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# RESEARCH AND LEARNING FOR RURAL SANITATION IN KENYA

## PART 2: DEEP DIVE MARKET ASSESSMENTS AT A COUNTY LEVEL

Final Report

**DECEMBER 2021**

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# RESEARCH AND LEARNING FOR RURAL SANITATION IN KENYA

## *PART 2: Deep dive market assessments at a county level*

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# ACRONYMS

| | |
|---|---|
| ASAL | Arid and semi-arid lands |
| CHV | Community health volunteer |
| FGD | Focus group discussion |
| KES | Kenyan shilling |
| Km | Kilometers |
| MBS | Market-based sanitation |
| OD | Open defecation |
| ODF | Open-defecation free |
| SACCO | Savings and credit cooperative organization |
| SMA | Sanitation market assessment |
| USAID | United States Agency for International Development |
| USAID/KEA | USAID Kenya and East Africa |
| USD | United States dollar |
| WASHPaLS | Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability |

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# EXECUTIVE SUMMARY

Access to basic sanitation is a significant challenge in Kenya, especially in rural areas. An estimated 70 percent of Kenya's population—approximately 36 million people—lack access to basic sanitation. Almost 5 million of them continue to practice open defecation (OD). The sanitation challenge varies by region: 25 counties, primarily located in the western and central regions, have less than 2.5 percent of households practicing OD; whereas 12 counties, predominantly in arid and semi-arid lands (ASAL), have more than 20 percent of households practicing OD.

The Water, Sanitation and Hygiene Partnerships and Learning for Sustainability Project (WASHPaLS) conducted a sanitation market assessment (SMA) in four counties to help USAID/Kenya and East Africa (USAID/KEA) understand potential opportunities for market-based sanitation (MBS) approaches within different contexts in Kenya. The SMA included Busia, Kakamega, and Homa Bay as counties broadly representative of rural western Kenya (i.e., the 10 counties in the former Western and Nyanza provinces). The fourth county, Marsabit, is representative of the ASAL region.

The SMA focused on increasing adoption of "durable, improved" toilets through markets. These are toilets that are not just improved as per the criteria established by the World Health Organization/United Nations Children's Fund (WHO/UNICEF) Joint Monitoring Programme (JMP), but also durable in view of the prevalence of collapsing toilets (especially in western Kenya).

The SMA reveals that the **sanitation market in rural western Kenya is ripe with potential** with several favorable demand- and supply-side conditions. But poor information flows on product prices and unclear roles of certain market players impede the market. The key findings are:

- Households **understand the benefits of sanitation**, are **informed about durable toilet designs**, and have a **strong desire** to improve the durability of their toilets
- **A significant share of households have the ability to pay for durable, improved toilets**; poorer households may need additional financial support but are **unwilling to take loans**
- The market benefits from a **thriving presence of both full-time and part-time *fundis* (masons)**; full-time *fundis* derive the **majority of their income from sanitation** and are capable and willing to aggregate materials
- Households benefit from a **range of available products** and can construct toilets by engaging with **three to four players who are easily accessible**; however, households **incorrectly perceive durable toilets to be expensive**, which impedes investment
- **Households do not trust *fundis*** despite their active role in the market, whereas other players such as community health volunteers **(CHVs) are trusted but play a negligible role in the market**
- **Introducing cost reductions may be challenging** due to the current incentives and beliefs in the market
- The supply chains for **construction materials are well-established**, and households **have a choice of suppliers**

In contrast to western Kenya, **rural Marsabit inherently lacks favorable conditions for MBS**. The population is only partially settled because they practice pastoralism. Further, population density is very low and the road infrastructure is poor, which prevents establishment of viable sanitation enterprises

and an upstream supply chain of construction materials. Given the unique challenges within this context, the SMA focused on **urban towns with the premise that they can serve as a starting point for MBS in Marsabit.**

The assessment shows that **urban Marsabit has a nascent sanitation market**, a relatively more favorable context for MBS than in rural Marsabit, and sedentism-driven growth. The key findings are:

- Households **value the benefits of having a toilet and are aware of durable toilet options**, but most **do not prioritize sanitation**, have **limited ability to pay**, and **do not want to take loans** to bridge the gap
- Part-time and full-time *fundis* exist, who consider the **sanitation business line to be viable**, though not as a standalone business
- There is a **trade-off between affordability and durability**, with durable toilets being more expensive due to **higher material and labor costs**
- The toilet construction process can be improved since households have to interact with **five to seven value chain players** who are accessible but often located far away
- **The supply chains for construction materials are dispersed,** but households are well connected with, and have a choice of, material suppliers through a **network of transporters**

The SMA validates the need for adopting different approaches for different contexts in Kenya to address the sanitation challenge. Importantly, MBS can be a critical component of any portfolio of solutions, especially for regions like rural western Kenya.

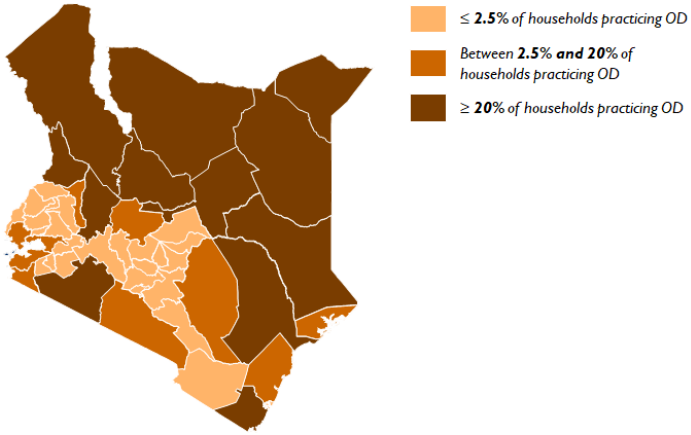
The findings will serve as inputs for USAID/KEA as it develops its future sanitation investment strategy, such as for the upcoming Western Kenya Sanitation and Hygiene project. The findings can also contribute to national-level conversations on the development of context-specific rural sanitation guidance and the overall objective of improving the quality of sanitation countywide in Kenya. More dialogues on the findings are planned to identify additional research areas, surface divergent views, and solicit high-level intervention ideas. These dialogues will serve as a platform for local stakeholders to deliberate on and develop interventions for the sector.

# 1.0 INTRODUCTION

Access to basic sanitation is a significant challenge in Kenya, especially in rural areas. An estimated 70 percent of Kenya's population—approximately 36 million people, lack access to basic sanitation. Almost 5 million of them continue to practice open defecation (OD).[1]

The sanitation challenge varies by region. There are 25 counties (primarily located in the western and central regions as per Figure 1) where less than 2.5 percent of the population practice OD. However, despite favorable conditions (social norms that promote toilet use), the uptake of improved sanitation products and services is low. 12 counties have more than 20 percent of households practicing OD, predominantly in arid and semi-arid lands (ASAL) with a high proportion of nomadic pastoralist communities.

***Figure 1: Classification of counties based on open-defecation (OD) burden***




*Source: Kenya Population and Housing Census 2019*

To address this challenge, the USAID/Kenya and East Africa Mission (USAID/KEA) seeks to understand the current state of sanitation markets and the potential opportunities for market-based sanitation (MBS) approaches within different Kenyan contexts. This assessment aims to inform future USAID investments in sanitation and the development of context-specific rural sanitation guidance for Kenya.

The Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability (WASHPaLS) conducted a sanitation market assessment (SMA) in four counties. The SMA included Busia, Kakamega, and Homa Bay as counties broadly representative of rural western Kenya (i.e., the 10 counties in the former Western and Nyanza provinces[2]). The fourth county, Marsabit, is representative of the ASAL region.

The first phase of the SMA was a desk review. It highlighted that rural Marsabit inherently lacks favorable conditions for MBS, unlike rural western Kenya. For example, most households in the region are home to pastoralists and are only partially settled, making them unlikely to invest in a fixed toilet.

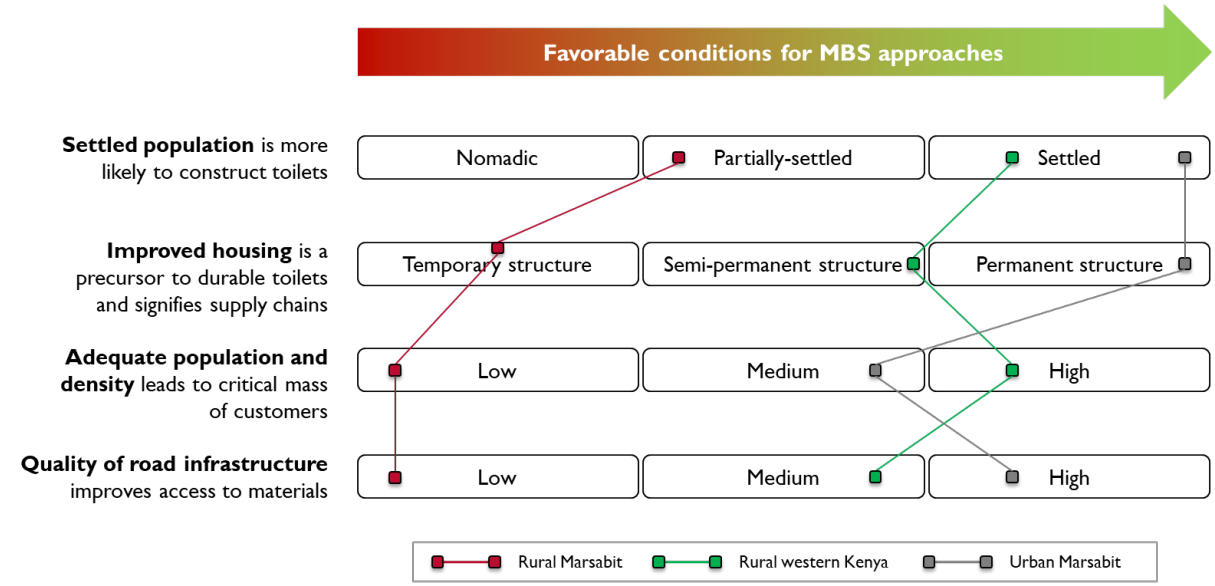
[1] WHO/UNICEF, 2020. *Joint Monitoring Program.* [Online]; Available at: https://washdata.org/data/household [Accessed 2021]

[2] The 10 counties in the former Western and Nyanza provinces include: Kisumu, Homa Bay, Migori, Kisii, Nyamira, Siaya, Vihiga, Busia, Bungoma, and Kakamega

The region also lacks the requisite population density and road infrastructure to establish viable sanitation enterprises and an upstream supply chain of construction materials.

Given the unique challenges in rural Marsabit, the assessment focused on urban towns[3] with the premise that they can serve as a starting point for MBS in Marsabit. It can then gradually be extended to rural areas, or coupled with other development approaches. The SMA highlights that these towns have a nascent sanitation market, a relatively favorable context for MBS compared to rural Marsabit, and sedentism-driven growth.[4] Figure 2 presents a qualitative mapping of key contextual factors that determine the appropriateness of MBS in the three regions.

***Figure 2: Mapping of three regions on conditions required for MBS***




*Notes:*

1. *The definition of house structures is consistent with the Kenya Integrated Household Budget Survey 2015-16*
2. *Two or more points inside a box convey that conditions are similar; distance between points inside a box are for representation only and are not relative to one another*

This report presents the SMA findings for rural western Kenya and urban Marsabit. The report also includes reflections from a national-level dissemination workshop where the research team presented the findings.

A supplementary compendium of findings detailing the methodologies and analyses support the findings presented in this report, available upon request from the WASHPaLS Project Director.

# 2.0 APPROACH

The assessment utilized the USAID/WASHPaLS MBS framework[5] (Figure 3) with analyses focused on two sections of the framework:

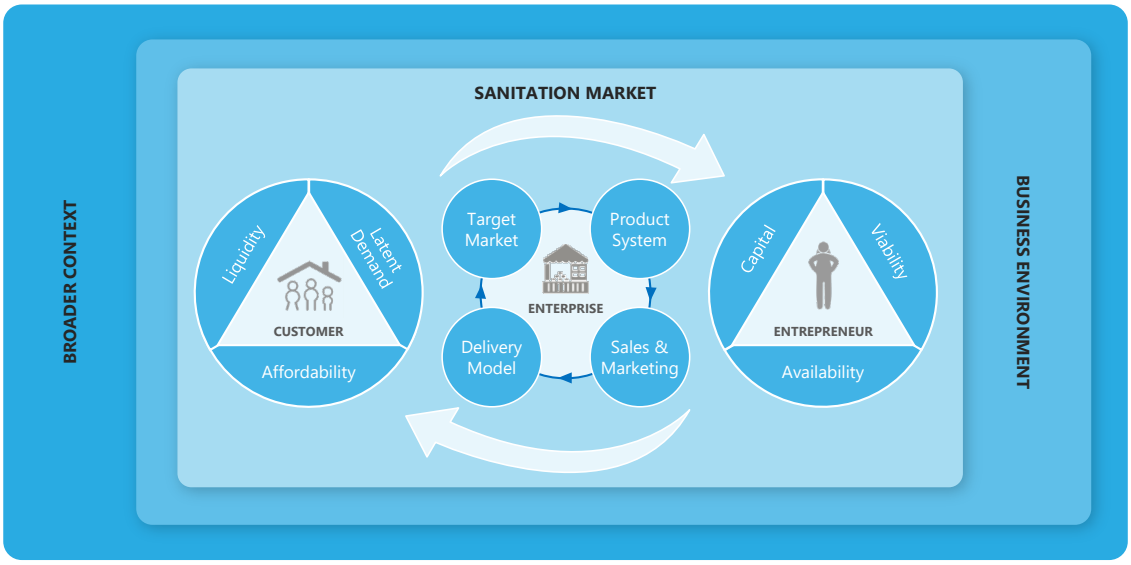
[3] The SMA focused on Marsabit town and three emerging secondary urban centers (outskirts of Marsabit town, Merille, Karare)

[4] The trend of sedentism was highlighted in expert calls and through focus group discussions with households in urban Marsabit

[5] USAID, (2018). *Scaling Market Based Sanitation: Desk review on market-based rural sanitation development programs,* Washington, D.C.: USAID Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability (WASHPaLS)

- **Core Sanitation Market:** The market system domain comprising of customers, entrepreneurs, enterprises, and interactions among them
- **Business Environment and Broader Context:** The factors influencing sanitation markets, such as market rules (e.g., policy, regulations); the availability of raw materials and credit for customers and businesses; and the broader context of social norms, economic, and environmental conditions

***Figure 3: USAID MBS framework***




The methodology consisted of a desk review followed by primary research utilizing methodologies such as customer segmentation[6] and value chain trace-backs[7].

The desk review involved:

- Literature review of 51 documents spanning sector reviews, past intervention reports, and policy documents; and
- Interviews with 14 key informants.

The primary research involved:

- 1,140 quantitative listing interviews (lasting 20 to 30 minutes) with households to understand their sanitation context and profiles;
- 316 quantitative detailed interviews (lasting 60 to 90 minutes) with households to understand their purchase process and beliefs related to sanitation;
- Trace-backs of 11 toilets to map the sanitation value chain;
- 58 qualitative interviews with value chain players[8]; and
- 13 focus group discussions (FGD) including ten in western Kenya and three in Marsabit with five households each to understand the rationale for their purchase process and beliefs

[6] Customer segmentation is a method of classifying customers into distinct and identifiable groups based on statistically significant differences in their attitudes, beliefs, preferences, and behavior with respect to a desired behavior (e.g., investment in durable, improved toilets)

[7] A trace-back starts with a qualitative interview with a household that constructed a toilet in the past few years, followed by qualitative interviews with all the value chain actors that had provided materials or services towards the construction of that toilet, including upstream actors such as the supplier to the hardware store

[8] Value chain players included *fundis* (masons), hardware stores, transporters, pit diggers, other material suppliers (sand/timber/aggregate), and community health volunteers

COVID-19 disrupted the research team's travel for fieldwork, necessitating several changes to the methodology. Originally, the team planned in-depth qualitative interviews with households to generate rich insights on the needs, aspirations, and buying process of all customer segments. However, the team's inability to travel prompted a shift to generating quantitative survey-based high-level insights on all segments. The team conducted FGDs only with select, prioritized segments for deeper, richer insights. For value chain research, experienced researchers from the local agency interviewed masons and businesses instead of the research team. The team devised more structured questionnaires instead of discussion guides and trained researchers on several topics, including business financials. Targets for for value chain actor interviews were lowered and excluded ancillary players (e.g., concrete product manufacturers, distributors, and national-level sanitation products manufacturers) to manage quality within the timelines. An observational study of livestock markets in Marsabit was excluded eventually because of the prevailing security risk.

The dissemination workshop shifted to a hybrid format with local stakeholders participating in person and the research team via teleconferencing. In consultation with the USAID/KEA Mission, the team also excluded several formats in group activities because they required active facilitation.

The SMA defined its objective as the provision of individual "durable, improved" toilets through markets (Box 1).

***Box 1: Definition of durable, improved toilets***

For purposes of this report, the criteria for improved toilets established by the World Health Organization (WHO)/United Nations Children's Fund (UNICEF) Joint Monitoring Programme (JMP) has been expanded to include durability, owing to pressing concerns around collapsing toilets (especially in western Kenya). "Durable, improved" toilets are defined as per JMP standards (a hygienic separation of excreta from human contact), but with the following additional criteria:

- A concrete foundation reinforced with iron bars/wire mesh under the toilet floor **to prevent toilet collapse**
- At least a partial pit lining beyond the foundation to **give the pit stability**

**Example:** 9 percent of rural households in western Kenya have a toilet with the following features:

- Surface floor finished with a layer of cement
- Floor supported by wood logs
- No pit lining

Such a toilet would qualify as improved as per the JMP definition, but it is not durable since the wood tends to rot and the lack of pit lining does not give it stability.

The research team developed the criteria for durability based on consultations with technical experts who identified toilet designs that would provide durability in the Kenyan context.

The subsequent sections will describe the drivers and barriers for MBS in rural western Kenya and urban Marsabit across the sanitation market system. The research team's analyses for each region are sequenced as follows:

- Summarize the key drivers and barriers to the adoption of durable, improved toilets
- Understand the sanitation context
- Analyze the drivers and barriers for customers and entrepreneurs
- Analyze the interaction of the two through the enterprise
- Finally, analyze the business environment and broader context

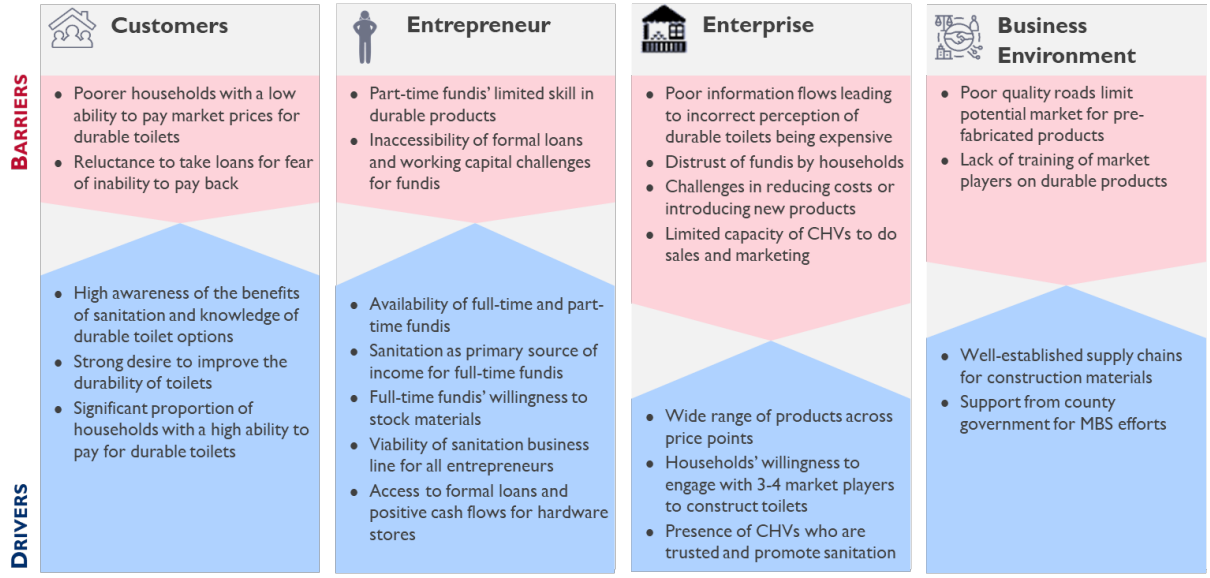
# 3.0 KEY FINDINGS FOR RURAL WESTERN KENYA

## 3.1. SUMMARY OF DRIVERS AND BARRIERS

The sanitation market in western Kenya shows significant potential for uptake of MBS interventions, driven by several favorable demand-side and supply-side conditions. The market, however, is impeded by poor information flows on product prices and the unclear roles of certain market players.

Figure 4 presents a summary of the drivers and barriers for MBS in rural western Kenya with details in subsequent sections. Entrepreneurs refer to hardware store owners, transporters, other material suppliers, and *fundis,* local artisans who have masonry skills needed to construct toilets. Enterprise is the mechanism that facilitates the transactions between customers and entrepreneurs.

***Figure 4: Summary of drivers and barriers for MBS in rural western Kenya***

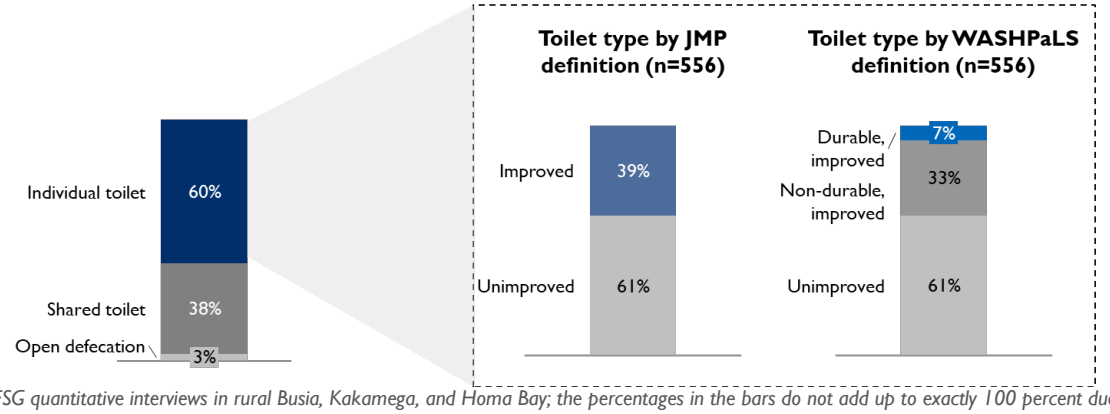



*Acronyms: CHV = Community health volunteers; MBS = Market-based sanitation*

## 3.2. SANITATION CONTEXT

Western Kenya is characterized by a very low prevalence of OD and a moderate prevalence of individual, improved toilets (Figure 5). However, most improved toilets are not durable (based on the definition given in Section 2.0). The figures shown here include slightly lower figures for OD from Homa Bay as compared to the 2019 Kenya Population and Housing Census. The research team assumes the variance relates to changing behaviors as toilets collapse.

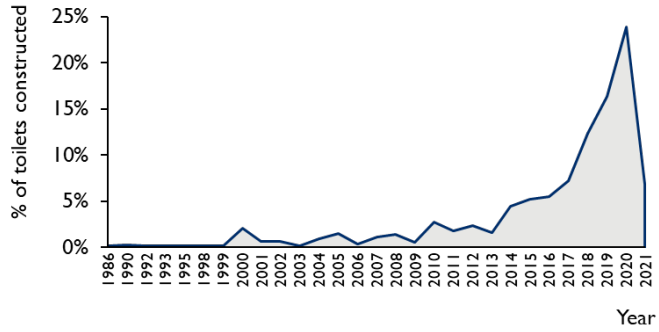
***Figure 5: Type of sanitation facility in rural western Kenya (n=931) (2021)***




*1. FSG quantitative interviews in rural Busia, Kakamega, and Homa Bay; the percentages in the bars do not add up to exactly 100 percent due to rounding off; the sum of "durable, improved" and "non-durable, improved" does not add up to 39 percent due to rounding off*

Lack of durable toilets, loose soil, and flooding lead to frequent collapsing or sinking of toilets before pits fill up. Almost half of the households surveyed reported that toilets collapse within five years of construction. This also leads to frequent replacements, often with traditional, unimproved toilets. Within the assessment sample, 67 percent of all toilets were constructed in the last five years (see Figure 6).

***Figure 6: Year of toilet construction (n=776) (2021)***




*Source: FSG quantitative interviews in rural Busia, Kakamega, and Homa Bay*

*"At my home, the toilet collapsed but it was not a permanent toilet…we just woke up one day and found it had collapsed."*

*– Rural household, Kakamega*

Upgrades are not common—only 24 percent of households have upgraded their current toilet because toilets typically collapse before a household can consider an upgrade. Sharing of toilets is quite common (38 percent across surveyed households). The high prevalence of sharing is facilitated by a cultural norm of helping friends and neighbors. This request to share is more common among households with poor quality toilets or those transitioning to a replacement (after the collapse of their toilet).

## 3.3. SANITATION MARKET DRIVERS AND BARRIERS

### 3.3.1. CUSTOMER

*Households understand the benefits of sanitation, are knowledgeable about durable toilet designs, and desire to improve the durability of their toilets*

The research team identified nine segments of customers in rural western Kenya based on factors such as awareness of durable toilets, affluence, and willingness to pay for toilets. The team used these factors to develop a nuanced understanding of household preferences (Box 2).

Households in rural western Kenya acknowledge that not only is sanitation important for disease prevention, but also toilet ownership can serve as a source of pride and can elevate an individual or family's status within their communities. They also know about causes and potential solutions to address toilet collapse and improve durability. Adding pit linings and concrete floor structures are some examples. In FGDs, households identified loose soil, flooding, and rotting of wooden structures as the causes most likely to lead to toilet collapse or sinking. Many households experienced the phenomenon personally.

### *Box 2: Segmentation of rural households in western Kenya*

To segment customers, the research team identified variables that are most likely to predict significant statistical differences in household behavior against key drivers of investment in individual, durable, improved toilets.

Ultimately, the team selected five segmentation variables that predicted differences in these drivers:

- Source of drinking water: *Households that use surface water (e.g., ponds, springs, rainwater harvesting, etc.) are affluent and have access to more fertile soils; well and piped water sources indicate proximity to peri-urban areas*
- Access to bank account: *Household heads with bank accounts are typically small business owners and have better access to market information*
- Solar panel ownership: *Lack of solar panels is an indicator of poverty since they are considered to be ubiquitous*
- Gender of household head: *Women-led households are typically less affluent but value having a good quality toilet*
- Presence of elderly members: *Households with elderly members are typically less affluent but have unique sanitation needs*

The percentages in parentheses indicate the proportion of households in each segment out of the total population in rural western Kenya without individual, durable, improved toilets.

<table>
<tr><td colspan="2">Source of drinking water</td><td colspan="2">Surface</td><td colspan="2">Well</td><td colspan="2">Piped</td></tr>
<tr><td colspan="2">Bank account</td><td rowspan="2">Yes</td><td rowspan="2">No</td><td rowspan="2">Yes</td><td colspan="2">No</td><td rowspan="2">Yes</td><td colspan="2">No</td></tr>
<tr><td colspan="2">Solar panel ownership</td><td>Yes</td><td>No</td><td>Yes</td><td>No</td></tr>
<tr><td>Gender of HH head</td><td>Elderly members in HH</td><td colspan="8"></td></tr>
<tr><td rowspan="2">Female</td><td>No</td><td colspan="2">A (12.5%)</td><td rowspan="4">E (11.6%)</td><td rowspan="2">F (10.7%)</td><td colspan="2" rowspan="2">G (7.6%)</td><td rowspan="4">I (10.5%)</td></tr>
<tr><td>Yes</td><td colspan="2" rowspan="2">B (14.5%)</td></tr>
<tr><td rowspan="2">Male</td><td>Yes</td><td colspan="2" rowspan="2">H (12.2%)</td></tr>
<tr><td>No</td><td>C (7.4%)</td><td>D (13%)</td></tr>
</table>

*HH = household*

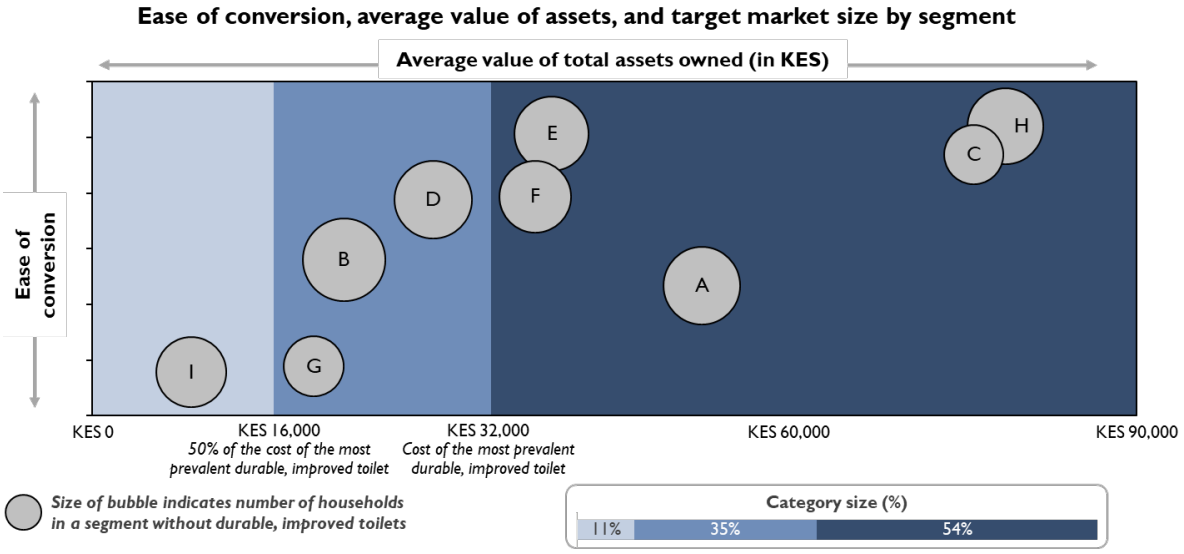
It is important to note that **households within a segment** are largely **homogenous** in terms of toilet purchase behaviors and sanitation profile. However, when compared **across segments, households** in each segment **differ** in their purchase behavior and sanitation profile. The compendium of findings provides further details on the segmentation methodology.

*Most households have the ability to pay for durable, improved toilets*

The segmentation analysis indicated that 5 out of 9 segments (constituting 54 percent of households) have a "high" ability

to pay,[9] estimated by the average value of their assets exceeding the cost of a durable toilet (see Figure 7). The team took a conservative estimate of ability to pay, and FGDs indicated that these segments tend to have a significantly more valuable asset base than the estimates (for example, most FGD respondents had more than five animals, whereas the research team assumed an average of two). Households stated they were reasonably comfortable with paying KES 32,000 for a toilet, equivalent to the price (including the shelter) of the most common durable toilet available in the market. Households consider the price as expensive, yet manageable if they can get a product system they desire. 27 percent of households planning a future toilet construction are already willing to invest KES 20,000 or more (see Figure 8). FGDs with the most affluent segments suggest that their willingness to pay is likely to be even higher if they can get toilets that do not collapse.

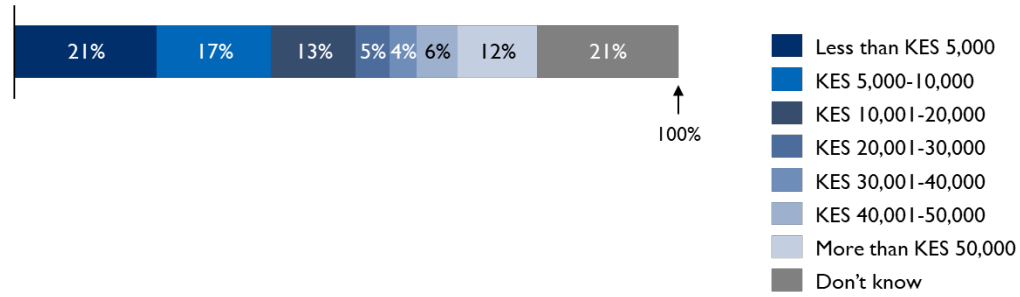
***Figure 7: Ease of conversion, average value of assets (KES), and target market size by segment***




*Notes:*

1. *Average total asset value for households within the segment: includes farm animals (average of 2 animals), solar panel, motorbike, car/truck, computer, mobile, bicycle, refrigerator, and television; KES 32,456 is the estimated cost of the most prevalent durable, improved toilet in rural Kenya (partially-lined pit latrine with a concrete foundation and slab)*
2. *Ease of conversion is a composite score of awareness of durable toilets, involvement in sanitation category, and willingness-to-pay for sanitation; market accessibility is not included under ease of conversion because all segments in western Kenya appear to have good access to markets, so it is not a differentiating factor*
3. *Category size is the proportion of households that are in each category, out of the total population of rural households in western Kenya without individual, durable, improved toilets*

***Figure 8: Households' willingness to pay for their desired future toilet in rural western Kenya (n=141) (2021)***




*Source: FSG quantitative interviews in rural Busia, Kakamega, and Homa Bay*

[9] The estimate of ability to pay is not definitive and is based on proxies (household asset value in this case). Further investment is recommended to understand the demand curve for rural households in western Kenya

*Some household segments have limited ability to pay, are reluctant to take loans, and may even need a subsidy*

While several customer segments can afford durable toilets, some may need financial support. For example, Segment I is the poorest segment, characterized by limited ownership of assets, including solar panels that are otherwise ubiquitous in western Kenya. Providing durable toilets at market prices may not be an appropriate solution for Segment I, and households will need subsidies to acquire good-quality toilets.

Other segments (B, D, and G) may need suitable loan products to purchase durable toilets. Households in these segments have access to informal saving groups and saving and credit cooperatives. But most are reluctant to take a loan for sanitation because of a general fear about not meeting repayment terms.

Overall, the market benefits from a critical mass of customers who do not need financing or subsidies and can be targeted in the initial phases of an MBS intervention—to build market momentum for durable toilets. Relatively poorer segments can be targeted through appropriate loan products and market-compatible subsidies. Targeting such segments is subject to the availability of financing mechanisms, area-wide sanitation programming plans, or a program's strategy.

Given such favorable demand-side conditions, the low prevalence of durable, improved toilets, alongside instances of toilet collapse shows that other market barriers exist. The research team identified several challenges, including information flows in the market and the roles played by key actors that can shed light on this issue. These challenges are described in the subsequent sections.

### 3.3.2. ENTREPRENEUR

*The sanitation market benefits from a thriving presence of both full-time and part-time fundis*

A *fundi*, derived from the Swahili word for artisan, is the first market player a household will approach to construct a toilet. The research team identified two types of *fundis* working in sanitation in western Kenya.

Part-time *fundis* are more prevalent than full-time *fundis*, but spend only 50 to 80 days a year doing masonry (both general construction and toilet construction work). They derive only 25 percent of their annual revenue from masonry. Many lack the technical knowledge to construct durable toilet variants. Instead, they focus on fulfilling the demand for traditional or "temporary" toilets.

Full-time *fundis* spend most of their time in masonry, which contributes to about 90 percent of their annual revenue. Full-timers are well-versed in constructing durable toilet designs. Sanitation contributes to the majority (about 55 percent) of their masonry income and is central to their livelihoods. This statistic is unique to this region as sanitation is usually a secondary income source for masons in most contexts.

The importance of the sanitation business is driven by several factors specific to western Kenya:

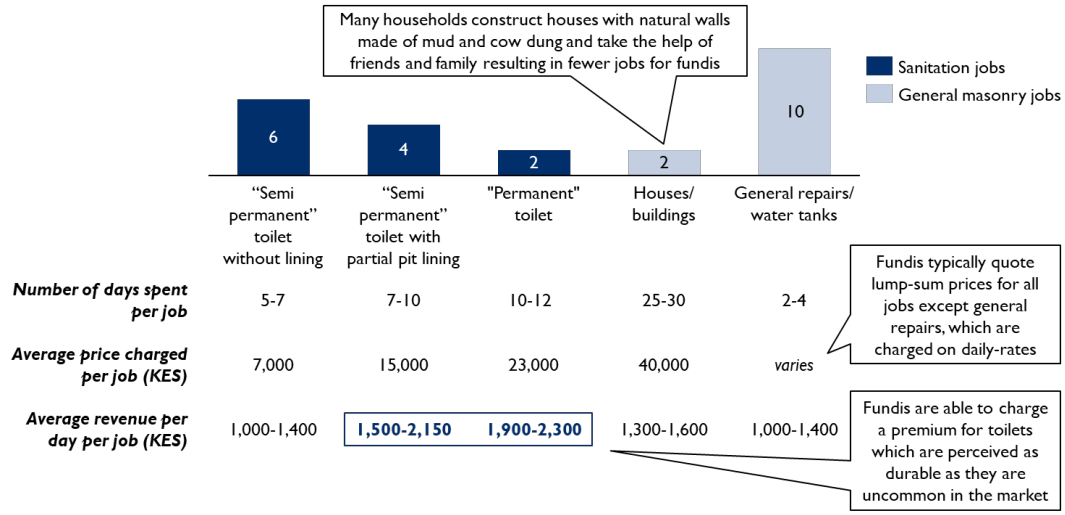
*Full-time fundis derive a significant share of their income from sanitation and are capable and willing to do further aggregation*

- **Volume of work.** *Fundis* get as many sanitation jobs as non-sanitation jobs (Figure 9). Toilet construction is in high demand due to the frequent pit collapse. Further, demand for house construction jobs (commonly performed by masons in contexts, including Kenyan contexts like urban Marsabit) is low because many households (including affluent ones) construct houses with natural walls made of mud and cow dung. Households often rely on friends and family for house construction and sometimes for the superstructure of the toilet too. They may hire *fundis* for a limited supervisory role.
- **Average revenue:** The average revenue per day per job is also higher for sanitation than for other work (Figure 9). Full-time *fundis* charge lump-sum prices instead of daily rates. The lump-

sum prices for toilets with some durable designs like lining or concrete flooring include a price premium for the effective daily rates[10]. This price premium reflects the fact that durable toilets are rare in western Kenya, and not all *fundis* can construct them.

- **Margins:** The price premium on durable toilets also allows full-time *fundis* to earn high margins on durable toilets; higher than most other jobs (see Figure 10)

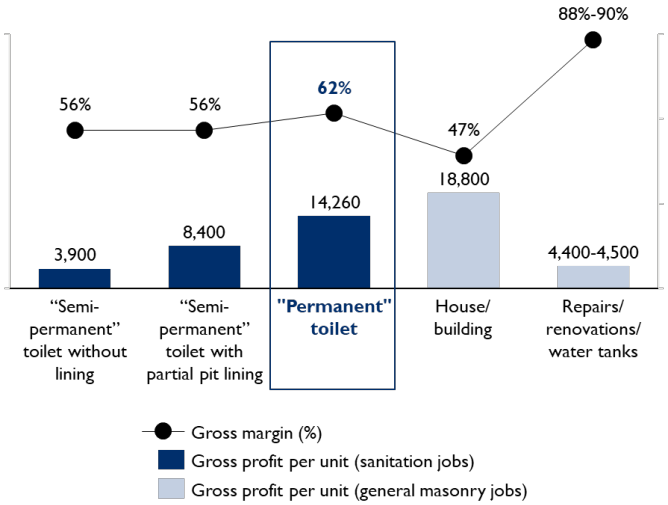
***Figure 9: Typical number of masonry jobs per year for a "full-time" fundi, split by type (2021)***




*Notes:*

1. *FSG analysis based on qualitative interviews with 3 "full-time" fundis in rural Busia, Kakamega, and Homa Bay*
2. *"Semi-permanent" is the common term used by fundis for a toilet with wood logs and cement floor, while "permanent" is used to indicate a lined pit and concrete foundation and slab*
3. *The price per job given here is for the entire toilet construction, including pit digging and construction of the substructure, interface, and shelter*

***Figure 10: Typical gross margin and gross profit per job (KES) for sampled fundis, by type of job (2021)***




*Notes:*

1. *FSG analysis based on qualitative interviews with 7 fundis in rural Busia, Kakamega, and Homa Bay*
2. *Gross margin (%) = Gross profit per unit / unit price*
3. *Gross profit = (Selling price) less (cost of direct hired labor) less (cost of own transport); gross margin is higher for repair jobs since they do not require hiring additional labor*

[10] *Fundis* charge customers based on lump-sum fees. The effective daily rates are calculated by dividing the lump-sum rate by the number of days for the job

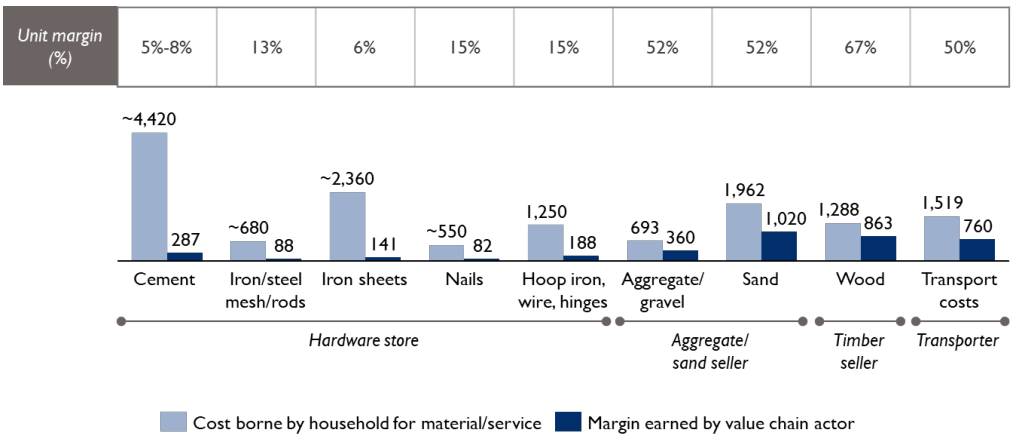
Given the higher revenues and profitability, full-time *fundis* consider sanitation to be a viable business line. Many *fundis* interviewed by the research team indicated they are willing and capable to invest further. Most *fundis* interviewed were willing to aggregate materials for sanitation so they can shift from simply providing construction services ad hoc, to being a steady supplier. They believe they have a sufficiently strong customer base to justify the investment, and have accumulated enough experience managing inventory with their other small part-time businesses (e.g., selling farm produce, bricks). These findings indicate a potentially greater role for full-time *fundis* to aggregate both materials and services in future MBS interventions. However, as explained in Section 3.3.3, households' commonly held negative perceptions of *fundis* must be considered by implementing partners when designing their role.

*Sanitation is a viable business for other entrepreneurs, but not as a stand-alone business*

Other entrepreneurs involved in sanitation include hardware store owners, transporters, and other material suppliers who are involved when certain materials are unavailable at hardware stores. All the players appear to earn healthy margins (Figure 11). The gross margins for hardware stores are lower than other players since they are traders and do not produce their own materials and services. However, their low margins is not exclusive to the sanitation market and is a characteristic of the trading business model.

Sanitation accounts for a small share of the revenue for these entrepreneurs (typically less than 15 percent), unlike full-time *fundis*. This is expected, given that they cater to the general construction market, not just sanitation. But they appear willing to continue participating in the sanitation market.

***Figure 11: Unit margin (KES) earned by value chain actors on the construction of a typical "durable, improved toilet" in rural western Kenya (2021)***




*Notes:*

1. *The costs and margins depicted here are for construction of a durable, improved toilet (fully-lined pit with a concrete foundation and slab); source: FSG analysis based on qualitative interviews with value chain actors in rural Busia, Kakamega and Homa Bay*
2. *Unit margin (%) for aggregate/sand/timber sellers and hardware store owners = (selling price per unit - cost of material to the seller/retailer) / (selling price per unit)*
3. *Unit margin (%) for transporter = (price charged per km - cost of fuel per km) / (price charged per km); transport costs includes cost of transporting both materials and service providers*
4. *Unit margins exclude costs that are shared with other business lines, such as assets, rent, taxes, etc.*

*Fundis face challenges in accessing formal loans and experience working capital shortages, but hardware stores do not*

The two primary sanitation entrepreneurs, *fundis* and hardware store owners, have access to small amounts of capital (ranging from KES 3,000 to KES 50,000) through informal savings groups and saving and loan cooperatives, common in western Kenya. They allow members to deposit small savings and access them every 6-12 months.

But access to formal capital is a challenge for *fundis*. They can secure formal loans only through banks, and they must have a banking history, which many do not. Hardware store owners, on the other hand, can access formal mobile loans based on their significant mobile money transaction volumes.

*Fundis* also face working capital constraints due to payment delays and bad debts but they need to pay their laborers promptly. Figure 12 presents an illustrative working capital position of a *fundi* over time. As the figure highlights, *fundis* face a negative cash balance from the day of job completion to the day they receive the full payment. In contrast, hardware store owners benefit from trade credit but do not extend credit to customers. The illustrative working capital position of a hardware store is more favorable (Figure 13), since it typically pays for its supplies after receiving cash from customers.

***Figure 12: Illustration of a fundi's working capital position for an average toilet construction job where payment has been delayed by 1 month***

| | Day 1 | Day 3 | Day 12 | Day 30 |
|---|---|---|---|---|
| *Amounts in KES* | Deposit received | | Job completed, payment delayed | Balance payment received |
| Opening cash balance | 0 | 3,700 | 2,340 | (2,260) |
| Payments from customer | 3,800 | 0 | 0 | 11,200 |
| Transport cost incurred | (100) | 0 | (100) | 0 |
| Payments to laborers | 0 | (1,360) | (4,500) | 0 |
| Net cash balance | 3,700 | 2,340 | (2,260) | 8,940 |

*Notes: Fundis are expected to pay hired laborers immediately after their work is completed; therefore, pit diggers are typically paid around the third or fourth day while all other laborers are typically paid when the entire job is completed*

***Figure 13: Illustration of a hardware store's working capital position, using stock movement of cement as an example***

| | Day 1 | Day 10 | Day 14 |
|---|---|---|---|
| Per 50kg bag of cement,<br>Cost price: KES 650<br>Selling price: KES 700<br>14 days credit period, 0% interest | Receives fresh stock | Sells stock | Receives fresh stock, pays for last order |
| Number of units purchased | 200 | 0 | 200 |
| Number of units sold | (20) | (140) | (40) |
| Closing stock | 180 | 40 | 200 |
| Revenue (in KES) | 14,000 | 98,000 | 28,000 |
| Amount paid to supplier (in KES) | 0 | 0 | (130,000) |
| Net cash balance (cumulative) | 14,000 | 112,000 | 10,000 |

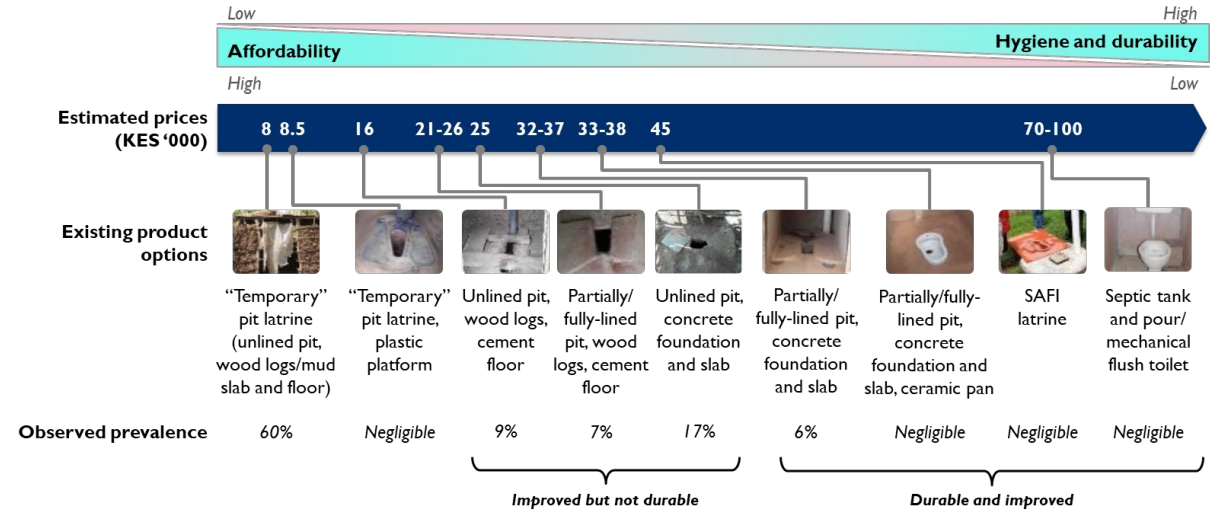
*Notes: The analysis used the average cost and selling price per unit, average inventory period of cement, and average credit period and time taken to receive orders from suppliers across 4 sampled hardware stores in rural Busia, Kakamega, and Homa Bay for this example*

### 3.3.3. ENTERPRISE

*Households have product options suitable for a range of budgets, and can construct toilets by interacting with three to four easily accessible actors*

The research team observed a wide range of products with few gaps in the price spectrum (see Figure 14). Traditional toilets, with unlined pits and mud/wood floors, are the cheapest and the most prevalent, starting at KES 8,000. At the other end of the spectrum are mechanical/pour-flush toilets with septic tanks which cost as much as KES 100,000.

***Figure 14: Observed products in rural western Kenya***



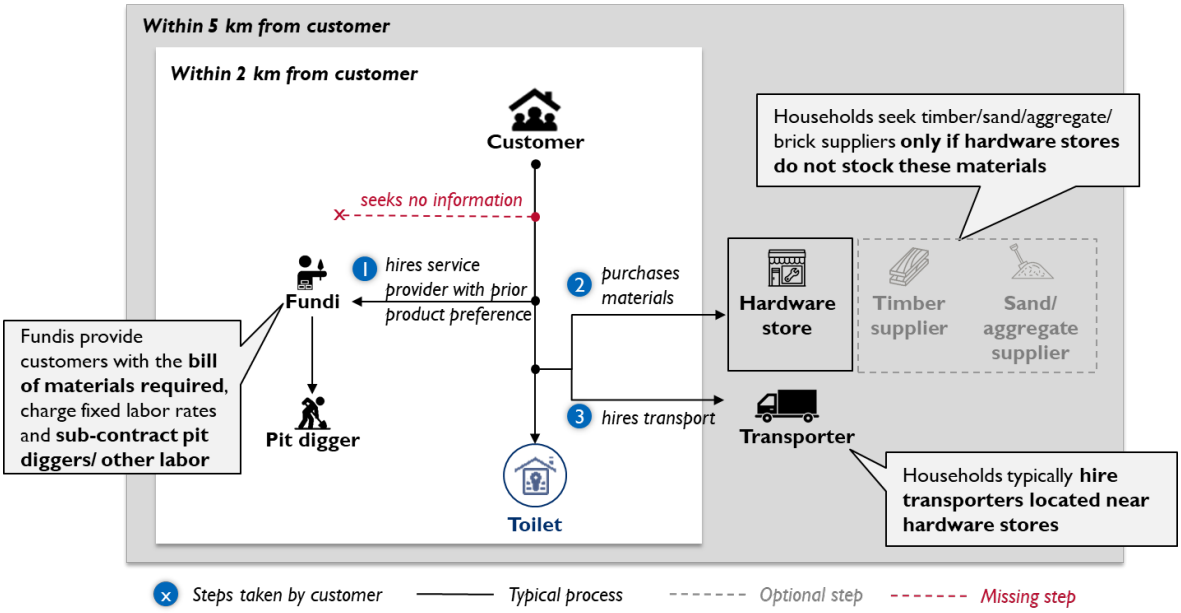

*Notes:*

1. *Estimated price represents the rounded-off consolidated price of substructure, interface, and shelter; estimated based on quantitative and qualitative interviews with households, value chain players, county government officials, and local program staff*
2. *Iron sheets are the most commonly used material for the toilet roof (87 percent) while the wall material varies by toilet type; mud/sticks walls are predominant for "temporary" toilets while others have iron sheet or brick and mortar walls; most toilets (87 percent) have rectangular pits*
3. *Price range represents the estimated price variation between partially- and fully-lined pit variants*
4. *Prevalence has been calculated based on a sample of 804 households (excludes 127 respondents who either practice open defecation or share toilets not constructed by them and 9 respondents with incomplete information on toilet components); source: FSG quantitative interviews in rural Busia, Kakamega, and Homa Bay (n=940) (2021)*

Of note are pit latrines that qualify as "improved" as per the JMP definition. They constitute approximately 33 percent of the toilets installed in the market, and households spend up to KES 26,000 on them. Yet, they are not durable in line with household requirements—wood logs supporting the floor often rot due to rains and floods, and the absence of pit lining renders the structure unstable and susceptible to collapse with loose soil. Effective, durable toilets start at around KES 32,000, which is considered expensive but still affordable for most households.

The delivery model, the pathway for households to access materials, labor, and information on construction (Figure 15) is largely do-it-yourself in nature, requiring households to approach different market players to collect their materials. However, the multi-step process is only a small hurdle since some market players occupy the same physical space. For example, *fundis* often subcontract pit diggers, most hardware stores stock all the materials required, and transporters are available outside hardware stores. Overall, households seem satisfied with the delivery model because they need to interact with only three or four players, all of whom are easily accessible. Households can more easily negotiate favorable costs and maintain a reasonable degree of control over the construction process.

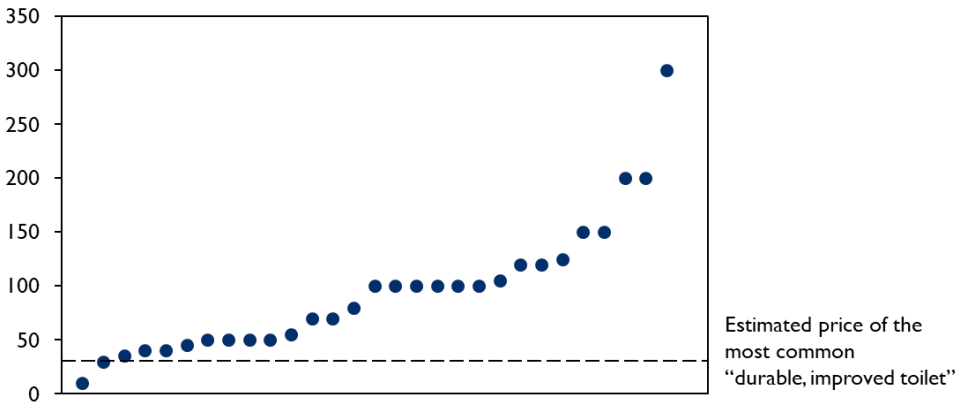
***Figure 15: Illustrative diagram of the process to construct a toilet in rural western Kenya***




*Households incorrectly perceive durable toilets as expensive, which inhibits investment, a perception potentially driven by households not actively seeking market information*

Despite the inherently favorable demand- and supply-side conditions, households avoid purchasing durable toilets owing to the incorrect perception that they are expensive, while market prices suggest otherwise. When asked in FGDs to state the price of a toilet that does not collapse, most households exceeded (significantly) the actual observed price of the most prevalent durable toilet (see Figure 16). Assuming that a durable toilet is beyond their means, households tend to opt for cheaper, poor-quality toilets. This perception is so deeply entrenched that many households refuse to believe that a good-quality, durable toilet can be affordable. For example, when households in segment H, relatively the richest customer segment, were asked if they are willing to pay KES 50,000 for a durable toilet, they responded that such a price is "impossible." Others believed that such pricing can only be offered if it involves a radically different technology.

***Figure 16: Perceived cost of a "toilet that does not collapse" by respondent (KES '000) (n=29) (2021)***




*Source: FSG focus group discussions with the 5 richest segments (A, C, E, F, H) in rural western Kenya*

Incorrect perceptions and low awareness of actual prices are, in part, outcomes of households not actively seeking information from market players or even through personal networks. About 80 percent of households do not seek any input before approaching a *fundi*, and many develop clear product preferences before beginning their discussions with market players. Households' interactions with *fundis* tend to be transactional, rather than consultative, depriving households of the opportunity to understand product options and prices.

*"You can make recommendations to customers but they still want to go with the idea of what they want."*

*– Fundi, Busia*

Reluctance in information gathering is due to most households believing that the information they have is sufficient. Some have also built toilets before. This belief is consistent with the general persona of households in western Kenya; they perceive themselves as informed customers who understand benefits and product options in sanitation. The prevalence of price misperceptions may be an unfortunate corollary outcome. Limited interest in information gathering is a key barrier that needs to be addressed.

*Introducing cost reductions or new products may be challenging due to current incentives and beliefs in the market*

With the cheapest improved toilet priced at ~KES 16,000 (~USD142) and a durable, improved toilet at ~KES 32,000 (~USD 284), there is scope for product re-engineering and innovation to make durable, improved toilets more affordable. However, such innovations may face potential challenges.

The research team's analysis indicates that in theory, there is scope to reduce costs and prices further. Currently, pits and slabs for durable toilets are over-engineered compared to technically accepted standards established by the LifeWater Latrine Design and Construction Manual (Figure 17). Constructing with Lifewater standards would lower material and labor costs, reducing the cost of a durable toilet by an estimated 18 percent (Figure 18).

*Fundis* also charge a premium for durable toilets (as described in Section 3.3.2) compared to other masonry jobs. If *fundis* applied their typical daily rates and the LifeWater standards, the cost of the pit and slab would reduce by 36 percent (see Figure 18).

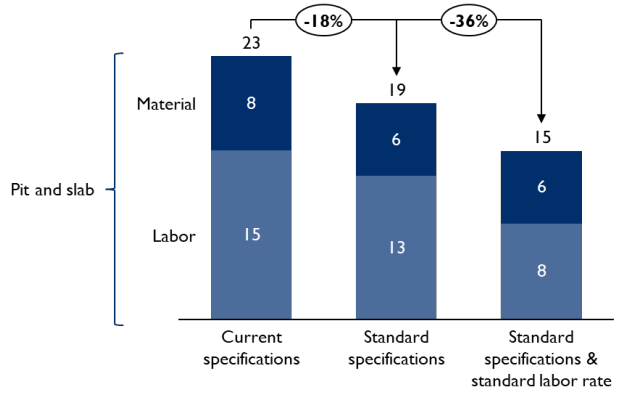
***Figure 17: Current vs. standard specifications of a durable, improved toilet***

| | Current specifications | Standard specifications | Net effect |
|---|---|---|---|
| **Dimensions (in feet)** | | | |
| **Pit** *(length x breadth x depth)* | 5 x 3 x 15 | 3.3 x 3.3 x 14 | ▼ Pit volume by **32%** |
| **Slab** *(length x breadth x thickness)* | 5 x 3 x 0.3 | 3.3 x 3.3 x 0.2 | ▼ Slab volume by **56%** |
| **Material mix** | | | |
| **Gravel : cement : sand** *(Ratio for slab)* | 2 : 2 : 3 | 3 : 1 : 2 | ▲ Gravel by **75%**<br>▼ Cement by **42%**<br>▼ Sand by **33%** |

*Notes:*

1. *Current specifications: FSG qualitative interviews with 7 fundis in rural Busia, Kakamega, and Homa Bay, 2021*
2. *Standard specifications of an on-set pit latrine, with a partially-lined pit, and concrete foundation and slab, which can last a household of 6 for a minimum of 10 years; source: LifeWater Latrine Design & Construction Manual, April 2011*

***Figure 18: Comparison of cost of a durable, improved toilet (only substructure and interface) using current and standard specifications (KES)***




| | | | |
|---|---|---|---|
| **Pit specification (feet)** *(length x breadth x depth)* | 5 x 3 x 15 | 3.3 x 3.3 x 14 | 3.3 x 3.3 x 14 |
| **Slab specification (feet)** *(length x breadth x thickness)* | 5 x 3 x 0.3 | 3.3 x 3.3 x 0.2 | 3.3 x 3.3 x 0.2 |
| **Fundi daily rate (KES)** | 1,900 | 1,900 | 1,200 |

*Notes:*

1. *The analysis considers the cost of the most prevalent durable, improved toilet, i.e., partially-lined pit latrine with a concrete foundation and slab*
2. *The assumption is that the number of labor days required for pit digging reduces because of the re-engineering, but the labor required for the slab remains unchanged since fundis will typically invest similar effort regardless of slab specifications*

However, cost reductions are likely to face resistance from both market players and households. Full-time *fundis* derive a significant portion of their income from sanitation, driven largely by the price premium for durable toilets. They are unlikely to change their approach to construction and pricing unless they are assured of the benefit of higher sales. Households also typically make product decisions without consulting market players. They confirmed in the FGDs that they are unlikely to accept any reduction in material quantity as they associate the use of more materials with durability.

Introduction of new products (such as plastic pans) will need to incentivize hardware stores, which usually stock only fast-moving materials (inventory days[11] of 1-2 weeks) or those that yield 20 to 40 percent gross profit margins.

*The roles of certain players are unclear—households do not trust fundis despite their active role in the market, while CHVs are trusted but play a limited role*

Despite their critical role in the market, *fundis* are not trusted by most households. This lack of trust in *fundis* further inhibits the gathering of relevant information by households. In FGDs, households mentioned having experienced the theft of raw materials or knowledge of *fundis* being complicit with hardware stores in inflating prices. This general mistrust is further exacerbated by instances reported of people with limited/little experience claiming to be *fundis*.

Western Kenya has a cadre of community health volunteers (CHV) who can potentially take up the role of demand activation, in part by spreading accurate information about prices. CHVs are found throughout the region and are well-respected by households. Their role in the sanitation market is limited because it is only one of several topics they specialize in. CHVs visit households for just 10 minutes, with only enough time to talk about the general benefits of

*"Most fundis are con-men and are not actually qualified… someone must watch them throughout the process."*

*– Rural household, Kakamega*

[11] Inventory days represents the average time taken to convert existing inventory into sales and to replenish/re-order stocks

toilets. Their visits are not well-suited for marketing important features such as components that are critical for durability.

## 3.4. BUSINESS ENVIRONMENT AND BROADER CONTEXT DRIVERS AND BARRIERS

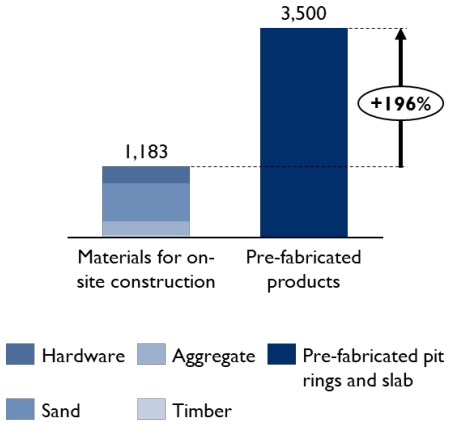
*Supply chains for associated construction materials are well-established but quality of roads limits off-site concrete pre-fabrication of toilet components*

Material suppliers are situated close to households, facilitating easy access. Most customers travel less than three kilometers to buy various materials. The research team also observed a high density of hardware stores in the region during field visits, and FGDs confirmed that households can choose from a range of suppliers. In interviews, suppliers identified several competitors within a five kilometer radius.

From an operations perspective, material suppliers easily procure materials and products and make healthy margins. For example, hardware store owners receive orders from distributors within a week and earn margins between 6 and 15 percent for fast-moving goods, and between 20 and 40 percent for slow-moving items. Similarly, producers for items such as timber, aggregate, and sand can procure raw materials from within a 2 to 10 kilometer radius while earning margins of 50 to 70 percent.

Though supply chains have penetrated the region, the last mile suffers from a poor quality road network, limiting the potential to distribute pre–fabricated products. Transporters prefer moving materials instead of pre-fabricated products, since they use motorcycles (*boda bodas*), which increase the risk of damaging pre-fabricated products. Transportation using larger vehicles like trucks is an option, but comes with higher costs (Figure 19). Trucks are less available than *boda bodas*. However, this does not preclude the use of more cost, labor, and time-efficient pre-fabrication of components done on-site.

***Figure 19: Transport cost of materials for on-site construction versus pre-fabricated products (2021)***




*Notes: Transport cost for on-site construction is for the typical materials required for constructing the interface and substructure of a durable, improved toilet in the market (fully-lined pit, concrete foundation and slab); transport cost for pre-fabricated products is the average of the range of costs for transporting pre-fabricated rings/slabs stated by transporters who operate trucks/lorries*

*County governments want to support MBS and the market can benefit from initiatives like formal training on durable toilet options*

Early conversations with county-level stakeholders indicated that counties see MBS as a critical lever to improve the quality of sanitation in their respective regions. Counties such as Homa Bay have developed a mandate to identify durable toilet options and train *fundis* and CHVs on construction and information sharing.

The market in western Kenya would benefit from investing in formal training for *fundis* and CHVs. Most *fundis* interviewed had not received any formal training on general construction and were learning on the job. As a result, they lack the knowledge of newer toilet systems such as offset pit latrines, and they rarely try new designs. CHVs, too, have limited product knowledge and are not equipped to advise households.

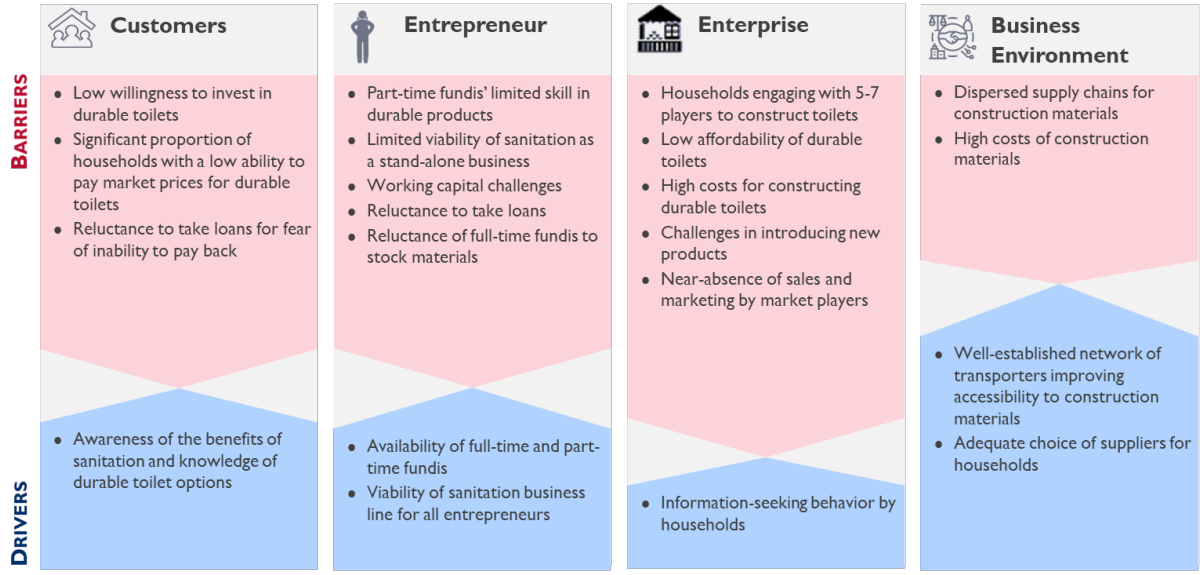
# 4.0 KEY FINDINGS FOR URBAN MARSABIT

## 4.1. SUMMARY OF DRIVERS AND BARRIERS

A nascent sanitation market already exists in urban Marsabit. However, there is a significant need to make durable, improved toilets more affordable and easier to construct.

Figure 20 presents a summary of the drivers and barriers for MBS in urban Marsabit with details in subsequent sections.

***Figure 20: Summary of drivers and barriers for MBS in urban Marsabit***

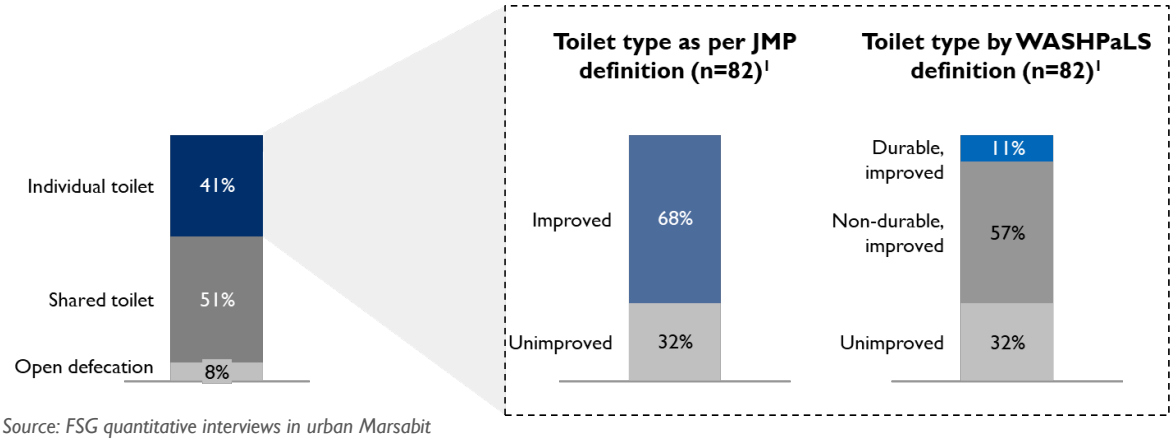



*Acronyms: MBS = Market-based sanitation*

## 4.2. SANITATION CONTEXT

Urban Marsabit is characterized by low OD rates and a moderately high prevalence of individual, improved toilets. However, most improved toilets are not durable (Figure 21).

***Figure 21: Type of sanitation facility in urban Marsabit (n=200) (2021)***




*Source: FSG quantitative interviews in urban Marsabit*

While toilet collapse is not as common as observed in western Kenya, it is still an issue due to the low durability of toilets; 58 percent of households stated that toilets collapse within 10 years (though only 9 percent stated that they collapse within five years).

Sharing is very common in urban Marsabit, mainly because many households cannot afford to construct their own toilets, and the county has built community toilets for public use. Upgrades are also rare because of limited affordability.

## 4.3. SANITATION MARKET DRIVERS AND BARRIERS

### 4.3.1. CUSTOMER

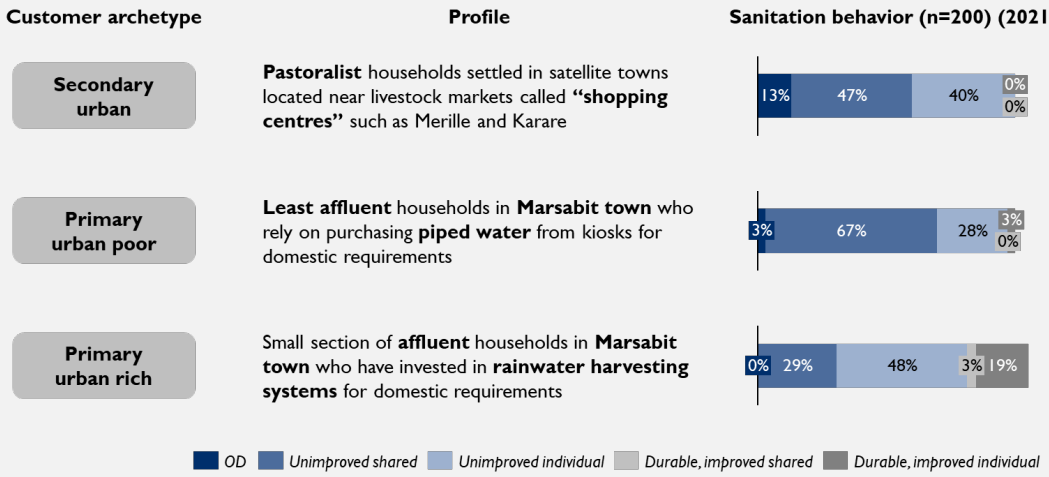
*Households value the benefits of having a toilet and are aware of durable toilet options, but most are unwilling to invest in them*

The research team identified three customer archetypes in urban Marsabit to develop a nuanced understanding of households (Box 3).

Households in urban Marsabit value having a toilet and cited the health and hygiene benefits that a toilet provides, along with the privacy it affords. Households are also aware of durable toilet components, such as pit linings and concrete slabs. Households specifically consider pit lining as critical to toilet stability.

***Box 3: Customer archetypes of urban households in Marsabit***

The research team identified three customer archetypes in urban Marsabit based on statistical differences in household behavior against key drivers of investment in individual, durable, improved toilets (similar methodology as adopted for western Kenya). The archetypes are defined by two variables: (1) their location and (2) their source of non-drinking water. The team was unable to estimate the size of the population of these archetypes due to data limitations. However, based on research, the team postulates that "primary urban poor" and "secondary urban" households are more prevalent than the "primary urban rich."




*Source for sanitation behavior data: FSG quantitative interviews in urban Marsabit*

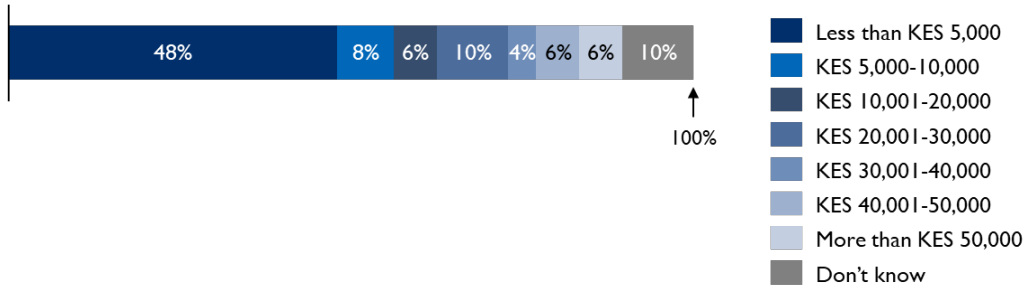
Despite acknowledging the benefits of toilets, households seem to have a low willingness to invest in durable toilets. Sanitation is a low priority as compared to expenses like school fees. Households said that paying school fees is critical while investing in a household toilet is not; shareable toilets are available. This is in stark

*"I would give priority to school fees...I can request a good neighbor to allow me to use their toilet while I organize my finances or maybe I'll go to the bush. Once I am done with paying school fees, then I can build a toilet."*

*– Household, Marsabit town*

contrast to a market like rural western Kenya, where many households prioritized sanitation over education and both are considered high priorities. In general, most households do not plan to invest a significant amount in sanitation—56 percent of households planning a future toilet construction are only willing to spend KES 10,000 or less (see Figure 22).

***Figure 22: Households' willingness to pay for their desired future toilet in urban Marsabit (n=48) (2021)***




*Source: FSG quantitative interviews in urban Marsabit*

*Most households lack the ability to pay for durable toilets or even individual toilets, and are unwilling to take loans to bridge the gap*

FGDs with households highlighted that the low willingness to pay is at least partially because of a limited ability to pay for sanitation. With assets as an indicator of wealth, most households in urban Marsabit do not have funds to pay for durable toilets. The average value of assets for the two largest customer segments (primary urban poor and secondary urban) is less than 30 percent of the cost of even the cheapest durable toilet (~KES 60,000). These households frequently share toilets (Box 3) and overwhelmingly cite the inability to pay as the key barrier for not having an individual toilet.

Households are also unwilling to take loans to bridge the gap. Marsabit generally does not have favorable cultural norms for taking loans. Only 11 percent of Marsabit's population has taken loans, compared to the national average of 34 percent.[12] Households do not plan to take loans for sanitation because of concerns around repayment and the non-income generating nature of the loan.

Overall, future interventions will need to consider the relatively low ability and willingness to pay of households in urban Marsabit. These challenges are further compounded by factors that drive up costs of durable toilets—as explained in subsequent sections.

### 4.3.2. ENTREPRENEUR

*The sanitation market has both full-time and part-time fundis who view sanitation as a viable business line, but not as a stand-alone business*

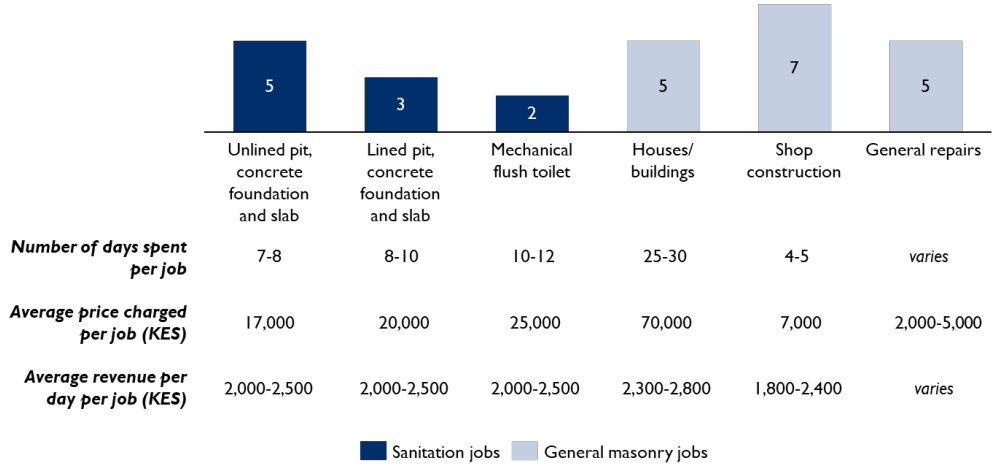
Like western Kenya, urban Marsabit also has two types of *fundis* (described below). However, the research team determined that Marsabit has a relatively lower supply of *fundis*.

Part-time *fundis* spend 2 to 6 months in the role and derive about 70 percent of their total revenue from masonry, but only 20 percent from sanitation. They focus on constructing traditional toilets, since they do not have the technical skills to construct more durable designs. Full-time *fundis* only do masonry. They are well-versed in constructing durable toilet designs because they are trained either at a polytechnic college or by non-governmental organizations. Sanitation contributes to about 30 percent of their annual revenue.

[12] Kenya Integrated Household Budget Survey 2015-16; sample size for this question could not be determined from the publically available data

Full-time *fundis* in urban Marsabit rely on sanitation only as a supplemental income-generation source because they have a thriving general masonry business. Most jobs are non-sanitation jobs, including high-value house construction jobs (Figure 23); most households hire *fundis* to construct permanent houses. Due to the nature of their income, *fundis* have little interest in expanding the sanitation business or engaging in material aggregation as an additional income source. They believe they have enough work and are averse to taking on additional responsibilities.

***Figure 23: Typical number of masonry jobs per year for a "full-time" fundi, split by type (2021)***

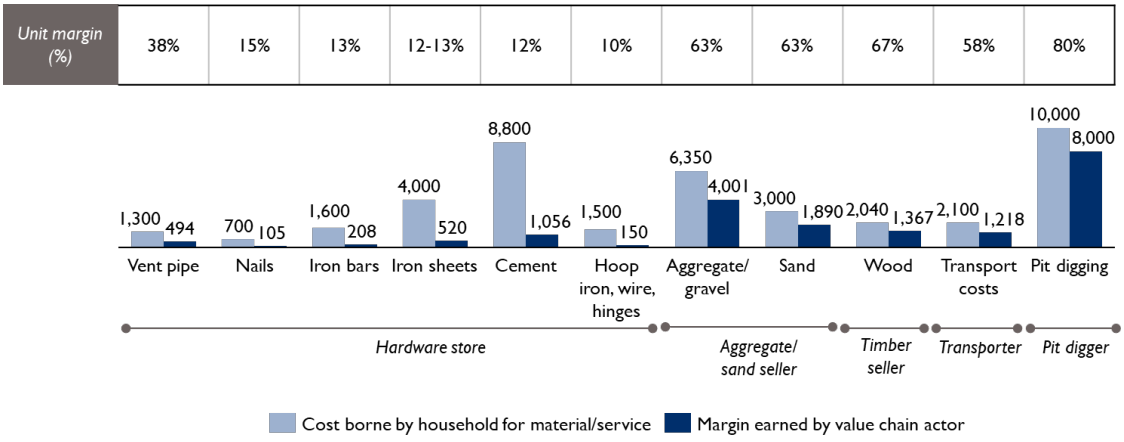



*Source: FSG analysis based on qualitative interviews with two "full-time" fundis in urban Marsabit*
*Note: Rates for fundis in Marsabit are generally higher since they are in shorter supply than in western Kenya*

*Sanitation is a viable business for other entrepreneurs, especially pit diggers, but not as a stand-alone business*

Other entrepreneurs involved in sanitation include pit diggers, hardware store owners, transporters, and other material suppliers. All players earn healthy margins (Figure 24). However, most players only derive a small share of their revenue from sanitation (35 percent or less). Pit diggers are an exception because they rely heavily on sanitation and earn close to half their revenue from it. They can charge high service fees (KES 500 per feet of pit digging) because digging in urban Marsabit's rocky soil is labor intensive.

***Figure 24: Unit margin (KES) earned by value chain actors on the construction of a typical "durable, improved toilet"***




*Notes:*
1. *The costs and margins depicted here are for construction of a durable, improved toilet (fully-lined pit with a concrete foundation and slab); source: FSG analysis based on qualitative interviews with value chain actors in urban Marsabit*
2. *Unit margin (%) for aggregate/sand/timber sellers and hardware store owners = (selling price per unit - cost of material to the seller/retailer) / (selling price per unit)*

3. *Unit margin (%) for transporter = (price charged per km - cost of fuel per km) / (price charged per km); transport costs includes cost of transporting both materials and service providers*
4. *Margin for materials are generally higher in Marsabit than in western Kenya because suppliers have higher transport costs and working capital requirements*
5. *Unit margins exclude costs that are shared with other business lines, such as assets, rent, taxes, etc.*

The other entrepreneurs do not view sanitation as a stand-alone business because sanitation comprises a relatively small amount of overall revenue. Even pit diggers cannot rely on sanitation alone, despite its sizeable contribution, as they are usually unskilled, and have highly localized operations (radius of 5 to 10 kilometers), which limits their potential market size.

*All entrepreneurs face working capital challenges and are unwilling to take loans*

Both *fundis* and hardware stores face working capital challenges. *Fundis* often give credit to households, and occasionally face bad debts. Hardware store owners do not receive trade credit and must invest significant capital to make bulk purchases. Despite working capital challenges, these entrepreneurs do not take loans due to the prevailing cultural norms against loans in Marsabit.

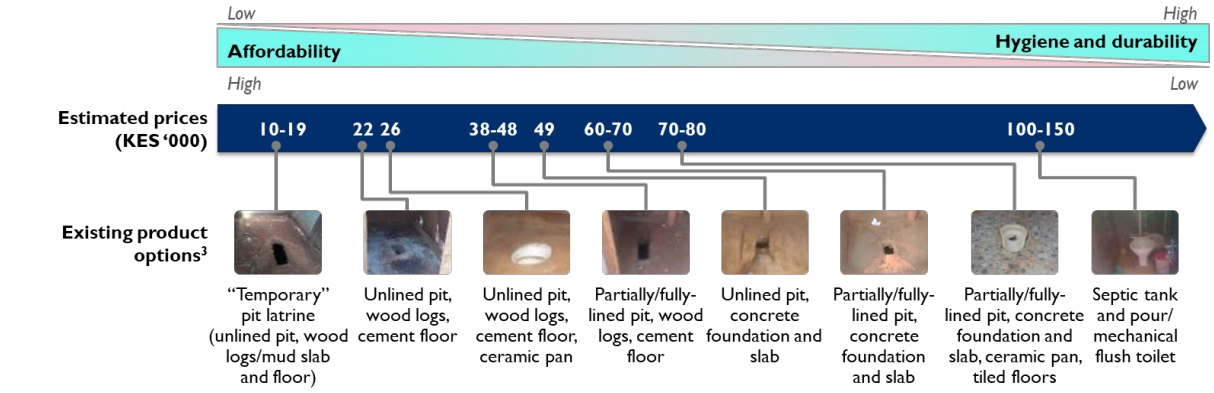
Data limitations prevented the research team from building illustrative working capital positions like those developed for western Kenya. However, the team believes the provision of credit to customers by *fundis*, and lack of trade credit for hardware owners imply that both have negative cash balances for a significant period of time.

### 4.3.3. ENTERPRISE

*The market has a range of product options, but durable toilet designs are expensive, driven by high material and labor costs*

The research team observed several product options in urban Marsabit. However, toilets with durable designs, such as pit linings, are significantly more expensive (see Figure 25).

***Figure 25: Observed products in urban Marsabit***

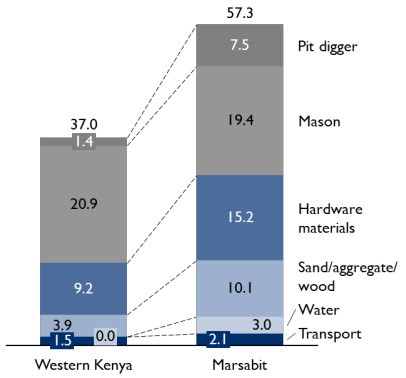



*Notes:*
1. *Estimated price represents the rounded-off consolidated price of substructure, interface, and shelter, estimated based on quantitative and qualitative interviews with households, value chain players, county government officials, and local program staff*
2. *Iron sheets are the most commonly used material for the toilet shelter (93 percent have iron sheet walls and 96 percent have iron sheet roof) across toilet options; most toilets (93 percent) have rectangular pits*
3. *Price range for a temporary toilet represents the difference between a mud shelter and iron sheet walls/roof; price range for lined pits represents the difference between partially- and fully-lined pit variants*
4. *Prevalence has been calculated based on a sample of 120 households in urban Marsabit (excludes 80 respondents who either practice open defecation or share toilets not constructed by them); source: FSG quantitative interviews in urban Marsabit (n=200) (2021)*

These high costs are driven by several factors unique to urban Marsabit. Figure 26 illustrates the difference between the cost of a comparable durable toilet in rural western Kenya and urban Marsabit:

- **Pit digging** is significantly more expensive in Marsabit than in western Kenya due to rocky soils, at KES 500 per foot. In western Kenya, pit diggers are sub-contracted by *fundis* at only KES 400-500 per day, for three to five days
- **Material costs from hardware stores** are higher in Marsabit because of higher transport costs due to greater distances from distributors, and the need to maintain higher working capital due to lack of trade credit
- **Other materials** like sand/aggregate/wood are significantly more expensive than in western Kenya because it is harder to procure these materials in smaller quantities in Marsabit
- **Water** is not available for free in Marsabit

***Figure 26: Comparison of total estimated cost (KES '000) of a comparable durable, improved toilet in rural western Kenya and urban Marsabit (2021)***




*Notes:*

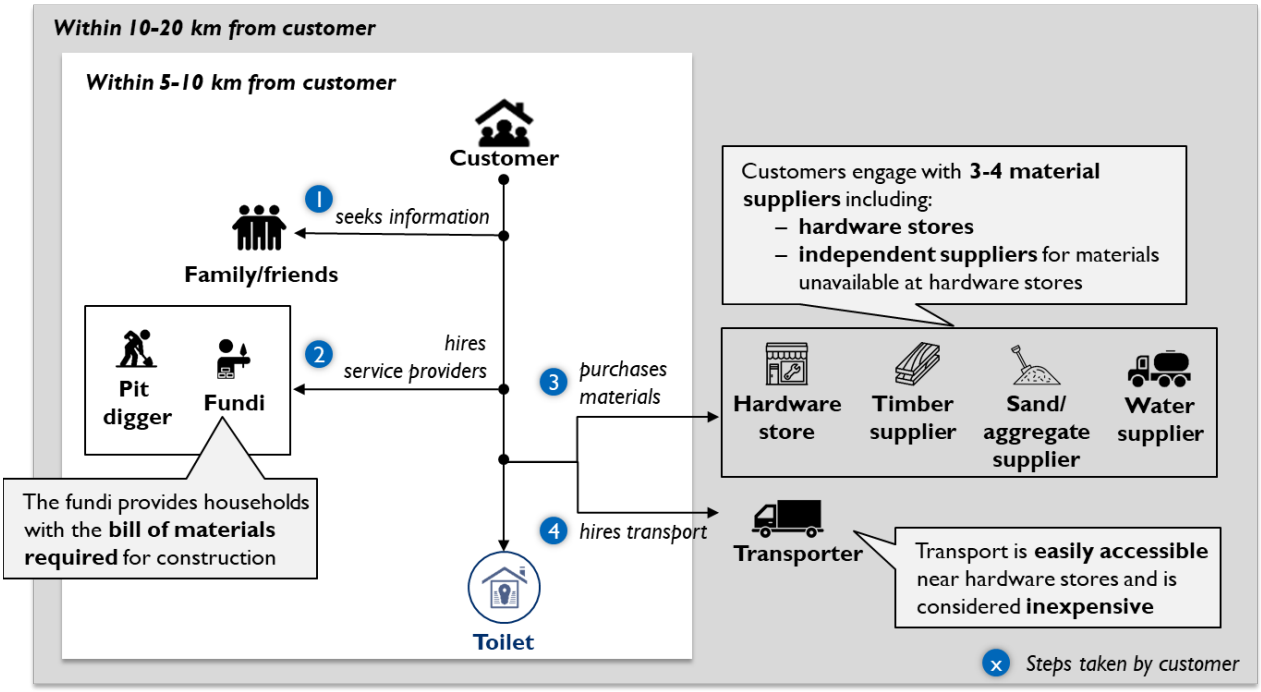
1. *Toilet specifications for western Kenya: 15-feet deep, fully-lined onset pit with a concrete foundation and 5x3 feet slab of 4 inch thickness, iron sheet walls and roof*
2. *Toilet specifications for Marsabit: 15-feet deep, fully-lined onset pit with a concrete foundation and 5x3 feet slab with 5 inch thickness, iron sheet walls and roof; the research team excluded the cost of vent pipe (KES 1,300) to make it comparable to rural western Kenya where vent pipes are not as common in durable toilets*

The research team was unable to test the potential to reduce product costs by re-engineering designs because of data limitations. Future studies should explore options to reduce prices. As in western Kenya, hardware stores will need incentives to stock new products, like plastic pans. Hardware stores in Marsabit typically limit their stocks to materials that sell within one month, or those with 35 to 40 percent gross profit margins.

*Households interact with five to seven value chain players to construct toilets and proactively seek information*

Households have to interact with five to seven different value chain players to construct a toilet, many of whom are located far away (see Figure 27). There is limited aggregation—*fundis* and pit diggers operate independently, and hardware stores often do not stock materials such as timber, sand, aggregate, and water. While households did not explicitly state their dissatisfaction, there are clear opportunities to simplify and improve the construction process, given the distances between households and material suppliers.

***Figure 27: Illustrative diagram of the process to construct a toilet in urban Marsabit***




*Notes:*

1. *FSG analysis based on qualitative and quantitative interviews in urban Marsabit, 2021*
2. *Distance to material suppliers is greater for households in secondary urban towns (~20 km) as compared to households in primary urban towns (~10 km)*

Most households are proactive about seeking information, typically from family and friends, and from *fundis,* during the construction process. The information sought is primarily on prices, materials required, and suppliers. This increases the awareness levels regarding product options and prices among households in urban Marsabit.

*Market players do not engage in active sales or marketing, including CHVs who do not have the incentives or training to activate demand*

The *fundis* and hardware stores interviewed by the research team are passive in their sales and marketing approach. They do not differentiate between customers and recommend the same toilet options to all customers. Given the relatively lower priority given to sanitation by households, the market could benefit from a more active sales and marketing approach.

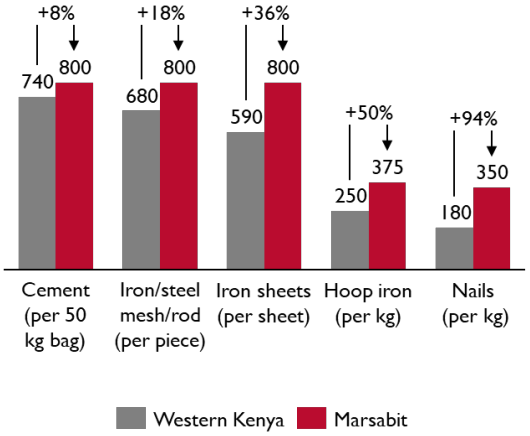
CHVs also play a negligible role in sales and marketing for sanitation due to paucity of time, lack of incentives, and inadequate relevant knowledge. Most CHVs spend only a small amount of time in their role, since it is not their primary source of income. Many are involved in casual labor to supplement their income. Their time as CHVs is dedicated mainly to non-sanitation promotion, such as disease awareness. Similar to western Kenya, their knowledge is restricted to the hygiene benefits of sanitation, and they are not aware of durable toilet designs.

## 4.4. BUSINESS ENVIRONMENT AND BROADER CONTEXT DRIVERS AND BARRIERS

*The supply chains for construction materials are dispersed, but a thriving network of transporters improves accessibility and provides choice to households*

As mentioned in Section 4.3.3, households must travel long distances to access material suppliers, which are mostly located in urban centers such as Marsabit town or Isiolo town. Distance to suppliers ranges from 10 kilometers in Marsabit town to 20 kilometers in secondary urban towns (like Merille and Karare). Hardware stores travel further to procure materials at their own cost, often as far as Nairobi (530 kilometers). Travel distances increase material costs (Figure 28).

***Figure 28: Cost comparison of hardware materials in rural western Kenya and urban Marsabit (KES) (2021)***




*Source: FSG analysis based on qualitative interviews with value chain players and local program staff in rural western Kenya and urban Marsabit*

Despite dispersed supply chains, households are connected to material suppliers through a thriving network of transporters, enabled by the Isiolo-Marsabit-Moyale highway and good quality last-mile roads. Several buses (*matatus*) run daily on highways and through towns, carrying both passengers and goods. Households hire these buses to take them to hardware stores, and to return with goods, which are loaded on top of the vehicle. Households can also hire three-wheelers (*tuk tuks),* which can be hired near hardware stores, and can deliver material in roughly one or two trips.

*"We transport passengers daily on this highway…transporting material on regular basis also adds to our profit."*

*– Matatu transporter, Marsabit*

These transport options are considered affordable by households. For example, it costs KES 1,000–1,500 to transport materials, even for a 150-kilometer trip. This distance is greater than the typical distance to suppliers (10-20 km) yet still amounts to only 10 to 15 percent of the total cost of the cheapest and most prevalent toilet. *Matatus,* in particular, are able to offer competitive rates because of the economies of scale—they simply add materials on top of an already-full bus.

Households also benefit from a choice of suppliers once they reach Marsabit and Isiolo. In FGDs, households mentioned that they shop around for suppliers to get the best prices. From a supply perspective, suppliers cite the presence of several competitors within a 5-km radius.

# 5.0 REFLECTIONS FROM THE DISSEMINATION WORKSHOP

The research team presented the findings of this report at a workshop in Nairobi, Kenya on December 7th, 2021. The audience comprised both national and county-level stakeholders, with representatives from the government, the private sector, and donors, among others. Two sessions were conducted—one for rural western Kenya, and another for urban Marsabit because of the differences in contexts. Each session was structured as:

- Presentation of the key findings (by WASHPaLS)
- Q&A with the audience
- Group discussion and plenary on the key challenges for MBS

The team thanks the valuable contributions of the audience on identifying how key MBS challenges could be addressed in both regions. The key solution themes from the discussion are highlighted below:

- **Developing an institutional framework with a regulatory mechanism for *fundis*:** Participants acknowledged the critical role played by *fundis* in the sanitation market. To address concerns such as households' low trust in *fundis*, the group proposed that a framework be developed to organize them (such as formal certification and training). Certification would not only provide a marker for households to identify trusted *fundis*, but also serve as a platform to train *fundis* on constructing and marketing durable toilets. A fundamental gap in the current market is the negligible presence of women *fundis*. The framework could provide opportunities for more women to train for the role.

- **Expanding the role of CHVs:** CHVs were recognized as crucial to the improvement of information flows to households; raising awareness on durable toilet options and prices. Their current training largely focuses on the delivery of health services and messages, and less so on sanitation marketing. Training them on durable product designs will position them as trusted sources on sanitation-related information. The potential of their role can be further expanded to include monitoring of toilets. Leading by example—by constructing durable toilets in their own homes, CHVs can serve as champions for durable toilet ownership. To manage the bandwidth of CHVs and complement their work, additional sales agents/sanitation marketers in local communities can be recruited and trained. Mechanisms for identifying and training these marketers will need to be developed.

- **Exploring technology options and localized materials to reduce costs:** The group emphasized the need to reduce costs, especially in Marsabit. Among the ideas discussed was the option to leverage local materials, and the need to scale successful pilots (such as the use of interlocking bricks in parts of Busia). New technologies being considered will need to account for acceptance from both customers and value chain players, and ensure structural durability.

- **Standardizing criterion for "durability":** The need for developing a set of standardized criterion for durable products was discussed, given the importance placed on toilet durability in the western Kenyan context. This will enable tracking the prevalence of durable toilets and

provide a basis for training *fundi*s and CHVs. The WASHPaLS operational definition (see Box 1) can serve as a starting point for the sector.

- **Leveraging livestock markets in Marsabit:** Livestock markets were identified as potential channels to connect urban supply chains to rural households. Ideas included sanitation champions to promote toilets at livestock markets and toilet pricing options that use livestock as currency (i.e., barter). Greater formalization of livestock markets could help create a platform for reaching rural households for multiple purposes, including sanitation awareness and marketing.

- **Developing a policy framework for MBS:** The group highlighted that the interventions discussed would benefit from a unified policy framework for MBS in Kenya. The current Sanitation and Hygiene Roadmap (under review) could provide a potential platform for developing this. The framework can issue technical guidelines for many of the interventions mentioned above, and for others pertinent to MBS in the Kenyan context.

The research team also received valuable feedback on key gaps in the SMA. The team acknowledges the feedback as important and highlights it below for further consideration by the sector:

- **Potential for sanitation financing:** The SMA highlights that sanitation financing may have limited potential—especially for households. This is based on the majority of households in the research sample stating that they were averse to taking loans for sanitation. However, several members in the audience provided evidence suggesting that households can take loans for sanitation. The SMA's finding may be influenced by the surveyed households' lack of awareness on the existence of sanitation loans. The assessment did not comprehensively study the possible financing options in the market, which the research team cites as a limitation of the study. The group also postulated low financial literacy as a concern. Overall, the sector stands to benefit from a rigorous study of the financing options available to both households and value chain players, and the potential of leveraging them for sanitation markets. Future studies could include research on a) households' general loan-taking behavior (not limited to sanitation), b) preferred sources of loans, and c) loan-taking behavior of households from banks. The sector will also benefit from bringing together financial institutions to discuss and develop potential loan products for sanitation.

  Financing could be particularly impactful in Marsabit, where households have a lower ability to pay for toilets. There is also a need to explore contextually-appropriate financing products for Marsabit—for example, loan products that are *Shariah*-compliant or accept livestock (a key indicator of wealth for pastoralist households) as collateral. Finally, there is a need to explore potential of "smart subsidies" and how they might accelerate (or distort) sanitation markets.

- **Expansion of research scope:** The SMA's scope was specific to understanding the potential for MBS, for on-site sanitation systems (such as pit latrines) at the household level. The group highlighted that research on other aspects of the WASH ecosystem could complement the findings. This included conducting geographic/hydrological studies to better understand the causes behind toilet collapse, and assessing the market for handwashing and hygiene products to develop a holistic view of WASH markets.

- **Engagement with county-level stakeholders:** The group and the authors of the study acknowledged that the SMA would have benefitted from more active engagement with county-level stakeholders from the outset. This is particularly important given the devolution of governance in Kenya, which places the onus of improving sanitation on the counties. The SMA

was initially designed with the intention of forming county-level committees serving as advisors. However, travel restrictions due to COVID-19 did not allow the team to hold adequate conversations and build relationships to facilitate their formation. Going forward, dissemination of the findings at the county-level will be critical for their uptake. This should include conducting stakeholder meetings at the county-level and highlighting county-specific findings, where possible. County-level engagement will also present an opportunity to understand the enabling environment for MBS, including policies and the institutional and capacity-building framework.

- **Analyze drivers of OD:** The assessment did not study the reasons for open defecation in detail since the prevalence of OD is very low. A study focused solely on understanding drivers of OD will be beneficial for the sector.

Overall, the group acknowledged the SMA as an important contribution to developing MBS in Kenya, where it is currently a nascent concept. The SMA also validated the need for adopting diverse approaches based on context-specificities unique to regions within Kenya.

The findings of the SMA will serve as inputs for USAID/KEA as it develops its future sanitation investment strategy, such as the upcoming Western Kenya Sanitation and Hygiene Project. The findings can also contribute to the national-level conversations on the development of context-specific rural sanitation guidance, and the overall objective of improving the quality of sanitation across Kenya. Dialogues among stakeholders to identify additional research areas and surface diverse perspectives are encouraged to generate refined recommendations and interventions by local stakeholders.