



PROMOTING VIABLE FECAL SLUDGE MANAGEMENT ENTERPRISES IN URBAN UGANDA – KEY LEARNINGS

USAID Uganda Sanitation for Health Activity (USHA)

AUTHORS: Rahul Singh, Vignesh Shankar (FSG), Jonathan Annis and Diana Keesiga (Tetra Tech) and Robert Makune (Sanitation Solutions Group)

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Executive Summary

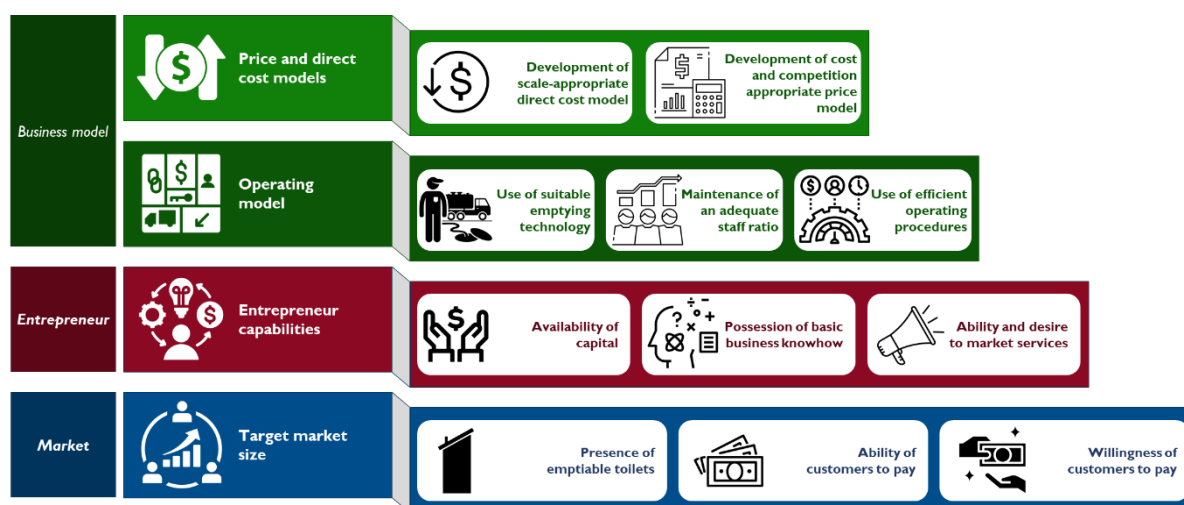
With an urbanization rate of 5.6% (World Bank 2021) Uganda’s urban population is expected to nearly double between 2018 and 2050¹, placing considerable strain on the country’s sanitation infrastructure. Currently, only 2% of urban households are connected to a sewer line², with the rest relying on on-site sanitation facilities. As a result, the provision of safe and affordable pit-emptying services is a growing need in urban areas.

A key goal of the Uganda Sanitation for Health Activity (USHA) was to increase access to safe fecal sludge management (FSM) services in select urban areas of Uganda. To achieve this, USHA worked with existing FSM entrepreneurs (FSMEs) to improve their business models to enable them to provide sustainable and safe pit emptying services. In doing so, USHA also aimed to help increase the volumes of fecal sludge reaching treatment plants.

In Uganda, FSM services are provided mainly by the private sector via manual emptying, mechanized emptying using cesspool trucks, and semi-mechanized emptying using Gulpers. Small private sector operators running single-truck businesses conduct most mechanized and semi-mechanized emptying outside of Kampala. However, these operators face several challenges sustaining viable FSM businesses. These include low utilization, high operating costs, and high customer defaults.

Through a desk review and interviews with FSMEs, USHA created a framework for developing viable FSM businesses. The framework (Figure 1) identified four key elements all viable FSM businesses need: (i) a critical mass of potential customers; (ii) entrepreneurs with the capabilities to establish and run FSM businesses; (iii) an efficient and effective operating model; and (iv) price and cost models that are appropriate given the scale of the business and competition.

Figure 2: Framework for developing viable safe FSM businesses.



USHA used this framework to identify gaps in partner FSMEs’ businesses and developed tailored interventions to address these gaps. Over a 31-month period (March 2020 and September 2022) USHA worked with six partner FSMEs, who collectively provided safe emptying services to 1,216 unique customers (institutions and households). When considering jobs for repeat customers, these FSMEs emptied an estimated 13 million liters of sludge.

During the implementation period, three of the six FSMEs USHA partnered disengaged due to limited interest in the partnership or limited capability to implement USHA’s proposed interventions. Through their partnership with USHA, the three FSMEs that remained active increased the number of customers they served annually. However, several challenges persisted with only one of the three FSMEs achieving sustained profits during the implementation period. While the

¹ World Urbanization Prospects: The 2018 Revision, United Nations, Department of Economic and Social Affairs, Population Division, 2019.

² Uganda Malaria Indicator Survey 2018-19, Uganda Bureau of Statistics, Government of Uganda, 2020.

other two FSMEs continue to make net losses, these losses reduced compared to the pre-implementation period.

Based on this experience, USHA identified several learnings regarding factors that can improve FSME performance and persistent challenges that continue to constrain FSME profitability. The key learnings are summarized as follows:

1. Invest time in identifying suitable implementation locations: For viable FSM businesses, both the emptying technology used by FSMEs, and the nearest treatment plant, should be appropriate for the nature of sludge available in the catchment area. As FSM implementers are unlikely to be able to influence the nature of sludge available, or the location and type of treatment facilities (in the short run), they should invest time upfront identifying areas where appropriate treatment plants are present, and where suitable FSMEs either exist or can be introduced.
2. Develop interventions based on FSME-specific challenges: While FSMEs may face some common challenges, the underlying reasons for these challenges are often different, e.g., low profitability could be due to low utilization or high costs. Further, some challenges are specific to certain FSMEs, e.g., cesspool trucks cannot empty unlined pits. Implementers, like USHA has been, should use appropriate tools (such as the framework mentioned above) to identify FSME-specific challenges, and work with the FSMEs to design feasible and workable solutions to these challenges.
3. Provide technical and financial support to ensure FSMEs access to good quality vehicles: The prevailing system for purchasing commercial vehicles in Uganda makes it nearly impossible for small businesses and individual entrepreneurs to identify and purchase affordable, good quality vehicles. Implementers should provide technical guidance to FSMEs on identifying good quality vehicles and, if needed, directly subsidise the cost of the vehicle, and/ or help FSMEs secure loans. Alternately, implementers can help FSMEs negotiate an affordable lease agreement with public or private cesspool truck owners.
4. Develop systems to identify cost-effective marketing channels: FSMEs typically lack the skills, interest, and funds to adequately market their services, which greatly impacts their utilization. As a result, implementers may need to invest in marketing on behalf of FSMEs. To ensure sustainability, implementers should test different marketing channels (both direct and mass marketing) and track their efficacy. This will enable implementers to guide FSMEs on the most cost-effective interventions to invest in once they end their support.
5. Use performance data to demonstrate the financial impact of proposed interventions: USHA found that their partner FSMEs were more receptive to proposed interventions when USHA used performance data to model the impact these interventions had on FSME profitability. Therefore, implementers should invest time upfront in setting up a robust and practical monitoring, evaluation, and learning (MEL) system. This includes identifying performance metrics that are essential to track, developing simple data collection tools, and defining periodicity of data collection. Further, the MEL system should be continuously refined. On receiving data, implementers should regularly analyze it and share key findings with FSMEs.

USHA hopes that these learnings can help other implementers to design and implement effective market-based FSM interventions in Uganda.

1.0 Introduction

1.1 Document overview

A key goal of the Uganda Sanitation for Health Activity (USHA) was to increase access to safe fecal sludge management (FSM) services in select urban areas of Uganda. To achieve this, USHA worked with existing FSM entrepreneurs (FSMEs) to improve their business models to enable them to provide sustainable and safe pit emptying services. In doing so, USHA also aimed to help increase the volumes of fecal sludge reaching treatment plants.

As a result of USHA's FSM interventions, between March 2020 and September 2022, USHA's partner FSMEs were able to provide safe emptying services to a total of 1,216 unique customers. When considering jobs for repeat customers, the FSMEs collectively emptied an estimated 13 million liters of sludge. Three of the six FSMEs USHA partnered with accounted for 86% of the total unique customers and 87% of sludge emptied.

Through their partnership with USHA, these three FSMEs were able to increase the number of customers they served per year despite several challenges, including profitability.

This document describes USHA's FSM interventions, their impact on partner FSMEs, persisting challenges, and steps USHA took to address these challenges. It also outlines key learnings based on USHA's experience. USHA hopes these findings will be useful for other implementers looking to introduce market-based FSM interventions in Uganda.

1.2 Background and context

Uganda's urban population is expected to nearly double between 2018 and 2050³, placing considerable strain on the country's sanitation infrastructure. Currently, only 2% of urban households are connected to a sewer line⁴, with the rest relying on on-site sanitation facilities. As a result, the provision of safe and affordable pit-emptying services is a growing need in urban areas.

In Uganda, FSM services are provided mainly by the private sector, and generally fall into one of three types:

- *Cesspool truck emptiers (CTEs)* – FSMEs that provide fully mechanized emptying using vacuum trucks (typically 3,500 – 10,000 liters in volume) equipped with motorized pumps.
- *Gulper emptiers (GPEs)* – FSMEs that provide semi-mechanized emptying using hand-operated pumps to extract sludge into barrels (typically 200 liters in volume).
- *Manual emptying* – FSMEs that scoop out the sludge by entering the pit or tunnel into the side of the pit and allow the sludge to flow out. Though it is a widespread practice, manual emptying is unsafe and is illegal in Uganda.

Uganda Sanitation for Health Activity (USHA)

USHA was a 66-month program (29 Jan'18 – 28 Jul'23) financed by the United States Agency for International Development (USAID). USHA was implemented by Tetra Tech along with partners FSG, Sanitation Solutions Group, SNV USA, and BRAC.

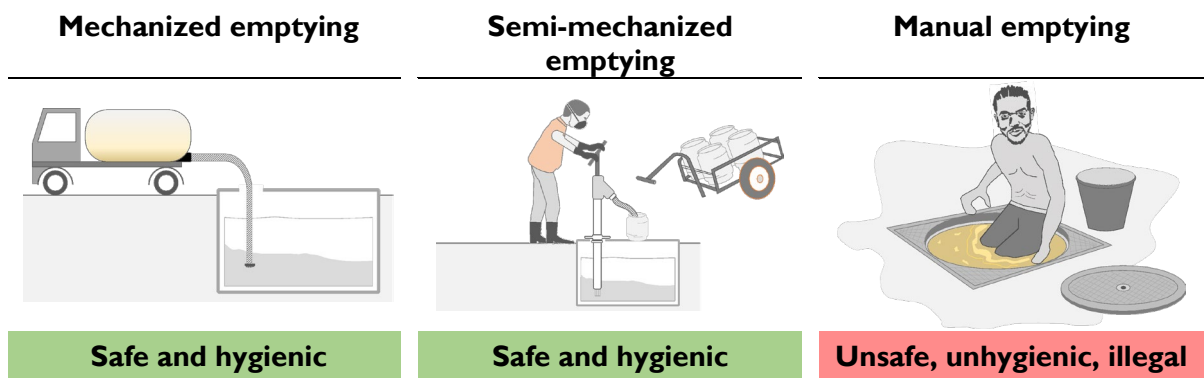
USHA worked in 20 districts across three regions in Uganda implementing a series of water, sanitation, and hygiene (WASH) interventions to achieve the following key outputs:

- Increased household access to sanitation and water services.
- Key hygiene behaviors at home, school, and health facilities adopted and expanded.
- Strengthened district water and sanitation governance for sustainable services.

³ World Urbanization Prospects: The 2018 Revision, United Nations, Department of Economic and Social Affairs, Population Division, 2019.

⁴ Uganda Malaria Indicator Survey 2018-19, Uganda Bureau of Statistics, Government of Uganda, 2020.

Figure 3: Types of FSM services available in urban Uganda



Small private sector operators running single-truck businesses carry out most of the mechanized and semi-mechanized emptying outside of Kampala. Based on interviews with 10 operators, USHA found that single-truck businesses are often informal and work with a limited understanding of their revenues and costs. Further, many of these businesses are not profitable, even in relatively denser urban areas in Uganda. There are three main reasons for this⁵.

First, single truck FSMEs operate at low levels of utilization, owing to limited demand for safe emptying and challenges in fulfilling demand. Demand is limited due to low prevalence of emptiable toilets, the seasonal nature of FSM demand, inability, or unwillingness of households to spend on safe emptying, and inadequate investment in marketing by FSMEs. Even where demand exists, FSMEs are not always able to fulfil it due to their inability to adapt to different emptying contexts. For example, depending on truck size, single-truck CTEs can serve either institutions (which prefer high-capacity trucks) or households (which prefer low-capacity trucks). Additionally, the prevalence of low-quality second-hand vehicles, coupled with a lack of investment in regular maintenance, results in frequent breakdowns and truck downtime.

Second, these businesses generally incur high operating costs, driven by the high cost of purchasing or leasing vehicles and high fuel costs. This is exacerbated by the poor quality of vehicles, which results in low fuel efficiency and high repair and maintenance costs.

Third, these businesses often report high customer default rates. This is largely caused by a lack of trust between FSMEs and their customers, stemming from the inability of both FSMEs and customers to accurately determine the volume of sludge in a pit, and the volume emptied by FSMEs. As customers are usually not aware of the exact dimensions of the toilet pit, FSMEs provide customers with a rough estimate of the volume of sludge they will empty. After emptying the estimated volume, some sludge may remain in the pit, causing customers to feel cheated. Further, FSMEs often add water to dilute thick sludge before pumping it out, which customers may perceive as an attempt to artificially inflate the volume emptied. Lastly, as it is difficult to estimate the volume of sludge emptied by CTEs, some customers fear that CTEs only partially fill their truck to charge for more trips. In these scenarios, customers often refuse to pay for the service, resulting in default.

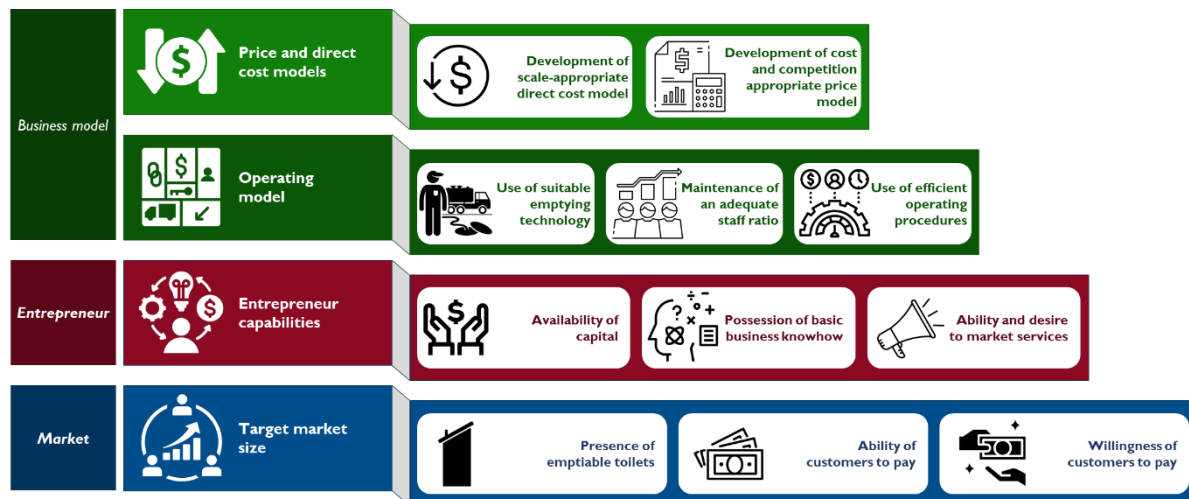
To address these challenges, USHA developed and implemented a suite of interventions in select urban locations. Section 2 presents USHA’s framework for developing viable safe FSM businesses; Section 3 describes USHA’s approach to identifying intervention locations and partners, and lists the interventions developed; Section 4 summarizes the impact of these interventions; Section 5 details USHA’s learnings; and Section 6 describes steps taken by USHA to support FSME sustainability after project closure.

⁵ For more details on the challenges faced by single-truck FSMEs in urban Uganda refer to ‘[Running on Empty: Challenges faced by private pit emptiers in urban Uganda](#)’, Shankar V. and Singh R., FSG, 2020.

2.0 USHA’s Framework for Developing Viable and Safe FSM Businesses

The viability of FSM businesses depends on four key elements: (i) a critical mass of potential customers (i.e., institutions and households); (ii) entrepreneurs with the capabilities to establish and run FSM businesses; (iii) an efficient and effective operating model; and (iv) price and cost models that are appropriate given the scale of the business and competition. USHA developed a framework to assess existing and potential FSM businesses against these four elements (Figure 3).

Figure 4: Framework for developing viable safe FSM businesses.



USHA organized the four elements in a pyramid based on an understanding of their ability, as an implementer, to intervene and influence these four elements, particularly in the short-to-medium term. USHA determined that, in the project period, they would have limited ability to influence elements at the bottom of the pyramid, with their ability to influence elements increasing as they moved towards the top of the pyramid. USHA believes this principle applies to other implementers looking to design and deliver FSM interventions in the short-to-medium term.

The base of the pyramid considers where an FSM business operates or wishes to operate. Viable businesses require a critical mass of potential customers who have accessible and emptiable toilets. Further, these potential customers should be able and willing to pay for safe emptying services. While implementers, like USHA, may be able to introduce interventions to broaden the target market, they are unlikely to be able to affect the underlying causes that limit market size. For instance, implementers may be able to convince FSMEs to reduce prices, making safe emptying services available to a wider set of customers, but they cannot change customers’ income levels. Additionally, interventions to broaden the market are likely to yield results only in the long term, e.g., implementers can sensitize customers to build emptiable toilets, but it would take several years for the proportion of emptiable toilets in a geography to increase meaningfully.

The second layer of the pyramid considers FSME capabilities. To establish and run a viable FSM business, entrepreneurs need to have (i) the capital to enter the market and grow the business (e.g., by buying or leasing a vehicle), or the ability to raise capital; (ii) basic business knowhow, such as an understanding of how to close sales, manage employees; and (iii) the ability and willingness to market business offerings. In the short-to-medium term, implementers may not be able to ‘create’ entrepreneurs or upskill them very significantly. However, implementers can partner with entrepreneurs with a starting set of skills and help strengthen their capabilities.

The top two layers of the pyramid contain elements related to the operations of an FSM business. The third level considers the operating model, which comprises the service offered, the human resources deployed, and the operating procedures followed. FSMEs must choose the right service offering for the market, i.e., they must identify whether mechanized or semi-mechanized emptying is appropriate for the market and choose the right truck type and size based on customer needs.

FSMEs also need to employ staff appropriate for the scale of the business, e.g., a single-truck business would not require a large administrative team. Additionally, FSMEs must ensure that emptying operations are efficient and cost-effective (e.g., by accurately assessing job feasibility, optimizing vehicle maintenance). This would help ensure the business's indirect costs are appropriate for the scale of business.

Lastly, the top of the pyramid considers a business's price and direct cost models. In addition to the indirect costs mentioned in level three of the framework, FSMEs must ensure that they accurately estimate their direct costs and non-cash expenses like depreciation and determine the appropriate method of costing key inputs. For example, FSMEs must choose whether to pay emptying personnel fixed or variable salaries depending on the utilization level. Once FSMEs have a good understanding of their costs, they need to set prices that cover the direct costs of providing their service, while generating sufficient margins to cover the indirect costs as well; these prices may vary depending on the type of job (e.g., higher prices for jobs over greater distances). Further, prices need to be in line with market forces (e.g., competition, customer willingness to pay). If it is not possible for FSMEs to charge a competitive price that also covers their costs, they may need to revise their operating and cost models.

In contexts where there is a sufficiently large target market and entrepreneurs with the required capabilities, it would be easier for implementers to introduce interventions to strengthen the operating, price, and cost models of an FSM business. Further, there is a greater chance for these interventions to demonstrate results in the short-to-medium term.

Section 3 describes USHA's approach to developing FSM interventions based on the four elements of this framework.

3.0 USHA's Approach to Developing FSM Interventions

Based on the framework described in Section 2, USHA followed a structured approach to understand the FSM landscape in program districts and (i) identify implementation locations with relatively larger target markets; (ii) identify partner FSMEs with a relatively higher level of capabilities; (iii) develop interventions to strengthen their operations; and (iv) monitor FSME performance and provide ongoing business advisory support.

USHA decided to pilot FSM interventions in their program districts in the Greater Masaka, Busoga, and Acholi regions. As a first step, USHA carried out scoping studies, consulting key stakeholders in urban areas within each of these three regions. This included treatment plant operators such as the National Water and Sewerage Corporation (NWSC), District Local Governments (DLGs), FSMEs, potential institutional customers (e.g., schools, health centers, hotels), and NGOs working on FSM (e.g., GIZ, Busoga trust). Additionally, USHA also consulted the Ministry of Water and Environment (MWE) to understand the broader context of FSM in the country.

Through these scoping studies, USHA mapped the FSM context in key urban areas in their program districts, creating an inventory of existing fecal sludge management infrastructure and FSMEs. USHA also used data from the scoping studies, along with additional secondary research, to identify potential barriers to the provision of safe FSM in these urban areas.

3.1 Identifying the appropriate implementation locations

Using data from the scoping studies and secondary research, USHA carried out a high-level estimation of the potential demand for, and supply of, FSM services in each of the key urban areas. Based on this assessment, USHA identified implementation locations in each cluster with (i) relatively high potential demand for FSM services (i.e., number of institutions and households with emptyable toilets); and (ii) relatively greater supply of FSM services (i.e., presence of FSMEs and treatment infrastructure). In all, USHA selected four urban areas that showed potential for developing sustainable FSM markets: one from the Busoga region, two from the Greater Masaka region, and one from the Acholi region.



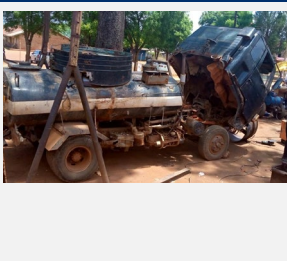
3.2 Identifying partner FSMEs

After identifying implementation locations, USHA followed a three-step approach to identify partner FSMEs based in each implementation location⁶. First, USHA identified FSMEs who had significant prior emptying experience as these FSMEs were likely to have the knowhow and assets (e.g., cesspool trucks) required to run an FSM business. Second, USHA prioritized FSMEs who were already providing mechanized or semi-mechanized emptying services (as these are more likely to be safely managed). Finally, FSMEs that were interested in partnering and willing to share data with USHA were shortlisted.

Over a period of 31 months (the implementation period), USHA worked with six FSMEs across the four urban areas selected from the Busoga, Greater Masaka, and Acholi regions. Of these, only two cesspool truck emptiers (CTEs) and a gulper emptier (GPE) remained active partners of USHA over the entire implementation period. The remaining three FSMEs (two CTEs and one GPE) dropped off as USHA partners due to a lack of interest and/ or lack of capabilities to implement USHA's proposed interventions.

As all partner FSMEs shared their data confidentially, USHA has not named them in this report. Instead, they are referred to by the type of emptying service they provide (CTE or GPE), the number of trucks they operate (single-truck or two-truck), and the region they operate in (Busoga, Greater Masaka, or Acholi). Figure 4 summarizes key details of the three FSMEs that remained active partners of USHA.

Figure 5: USHA's partner FSMEs

	Busoga Region	Greater Masaka Region	Acholi Region
	<i>Single-truck GPE from the Busoga region</i>	<i>Single-truck CTE from Greater Masaka</i>	<i>Two-truck CTE from the Acholi region*</i>
			
Service type	Gulper	Cesspool	Cesspool
On-boarding date	Mar 2020	Mar 2020	June 2021
Type of treatment infrastructure accessed	Wastewater stabilization ponds (WWSP)	Wastewater stabilization ponds (WWSP)	Fecal sludge treatment plant (FSTP)
Annual volume emptied. (pre-USHA)	840 barrels (0.13 million ltrs.)	300 trips (1.05 million ltrs.)	300 trips (1.05 million ltrs.)
Annual net profit (pre-USHA)	UGX -19.8 million (-79% of revenue)	UGX -10.2 million (-21% of revenue)	UGX +11.3 million (+24% of revenue)
* The two-truck CTE purchased their second truck during the implementation period with support from USHA			

While USHA wanted to test both mechanized and semi-mechanized emptying technologies in each of the implementation locations, only the implementation location in the Busoga region had an existing FSME providing semi-mechanized emptying services that met the selection criteria. USHA

⁶ USHA did not consider FSMEs based in other districts (e.g., Kampala), but operating in the implementation locations as the transport costs would increase the cost of services to potential customers.

attempted to introduce a semi-mechanized emptying service in the Greater Masaka region by collaborating with an interested entrepreneur, but this attempt was not successful as the entrepreneur lacked the business knowhow and capabilities to run a viable business, and to implement USHA’s proposed interventions.

3.3 Developing tailored solutions for partner FSMEs



USHA’s approach to identifying implementation locations and partners helped ensure that key elements of the framework for developing viable safe FSM businesses were in place. For example, the three selected implementation locations had relatively larger target markets than other urban areas in USHA’s program districts. Similarly, by focusing on entrepreneurs with prior emptying experience, USHA ensured that the partner FSMEs had a minimum degree of business knowhow. However, none of the implementation locations, or partner FSMEs, met all the criteria identified in the framework. This is demonstrated by the fact that of the six FSMEs USHA on-boarded during the implementation period, only two were profitable at the time of partnership, and all six were operating at low utilization levels.



USHA used the framework to analyze each partner FSME’s business and identify which gaps persisted, and to develop tailored interventions to address these gaps. These interventions fall into four categories, each addressing gaps at one of the four levels of the framework, i.e., interventions to: (i) optimize price and cost models; (ii) strengthen business operations; (iii) strengthen entrepreneur capabilities; and (iv) broaden the target market.

The assessment of partner FSMEs’ businesses revealed that USHA needed to invest significant time and resources to address multiple FSME-specific gaps in capabilities and operations. For this reason, and because the chosen implementation locations already had relatively large untapped markets, USHA decided to deprioritize interventions to broaden the target market.

Table 1 summarizes all the interventions USHA developed over the implementation period. This includes interventions that USHA developed but did not implement, and those that were not part of USHA’s initial design but were introduced later.

Table 1: Summary of USHA's FSM interventions

Intervention category	Interventions
 <p>Optimize price and costs.</p>	<ul style="list-style-type: none"> • Revenue model: USHA provided inputs on setting prices, maximizing per-trip revenue, and targeting and structuring high-value jobs, e.g., USHA advised the GPE in the Busoga region and the CTE in the Greater Masaka region to vary prices by job type, and encouraged all the active FSMEs to target institutional customers through annual contracts. • Cost model: USHA also recommended cost-reduction strategies, e.g., USHA identified utilization levels above which partner FSMEs would benefit from a fixed wage model for remunerating staff rather than their existing variable wage model.
 <p>Strengthen business operations.</p>	<ul style="list-style-type: none"> • Selecting suitable service offering: USHA advised FSMEs on the appropriate emptying technology and truck capacity for their markets, e.g., USHA advised the GPE in the Busoga region to focus on gulper emptying, as the cesspool emptying market in the implementation location is saturated. • Streamlining staffing structures: USHA provided technical assistance to FSMEs to help optimize staffing based on operational needs, e.g., USHA advised the GPE in the Busoga region to reduce underutilized administrative staff, and the CTE in the Greater Masaka region to hire an accountant to improve record keeping. • Enhancing operational efficiency: USHA developed standard operating procedures (SOPs) for all partner FSMEs to close sales, optimize vehicle maintenance, and ensure safe and hygienic operations (see Annexures 10-11).

Intervention category	Interventions
 <p>Strengthen FSME capabilities.</p>	<ul style="list-style-type: none"> • <u>Credit support</u>: USHA supported three partner FSMEs to purchase vehicles by providing partial financial support, and technical assistance to help the FSMEs secure bank loans. • <u>Business advisory support</u>: USHA provided technical assistance to help partner FSMEs maintain financial records and better assess their profitability, register their businesses, and comply with statutory regulations. • <u>Sales and marketing support</u>: To increase FSME utilization, USHA linked partner FSMEs to trained sales agents, provided technical and financial support for mass marketing activities (e.g., radio campaigns), and encouraged FSMEs to invest in cost-effective marketing activities (e.g., SMS marketing).
 <p>Broaden the target market</p>	<ul style="list-style-type: none"> • USHA planned to <u>work with local governments</u> to promote building of emptyable toilets, appropriate pit usage, benefits of safe emptying, and enforcement of FSM regulations. However, these interventions were deprioritized.
<p>Note: Interventions in red font are those that USHA introduced during the implementation period in response to challenges identified through USHA’s monitoring, evaluation, and learning mechanism.</p>	

3.4 Performance monitoring and ongoing business advisory support

USHA’s support to partner FSMEs did not end with developing and deploying interventions. To ensure FSMEs progressed towards viability, USHA developed financial projections and monitoring tools to track their financial performance (see Annexures 6-9 for the monitoring tools used by USHA). USHA asked partner FSMEs to record business performance data in the monitoring tools, which the USHA team then collected at specific intervals. USHA analyzed the performance data to identify deviations from projections and collected qualitative data from FSMEs and other stakeholders (e.g., sales agents, customers) to understand potential reasons for these deviations. Based on this, USHA provided technical assistance to help the FSMEs tackle the challenges identified.

4.0 Overall Impact of USHA’s FSM Interventions

This section summarizes the overall impact of USHA’s interventions based on the quantitative performance data collected from partner FSMEs over the 31-month implementation period. USHA measured impact in terms of two metrics: (i) change in access to safe emptying services in implementation areas; and (ii) change in FSME viability.

Overall, USHA found that while their interventions were successful in increasing access to safe FSM services, the impact of the interventions on FSM business viability remained mixed. Only one of the three active FSME partners achieved sustained profits. This is discussed in detail below.

4.1 Change in access to safe emptying services

For this metric, USHA measured the number of unique customers served by their partner FSMEs, and the total volume of sludge safely emptied and disposed by these FSMEs.

The number of unique customers served represents the number of institutions and households that gained access to safe emptying because of USHA’s interventions. USHA counted the first time a partner FSME served a customer during the implementation period as a job for a *unique* customer. If

any partner FSME served the same customer later, the second job was counted as a job for a *repeat customer*⁷.

USHA required all partner FSMEs to follow safe and hygienic practices while emptying (e.g., ensuring emptiers wore protective gear), transporting (e.g., ensuring sludge containers had no leaks), and disposing fecal sludge (e.g., disposing only at authorized treatment plants). Therefore, USHA considered all sludge emptied by partner FSMEs (for unique and repeat customers) to be safely emptied and disposed⁸. Further, USHA assumed that if these customers had not been served by a partner FSME, the sludge would have been emptied using unsafe practices (e.g., manual emptying) and/ or the sludge, once emptied, would have been disposed unsafely (e.g., in open fields).

Over the implementation period, USHA's six partner FSMEs completed jobs for 359 unique institutions (60% of USHA's target of 600 institutions) and 857 unique households. When repeat customers are considered, these FSMEs completed 1,389 jobs (665 for institutions and 724 for households), resulting in safe emptying of approximately 13.6 million liters of sludge being safely emptied⁹.

4.2 Change in FSME viability

For this metric, USHA measured: (i) change in utilization; (ii) change in revenues; and (iii) change in net profitability of partner FSMEs. USHA focused on the three FSMEs who remained active partners of USHA over the entire implementation period as these FSMEs accounted for most of the unique customers (86%), total jobs completed (83%), and total volume of sludge emptied (87%)¹⁰. Two of the three partner FSMEs (the single-truck CTE from Greater Masaka and the single-truck GPE from Busoga region) were active for the entire 31-month implementation period; the CTE from the Acholi region was on-boarded later and was active for 16 months. To account for the difference in engagement duration, USHA has used annualized averages for all data points in this section.

4.2.1 Change in utilization

Over the implementation period, all FSMEs showed an increase in the number of customers served, with two of the three also recording an increase in number of trips/ barrels emptied:

- *Single truck CTE from Greater Masaka*: The CTE's performance before and during their partnership with USHA are shown in Figures 5 and 6. Overall, the single-truck CTE achieved a 55% increase in number of jobs, but an 11% decline in number of trips. The decline in number of trips is due to the CTE purchasing a larger capacity truck with USHA's support. As the larger truck needs only half the number of trips to empty the same volume of sludge as the CTE's smaller older truck, the overall number of trips completed has declined. However, the volume of sludge emptied per year by the CTE increased by 56% during the implementation period.

⁷ USHA's partner FSMEs may have served one or more of the unique customers prior to USHA's interventions. However, as it is not possible to know if jobs completed prior to USHA's interventions were carried out safely, customers served before the intervention period are not considered as having prior access to safe services.

⁸ During the implementation period, USHA discovered that the GPE from the Busoga region was engaging in manual emptying for certain jobs (see Section 5.3.2). As a result, for the remainder of the implementation period, USHA disregarded jobs in which the GPE used manual emptying when estimating the number of unique customers served and volume of sludge safely emptied and disposed.

⁹ Volume estimates are based on the assumptions that (i) in each trip, CTEs fill between 75% and 100% of truck capacity; and (ii) GPEs fill 160 liters of sludge in each barrel (which is 80% of full barrel capacity).

¹⁰ Three partner FSMEs dropped off over the course of the implementation period; these were: (i) CTE from Busoga region (partnership started Sep'20, ended Apr'22), (ii) CTE2 from Greater Masaka (partnership started Mar'20, ended Dec'21), and (iii) GPE from Greater Masaka (partnership started May'21, ended Nov'21).

Figure 6: Number of customers served per year before and during USHA's implementation period

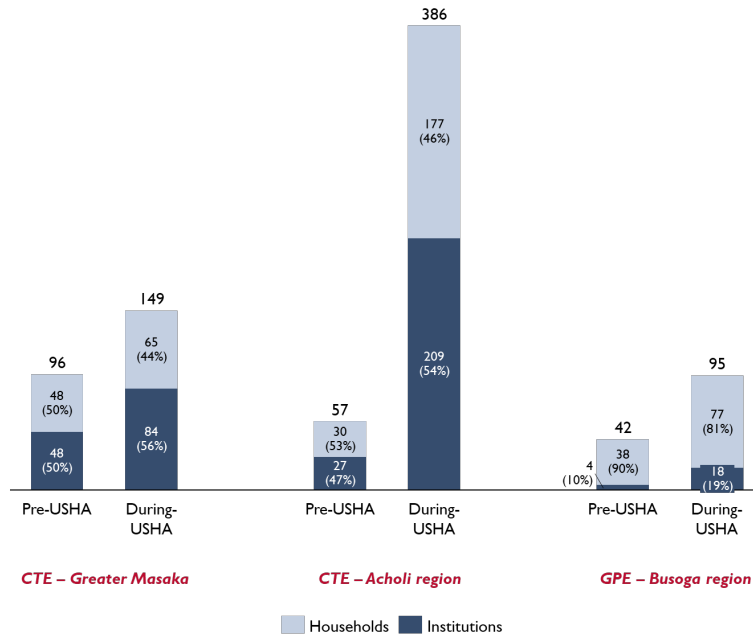
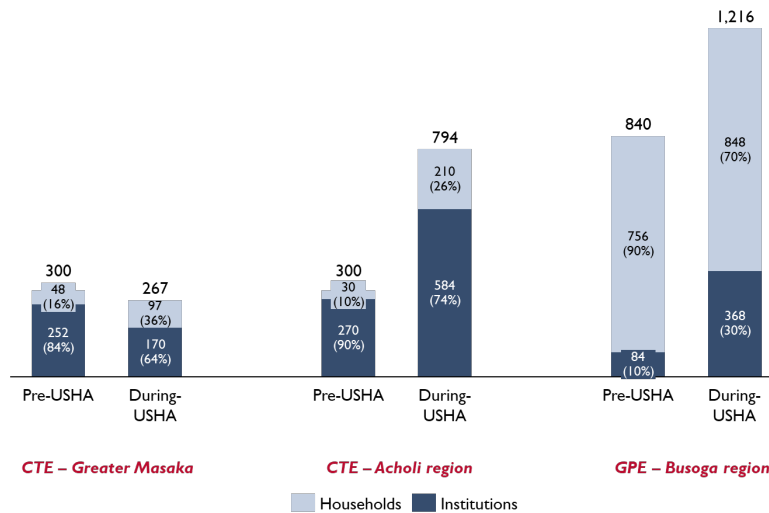


Figure 7: Number of trips/ barrels emptied per year before and during USHA's implementation period



- **Two-truck CTE from Acholi region:** As seen in Figures 5 and 6, during their partnership with USHA, the two-truck CTE saw a nearly sevenfold increase in the number of jobs completed per year and more than double the number of trips emptied. While this is partly due to USHA supporting the CTE in expanding to a two-truck business, the quantitative data shows that CTE has been able to maintain the pre-USHA level of utilization of their older truck, while attracting an impressive number of customers with the second larger-capacity truck.
- **Single-truck GPE from Busoga region:** In the case of the GPE, the number of customers served per year more than doubled after they partnered with USHA.

Apart from an overall increase in utilization, there was also an increase in the proportion of institutional customers served for all three FSMEs. This change in composition of customers could have a longer-term positive impact on FSME businesses as institutions have larger and more frequent emptying needs than households.

While the FSMEs increased the number of customers served, they were still below USHA's projections of what was required to achieve a viable business. COVID-19 was one of the key factors that may have contributed to this, as much of Uganda was locked down in the early periods of the pandemic. While FSMEs were permitted to operate during this time, they reported two key

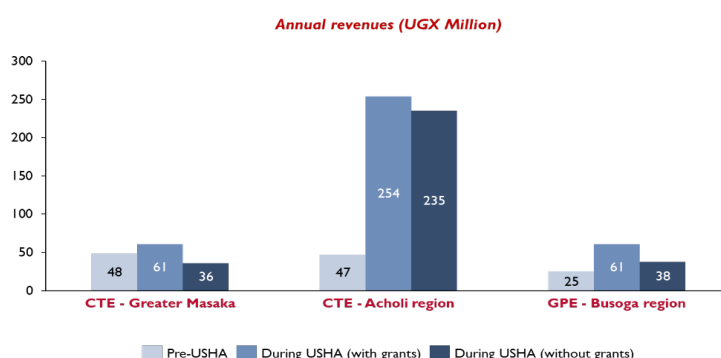
challenges. First, schools, which were a significant source of business for FSMEs, closed in February 2020 and did not reopen until October 2021 or later. Second, household incomes were adversely affected. As a result, households either emptied reduced volumes, or resorted to cheaper unsafe emptying services. Both challenges likely limited the number of trips/ barrels emptied by the single-truck CTE from Greater Masaka and the single-truck GPE from the Busoga region. The impact on the two-truck CTE from the Acholi region was comparatively lower as the FSME was on-boarded only in June 2021. Other factors that may have contributed to the low utilization were a lack of investment in marketing by the FSMEs, poor-performance of USHA-trained sales agents and, in the case of the CTE from Greater Masaka, non-availability of their truck due to breakdowns.

4.2.2 Change in revenues

The three FSMEs also saw an increase in annual revenue (Figure 8). These revenue figures include capital grants from USHA for the purchase of vehicles. Additionally, they include cash grants provided by USHA to cover cash flow shortfalls faced in the initial stages of implementation when FSME utilization levels were not sufficient to cover interest payments on FSME vehicle loans. If grant income is disregarded, the CTE from Greater Masaka saw a decline in emptying revenue, though the other two FSMEs continue to see an increase in revenue. FSME-wise performance is summarized below.

- Single-truck CTE from Greater Masaka: With grant income included, the CTE saw a 27% increase in total annual revenue during the implementation period. However, at the same time, the annual revenue from emptying declined by 25% due to a decline in the price per liter charged by the CTE. While the CTE’s new truck can empty more than double the volume of sludge per trip compared to the older truck, the increase in the price per trip charged by the CTE was not proportionate (as this would have made the CTE uncompetitive). As a result, CTE’s price per liter declined from UGX 40.3 with the old truck to UGX 19.5 with the new truck¹¹. By itself a decline in price per liter is not concerning. If the cost per liter reduces in the same (or greater) proportion as the decrease in the price per liter, the FSME’s profitability would remain the same or improve.
- Two-truck CTE from Acholi region: The CTE recorded the greatest increase in revenues. With grants included, the CTE’s total annual revenue grew by 440%. Further, during the implementation period, the CTE’s annual emptying revenue grew by 400%. This increase can be attributed to the increased utilization resulting from the CTE operating two trucks instead of one.
- Single-truck GPE from Busoga region: The GPE also saw an increase in total annual revenues (with grant) and annual emptying revenue (without grant). Total annual revenues grew by 140%, while annual emptying revenue grew by 52% due to an increase in the number of barrels emptied.

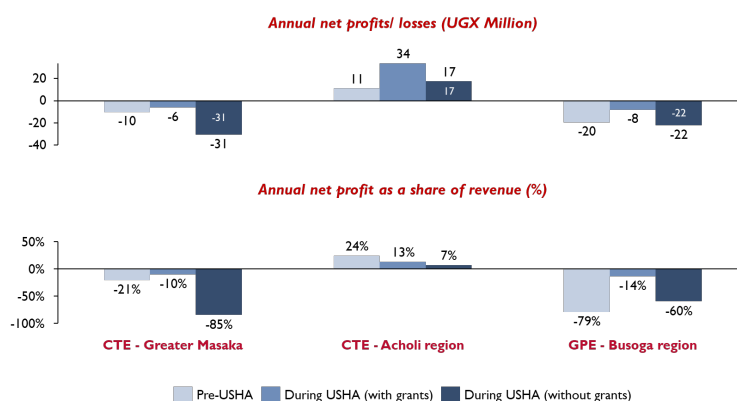
Figure 8: FSME revenues before and during USHA's implementation period



¹¹ The average price per trip for the old 4,000-liter truck was UGX 161,000 whereas the average price per trip for the new 10,000-liter truck was 194,643.

4.2.3 Change in net profits

Figure 9: FSME net profits before and during USHA's implementation period



Only the two-truck CTE from the Acholi region has been profitable throughout the implementation period (Figure 8). The single-truck CTE from Greater Masaka and the single-truck GPE from the Busoga region continued to incur losses in the implementation period, though their net loss margin declined over time. As with revenue, if the grant support provided by USHA is disregarded, the CTE from Greater Masaka and the GPE from the Busoga region performed poorly. FSME performance is summarized below:

- Single-truck CTE from Greater Masaka:** With grant income included, the CTE saw their total annual net losses reduce from 21% of revenue pre-implementation to 10% of revenue during implementation. However, disregarding the grant income, the annual losses from emptying operations increased to 85% of annual revenue. This was due to a combination of incorrect pricing strategy and high operating costs. While the prices charged by the CTE covered the direct costs of a job, they did not generate adequate margins to cover operating costs. Prices were lower than ideal due to an incorrect understanding of costs, and a desire to compete with other FSMEs. Additionally, the CTE incurred significant repair costs due to unexpected truck breakdowns. Prior to the first breakdown, the CTE had started earning monthly profits, but the high cost of repairs, and the truck downtime resulted in significant losses. The CTE spent an average of UGX 19 million a year on vehicle repair and maintenance in the implementation period, which is 42% of annual emptying revenue generated during that time. As direct costs of sale (e.g., labor, fuel costs) were 56% of emptying revenue, the gross profits earned were just enough to cover the repair and maintenance costs, but not other operating costs (e.g., office rent, insurance payments).
- Two-truck CTE from Acholi region:** The total annual net profits earned by the CTE, as a percentage of revenue, declined from 24% pre-implementation to 13% during implementation. However, as there was a significant growth in revenues during implementation (Figure 8), in UGX terms, the profits earned by the CTE grew by 209% (from UGX 11 million to UGX 34 million). These profits include income from USHA grants. However, even if we subtract the grant income, the CTE still saw a 55% increase in absolute profits (from UGX 11 million to UGX 17 million). The increase in absolute profits was a result of the increased number of customers the CTE was able to serve after the addition of a second truck.
- Single-truck GPE from Busoga region:** The total annual net loss earned by the GPE as a percentage of revenue declined from 79% pre-implementation to 14% during implementation. However, disregarding grants, the GPE's annual net loss from emptying was 60% of revenue, which is still lower than the pre-implementation period. As with the CTE from Greater Masaka, the GPE's losses can be explained by a combination of pricing that didn't sufficiently cover operating costs, and higher than ideal operating costs. Specifically, the GPE's administrative costs were not in proportion to the scale of their business. On average, the GPE spent UGX 23.2 million a year on administrative expenses (rent, staff salaries) during the

implementation period, which is 50% of the emptying revenue earned during the same time. As direct costs of revenue were another 45% of emptying revenue, this gross profit was enough to cover admin costs, but not all other operating costs.

We describe some of these challenges, and the steps USHA took to remedy them, in detail in Section 5.

5.0 Key Learnings from USHA's FSM Interventions

This section summarizes learnings from USHA's experience of implementing FSM interventions in four urban areas. The learnings cover key steps in their FSM approach, i.e., identifying appropriate implementation locations, identifying partner FSMEs, developing tailored interventions, and monitoring the performance of FSMEs.

5.1 Selecting implementation locations and partner FSMEs

5.1.1. Availability of appropriate and accessible treatment facilities close to an FSME's catchment area was a key factor in determining if a partner FSME was able to run a viable safe emptying business.

As mentioned in Section 3.2, USHA attempted to identify urban locations that had treatment plants near the catchment area. This approach proved to be successful in the Acholi region, and in one of the urban areas in the Greater Masaka region as the treatment plants were (i) appropriate for the nature of sludge found in the urban area, and (ii) accessible using the vehicles partner FSMEs operated. However, this was not the case in the Busoga region, and the second urban area from Greater Masaka. As a result, USHA's partner FSMEs in these areas faced challenges:

- i. Lack of an appropriate treatment plant in Busoga region: Unlike fecal sludge treatment plants (FSTPs), wastewater stabilization ponds (WWSPs) cannot treat thick sludge with a high solid waste concentration, which is typically found in unlined pit toilets. In USHA's selected urban area in the Busoga region, there is a mix of lined and unlined pit toilets. As several CTEs were already catering to customers with lined pit toilets, USHA decided to partner with a GPE and target unlined pit toilets. However, the treatment plant in the urban area is a WWSP, and the GPE was often not permitted to dispose sludge at the plant. This limited the number of customers the GPE could serve, as they turned down jobs if they suspected the sludge was too thick for the WWSP. Further, it increased the costs for the GPE, as they had to buy water to dilute the sludge or spend more on fuel to transport the solid waste to an FSTP. To avoid these additional costs, the GPE sometimes chose to dispose the sludge in a trench dug on an unused plot of land, which is considered unsafe. While USHA was aware that WWSPs find it difficult to treat gulper sludge, interviews with stakeholders prior to implementation indicated that it would be possible for GPEs to dilute the sludge sufficiently for WWSPs to accept. However, over the implementation period, USHA found that this was not the case.
- ii. Poor access to the treatment plant in Greater Masaka: There is an FSTP within 5 km of USHA's second urban area in Greater Masaka. However, the mud road leading to the FSTP is not motorable during the rainy season, which is the peak season for emptying. In the dry season, only CTEs can access the plant. However, given the prevalence of unlined pit toilets in the urban area, semi-mechanized technologies like guplers are better suited for the needs of customers. GPE's may be able to access the plant if they use a pick-up truck, but most GPE's prefer to use motorized tricycles as they are less expensive to purchase and enable the GPE to achieve profitability at lower volumes. As tricycles cannot traverse the mud road, this may have contributed to the lack of GPEs in the urban area. Due to the absence of GPEs, USHA decided to partner with an existing CTE, despite concerns over the suitability of cesspool emptying. However, the CTE was not able to generate sufficient jobs to achieve viability.

5.1.2. Selecting/ introducing FSMEs who use emptying technology suitable for the implementation location is critical in ensuring viable safe emptying businesses.

As in the case of treatment plants, the emptying service provided by the partner FSMEs needs to be appropriate for the nature of sludge found in the target market. The service provided by USHA's six partner FSMEs was suitable for the urban locations they operated in, except for the partner FSMEs in the second urban area in Greater Masaka, and the urban area in the Busoga region.

The challenge with engaging a CTE partner in the second urban area in Greater Masaka has been described above. In the Busoga region, USHA partnered with a GPE. While USHA believed gulper emptying was appropriate for many customers in the implementation location, for many jobs the GPE resorted to manual emptying¹². Discussion with the FSME revealed genuine challenges in using the gulper, especially when servicing households with unlined pits. It appears that the gulper is not suitable for emptying pits with thick sludge and high solid waste content (which is a large share of the market), as the sludge blocks the pump. Further, guplers have limitations on the depth to which they can empty pits. As customers usually need (or want) the pit to be emptied to a greater depth than is possible with the gulper, the GPE resorted to a mix of gulper and manual emptying to avoid losing jobs. On discovering this, USHA worked with the GPE to develop standard operating procedures (SOPs) for safe manual emptying and trained the GPE's team on the SOPs.

5.1.3. Partner FSMEs that were profit oriented and had relatively formalized business processes were better able to implement USHA's interventions.

Three of the six FSMEs USHA on-boarded over the implementation period withdrew from participation due to their inability to implement USHA's proposed interventions or a lack of interest. The other three FSMEs also faced challenges implementing the interventions but remained active. Based on interactions with the six FSMEs, USHA identified two factors that may explain their differing performance: (i) business orientation and (ii) business processes and knowhow:

- i. **Business orientation:** USHA found that FSME partners with a profit motive showed a greater interest in developing businesses that could sustain beyond the implementation period. The single-truck CTE from Greater Masaka and the two-truck CTE from the Acholi region, both of whom have a profit motive, showed greater interest in USHA's analysis of their finances, proactively sought USHA's support on their pricing models, were receptive to inputs on operational aspects (e.g., using genuine spare parts for their vehicles), and were responsive to data requests. On the other hand, the single truck GPE from the Busoga region, which is a non-profit did not actively seek support beyond financial assistance. Further, despite USHA's analysis showing significant business model gaps (e.g., inadequate contribution margins), the GPE was less receptive to inputs on their pricing and operating models (e.g., rationalizing staffing structure), and was not very responsive to data requests. It is possible that having invested their own funds, and being dependent on profits for continued operations, FSMEs with a profit motive were more interested in building sustainable businesses. However, this does not imply that non-profits are incapable of running viable emptying businesses. Irrespective of the type of organization (profit or non-profit), if an organization is oriented towards generating surpluses to grow and sustain its business, they are more likely to be receptive to business model improvements.
- ii. **Business processes and knowhow:** USHA noted that FSMEs with experience of running formal businesses were better equipped to implement and institutionalize USHA's interventions than informal actors without prior business experience. Formal businesses are more likely to have established business processes that they could build upon, e.g., the two-truck CTE from the Acholi region, who had the most established record-keeping system, demonstrated the greatest understanding of their financials, and the greatest ability to engage in informed discussions about their business. For instance, though USHA recommended the FSME reduce prices to increase utilization, the FSME was confident of increasing utilization at the existing prices, which the FSME was able to do. Alternately, the single-truck CTE from Greater Masaka was running an unregistered business, with no formal record keeping system, and limited business knowhow (e.g., inability to identify all costs of their business). This limited the single-truck CTE's ability to

¹² Based on customer verification calls conducted by USHA between October and December 2021

implement the interventions, e.g., despite many discussions with USHA regarding their financials, the CTE struggled to understand components of their profit and loss statement (P&L).

5.2 Designing and implementing appropriate interventions

The learnings in this sub-section are structured around the four elements of USHA's framework for developing viable safe FSM businesses, i.e., (a) price and cost models, (b) operating model, (c) entrepreneur capabilities, and (d) target market.

A. Optimizing price and cost models

5.2.1. *Providing frequent, ongoing technical advisory support based on an in-depth understanding of partner FSMEs' businesses helped USHA strengthen FSME price and cost models.*

Through in-depth interviews and analysis of FSME financials, USHA identified gaps in partner FSMEs' price and cost models and provided inputs to help them address these gaps (see Annexure I for a FSME profit and loss analysis tool). The process of doing so involved multiple conversations with the FSMEs to understand the rationale behind their current practices, and to help them understand USHA's proposed changes.

- Inputs on price models: USHA's analysis revealed that the prices charged by the single-truck GPE from the Busoga region and the single-truck CTE from Greater Masaka did not adequately consider factors that affect price (e.g., distance, volume, competition). As a result, their prices did not cover operating costs (see Section 4.2.3). USHA demonstrated the financial impact of this to partner FSMEs by modelling the profits they could earn with an alternate pricing strategy. This convinced both partner FSMEs to update their prices. However, as the change in pricing strategies were introduced close to the end of the implementation phase, they had limited impact on the FSME's overall performance during the implementation phase.
- Inputs on cost models: USHA also identified potential tweaks to FSME cost models. For example, all FSMEs currently pay workers a variable rate based on the number of trips or barrels emptied. While this is appropriate for businesses with low utilization levels, USHA assessed that, at the utilization levels needed to run viable emptying businesses, a fixed labor model would be more economical. USHA calculated the utilization threshold beyond which each partner FSME should switch to a fixed labor model and shared the findings with the FSMEs. While the FSMEs have not yet reached the levels of utilization required to make the switch, they have expressed interest in doing so once they do.

B. Strengthening business operations

5.2.2. *While ensuring access to appropriate vehicles is critical to FSME profitability, the process of buying vehicles in Uganda made it difficult for FSMEs to identify good quality vehicles.*

USHA provided partial financial support to the two-truck CTE from Acholi region and the single-truck CTE from Greater Masaka to help them purchase 10,000-liter cesspool trucks. Additionally, USHA also supported the GPE from the Busoga region to purchase a pick-up truck that could transport 30 barrels per trip. The purchase of vehicles was a key factor in the two-truck CTE generating profits, and the GPE reducing losses. However, the single-truck CTE did not benefit from this intervention due to the poor quality of the truck purchased.

Though USHA planned to provide technical support to help partner FSMEs select good quality vehicles (e.g., by linking FSMEs to mechanics who would assess the vehicle prior to purchase), this proved challenging. In Uganda, all vehicles are imported and sold through dealerships known as 'bonds. As new vehicles are prohibitively expensive, most bonds deal in second-hand vehicles. While bonds typically maintain a stock of passenger vehicles, more expensive commercial vehicles, like cesspool trucks, are imported on order. Potential customers are directed to websites where available vehicles are listed along with limited details such as the make, volume, date of manufacture, and mileage. Once the customer selects a vehicle and pays a deposit, the bond arranges the import

of the selected vehicle. Customers do not have the opportunity to inspect the vehicle prior to import and cannot reject the vehicle once it is imported. This can prove problematic, as these second-hand vehicles are often in poor condition.

Both the two-truck CTE from Acholi and the single-truck CTE from Greater Masaka faced problems with the trucks purchased with USHA support. The two-truck CTE had to invest their own funds over and above the purchase price to make the cesspool truck roadworthy. However, once this was done the vehicle remained operational over the implementation period. The single-truck CTE faced greater challenges. While their truck performed well initially, it later suffered a series of breakdowns, which greatly impacted the FSME's profitability (see Section 4.2.3). To remedy the situation, USHA helped the single-truck CTE identify a mechanic with the required technical knowhow to alter the truck in a way that will make it easier to maintain and repair in the future. Further, the CTE has been able to secure a top-up loan to cover the costs of the alteration from the bank that extended the loan for the truck purchase.

Based on these experiences, USHA believes that the following steps may help limit, if not fully mitigate, the challenges partner FSMEs face when purchasing vehicles. First, FSMEs should only opt for vehicle makes that are commonly available in Uganda, as this may make it easier, quicker, and cheaper to find appropriate spare parts and mechanics. Second, FSMEs should work with a mechanic familiar with the chosen vehicle make to identify minimum specifications to assess vehicles available online (e.g., year of manufacture, total mileage, transmission type, vacuum pump capacity). Third, the FSME should request the identified mechanic to inspect photos of potential vehicles for signs of any damage to the chassis. This can help minimize the risk of FSMEs selecting vehicles that are beyond their useful life and/ or outside the skillset of mechanics to repair. Lastly, FSMEs should explore the possibility of signing an agreement with the bond that makes the final payment contingent on a physical inspection of the vehicle once it is imported.

5.2.3. Demonstrating tangible financial benefits of the proposed interventions was key in convincing partner FSMEs to adopt interventions aimed at streamlining business operations.

Initial assessments, and ongoing monitoring, revealed certain inefficiencies in the business operations of partner FSMEs. However, the FSMEs took time to adopt USHA's proposed interventions to address these inefficiencies, only doing so when a financial benefit was clear and evident. This is demonstrated by the following two examples.

First, while working on the pricing strategy for the GPE from the Busoga region, USHA realized that to cover the GPE's costs, the price per barrel would need to be higher than what the market would accept. This was largely due to the GPE (which is a non-profit entity) maintaining more administrative staff than required to run a single-truck business. Despite USHA urging the FSME to reduce administrative costs, the FSME did not take action for more than a year. Ultimately, USHA modelled the additional profit the GPE could earn if they adopted a leaner staffing structure. On seeing the extent of the financial benefit, the GPE finally agreed to rationalize their administrative staff, and worked with USHA to determine key positions needed to run a business of their size.

Second, USHA identified gaps in vehicle maintenance and repair practices of both the single-truck CTE from Greater Masaka and the two-truck CTE from Acholi. The CTE from Greater Masaka was using low-cost alternatives (e.g., re-treaded tires) instead of genuine spares, which was affecting the truck performance, and the CTE from the Acholi region was continuing to run their older 4,000-liter truck, despite it requiring frequent and expensive repairs. Both CTEs only agreed to revisit their practices once USHA shared the results of a detailed analysis of the repair costs they had incurred, and the impact this had on profitability. On seeing the impact, the CTE from the Greater Masaka agreed to use genuine spares going forward, while the CTE from the Acholi region decided to replace his older 4,000-liter truck with a newer, larger-capacity truck. As a result, the CTE from Acholi will continue to operate two trucks – the 10,000-liter truck purchased with USHA's support, and a newer larger-capacity truck purchased to replace the old 4,000-liter truck.

C. Strengthening entrepreneur capabilities

5.2.4. *Providing direct subsidies and working with banks to extend loans to the FSMEs, was essential in enabling partner FSMEs to purchase appropriate vehicles.*

None of three active FSME partners had access to appropriate vehicles prior to partnering with USHA. The CTE partners from Acholi and Greater Masaka both had low-capacity cesspool trucks, which were not suitable for institutional customers. In both cases, the cesspool trucks used were past their useful life resulting in low fuel economy, and frequent breakdowns. While the GPE from the Busoga region did not have problems with the size and quality of the truck, they faced issues with the truck's availability. The GPE rented the truck on a per job basis, and often the rented truck was not available when the GPE had a job; this resulted in the GPE having to turn away customers.

All three FSMEs were keen to purchase new vehicles; however, they lacked the capital to purchase a truck outright, or to pay the instalments if they purchased vehicles through a loan. As mentioned earlier, all vehicles in Uganda are imported. Once taxes and duties are levied, most FSMEs cannot consider purchasing a vehicle without taking a loan¹³. However, banks charge interest rates between 28-32% per annum, which the FSMEs cannot afford.

Mindful of these challenges, USHA decided to provide FSMEs partial financial support for the purchase of vehicles. USHA first developed financial projections for each FSME and determined that the maximum loan the FSMEs could repay was equal to 35% of the vehicle value. Further, to ensure the FSMEs were invested, USHA insisted FSMEs contribute at least 5% of the vehicle value. USHA then provided a capital subsidy for the remaining 60% by means of a cash grant.

Additionally, USHA spent six months convincing banks to lend to the FSMEs. This was not easy, as banks in Uganda lend on past cash flows rather than projections and, except for the CTE from Acholi, the partner FSMEs were loss making with negative cash flows. Moreover, both the CTE from the Greater Masaka and the GPE from the Busoga region did not have any financial records, and the CTE from Greater Masaka was not registered.

The bank ultimately agreed to provide the loan as USHA's involvement and support to the FSMEs mitigated the risk involved. For example, USHA contributed to the cost of the vehicle. Further, while USHA did not provide a default guarantee, they extended a monthly business support grant to FSMEs to help cover projected cash flow shortfalls. The total business support grant extended was minimal (just 44% of the capital grant). Further, the grants were performance based, i.e., FSMEs only received the full grant if they achieved agreed upon monthly and quarterly utilization targets. If the FSME did not meet their targets, the grant was reduced proportionately. Despite the business support grant being relatively small, and not assured, its presence gave confidence to the banks that USHA was invested in making the FSMEs viable.

5.2.5. *FSMEs need marketing support as they lack the skills and funds to market their services; however, further evidence is needed to identify cost-effective sales channels.*

Most of the FSMEs USHA interviewed (including the six they partnered with) did not have the skills (or interest) to market their businesses. FSME marketing activities were limited to distributing business cards and parking their vehicles at busy intersections where potential customers could see them. To address this, USHA introduced a commission-based door-to-door sales model and invested in select mass marketing channels. USHA aimed to demonstrate the benefit of these channels, thereby convincing partner FSMEs to increase their own investment in marketing.

Door-to-door sales: USHA identified community health volunteers known as village health teams (VHTs) to act as sales agents and trained them to make sales using a standardized sales pitch. Based on customer and FSME inputs, USHA developed a sales pitch with marketing messages tailored to customer preferences¹⁴, and instructions on closing a sale (see Annexures 2-3 for the sales pitch guide and Annexures 4-5 for tools used by sales agents to close and track sales). However,

¹³ Taxes and duties on imported vehicles lead to a 90-105% increase in their final cost as compared to their CIF (cost, insurance, and freight) value.

¹⁴ Based on interviews with 100 customers from across the implementation areas, USHA identified promptness, cleanliness, environmental friendliness, and professionalism as the key features customers look for in an emptying service.

quantitative data shows that only 11% of jobs across the three active FSMEs came from sales agents, significantly lower than the 70% USHA projected. Qualitative interviews with customers confirm that customers (particularly institutions) did not consider recommendations from sales agents as a key deciding factor in choice of FSME. Instead, factors that influence the choice of FSME are proximity of the FSME, availability of the FSME to start immediately, and price quoted.

The relatively poor performance of USHA-trained sales agents can, to an extent, be explained by the profile of sales agents selected. USHA selected VHTs to play the role of sales agents, as VHTs are from the communities they serve, are motivated by a desire to improve the sanitation status of their communities and are respected and trusted by households. However, USHA discovered that VHTs were not effective as they had limited catchment areas, competing demands on their time, and often lacked the required communication or persuasion skills. USHA, therefore, broadened the pool of sales agents to include professional sales agents, such as plumbers. The professional sales agents appear to have been more active and effective than the VHTs. Qualitative interviews with sales agents¹⁵ reveal that professional sales agents visited 18 customers per week as opposed to only 12 visits per week by VHTs. Further, professional sales agents converted 18% of their visits to jobs compared to 12% for VHTs.

Another reason for the poor performance of sales agents may have been the infrequent and inadequate commissions paid by FSMEs. All three partner FSMEs agreed to pay sales agents a pre-defined commission once the sale was closed. However, in practice, commission amounts were determined more fluidly on a job-by-job basis and were not always paid on time.

USHA believes that the sales agent model could have performed better if professional sales agents were inducted earlier, and if a more robust incentive mechanism was introduced. However, further evidence would be needed to confirm this hypothesis.

Mass marketing: To supplement door-to-door sales, and help FSMEs reach a broader customer base, USHA invested in mass-marketing activities on their behalf. Specifically, USHA developed and funded radio campaigns for each of the three FSMEs, and designed and printed flyers or brochures.

In qualitative interviews, all three FSMEs expressed satisfaction with USHA's mass-marketing initiatives, particularly the radio campaign. They reported receiving a higher number of inquiries during, and in the period immediately after, the campaign. They also claimed that a significant number of these inquiries resulted in jobs, and they expressed strong interest in conducting subsequent radio campaigns. However, the quantitative data shared by the FSMEs shows only 3% jobs were sourced through radio. Similarly, while partner FSMEs felt the brochures/ flyers led to more jobs, the quantitative data shows that only 2% were sourced through this channel.

The variance between FSME experience and quantitative data may be explained, in part, by how job leads were recorded. Qualitative interviews with partner FSMEs reveal that they may not have accurately captured lead sources for all jobs. For example, if a customer called a partner FSME to inquire about a job, the FSMEs would record this as a direct sale without first asking customers how they heard of them.

Given the lack of evidence, and the high costs involved in using channels like radio, USHA advised partner FSMEs to test efficacy of mass marketing through low-cost channels (e.g., community radio, SMS adverts). Following this advice, the CTE from Greater Masaka invested UGX 100,000 in SMS adverts, which resulted in five jobs with a total job value of UGX 1,450,000.

5.3 Performance monitoring

5.3.1 While FSME performance data was key in convincing partner FSMEs to adopt USHA's interventions, USHA had to refine its monitoring, evaluation, and learning system to better suit FSME capabilities.

¹⁵ Based on qualitative interviews with 13 sales agents (9 VHTs and 4 professional sales agents) carried out in the Busoga region and Greater Masaka.

As described above, FSME's were more open to interventions when USHA could use performance data to demonstrate the impact of interventions on FSME profitability. This analysis was made possible due to regular collection of quantitative and qualitative data from FSMEs and other stakeholders (e.g., sales agents, customers).

Based on the program objectives (increasing access to safe emptying and improving FSME viability), USHA identified key metrics that needed to be tracked. These metrics were distributed across five monitoring templates based on the type of metric and the frequency with which it needed to be tracked. The quantitative data collected included number and source of leads, number and type of customers served, volume and value of jobs, direct costs incurred per job, and indirect costs (e.g., maintenance, marketing). In addition, USHA collected qualitative data through monthly check-in meetings with FSMEs, quarterly review meetings with FSMEs and sales agents, and a one-time learning visit that covered FSMEs, sales agents and customers.

USHA faced four key challenges in implementing this monitoring, evaluation, and learning (MEL) system. First, FSMEs did not appreciate the need for collecting certain data points. For example, despite multiple discussions, none of the partner FSMEs fully understood the benefits of recording sales leads. Second, FSMEs did not understand how to record certain data, e.g., data on outstanding payments. Third, FSMEs did not systematically record their indirect costs. For example, though USHA recommended FSMEs capture details of vehicle repairs and maintenance at the time they were incurred, FSMEs did not do this consistently. Fourth, factors outside the control of the FSMEs prevented them from providing certain performance data, e.g., some FSMEs were not able to provide accurate data on fuel consumption, as their vehicles did not have functioning odometers.

To address these issues, USHA made changes to the MEL system. First, USHA reduced the frequency of data collection from weekly to once in two weeks to not overwhelm the FSMEs. Second, USHA asked FSMEs to record only the data points they understood and appreciated the importance of (e.g., size of job, price per trip/ barrel, and direct costs per job). Third, data points that the FSMEs did not understand (e.g., outstanding payments), did not collect regularly (e.g., repairs/ maintenance), or could not measure (e.g., fuel costs) were estimated by USHA through qualitative interviews with the FSMEs. Fourth, rather than ask the FSMEs to send their data to USHA, USHA sent team members to the FSME office to sit with the FSME and digitize their data. Lastly, USHA also developed simplified templates to allow the FSME to track key financial metrics and trained the FSMEs to use these templates. In addition to these changes, USHA regularly analyzed FSME performance data and shared the findings with the FSMEs to help them understand the value of maintaining records.

Summary of key learnings for FSME implementers:

USHA's experience highlights the challenges in identifying appropriate implementation locations and partner FSMEs, the importance of providing ongoing business advisory support based on robust performance data, and the need to supplement technical assistance with financial support.

1. Invest time in identifying suitable implementation locations: USHA's experience shows that it is difficult to promote viable FSM businesses where either the treatment plant or the emptying technology used by partner FSMEs is not suited to the nature of sludge available in the area. Implementers should conduct demand and supply studies to identify appropriate locations.

2. Develop interventions based on FSME-specific challenges: While FSMEs may face some common challenges, the underlying reasons are often different. Further, some challenges are FSME-specific. Implementers should use appropriate tools (e.g., framework in Section 2) to identify FSME-specific challenges and co-create feasible and workable solutions with FSMEs.

3. Provide technical and financial support to help FSMEs access good quality vehicles: The prevailing system for purchasing commercial vehicles in Uganda makes it nearly impossible for FSMEs to identify and purchase affordable, good quality vehicles. Implementers should provide technical guidance to FSMEs on identifying good quality vehicles and, if needed, directly subsidise the cost of the vehicle, and/ or help FSMEs secure loans. Alternately, implementers can help FSMEs negotiate an affordable lease agreement with public or private cesspool truck owners.

4. Develop systems to identify cost-effective marketing channels: FSMEs typically lack the skills, interest, and funds to adequately market their services. As a result, implementers may need to invest in marketing on behalf of FSMEs. To ensure sustainability, implementers should test different marketing channels (both direct and mass marketing) and track their efficacy. This will enable implementers to guide FSMEs on the most cost-effective interventions to invest in.

5. Use performance data to demonstrate the financial impact of interventions: USHA's partner FSMEs were more receptive to proposed interventions when USHA used performance data to model the impact of the interventions on profitability. Implementers should invest time upfront in setting up a robust and practical MEL system. Once data is received, implementers should regularly analyze the data and share key findings with the FSME.

6.0 Building sustainability post project closure

Throughout the implementation period, USHA shared relevant learnings with all partner FSMEs and sought their inputs on additional support required. As part of the project closure activities, in consultation with partner FSMEs, USHA identified three areas of support that could help partner FSMEs continue their journey towards sustainability once the project ended. USHA has spent the last 3 months of the project working on these activities; they are:

- **Strengthening financial management:** Throughout the implementation period, USHA supported FSMEs to improve their record keeping and their understanding of key financial metrics. To enable partner FSMEs to carry out at least a basic level of financial analysis and planning once the project ended, USHA developed a simplified profit and loss (P&L) template and used it to help the FSMEs understand drivers of revenue and costs. USHA also supported the FSMEs to develop their own P&L statements, and to use them to make business decisions. As a result of these efforts, the two-truck CTE from Acholi was able to independently develop a six-month P&L and use it to ascertain truck-wise profitability.
- **Securing long-term contracts:** USHA encouraged partner FSMEs to secure long-term contracts with institutional customers (e.g., schools). USHA shared a database of schools in each implementation area with the partner FSMEs, developed a contract template, and advised them on how to pitch these contracts to schools. USHA hopes this will help partner FSMEs achieve stable revenues in the future.
- **Identifying marketing priorities:** By the end of the project period, partner FSMEs acknowledged the need to invest in marketing. However, they lacked the funds to invest in multiple channels, especially expensive channels like radio adverts. USHA worked with the FSMEs to identify low-cost channels suitable to their contexts (e.g., SMS marketing and community radio). Further, USHA helped the FSMEs introduce systems for accurately

tracking lead sources so they could assess the relative effectiveness of different marketing channels and, over time, identify the most cost-effective ones.

In addition to supporting existing FSME partners, as part of the project closure activities, USHA worked with the Ministry of Water and Environment (MWE) to develop a cesspool truck leasing model. As mentioned earlier, a key challenge to establishing viable FSM businesses in Uganda is the prohibitive costs of purchasing and/ or leasing good quality vehicles. MWE possesses several relatively new cesspool trucks that are intended to serve catchment areas around the treatment plants constructed by MWE. Many of these trucks, which are operated by the Umbrellas for Water and Sanitation, are underutilized. MWE is interested in increasing the utilization of the trucks, to help meet truck maintenance costs, and to increase volume of sludge reaching the treatment plants. USHA proposed that the MWE lease these trucks to private FSMEs at affordable rates. This would address the challenge FSMEs face in accessing good quality vehicles, while increasing truck utilization.

MWE and USHA agreed to pilot a leasing model in one of USHA's implementation areas in the Greater Masaka cluster. USHA helped MWE set the parameters within which the leasing model would operate, including the floor price that would provide MWE adequate income to meet truck maintenance costs. USHA also developed criteria for identifying and selecting a suitable lessee, helped evaluate applicants, provided inputs into the contract discussions, and developed monitoring templates to help MWE track the outcomes of the leasing model. By the time the project ended, the identified lessee had begun operations. USHA hopes that other implementers looking to introduce market-based FSM interventions in Uganda can draw from USHA's experience to further strengthen their interventions.