typically ran as partnerships between governments and development partners. In line with this, the IFC forecasts that Kenya, Côte d'Ivoire, Nigeria, and South Africa could unlock a USD 783 billion opportunity through climate-smart investing in various sectors including urban wastewater and municipal solid waste management.⁷⁴

3.3. Barriers to Sanitation Investment

While there are barriers to investment, there are positive trends encouraging more investment into the sector. We identified barriers to investment across three main themes: (i) the supply side such as limited understanding of the sector (ii) the demand side such as lack of reliable business data and limited disruptive innovations, and (iii) regulatory risks such as limited policies and frameworks to govern sector participation and potential political interference for government affiliated entities, which are discussed in detail below.

Limited understanding of the sanitation sector such as on existing business models, in part driven by lack of market data compared to other sectors such as agriculture. While the performance of WSPs is well documented with annual reports released on their sewerage coverage and operation and maintenance costs as part of regulatory compliance, there is less visibility on the private service providers who serve the needs of the vast majority of customers, but tend to be less formal in their operations. There is therefore limited data on their coverage, performance and impact. However, once investors make initial sanitation investments, they start to build an understanding of the sector and are more willing to make follow on investments.

Limited disruptive innovations: majority of the businesses in the sector are replicable but may be less likely to scale massively, an attribute that equity investors tend to look for so that they can recoup their investment given their risk profile. The nature of these businesses is therefore more likely to attract debt capital. For the few business models that would be considered attractive to impact investors willing to take on the risk of investing in new technologies such as in the case of reuse models for the manufacture of briquettes, they are yet to break-even, and there have been few

⁷¹ Capital Markets Authority (CMA). (2019). Green Bond Market Launched in Kenya. [Link](#)

⁷² Kenya Bankers Association. (2019). Green Bonds Programme: Kenya. [Link](#)

⁷³ The East African. (2020). Kenya's green bond listed on the London Stock Exchange. [Link](#)

⁷⁴ The Kenya Institute for Public Policy Research and Analysis (KIPPRA). Catalyzing Green Bonds from Kenya's Private Sector. [Link](#)

successful exit examples for these models in the sanitation sector.⁷⁵ As such, the nascent nature of the sector requires patient capital from investors willing to invest in high-risk businesses.

Lack of reliable business data: investment decisions and subsequent disbursement of funds are dependent on how promptly investees avail the required information/documentation on financial performance, internal structures and impact created. Due diligence is a time and capital-intensive process for businesses, even for larger, more formal businesses, which must prepare financial statements and other documentation to meet statutory obligations and field questions. The process is even more challenging for smaller, less formal businesses. Many do not maintain reliable historical financial records, develop financial projections or track their operational performance, and therefore such information is typically lacking. Over interviews, businesses across all levels of formality have expressed the difficulty in measuring impact, which is a significant data gap for impact focused investors. Investment coupled with pre-investment support such as implementation of systems to capture data has the potential to increase the robustness of data availability.

Government involvement: government participation in the sector is two-fold, in the form of investment in the sector as well as in creation of regulatory frameworks. On the investment side, with the emerging trend of publicly owned WSPs creating for-profit subsidiaries, investors have shown reluctance to engage with businesses that have significant government participation due to the threat of government interference, potential shifts in direction following administration changes and the overall perceived inefficiency of most public institutions. On the regulatory front, given limited policies and frameworks to govern participation, particularly for on-site management, the outlook on the sector and the direction legislation may take is largely uncertain. This lack of clarity increases the risk of investment within the sector, and thus may deter private sector participation. However, the trend of government support towards private participation in the sector both in terms of financing and service provision is an encouraging trend.

⁷⁵ Global Impact Investing Network. (2015). The Landscape for Impact investing in East Africa. Pg 10, link

Conclusion

Private sector participation both in terms of financing and service provision is critical in the Kenya sanitation sector to meet SDG 6.2. While there is a growing number of SMEs involved in sanitation, private sector financing is still quite low, with sanitation investments making up less than 10% of the portfolio for investors open to funding WASH. This is due to some of the barriers to investment such as limited understanding of the sector, few disruptive innovations, lack of reliable data and perceived risk of government involvement.

While government involvement is a risk, the trend of increased government support for the private sector in sanitation is extremely encouraging. Whilst there is significant need for regulatory reform to clearly set the mandate of the various governing institutions within the sanitation sector, government participation through for-profit subsidiaries of WSPs and expanded sanitation plans are a positive trend in the government's support for commercialization of the sector and support of alternative sanitation models.

To deepen existing models and support innovating models, private sector engagement will require development of key segments of the value chain. Specifically, exhauster trucks, though few view themselves as "impact businesses" have the potential to drive impact through safe collection, transportation and disposal of waste. By assisting these businesses position themselves as impact investments, they have the potential to unlock impact capital coupled with pre-investment support to formalize operations. Key to key to this formalization is improved data capture systems such as record keeping and performance tracking.

Across the sanitation value chain, closing of information gaps will enable increased investment and acceleration of sanitation business growth trends. The investment tool we will be developing aims to do just this by provide more visibility into the nature of businesses, data availability and associated regulatory risk. The market and firm level insights derived from this market research phase will be used to feed into the next phase which is the tool development phase with the investment tool expected to go 'live' in February 2021.

Annexure

As mentioned in the acknowledgements, below is a list of stakeholders consulted through the course of this market research and for further engagement in the upcoming phases of our study.

Sanitation Businesses	Silafrica Plastics & Packaging Int. Ltd. NAWASSCOAL Nakuru Water and Sanitation and Sanitation Services Company (NAWASSCO) Kenya Septage Emptiers Association RootZone Africa Ecotact Wasafi Sanivation Sanergy
Investors	African Private Equity and Venture Capital Association (AVCA) East Africa Venture Capital Association (EAVCA) Equity Bank Sidian Bank Novastar Ventures Global Partnerships Kenya Innovative Finance Facility for Water (KIFFWA) Pangea Accelerator



THE IMPACT PROGRAMME