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USAID/Uganda Sanitation for Health (S4H)
Task 1.1.1 Develop a National Sanitation Market Strategy

In-depth research findings: Value chain

Acronyms and terms

Agg.	Aggregate
EA	Enumeration area
FSM	Fecal sludge management
HH	Household
HW	Hardware store
IBT	Improved (at least basic) toilet
MBS	Market-based sanitation
NSMS	National Sanitation Market Strategy
S4H	Sanitation for Health
Permanent materials[1]	Construction materials that can maintain their stability for more than 15 years; e.g., concrete, cement screed, tiles, iron sheets
Temporary materials[1]	Construction materials that can maintain their stability for no more than 3 years; e.g., grass, mud, wattle
VC	Value chain
VHT	Village Health Team

1. National Population and Housing Census 2014: Analytical Report, Uganda Bureau of Statistics, Government of Uganda, 2017

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Overview | Objectives

- The USAID Uganda Sanitation for Health Activity (S4H) is supporting the Ministry of Health to develop a **National Sanitation Market Strategy (NSMS)** aimed at increasing access to and use of improved sanitation through market interventions
- As part of this process, over the last year, S4H has carried out **both secondary and primary research** to better understand the current situation of the sanitation market in Uganda, focused on **identifying drivers for, and barriers to, the provision of improved sanitation**
- This involved speaking with experts from the Government, NGOs, and the private sector, and conducting in-depth interviews with households, institutions (schools and health facilities), and actors in the sanitation value chain (e.g., masons, pit diggers, hardware stores, financiers)

This document presents the key findings of the value chain and policy research

For value chain, our research covered **key value chain actors** with the aim of understanding their:

- **Sanitation business outlook** including barriers and drivers towards increased participation of the value chain actors in the sanitation market
- **Business economics of key value chain actors** (to the extent possible) including unit margins on sanitation products and services and relative importance of sanitation compared to the actor's overall construction business

For policy, our research covered interviews with select **district officials** with the aim of understanding:

- **Key regulatory and policy barriers** that may impact households' ability to construct IBTs and/or impact the business environment within which value chain actors operate

Overview | High-level approach

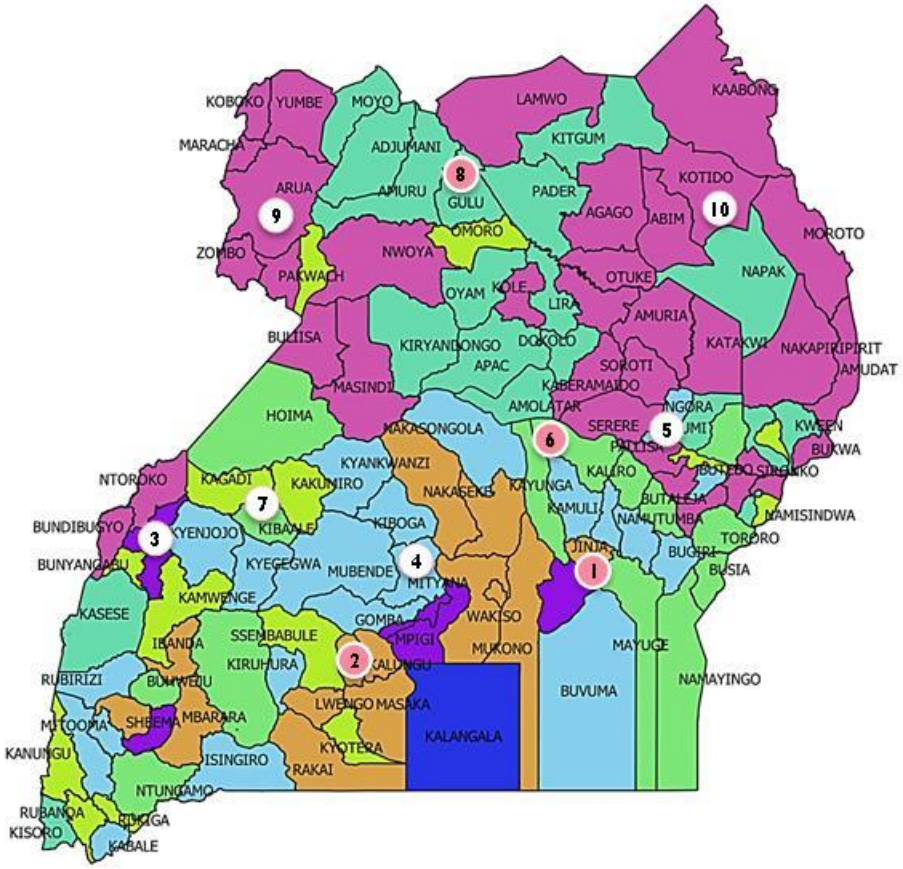
	Apr 2018 – Jul 2018	Jul 2018 – Oct 2018	Oct 2018 – Nov 2018	Nov 2018 – Jan 2019
	Understand sanitation landscape	***Prepare for in-depth value chain research***	***Conduct in-depth value chain research***	***Carry out value chain analysis***
Key activities	• Secondary research to understand sanitation value chain, products, and challenges • Immersion field trip to understand value chain actors and their barriers	• Define research areas • Develop and test quantitative questionnaire • Develop qualitative discussion guides • Select and train research agency	• Interview key value chain actors using quantitative tools • Conduct 8 value chain trace backs in 5 districts	• Analyze in-depth research and Immersion data to identify key barriers and drivers • Conduct unit margin and system economic analyses for key actors
Outputs	• Hypotheses on barriers and drivers towards increased participation of VC actors in the sanitation market, based on 99 qualitative interviews • Key areas of inquiry for in-depth research	• Digitized questionnaire translated in 9 local languages • Actor-specific discussion guides for qualitative interviews	• 453 quantitative interviews conducted • 8 value chain trace backs conducted	• Key barriers and drivers that may prevent/ enable value chain actors to increase participation in the sanitation market • System economics and unit margins of key value chain actors

Overview | Research locations

In-depth quantitative value chain research was conducted in 10 districts, and qualitative trace backs were conducted in a subset of 5 of these 10 districts. The districts were selected to cover a diverse set of sanitation contexts

List of RHIS Districts

1. Jinja
2. Bukomansimbi
3. Kabarole
4. Mityana
5. Ngora
6. Buyende
7. Kibaale
8. Gulu
9. Arua
10. Kotido



Legend for District Type

	Affluence [1]	Access [2]	Market infrastructure [3]
	High	High	High
	High	High	Low
	High	Low	Low
	Low	High	High
	Low	High	Low
	Low	Low	High
	Low	Low	Low
	Data not available for the district		

S4H program districts

Non-S4H districts

VC qualitative interviews

1. Measures relative ability of households in a district to pay for construction of sanitation facilities using a composite of UBOS's poverty indicator, household asset ownership, percentage of households in the district that consume less than 2 meals a day, and materials used for house construction; 2. Measures relative difficulty faced in accessing materials for construction of sanitation facilities in a district using a composite of average distance from the nearest road, whether the district is difficulty to reach, and whether the district is affected by armed conflict; 3. Measures relative availability of private product and service providers in a district using a composite of average distance from the nearest market selling general merchandise, percentage of households which have at least one member engaged in non-agricultural household based enterprise, and percentage of households with water connections in own yard/ plot/ building

Overview of value chain research | Sample size

We conducted ~450 quantitative interviews in 10 districts, and 8 value chain trace backs in 5 districts as part of the in-depth research; conducted 99 qualitative interviews as part of the Immersion visit

Quantitative research

Value chain 'key actor'	# of quantitative interviews[1]
Aggregate producer	52
Brick maker	50
Sand miner	45
Cement pre-fabricator	30
Hardware store	45
Transporter	48
Pit digger	51
Mason	50
VSLA	47
SACCO	35
	453

Qualitative research

District	# of VC trace backs[2]
Bukomansimbi	1
Buyende	2
Gulu	2
Kabarole	2
Ngora	1
	8

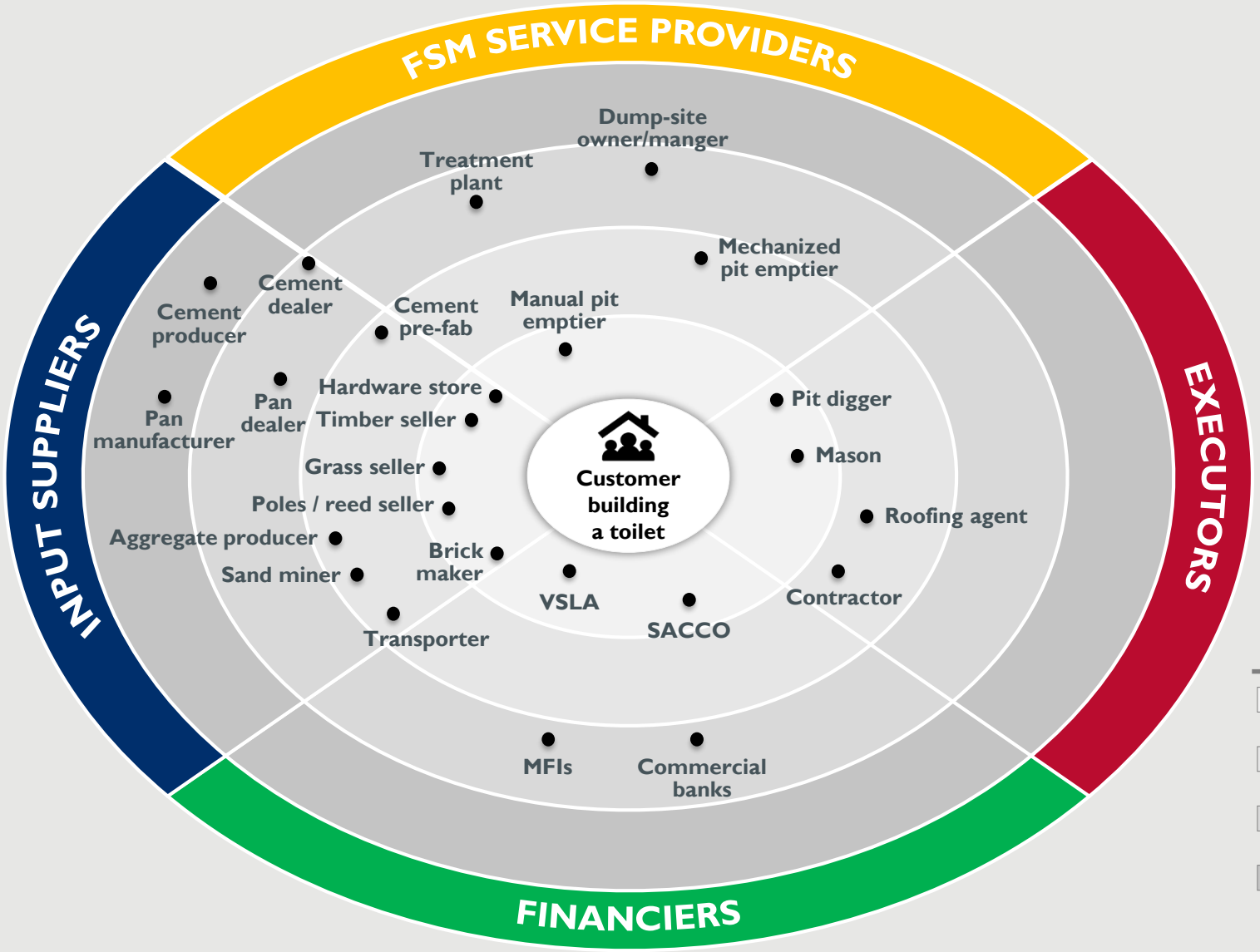
Qualitative research (Immersion visit)

District	# of qualitative interviews
Arua	24
Kampala	22
Kibaale	31
Mukono	22
	99

1. Includes interviews that were conducted as part of the pre-test
2. Each value chain trace back involved qualitative interviews with the VC actors that provided key inputs or services towards a particular households' toilet construction

Executive summary | Context

The value chain includes a wide range of disaggregated players, with some convergence upstream



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Executive summary | Key insights

For sanitation entrepreneurs

1. **Sanitation entrepreneurs are generally unavailable** to household customers, in most rural and some urban areas, either due to lack of physical presence (cement pre-fabricators) or due to perceived lack of business potential in household toilets (contractors); this leads to a disaggregated supply chain and a DIY (do-it-yourself) delivery model

   Other value chain actors that could play this sanitation entrepreneur role do not have the requisite business acumen or inclination to succeed in this role (e.g., pit diggers, masons)

2. **High working capital requirement** for actors such as hardware stores, transporters, and contractors, coupled with **lack of appropriate capital products**, limits their ability and/ or interest to provide sanitation-specific products or services

3. **Sanitation**, as a stand-alone business, **may not be viable for many value chain actors** due to seasonality in income, high competition, and customer-related delays

4. **However, sanitation is adequately profitable at a unit level**, more so for service-related actors such as pit diggers and masons; this may increase their interest in sanitation

For sanitation enterprises

5. **Product design of plastic pans** may not be appropriate for large parts of the country, and **many pit diggers do not have the required skill or knowledge** to offer households the most appropriate pit type

6. **Lack of appropriate sales and marketing efforts** leads to untrained masons, and a customer base that may not be willing to buy sanitation-specific products due to insufficient knowledge about price and/ or value

7. Within the existing DIY delivery model, knowledge of closely-related actors and **customer referrals among them** may provide the actors with additional business; it may also provide the potential for an existing actor to serve as a focal point to households

Executive summary | Key insights

Within the business environment

8. **Poorly penetrated associated supply chains** (hardware stores, sand, aggregate) lead to limited local access and increased transportation costs, particularly for rural households
9. **Increasing fuel costs may impact the viability** of various actors (such as pan manufacturers and transporters)
10. **Government policies**, such as mining regulations may **increase the cost of doing business** and may make the construction of IBTs more expensive
11. National level Public Health Act **may not be well supported at the local level by adequate bylaws**, and may not be adequate in promoting appropriate toilets for households
12. **Budgetary constraints, insufficient political will at local Government level, and unintended consequences** may render enforcement of the Public Health Act and any bylaws (if present) ineffective

These key insights have been further detailed in the next section of the document against the Sanitation Market System – Framework for MBS[1]

1. Scaling Market Based Sanitation, June 2018, by Agarwal, Chennuri, and Mihaly

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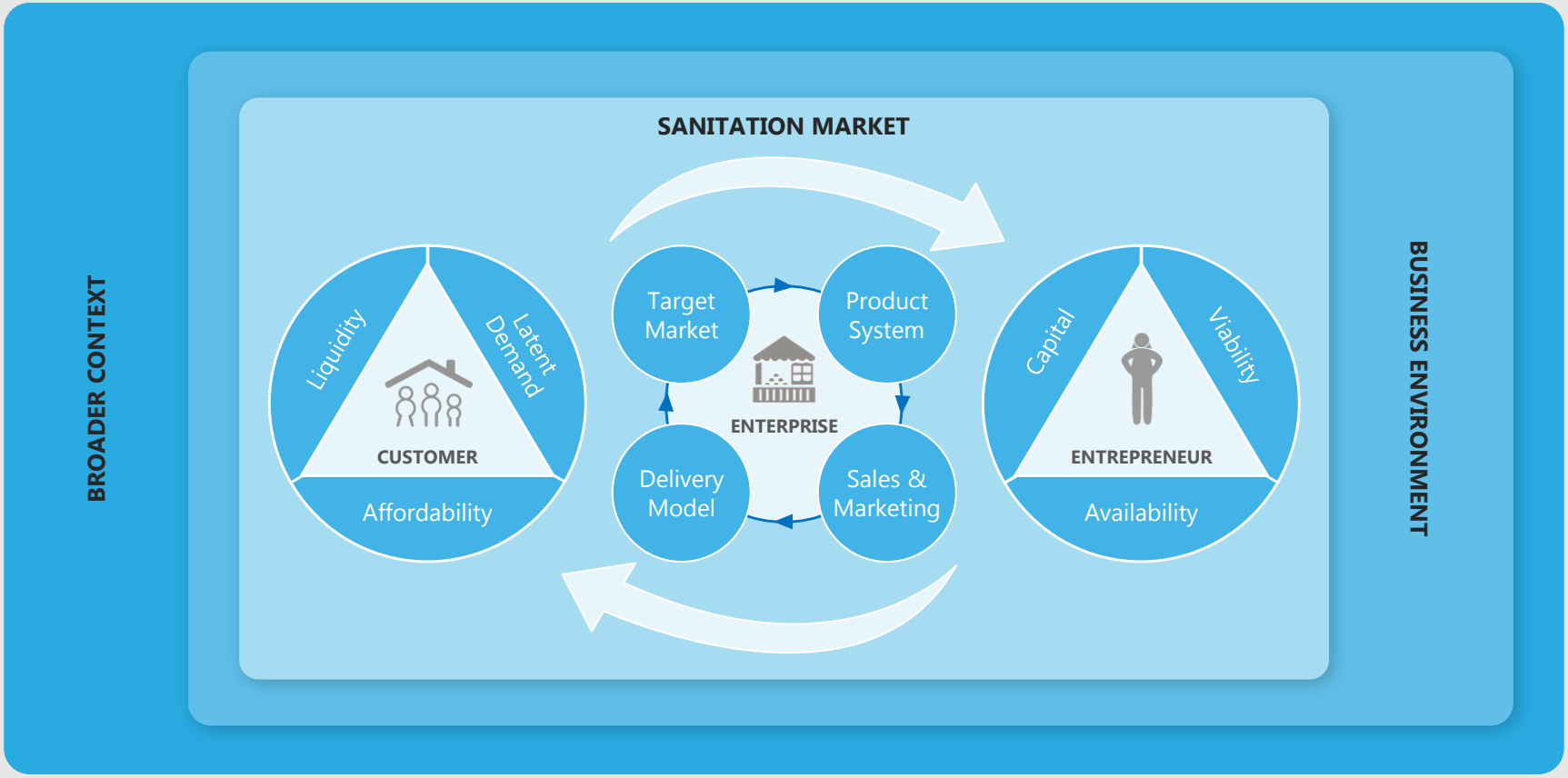
Barriers and Drivers | Framework

The Sanitation Market System – Framework for MBS[1]



A **barrier** is any factor that **restricts a value chain actor's participation** in the sanitation market, thereby making it more difficult for customers to adopt IBTs

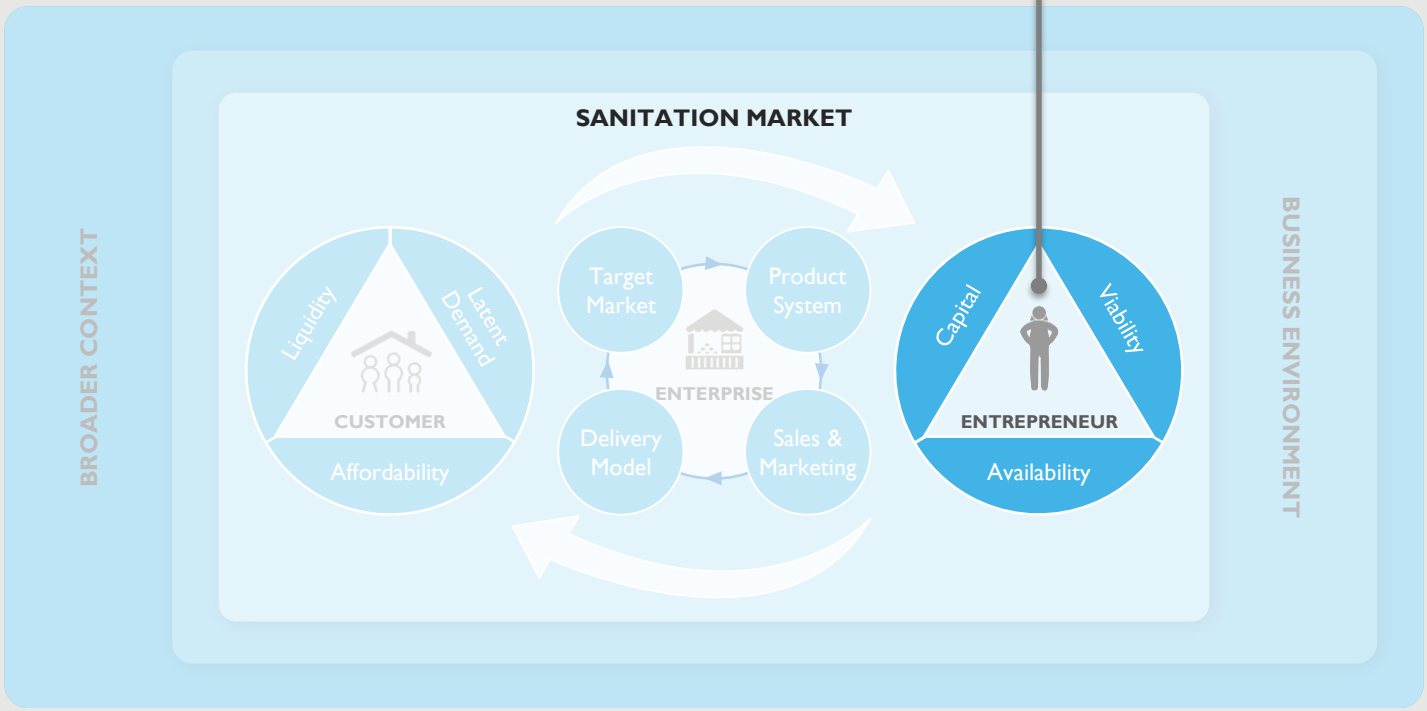
A **driver** is any factor that **enhances a VC actor's participation** in the sanitation market, thereby making it easier for customers to adopt IBTs

1. Scaling Market Based Sanitation, June 2018, by Agarwal, Chennuri, and Mihaly

Barriers and Drivers | Entrepreneur

Entrepreneur barriers/ drivers

- Lack of sanitation entrepreneurs, especially in rural areas
- High working capital requirements and lack of appropriate capital products
- Lack of viability of sanitation business
- Adequate unit margins on sanitation products/services, for some actors



- Barriers
- Drivers

Entrepreneur | Barrier | Availability of sanitation entrepreneurs (1/8)

I

Sanitation entrepreneurs[1] are generally unavailable to household customers, in most rural and some urban areas, either due to lack of physical presence (cement pre-fabricators) or due to perceived lack of business potential in household toilets (contractors); this leads to a disaggregated supply chain and a DIY (do-it-yourself) delivery model

Other value chain actors that could play this sanitation entrepreneur role do not have the requisite business acumen or inclination to succeed in this role to succeed (e.g., pit diggers, masons)

a

Cement pre-fabricators are not found in most rural and many urban areas

b

Contractors currently have low interest in taking on household toilet jobs as they perceive the jobs to have lower revenue potential compared to institutional toilet jobs, and low profitability

c

Pit diggers do not always charge a higher per-foot rate for rocky soil conditions

d

Masons do not engage in marketing efforts, and find it difficult to estimate their annual revenues from toilet construction jobs

e

A largely DIY ('do it yourself') model requires customers to individually source most materials and services from various locations, some of which may be far away

1. Sanitation entrepreneurs are value chain actors that play some 'focal-point' role by aggregating materials, services, and/ or information on behalf of the customer

Entrepreneur | Barrier | Availability of sanitation entrepreneurs (2/8)

I

a

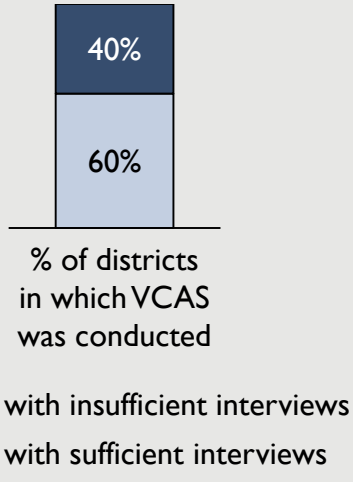
Cement pre-fabricators are not found in most rural and many urban areas

The field research team deployed by S4H was unable to identify sufficient number of cement pre-fabricators to interview for the primary research in both urban and rural areas

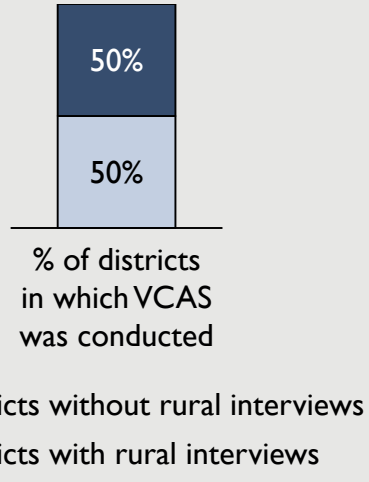
The S4H team aimed to interview 30 cement pre-fabricators across 10 districts as part of the in-depth research

3 interviews per district, with 1 in a rural setting

40% of the districts had insufficient cement pre-fabricator interviews[1]



50% of districts had no rural cement pre-fabricator interviews[2]



1. The districts with insufficient interviews include Buyende, Kabarole, Kibaale, and Kotido.
2. The districts without rural interviews include Buyende, Gulu, Jinja, Kabarole and Kotido

Entrepreneur | Barrier | Availability of sanitation entrepreneurs (3/8)

I

b

Contractors currently have low interest in taking on household toilet jobs as they perceive the jobs to have lower revenue potential compared to institutional toilet jobs, and low profitability

Contractors believe that household toilet jobs generate low revenues

*"Have not done any work for households because the **jobs are of low value** – they only require 2-3 stance toilets"*

- Contractor in Ngora[1]

*"**Individual household toilet construction jobs are of much lower value than institutional jobs** – so I don't see many prospects for this type of business."*

- Contractor in Kabarole[1]

Contractors believe that household toilet cannot be priced in a profitable manner

*"I don't have household clients - **I need to quote prices which can cover the cost of my taxes, which puts me out of the reach of households**. Households would rather negotiate with masons."*

- Contractor in Bukomansimbi[1]

*"**I would not be interested in building a household toilet for UGX 1.5M** – I don't think the job will be profitable at that budget. I would charge around UGX 2.5M million for a 1-stance toilet."*

- Contractor in Kabarole[1]

1. Source: Qualitative value chain interviews

Entrepreneur | Barrier | Availability of sanitation entrepreneurs (4/8)

I

c

Pit diggers do not always charge a higher per-foot rate for rocky soil conditions

Pit diggers do not charge a higher per-foot rate for rocky soil conditions…

"I charge UGX 10K per foot for a rectangular pit. ***The conditions of the soil doesn't affect the price****."*

- Pit digger in Kabarole

*"****I always charge UGX 6K per foot*** *– this does not change based on the pit depth or by type of soil."*

- Pit digger in Buyende

"Once I have negotiated the rate with the household, I ***won't change it even if I encounter rocky soil****."*

- Pit digger in Gulu

…while they take longer to complete a job in rocky soil conditions, which may reduce the number of jobs they are able to take on

Illustration

Pricing mechanism for a pit digger in Bukomansimbi[1]

	Non-rocky soil	*Rocky soil*
# of days taken to dig	14-15	28-30
Per-foot rate charged	UGX 6,000 – 7,000	UGX 6,000 – 7,000

"When digging in rocky ground, ***I sometime use fire to split the stones*** *in order to be able to dig further. However, this process is* ***risky****, and can leave me with blisters, which leave me unable to dig for a few days."*

- Pit digger in Bukomansimbi

1. Source: Qualitative value chain interviews

Entrepreneur | Barrier | Availability of sanitation entrepreneurs (5/8)

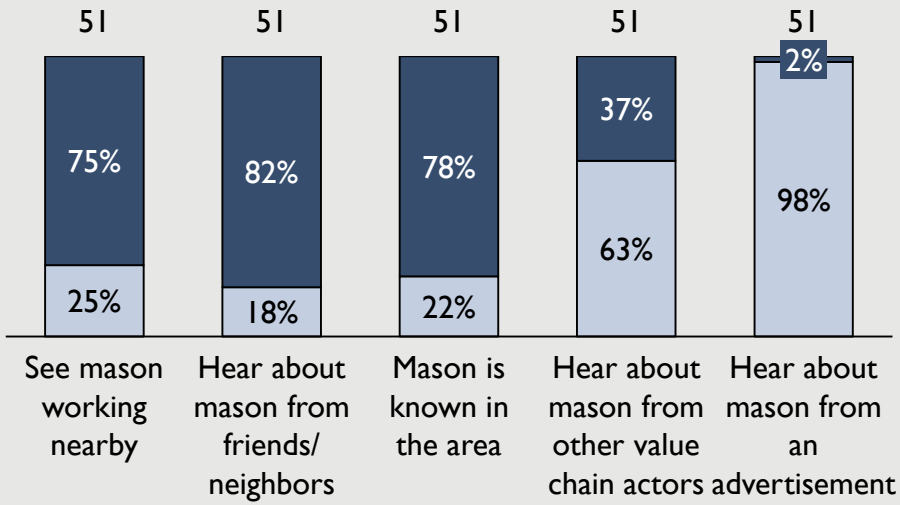
I

d

Masons typically do not engage in marketing efforts, and find it difficult to estimate their annual revenues from toilet construction jobs

Masons do not actively market themselves to acquire new customers; they rely on 'word of mouth' to source new customers

Channels through which potential customers hear about masons[1]



"I don't need to market my work – it will speak for itself."

- Mason in Buyende[2]

"I don't market my masonry business at all, even if I don't get a job for 6 months."

- Mason in Gulu[2]

Secondary research

As per a PATH study[3] on the sanitation supply chain in rural Uganda,

"Most masons find new opportunities by word-of-mouth and based upon their reputation…none were engaged in active promotions, particularly related to household sanitation."

1. Source: Quantitative value chain interviews
2. Source: Qualitative value chain interviews
3. Source: PATH, Analysis of the Sanitation Supply Chain in Rural and Small Towns in Uganda (2012)

Entrepreneur | Barrier | Availability of sanitation entrepreneurs (6/8)

I

d

Masons typically do not engage in marketing efforts, and find it difficult to estimate their annual revenues from toilet construction jobs

Mason are sometimes unable to estimate their annual revenues from toilet construction jobs

"I know that I earn around UGX 300K per month from masonry, but I can't estimate how much of that is from toilet construction jobs."

- Mason in Buyende

"I don't know how much I earn from masonry each year."

- Mason in Gulu

"I earn around UGX 600K per month from masonry. I don't know how much I earn from toilet construction jobs."

- Mason in Gulu

Source: Qualitative value chain interviews

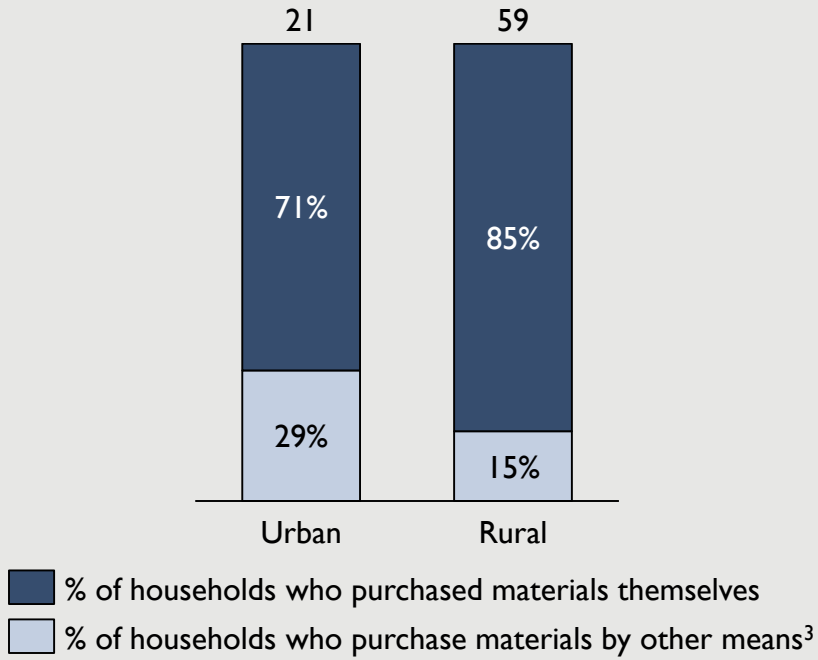
Entrepreneur | Barrier | Availability of sanitation entrepreneurs (7/8)

I

e

A largely DIY ('do it yourself') model requires customers to individually source most materials and services from various locations, some of which may be far away (1/2)

% of households who constructed an IBT in the past 3 years, and self-purchased materials for toilet construction[1]



Question: Who bought the materials needed for the toilet? (selection of multiple choices)

"Households will not trust me to purchase materials on their behalf as they think I will run away with the money."

- Mason in Ngora[2]

"I don't have the working capital to purchase materials on behalf of households."

- Mason in Gulu[2]

1. Source: Quantitative household interviews
2. Source: Qualitative value chain interviews
3. 'Other means' includes purchase of materials by a mason, a contractor, or a transporter on behalf of the household

Entrepreneur | Barrier | Availability of sanitation entrepreneurs (8/8)

I

e

A largely DIY ('do it yourself') model requires customers to individually source most materials and services from various locations, some of which may be far away (2/2)

Primary research

The value chain trace backs conducted by S4H revealed that:

- Irrespective of whether they were urban or rural, **households** needed up to 8 **material or service inputs from various value chain actors** to construct an IBT
  - Materials included: aggregate, brick, sand, hardware materials (including cement), timber
  - Services included: pit digging, masonry, transportation
- In **4 of out 6** IBT trace backs, households interacted with the various value chain actors and **sourced each material or service themselves**
  - Among the remaining **2** IBT trace backs, households used transporters to purchase sand and aggregate, but **sourced the remaining materials and services themselves**

Source: FSG analysis based on qualitative interviews conducted by S4H. For detailed trace back slides, click here

Entrepreneur | Barrier | High working capital requirement (1/7)

2

High working capital requirement for actors such as hardware stores, transporters, and contractors, coupled with lack of appropriate capital products, limits their ability and/ or interest to provide sanitation-specific products or services

a

Hardware stores need to maintain a large inventory of products and often do not receive credit from suppliers, creating a working capital challenge. Further, capital may get locked-up in slower moving sanitation-specific products which may discourage hardware stores from stocking and selling these products

b

Customers typically pay transporters once the product has been delivered, and several transporters provide credit to household customers; this requires the transporter to have sufficient working capital to buy the materials on behalf of the customer

c

Contractors are paid for Government toilet projects after construction has been completed and hence have high working capital requirements in order to procure materials and labor

d

Financiers may not be offering value chain actors with loan products that have reasonable collateral requirements, interest rates and repayment periods

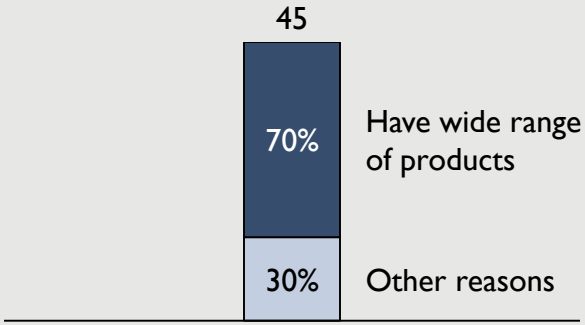
Entrepreneur | Barrier | High working capital requirement (2/7)

2

a

Hardware stores need to maintain a large inventory of products and often do not receive credit from suppliers, creating a working capital challenge. Further, capital may get locked-up in slower moving sanitation-specific products which may discourage hardware stores from stocking and selling these products (1/2)

70%[1] stated that **having wide range of products** was one of the reasons why customers choose them

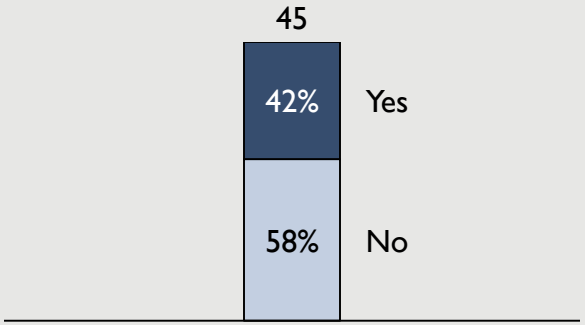


Why does a customer choose to purchase from you instead of from your competitors? (multiple choice)

*"To compete in this market, **you need to stock every product**."*

- Hardware store in Arua[2]

58%[1] **did not receive credit** from any of their suppliers

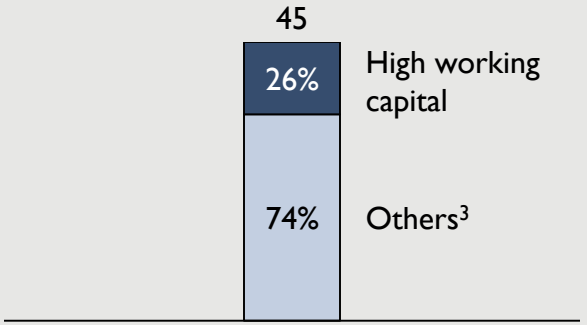


Do you receive credit from any of your suppliers?

*"Shortage of working capital becomes a challenge as **I need to pay suppliers upfront**."*

- Hardware store in Mukono[2]

26%[1] stated **high working capital** to be one of the key challenges



What are the key challenges in selling cement/ iron sheet/ iron bar/ wire mesh? (multiple choice)

***"It is expensive to maintain large stocks** in the shop."*

- Hardware store in Kibaale[2]

1. Source: Quantitative value chain interviews
2. Source: Qualitative value chain interviews
3. Other challenges included variation in prices charged by suppliers, low margin, low customer demand, and payment default, among others

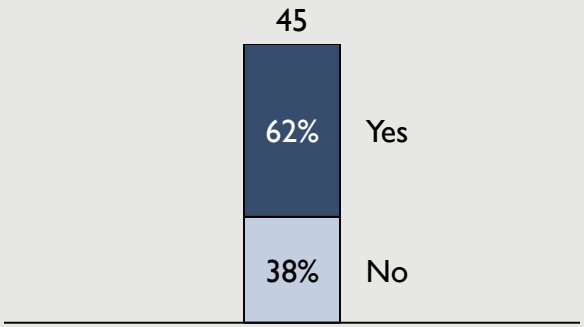
Entrepreneur | Barrier | High working capital requirement (3/7)

2

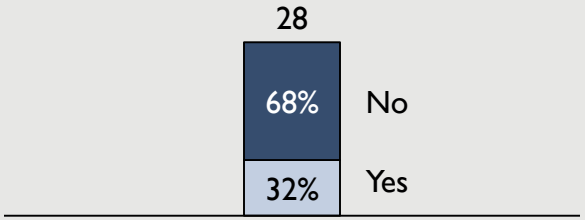
a

Hardware stores need to maintain a large inventory of products and often do not receive credit from suppliers, creating a working capital challenge. Further, capital may get locked-up in slower moving sanitation-specific products which may discourage hardware stores from stocking and selling these products (2/2)

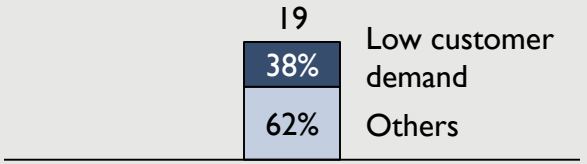
62%[1] were interested in **expanding their sanitation-related business** ⟶ Of these, **68%**[1] stated they were **not interested in selling plastic pans** ⟶ Of these, **38%**[1] stated **lack of customer demand**[2] as a reason for not selling plastic pans



Have you considered expanding the toilet construction-related activities you are involved in?



Have you considered selling plastic toilet pans



Why are you not considering selling plastic toilet pans (multiple choice)

"SatoPan has been a slow-moving product and sales have come down. ***Stores cite unsold stocks as a challenge*** *and only a few of them place repeat orders."*

- Pan distributor in Mukono[2]

"Sanitation products are not attractive enough. Only ***2% of my customers may take interest*** *in pans, so it is not worth stocking for me."*

- Hardware store in Buyende[2]

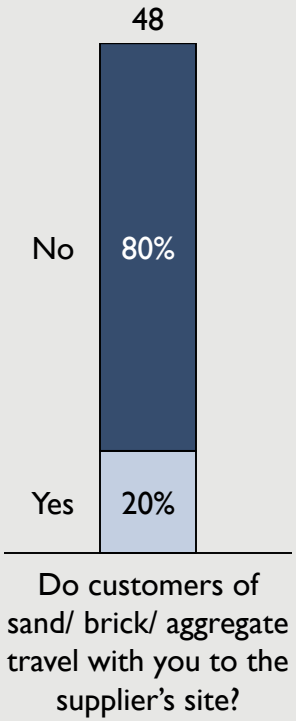
1. Source: Quantitative value chain interviews
2. Source: Qualitative value chain interviews
3. Other reasons included lack of interest, low revenue potential, and lack of access to finance to sell pans

Entrepreneur | Barrier | High working capital requirement (4/7)

b

Customers typically pay transporters once the product has been delivered, and several transporters provide credit to household customers; this requires the transporter to have sufficient working capital to buy the materials on behalf of the customer

80%[1] stated that **none of their customers travel to the material supplier's site** with them, which implies that **customers pay the transporter upon delivery**



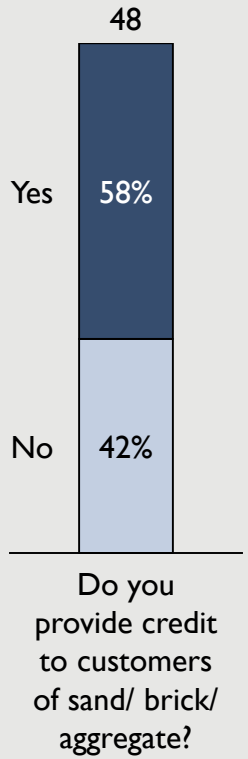
*"There is a need to pay the supplier upfront but the **customer only pays after delivery which leads to cash flow problems**. One needs to make sure there is enough capital to be able to take on larger orders."*

- Transporter in Gulu[2]

*"**Suppliers want cash, which sometimes I may not have**, and might have to borrow from a friend in order to have the materials supplied to the customers."*

- Transporter in Mityana[2]

58%[1] **provide credit to their customers,** for one or more of the materials



1. Source: Quantitative value chain interviews
2. Source: Qualitative value chain interviews

Entrepreneur | Barrier | High working capital requirement (5/7)

c

Contractors are paid for Government toilet projects after construction has been completed and hence have high working capital requirements in order to procure materials and labor to execute

Unfavorable payment terms

"For larger construction jobs, Government might pay the contractor in stages. However, for smaller jobs such as toilet construction, ***payment is typically disbursed only after completion of the job.*** *This means contractors must pay for labor and material themselves. In fact, we are often asked to wait until the next quarter for our payment."*

- Contractor in Bukomansimbi[1]

Delays in payment

"Delay in payment by the Government is very common. ***I got my payment one month after*** *finishing the toilet construction. The process is very cumbersome."*

- Contractor in Ngora[1]

"I feel financially strained and in need of a loan as ***there isn't enough working capital.*** *To top that, there are delays in receiving payments for Government jobs."*

- Contractor in Kabarole[1]

Lack of capital

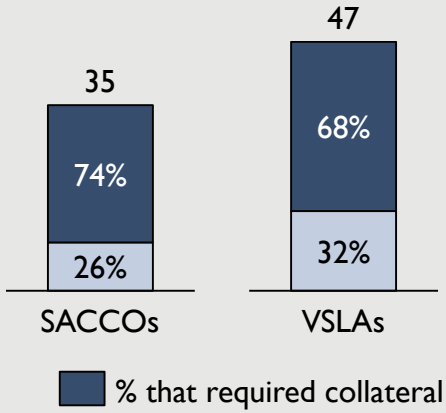
1. Source: Qualitative value chain interviews

Entrepreneur | Barrier | High working capital requirement (6/7)

d

Financiers may not be offering value chain actors with loan products that have reasonable collateral requirements, interest rates and repayment periods (1/2)

More than 65%[1] of the SACCOs and VSLAs require collateral to receive a productive loan



*"To get a loan from our SACCO, **members have to provide land titles as their collateral.** The loan request is rejected if they can't provide the security,"*

- SACCO in Bukomansimbi[2]

SACCOs and VSLAs provide productive loans with relatively high monthly interest rates

Primary research

Loan terms	SACCOs (*n = 28*)	VSLAs (*n = 32*)
Monthly interest rate (avg.)	7%	6%

Secondary research

As per a report by World Bank,[3]
In real terms, Uganda's lending rates are even higher relative to those of its neighbors. Although it is difficult to assess the degree to which a particular level of lending rates is justifiable, surveys find that the **high cost of finance and the stringent collateral requirements are a significant barrier to enterprise growth and operation, particularly in the case of small and medium enterprises**... in terms of the affordability of financial services index, Uganda ranks in 120th place out of 138 countries, with a steady decline in its position over recent years.

1. Source: Quantitative value chain interview
2. Source: Qualitative value chain interviews
3. World Bank, Uganda Economic Update (2017)

Entrepreneur | Barrier | High working capital requirement (7/7)

d

Financiers may not be offering value chain actors with loan products that have reasonable collateral requirements, interest rates and repayment periods (2/2)

*"**Lenders are not currently focusing on the actual needs of supply-side players**, like their working capital requirements. Current loan options **are not structured well for their needs**, especially in aspects like loan tenure, grace period etc. Moreover, some of the smaller supply-side players **are not able to provide the level of collateral needed**."*

- Credit supervisor of a bank in Uganda[1]

*"In one of our pilot programs, we realized that one of the main issues was that **masons lack access to credit**. To resolve this we **tried to create a model with VSLA, but it did not work because of their liquidity challenges**. We also tried to tie up with MFIs, but **because they require collaterals, it was challenging to access credit through MFIs as well.**"*

- Representative from Plan International[1]

Secondary research

As per a report by World Bank[2]

In **Fort Portal**, uptake (for sanitation specific loan products) **has been disappointing,** primarily because the **interest rates and collateral requirements are generally perceived to be relatively high**

Secondary research

As per a report by ACP-EU Development Minerals Programme[3]

Small-scale sand miners, aggregate miners, and brick makers indicated **fear and uncertainty in approaching or borrowing** from most interest-based institutions... they do not feel safe working with financial institutions, and feel that they **will not be able to comply with the standards that are required**.

1. Source: Qualitative value chain interviews
2. World Bank Uganda Sanitation Diagnostic Report, (2017)
3. ACP-EU Development Minerals Programme, Baseline Assessment of Development Minerals in Uganda Volume 1 (2018)

Entrepreneur | Barrier | Lack of viability (1/6)

3

Sanitation, as a stand-alone business, may not be viable for many value chain actors due to seasonality in income, high competition, and customer-related delays

a

Sanitation is not a large percentage of overall business for many actors (apart from pit diggers and masons) due to seasonality of construction business and the need to have multiple income sources; this may reduce the value chain actors' ability to place greater emphasis on their sanitation business

b

High competition (for brick makers) and digging of pits by households (for pit diggers) impacts viability of such actors

c

Customer payment defaults impact the viability of some value chain actors (such as pit diggers, hardware stores, contractors); provision of customer credit further exacerbates the challenge

d

Masons face delays in project completion due to incomplete construction material being made available by the customer

Entrepreneur | Barrier | Lack of viability (2/6)

3

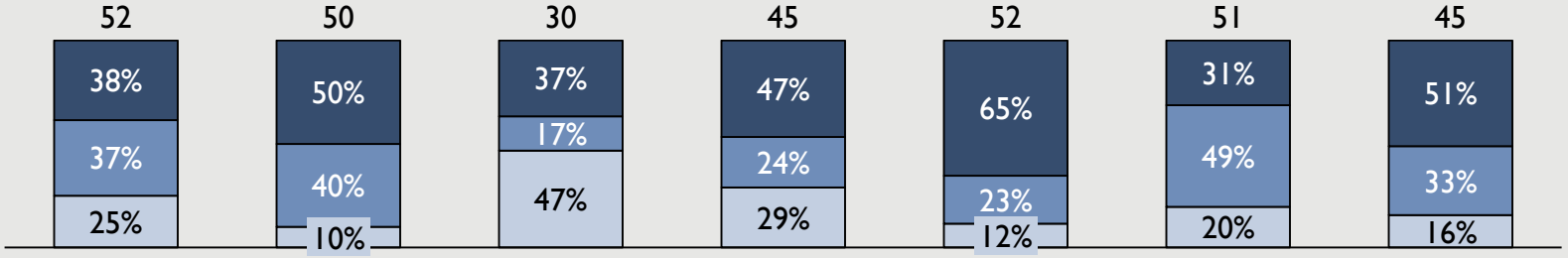
a

Sanitation is not a large percentage of overall business for many actors (apart from pit diggers and masons) due to seasonality of construction business and the need to have multiple income sources; this may reduce the value chain actors' ability to place greater emphasis on their sanitation business (1/2)

Sanitation is not a large percentage of the construction business or overall income for most value chain actors…

Share of sanitation within construction business[1,2]	*Agg. producer*	*Brick maker*	*Cement pre-fabricator*	*Hardware store*	*Pit digger*	*Mason*	*Sand miner*
							

Percentage of value chain actors that have another stream of income in addition to their construction business[3]



- % of actors with multiple income sources; main income source is not construction (i.e., main source is not brick making, masonry, etc.)
- % of actors with multiple income sources; main income source is construction (i.e., main source is brick making, masonry, etc.)
- % of actors whose sole source of income is construction (i.e., only source is brick making, masonry, etc.)

1. Represents qualitative understanding of the importance of sanitation to the construction business of each value chain actor based on qualitative interviews. While this information was also obtained in the quantitative research, the data is likely to be incorrect due to the survey context. The quantitative data has only been used to help identify the relative importance between different actors
2. Source: FSG analysis based on qualitative value chain interview
3. Source: Quantitative value chain interviews

Low Moderate High

Entrepreneur | Barrier | Lack of viability (3/6)

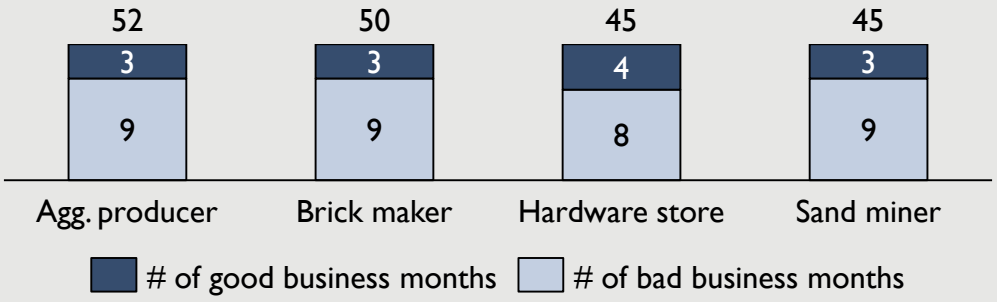
a

Sanitation is not a large percentage of overall business for many actors (apart from pit diggers and masons) due to seasonality of construction business and the need to have multiple income sources; this may reduce the value chain actors' ability to place greater emphasis on their sanitation business (2/2)

…as income from construction, and by extension, sanitation-related construction, is seasonal for most value chain actors

Some actors reported only 3-4 good months of construction business per year

Average # of months of good business reported by select value chain actors[1]



Primary research

- Aggregate producers **receive 180% more orders during good months** of business compared to the bad months[1] *(n=52)*
- Hardware stores **generate 150% more revenue during good months** of business compared to the bad months[1] *(n=45)*

"I typically only get pit digging jobs in the dry months – January, February, June and July"

- Pit digger in Bukomansimbi[2]

"I only get construction in the dry months after the harvest, when households have the money to spend"

- Mason in Ngora[2]

1. Source: Quantitative value chain interviews
2. Source: Qualitative value chain interviews

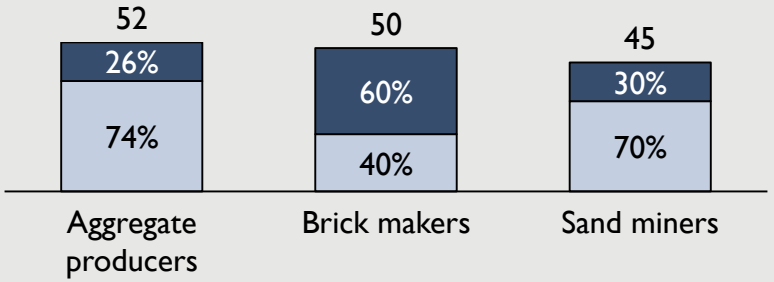
Entrepreneur | Barrier | Lack of viability (4/6)

b

High competition (for brick makers) and digging of pits by households (for pit diggers) impacts viability of such actors

Some brick makers cited competition as a challenge for their business

Estimation of # of similar actors found in the same parish/ ward by select value chain actors[1]

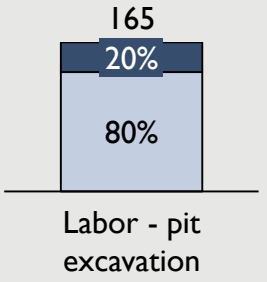


Primary research

30% of brick makers interviewed cited **competition** as a key challenge for their business[1] *(n=50)*

Most rural households do not hire a pit digger, and use own-labor instead, in order to reduce costs

Percentage of households who hired labor for toilet construction[2]



Secondary research

As per an SNV study[3] of the sanitation market and supply chain in Uganda, "**In half of the cases** [observed from data gathered in the field across Uganda], **family labor is used for digging the pit**"

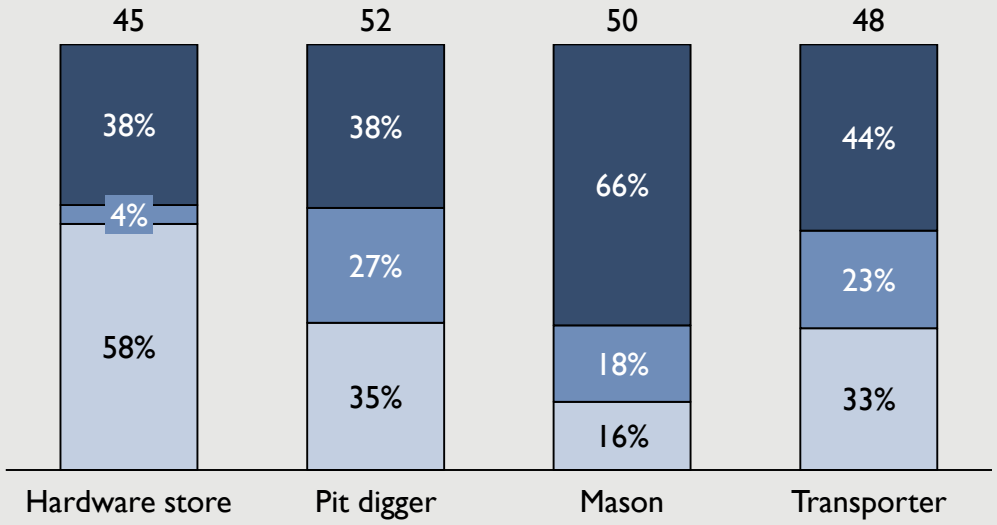
1. Source: Quantitative value chain interviews
2. Source: Quantitative household interviews – consists of households which built a toilet (IBT or unimproved) in the past 3 years
3. Source: SNV Consumer Insight and Sanitation Supply Study, Uganda (2015)

Entrepreneur | Barrier | Lack of viability (5/6)

c

Customer payment defaults may impact the viability of some value chain actors (such as pit diggers, hardware stores, masons, transporters); provision of customer credit may further exacerbate the challenge

Percentage of actors facing payment default challenges from household customers[1,2]



- % of actors who cited default payments as a challenge for their business and offer credit
- % of actors who cited default payments as a challenge for their business and do not offer credit
- % of actors who did not cite payment-related challenges

*"**Default and delayed payments** and how to deal with them is a **recurring and critical challenge** for many participants (new and small business owners) of our training programs"*

- Representative from Enterprise Uganda[3]

"My biggest challenge is dealing with customers who try to cheat me out of payment."

- Mason in Kabarole[3]

1. Default payments include both non-payment and late payments by customers. Default payment was stated to be a significant challenge only by the value chain actors represented on the graph
2. Source: Quantitative value chain interviews
3. Source: Qualitative value chain interviews

Entrepreneur | Barrier | Lack of viability (6/6)

d

Masons face delays in project completion due to incomplete construction material being made available by the customer

90% masons interviewed stated that they **faced delays in construction** of household toilets due to **lack of required construction materials being available on-site**[1] *(n=50)*

Secondary research

As per a PATH study[2] on the sanitation supply chain in rural Uganda,

"Masons cited **frustrations with having to wait for the household to buy the materials before they could start construction**, often running into issues with not having the correct amount or type of materials they need…[when] a household purchases the materials in batches or pays in installments, this delays the construction process even more."

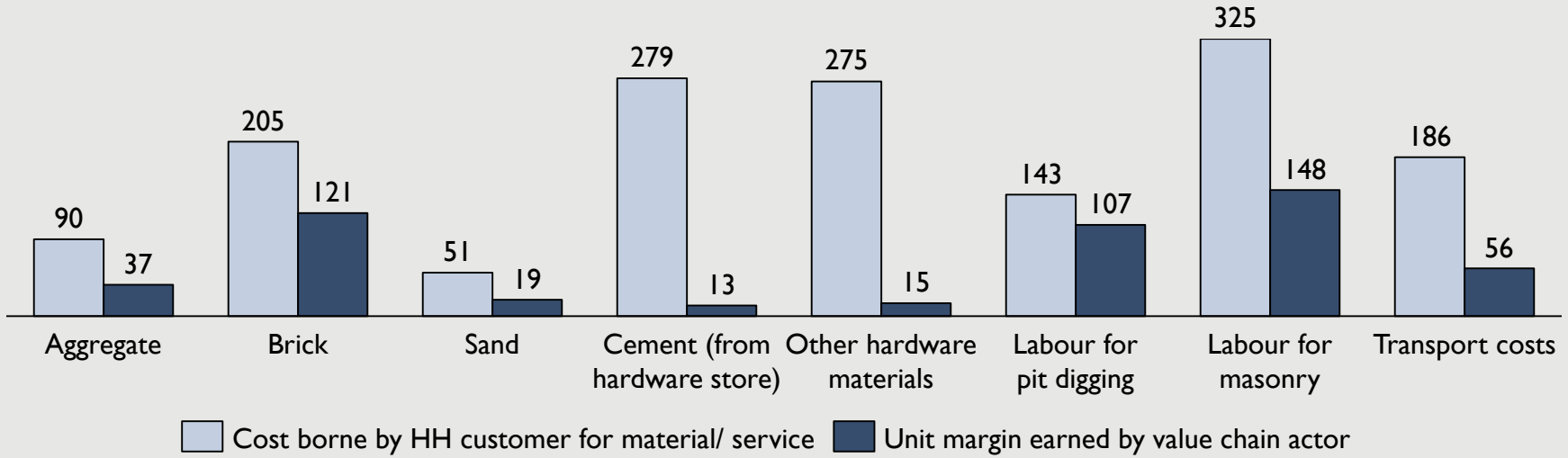
1. Source: Quantitative value chain interviews
2. Source: PATH, Analysis of the Sanitation Supply Chain in Rural and Small Towns in Uganda (2012)

Entrepreneur | Driver | Adequate unit margin (for some actors) (1/2)

Sanitation is adequately profitable at a unit level, more so for service-related actors such as pit diggers and masons; this may increase their interest in sanitation (1/2)

Unit margin earned by value chain actors on the construction of a 2-stance IBT for a rural household (1,000 UGX)[1,2,3]

Unit margin (%)[1,3,4]	40% – 42%	59%	35% – 40%	4.5%	3% – 7%	75%	44% – 47%	20% – 40%



1. Costs borne by a rural HH customer during the construction of a 2-stance IBT are taken from the toilet cost build-up of a toilet in rural Uganda which can be found by clicking here, and unit margin is based on FSG's analysis of unit economics for the value chain actors, more information on which can be found by clicking here
2. Data for actors not directly involved in construction of 2-stance IBTs in rural households (such as contractors, cement-prefabricators, etc.) can be found in the appendix
3. Unit margins indicated for cement and other hardware materials are applicable only to retailers; we did not conduct unit economic analyses for the upstream value chains of these products
4. FSG's analysis of unit margin accounts for land purchase/ rental costs for aggregate producers, but does not do so for brick makers and sand miners due to data gaps

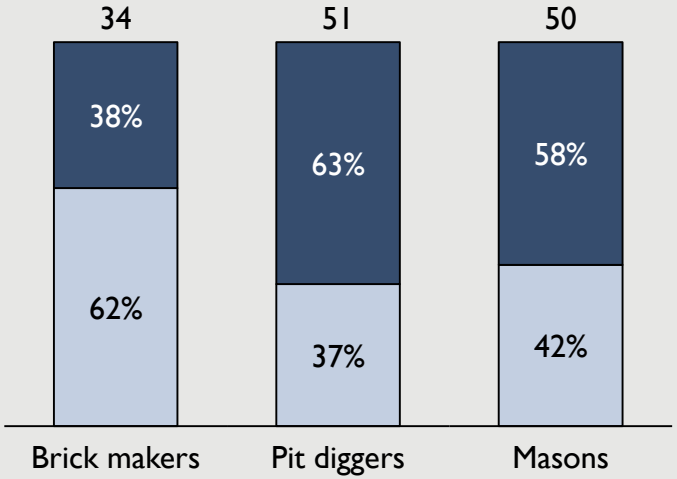
Source: FSG analysis based on qualitative interviews conducted by S4H, and quantitative value chain interviews

Entrepreneur | Driver | Adequate unit margin (for some actors) (2/2)

Sanitation is adequately profitable at a unit level, more so for service-related actors such as pit diggers and masons; this may increase their interest in sanitation (2/2)

Value chain actors such as pit diggers, masons, and brick makers are interested in sanitation as they view it as an area with high revenue potential within the current scope of their activities

Percentage of actors who view sanitation as an area of high revenue potential[1]



Why do you see sanitation as a key area for your business? (multiple choices)[3]

Primary research

- **68% of the brick makers thought sanitation was a key area** for their business; 45% of these said that doing sanitation-related business would **provide them with additional business opportunities**[1] *(n=50)*

*"**I look at sanitation as a valuable component,** central to my business. Not many people are building houses so there can be a situation where we have about 10 people who all want to build a toilet."*

- Brick maker in Bukomansimbi[2]

*"**Toilets are an area of business for the future**; every youth who grows up and moves out of home will need a new toilet."*

- Mason in Bukomansimbi[2]

1. Source: Quantitative value chain interviews
2. Source: Qualitative value chain interviews
3. Other reasons include high demand, higher margins compared to other activities, among others

Barriers and Drivers | Enterprise

- Barriers
- Drivers

Enterprise barriers/ drivers

- Appropriate product designs not available to customers, in some contexts
- Lack of appropriate sales and marketing for sanitation-specific products,
- Potential for increased business due to customer referrals among closely-related actors

Enterprise | Barrier | Product system challenges (1/4)

5

Product design of plastic pans may not be appropriate for large parts of the country, and many pit diggers do not have the required skill or knowledge to offer households the most appropriate pit type

a

Pans require regular, albeit low, water usage which may not be feasible or desirable for households in many parts of the country, especially rural areas

b

Many pit diggers do not know how to dig circular pits. Those that do, may not be advising customers living in areas with soil susceptible to collapsing, about circular pits

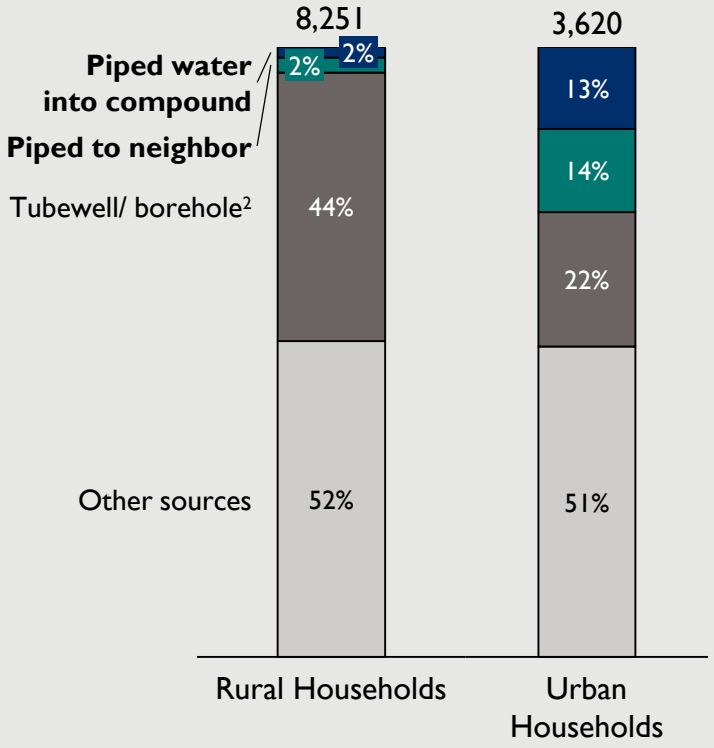
Enterprise | Barrier | Product system challenges (2/4)

5

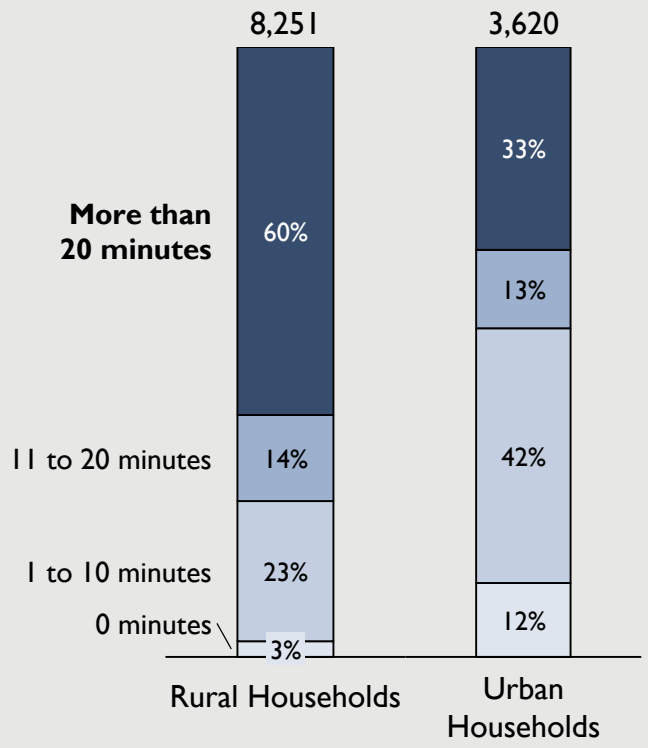
a

Pans require regular, albeit low, water usage which may not be feasible or desirable for households in many parts of the country, especially rural areas (1/2)

4%[1] of rural and 27%[1] of urban households have easy access to piped water



60%[1] of rural and 33%[1] of urban households travel for more than 20 minutes to get water from the source



1. Source: Quantitative household interviews
2. Proximity to tubewell/ borehole depends on the location of the house - for many households, these sources might not be in their vicinity

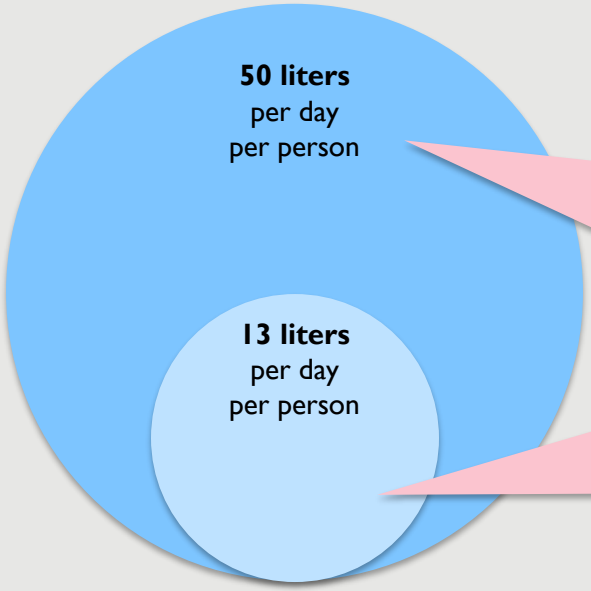
Enterprise | Barrier | Product system challenges (3/4)

5

a

Pans require regular, albeit low, water usage which may not be feasible or desirable for households in many parts of the country, especially rural areas (2/2)

There may be low feasibility to use water for sanitation, given the water consumptions levels



It takes **more than 50 liters per day per person** to have enough for personal hygiene[1]

Average water consumption ranges from **12 to 14 liters per day per person** in rural Uganda[2]

Customers tend to prefer a product that does not require any water

*"Feedback from urban customers has made us realize that **people seem to prefer a pan in which they won't need to put in any water.** Customers are aware that the current need for water is low, but it is still not suiting their desired feature."*

- Pan manufacturer in Uganda[3]

*"The design of SaTo pans is such that users require water to keep it clean, but since a majority of the population in the country does not clean themselves with water after using the toilet, **they don't want to use a product which will use up their water resources**."*

- Representative from SNV in Arua[3]

1. World Health Organization, The Right to Water (2003)
2. Poverty Eradication Action Plan (2004/5 to 2007/8), Ministry of Finance, Planning and Economic Development (2004)
3. Source: Qualitative value chain interviews

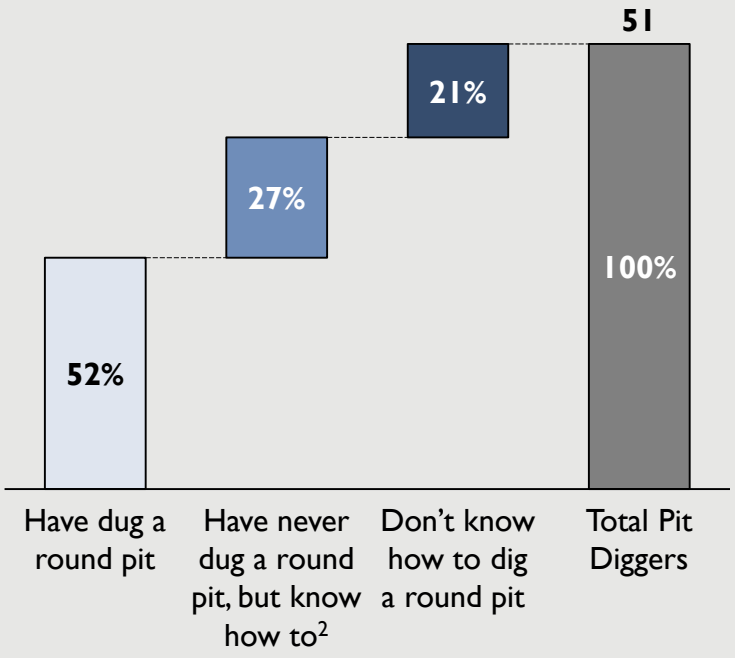
Enterprise | Barrier | Product system challenges (4/4)

5

b

Many pit diggers do not know how to dig circular pits. Those that do, may not be advising customers living in areas with soil susceptible to collapsing, about circular pits

21%[1] pit diggers did not know how to dig a circular pit



In districts where most of the EAs had sandy (loose) or rocky soil, only 4%[1] of the households considered a circular pit for their toilet

Primary research

District	# of research EAs that have sandy (loose) or rocky soil[3]	% of households that considered any form of circular pit for their toilet[3]	# of pit diggers who have dug a circular pit[1]
Mityana	7 out of 10	4% of 55 Households	3 out of 5
Kotido	9 out of 10	4% of 101 Households	1 out of 5

1. Source: Quantitative value chain interviews
2. 27% respondents mentioned that the reason they have never dug a round pit for toilets is due to low demand or because it was more difficult/ time consuming (compared to rectangular pits). Lack of skill or knowledge was not mentioned as a reason
3. Source: Quantitative household interviews

Enterprise | Barrier | Sales and marketing (1/5)

6

Lack of appropriate sales and marketing efforts leads to untrained masons, and a customer base that may not be willing to buy sanitation-specific products due to insufficient knowledge about price and/ or value

a

Many masons are not aware of the different slab options and how to install them

b

A mismatch between pan prices, as advertised across the country and as actually offered in hardware stores, turns some customers away

c

Customers may not see the value in purchasing pre-packaged 1 kg cement bags, as hardware stores sell loose cement (from larger, damaged bags) at lower prices

d

Customer experience of receiving free products and services may impact the target market size for some value chain actors such as pan manufacturers

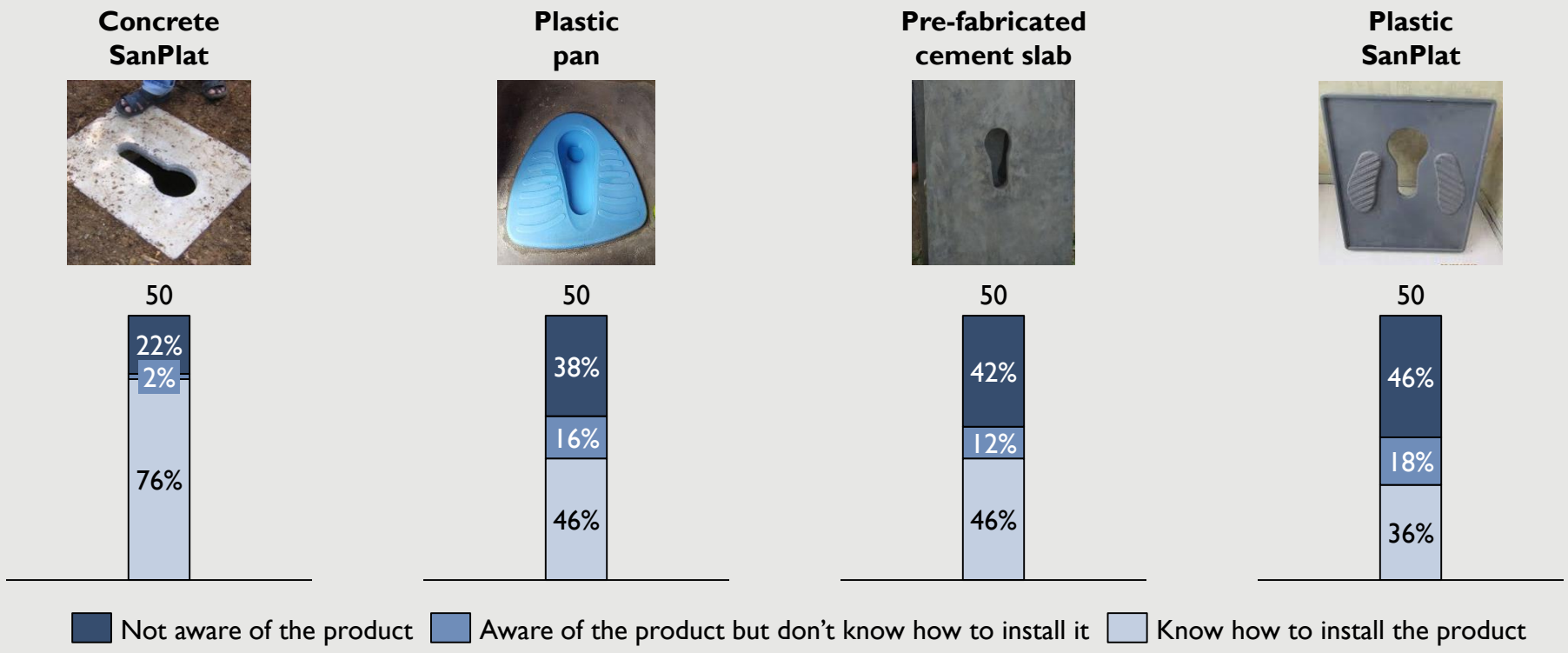
Enterprise | Barrier | Sales and marketing (2/5)

6

a

Many masons are not aware of the different slab options and how to install them

22% to 48% of the masons interviewed were not aware of one or more of the common pan/ slab options[1]



1. Source: Quantitative value chain interviews

Enterprise | Barrier | Sales and marketing (3/5)

b

A mismatch between pan prices, as advertised across the country and as actually offered in hardware stores, turns some customers away

*"Our marketing team uses different marketing collaterals and **radio advertisements** to inform customers of the price at which they should buy the product. **There are two prices advertised** – one for the Kampala region and another for outside the Kampala region."*

- Pan manufacturer in Uganda[1]

*"Radio advertisement states that the cost of a SaTo is UGX 15,000. Now, I buy each SaTo pan for UGX 20,000 from Masaka and sell them in my store at UGX 22,000. The challenge is that when I quote this price, customers say **it is not the price they heard on radio, and it gets difficult to convince them**."*

- Hardware store in Bukomansimbi[1]

1. Source: Qualitative value chain interviews

Enterprise | Barrier | Sales and marketing (4/5)

c

Customers may not see the value in purchasing pre-packaged 1 kg cement bags, as hardware stores sell loose cement (from larger, damaged bags) at lower prices

*"Regular HW stores **already sell loose cement** in 1kg quantities by using the damaged cement bags."*

- Bonastore in Kampala[1]

*"We also sell **1 to 10 kg of cement for UGX 1,000 per kg**, typically from the bags that we open for customers who want to buy half of the quantity"*

- Hardware store in Arua[1]

*"We have recently introduced cement in bag sizes of **1 kg, 5 kg and 10 kg**"*

- Hima Cement[1]

"Loose cement is typically sold by hardware stores in ordinary plastic bags for UGX 800 per kg.

*Hima cement, on the other hand, has introduced the **1kg cement bags for UGX 1,300, making it very difficult to sell them**."*

- Bonastore in Kampala[1]

1. Source: Qualitative value chain interviews

Enterprise | Barrier | Sales and marketing (5/5)

d

Customer experience of receiving free products and services may impact the target market size for some value chain actors such as pan manufacturers

"I see very limited scope of sanitation products in the household market (of Uganda). Marketing efforts have shown some result, however, changing the overall culture is practically impossible, as ***people have a strong inherent belief that they will be provided these products for free****. Companies have historically been unsuccessful in convincing households to purchase their own sanitation products."*

- Former employee of a pan manufacturing company in Uganda[1]

"Main challenge with regards to sanitation in my district is people's attitude. People can make their own toilets and improve it by engaging with the private sector. However, that does not happen because ***the culture of 'Government will come and fix my sanitation needs' is deeply entrenched*** *because* ***they are used to free sanitation facilities****."*

- Senior district official, Gulu[1]

Secondary research

As per a PATH report[2] on the sanitation supply chain in Uganda,

"..This (*donor funded development programs stemming out of Poverty Eradication Action Plan*), has consequently **distorted the potential for market** development… **by creating unrealistic expectations,** most likely within the supply chain, **that services will be provided to households for free** or via subsidies through Government, donor, or NGO funding."

1. Source: Qualitative value chain interviews
2. PATH, Analysis of the Sanitation Supply Chain in Rural and Small Towns in Uganda (2012)

Enterprise | Driver | Customer referrals among closely-related actors

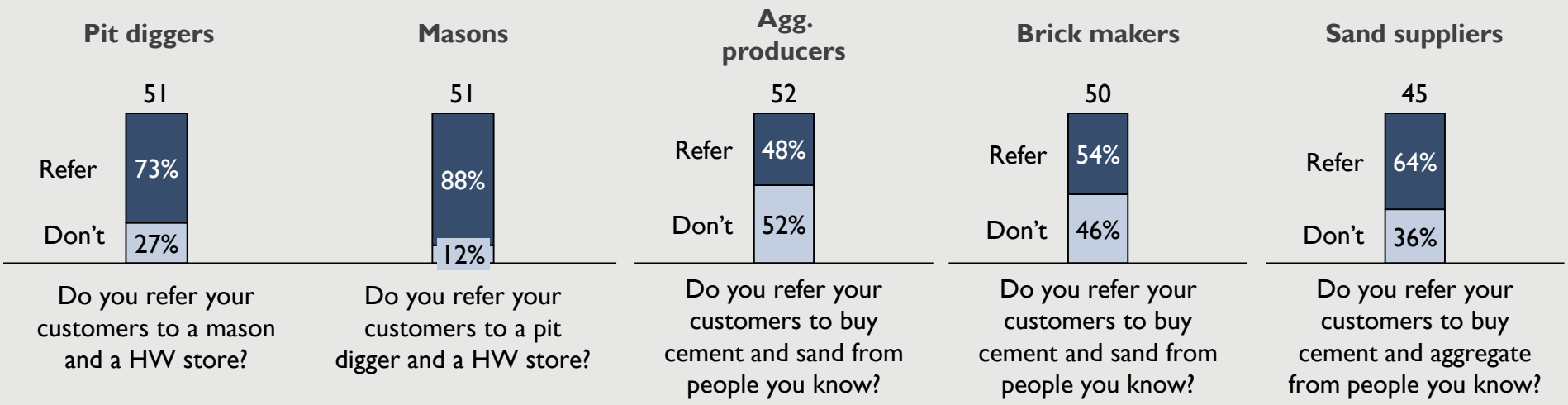
Within the existing DIY delivery model, knowledge of closely-related actors and customer referrals among them may provide the actors with additional business; it may also provide the potential for an existing actor to serve as a focal point to households

73%[1] pit diggers refer their customers to **HW stores and/ or masons**

88%[1] masons refer their customers to **HW stores and/ or pit diggers**

48%[1] of agg. producers and 54%[1] of brick makers refer their customers to **HW stores and/ or sand suppliers**

64%[1] sand suppliers refer their customers to **HW stores and/ or agg. producers**



*"**I help identify a mason** if the customer doesn't have one, and in return, charge the mason UGX 20,000."*

- Pit Digger in Gulu

*"**I refer customers to pit diggers** and earn a commission for it as well; for 20 feet I earn UGX 2,000 and for 40 feet I earn UGX 5,000."*

- Mason in Buyende

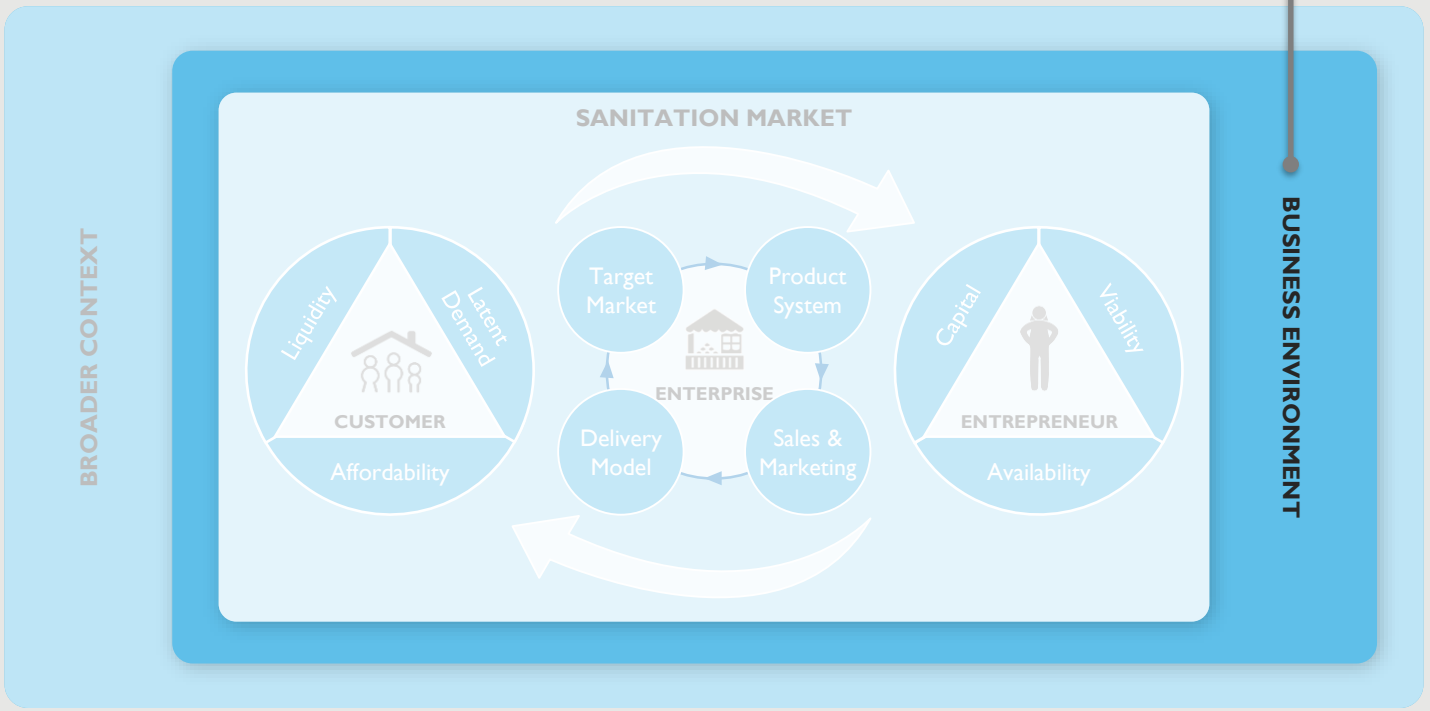
1. Source: Quantitative value chain interviews

Each of the above mentioned value chain actor was asked if they refer their customers to specific actors. Information on whether or not they referred their customers to other actors was not collected

Barriers and Drivers | Business environment

Barriers due to the business environment

- Poorly penetrated associated supply chains (hardware stores, sand, aggregate, etc.)
- Increased cost of doing business (due to policy and fuel costs)
- Inadequate local adaptation of national sanitation policies
- Ineffective/undesirable consequences to enforcement of policies



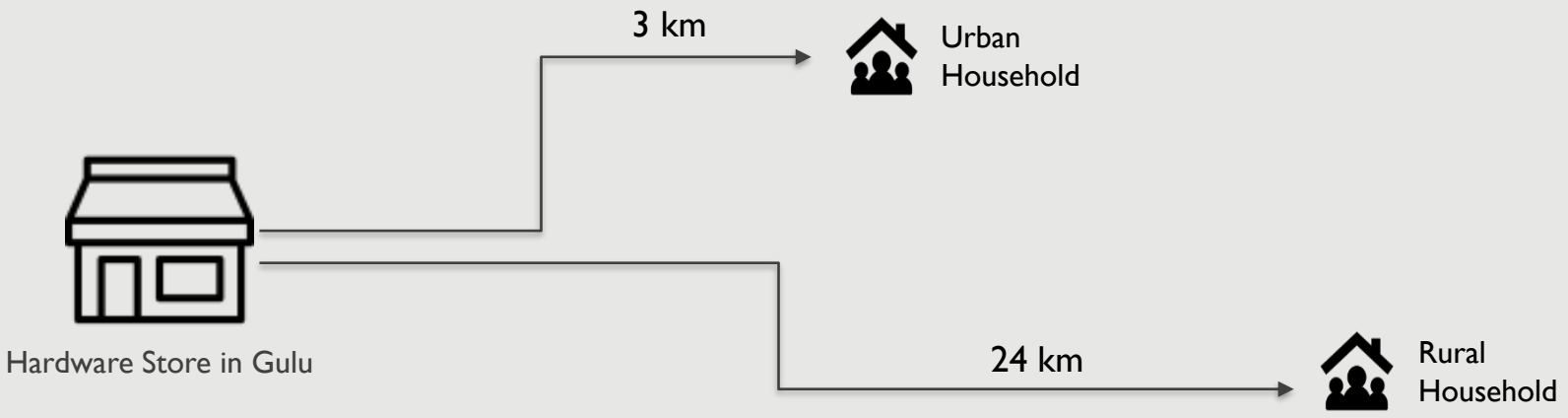
- Barriers
- Drivers

Business environment | Barrier | Supply chain penetration (1/2)

Poorly penetrated associated supply chains (hardware stores, sand, aggregate) lead to limited local access and increased transportation costs, particularly for rural households

On an average, **a typical rural household customer traveled ~20 km to access a hardware store**, while a typical urban household customer traveled ~4 km[1]

Illustration from trace back in Gulu



1. Source: FSG analysis based on qualitative interviews conducted by S4H. For detailed trace back slides, click here

Business environment | Barrier | Supply chain penetration (2/2)

Poorly penetrated associated supply chains (hardware stores, sand, aggregate) lead to limited local access and increased transportation costs, particularly for rural households

Primary research

- On average, **transporters traveled 35 to 50 km to supply a rural household** with sand or aggregate, whereas, they traveled **20 to 25 km** to supply these materials to an **urban household**[1]
- As a result, for getting one trip of the material supplied, the **total transportation cost** incurred by rural households is **~UGX 70,000 to 90,000,** while for urban households it is **~UGX 45,000 to 53,000**[1,2]

Illustration from trace back in <u>rural Gulu</u>
Total trip distance - 55 km

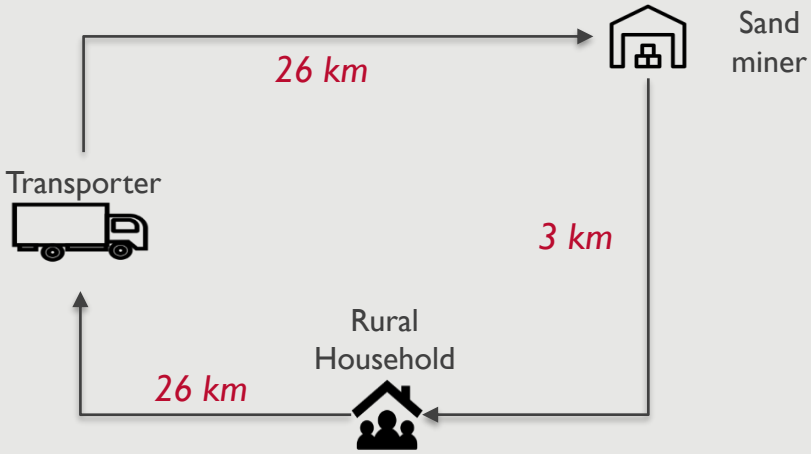
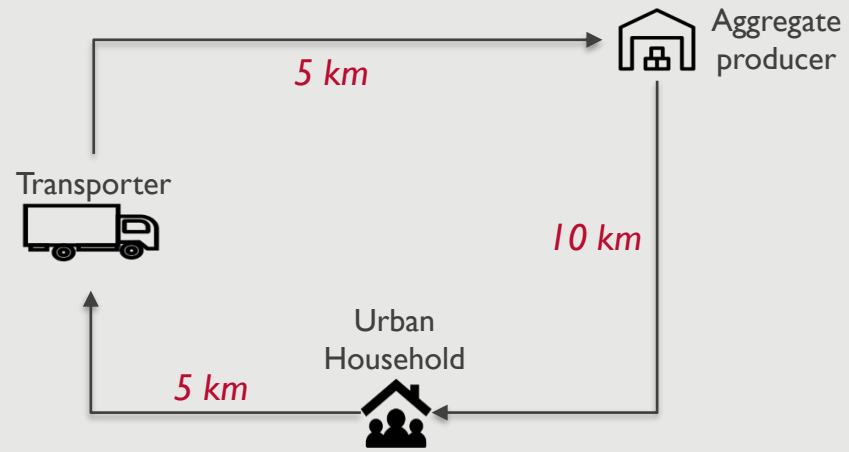


Illustration from trace back in <u>urban Buyende</u>
Total trip distance - 20 km



1. Source: FSG analysis based on qualitative interviews conducted by S4H. For detailed trace back slides, click here
2. Costs include fuel cost, loading/ unloading costs, and markup added by the transporter

Business environment | Barrier | Increasing fuel price

Increasing fuel costs may impact the viability of some actors (such as pan manufacturers and transporters)

Increasing fuel costs may be impacting viability of certain actors

Primary research

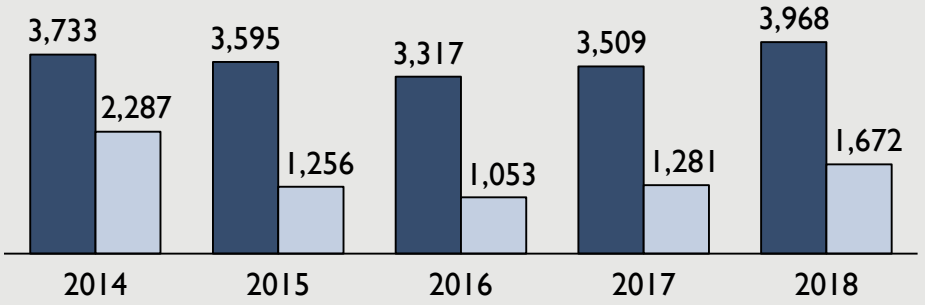
79% of **transporters** interviewed cited **high fuel costs** as a key challenge for the viability of their business[1] *(n=48)*

*"Fluctuation of prices of raw materials**, driven by the fuel cost**, is a challenge. We can't adjust the price of the pans based on the fluctuations as this will result in too many price changes for the customer."*

- Pan manufacturer

The increased prices in Uganda are notable as they differ from the variance in global crude oil prices

Comparison of retail oil prices in Uganda with global crude oil prices, 2014-2018 (UGX per liter)[2]



	2015	2016	2017	2018
Y-o-Y change, retail price	*-4%*	*-8%*	*6%*	*13%*
Y-o-Y change, crude oil price	*-45%*	*-16%*	*22%*	*31%*

Retail oil price in Uganda (UGX per liter)

Brent crude oil price (UGX per liter)[3]

1. Source: Quantitative value chain interviews
2. Source: FSG analysis, and data obtained from 'Global Petrol Prices'
3. Brent crude oil prices are a benchmark for crude oil prices worldwide

Business environment | Barrier | Government regulations on mining

10

Government policies, such as mining regulations may increase the cost of doing business and may make the construction of IBTs more expensive

Secondary research

According to the (Draft) Mining and Mineral Policy of Uganda, 2018 by Republic Of Uganda, Ministry of Energy and Mineral Development

"The policy (Mineral Policy of Uganda in 2001) has become obsolete and is not strategically positioned to address new and emerging issues, including the **need to regulate commercial exploitation of substances like sand, stone, clay and murram,** excluded from the definition of the word "mineral" (earlier) in Article 244(5) of the Constitution…"

"The role of the Local Governments under this (new) Policy shall include: ….**licensing building minerals such as sand, clay and murram**…..The private sector players including exploration and mining companies shall work with Government in implementing this Policy as well as **complying with the provisions of the law and mineral development agreements or licenses relating to mineral rights**."

Secondary research

An article in Daily Monitor[1] says,

"Government has approved a new mining policy, placing Uganda's sand, murrum, granites and stones under the mineral sector, ending centuries of unregulated mining of the said products. **In a decision that is likely to have huge impact on the construction industry, the cabinet decided that for one to mine sand and other associated products, a license has to be issued** by the line minister and that should such entity violate the terms in the license, punitive measures will be instituted against such a person or entity."

1. Daily Monitor, Cabinet Puts Sand, Stones And Murrum Under Minerals In New Mining Policy (May, 2018)

Business environment | Barrier | Insufficient local bylaws (1/2)

National level Public Health Act may not be well supported at the local level by adequate bylaws, and may not be adequate in promoting appropriate toilets for households (1/2)

Bylaws or ordinances allow local officials to levy penalties, and enforce punitive measures

Secondary research

According to focused group discussions conducted in partnership with UWASNET[1]

"In Bulebi (Mukono district), local leaders enacted the bylaws against open defecation. Everyone caught defecating in the open…is charged a fee of UGX 20,000…"

"Since the bylaw was passed (in 2009), so far only one person was caught defecating in the open…"

Some districts in Uganda may not have bylaws for sanitation-related policies

Primary research

2 out of 5 districts in which S4H conducted qualitative interviews did not have local bylaws or the relevant district officials were not aware if they existed[2]

*"The main issue related to sanitation is the **lack of any ordinance or bylaw**. In the absence of a bylaw, the Public Health Act is **not as effective.**"*

- Senior district official, Gulu

1. Outcomes of the Focus group discussions for the situational analysis for water hygiene and sanitation in Mpunge, Kasali, and Bulebi landing sites (2012)
2. Source: FSG analysis based on qualitative interviews conducted by S4H

Business environment | Barrier | Insufficient local bylaws (2/2)

National level Public Health Act may not be well supported at the local level by adequate bylaws, and may not be adequate in promoting appropriate toilets for households (2/2)

Existing policies may not be adequate in promoting improved (as opposed to unimproved) toilets for households

*"The current policies/regulations may not be adequate because the **type of toilet** that households should build **is not defined**."*

- District water official, Buyende

*"**Need to set standards** for household toilet facilities. The bylaws focus on enforcing latrine ownership, but not on the **type of latrine that should be built**."*

- Senior district official, Buyende

Source: FSG analysis based on qualitative interviews conducted by S4H

Business environment | Barrier | Ineffective enforcement (1/2)

Budgetary constraints, insufficient political will at local Government level, and unintended consequences may render enforcement of the Public Health Act and any bylaws (if present) ineffective (1/2)

Budgetary constraints limit the ability of district teams to do effective monitoring and enforcement

*"One of the enforcement-related challenges is the **limited funding** from the Department of Health. For effective enforcement, we **need to mobilize teams, and have a vehicle** and this becomes a challenge due to insufficient funds."*

- District health official, Kabarole

*"To implement and enforce, we need VHT's and vehicles. Currently, due to insufficient budgets, we **cannot pay VHT's well** and they are not interested in going to far away areas.*

*The district office only has one car which means that the **health team cannot split-up** and conduct monitoring rounds in different areas of the district."*

- District health official, Gulu

Lack of interest and resistance from local leaders further limits enforcement

*"Sometimes even the **local leaders** (the LC) are **not interested in pushing their communities** towards improving their toilet facilities because it can **jeopardize their political capital.**"*

- Senior district official, Ngora

*"Find great improvements (in sanitation facilities) in places where leaders are proactive but in many places there is **interference by politicians** (LC1 and LC3), who **don't support local sanitation policies or their constituents being prosecuted."***

- District health official, Kabarole

*"Enforcement is a major challenge as **political leaders put up a lot of resistance** when officers move ahead to enforce (the policies)."*

- District water official, Buyende

Source: FSG analysis based on qualitative interviews conducted by S4H

Business environment | Barrier | Ineffective enforcement (2/2)

Budgetary constraints, insufficient political will at local Government level, and unintended consequences may render enforcement of the Public Health Act and any bylaws (if present) ineffective (1/2)

Enforcements may also lead to households building temporary or unimproved toilets

Secondary research

As per a study by PATH[1]

- At the local level, the Uganda Public Health Act mandates that all households have a latrine, but the **regularity of enforcement varies**. This leads to inconsistency in households' expectations of enforcement and can create a **mixed sense of urgency and prioritization around sanitation**, which in turn can affect levels of demand and the market's ability to respond appropriately.
- Unfortunately, this has created an environment where top concern of many households is to **have *something* installed** to meet the requirement.
- More often than not, this equates to a **makeshift, unimproved latrine** built from *whatever meager budget or physical resources* a household has at the time.

*"**Households do end up building toilets of locally available materials** due to enforcement. Communities can get good sanitation with log and wood as well, they **do not need to necessarily cast a slab**."*

- Senior district official, Gulu

*"We have seen instances of households **building very basic toilets as a result of enforcement**. This is primarily due to the financial constraints of the household."*

- District water official, Bukomansimbi

1. PATH, Analysis of Sanitation Supply Chain in Rural and Small Towns in Uganda (2012)

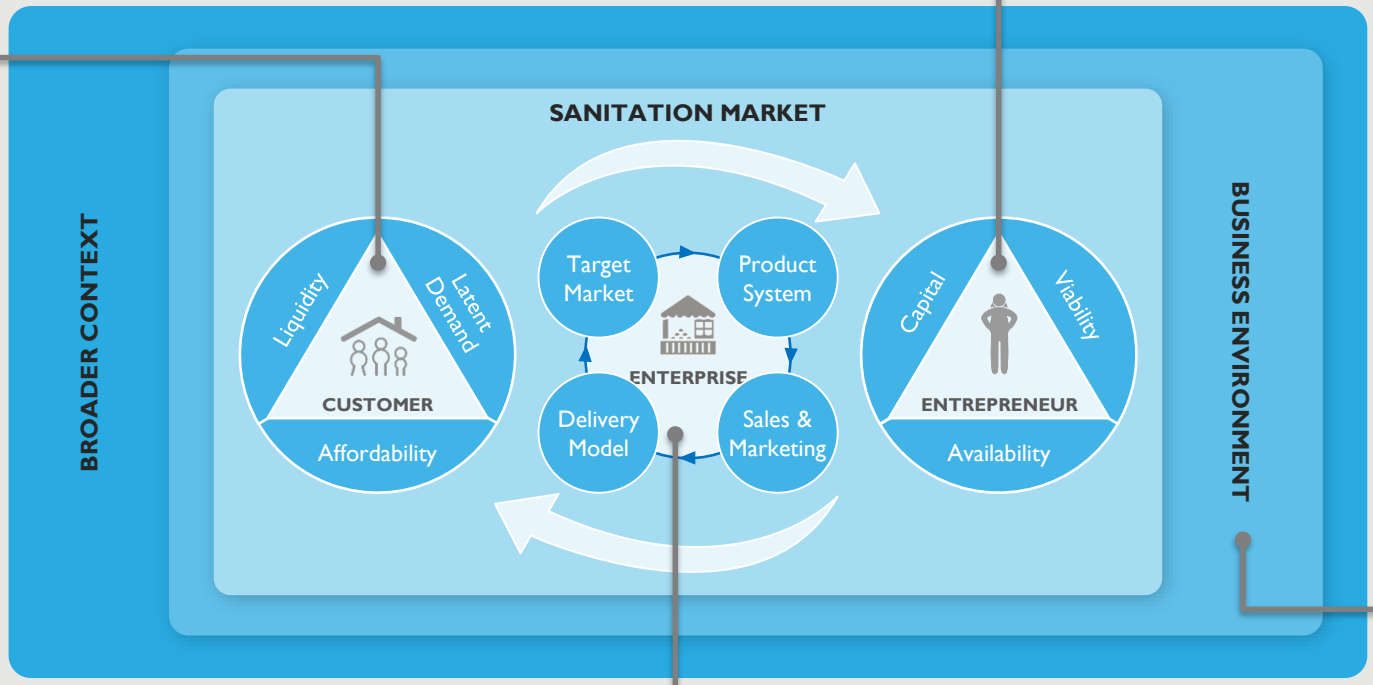
Barriers and Drivers | Overall summary

Customer barriers

- Strong preference for IBTs
- Inadequate income to afford IBTs
- Inadequate seasonal savings
- Lower priority accorded to sanitation
- Unwillingness or inability to obtain financing
- Preference for the "ideal solution

Entrepreneur barriers and drivers

- Lack of sanitation entrepreneurs, especially in rural areas
- Lack of viability of sanitation business
- Adequate unit margins on sanitation products/services, for some actors
- High working capital requirements and lack of appropriate capital products



Enterprise barriers and drivers

- Appropriate product designs not available to customers, in some contexts
- Lack of appropriate sales and marketing for sanitation-specific products
- Potential for increased business due to customer referrals among closely-related actors

Barriers and drivers due to business environment

- Poorly penetrated associated supply chains (hardware stores, sand, aggregate, etc.)
- Increasing fuel costs
- Inadequate local adaptation of national sanitation policies
- Ineffective/undesirable consequences to enforcement of policies

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Value chain trace backs | Key takeaways

- **Average cost of constructing two-stance IBTs is ~UGX 1.77M** with a range of UGX 590k – UGX 2.5M
  - 5 of the 6 IBTs were 2-stance (one was a single-stance), and none used temporary materials for the superstructure
- **Only 1 HH had piped non-drinking water source** in the House compound, rest relied on unprotected springs or tube well/borehole
- **Service providers (pit diggers and masons) are within easy reach of HHs** and within a ~2 km radius of the HHs
- **HW stores** were, on average, **located ~20 km from the HH in rural areas** and ~4km in the urban areas
- Transporters used by the rural HHs were parked, on average, ~20 km away from the HH; this may increase overall transportation costs for the HHs
- **Bricks, unlike sand and aggregate, are generally available within the same village as the HH** (most brick makers were <1km meters from the HH)[1]
- **Financiers rarely used by HHs for toilet construction** (1 out of 8 HHs) even though 5 out of 8 HHs mentioned some finance-related challenge as one of their key challenges during toilet construction

Source: FSG analysis and qualitative Interviews conducted by S4H
1. Household may still rely on a transporter to get the bricks delivered to their house

Trace back of an unimproved toilet found in rural Kabarole (1/2)

House

Toilet superstructure

Toilet interface

District snapshot

Demographic profile[1]		Sanitation profile[2]	
Population	469,200	**% of HH with basic service**	15%
% urban population	26%	**% of HH with limited service**	11%
Average HH size	4.4	**% of HH with unimproved service**	74%

Household descriptors

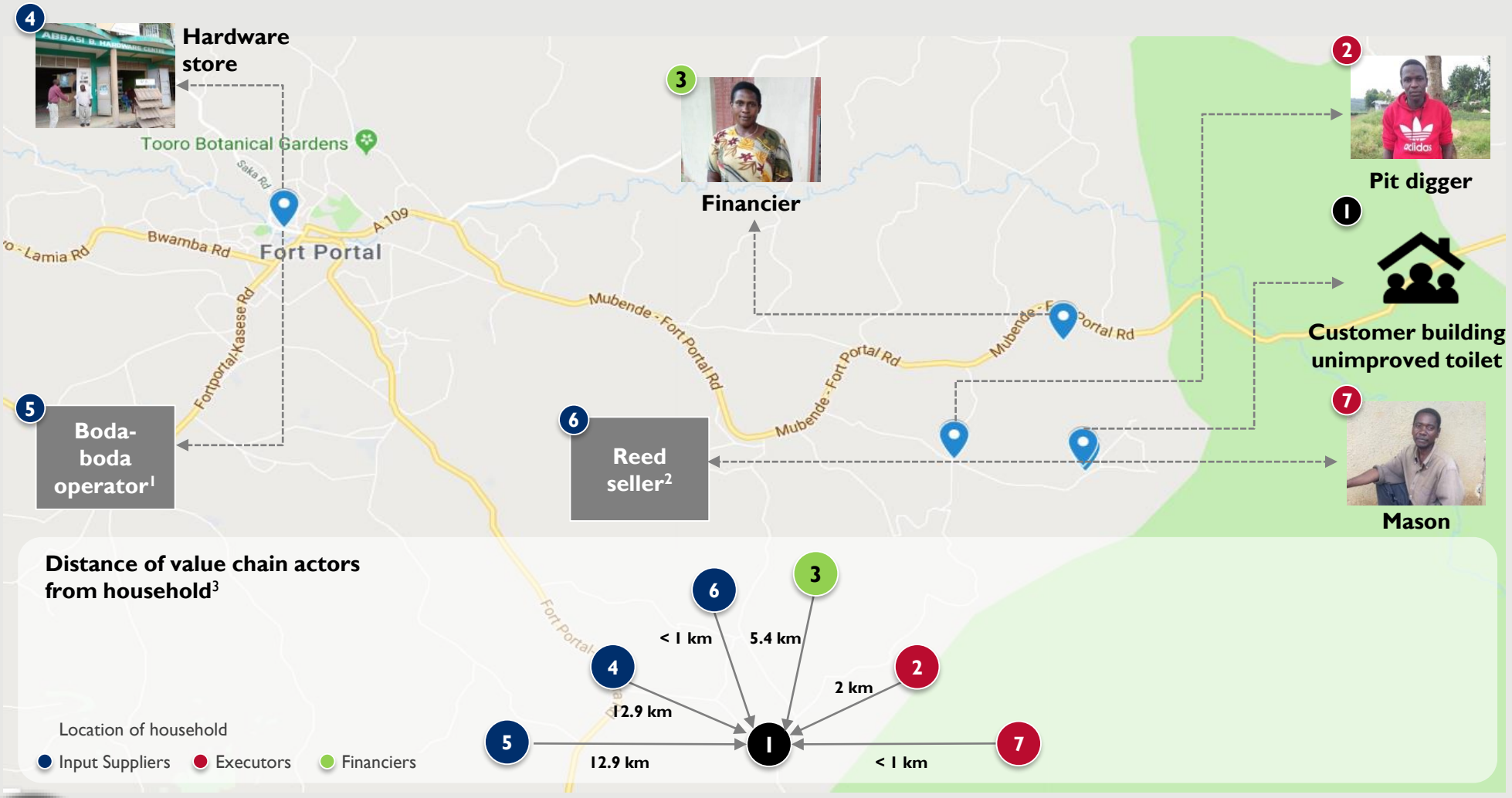
- Male-headed household, with 6 members; Located in Mugusu B village in Busoro sub-county
- *Highest education level in household:* A-level
- *Occupation(s) of household head:* Farming, fishing
- *House characteristics:* Own house largely constructed using permanent materials (i.e., cement walls, iron sheet roof)
- *Non-drinking water source:* Unprotected dug well
- *Select assets owned:* Motor cycle, bicycle, television, radio, mobile phone, solar light system

Toilet descriptors

- Single-stance unimproved toilet with no bathroom or curtain wall; shared among 2 families; Constructed 2.5 years ago
- *Substructure description:* 20 ft. deep unlined pit
- *Interface description:* Floor made of wooden poles, mud, and sand
- *Superstructure description:* Walls made of wooden poles and mud; roof made of iron sheets
- *History of toilet ownership:* This is the first toilet constructed by the household
- *Total cost of toilet:* UGX ~600K
- *Loan taken for toilet construction, if any:* Loan of UGX 500K taken from local SACCO
- *Key challenge with existing toilet:* "Would prefer to have a toilet made of permanent materials instead, but can't afford to build one immediately." – Household head

1. Source: Uganda National Census, 2014
2. Source: Uganda Demographic and Health Survey (UDHS), 2016

Trace back of an unimproved toilet found in rural Kabarole (2/2)



[1] Boda-boda operator was not interviewed by the S4H team However, the household head mentioned that he had hired the boda-boda operator from outside the HW store

[2] Reed seller was not interviewed by the S4H team. However, as the household head mentioned that the reed seller collected the reeds from a forest near the house, the reed seller is assumed to be within a radius of <1 km from the household.

[3] We have estimated the distance between two GPS points using the shortest routes suggested by Google Maps. Actual distance traveled may vary, if alternate routes are

Qualitative interviews conducted by S4H in Kabarole

Trace back of an IBT found in rural Kabarole (1/2)

House

Toilet superstructure

Toilet interface

District snapshot

Demographic profile[1]		Sanitation profile[2]	
Population (2014)	469,200	**% of HH with basic service**	15%
% urban population	26%	**% of HH with limited service**	11%
Average HH size	4.4	**% of HH with unimproved service**	74%

Household descriptors

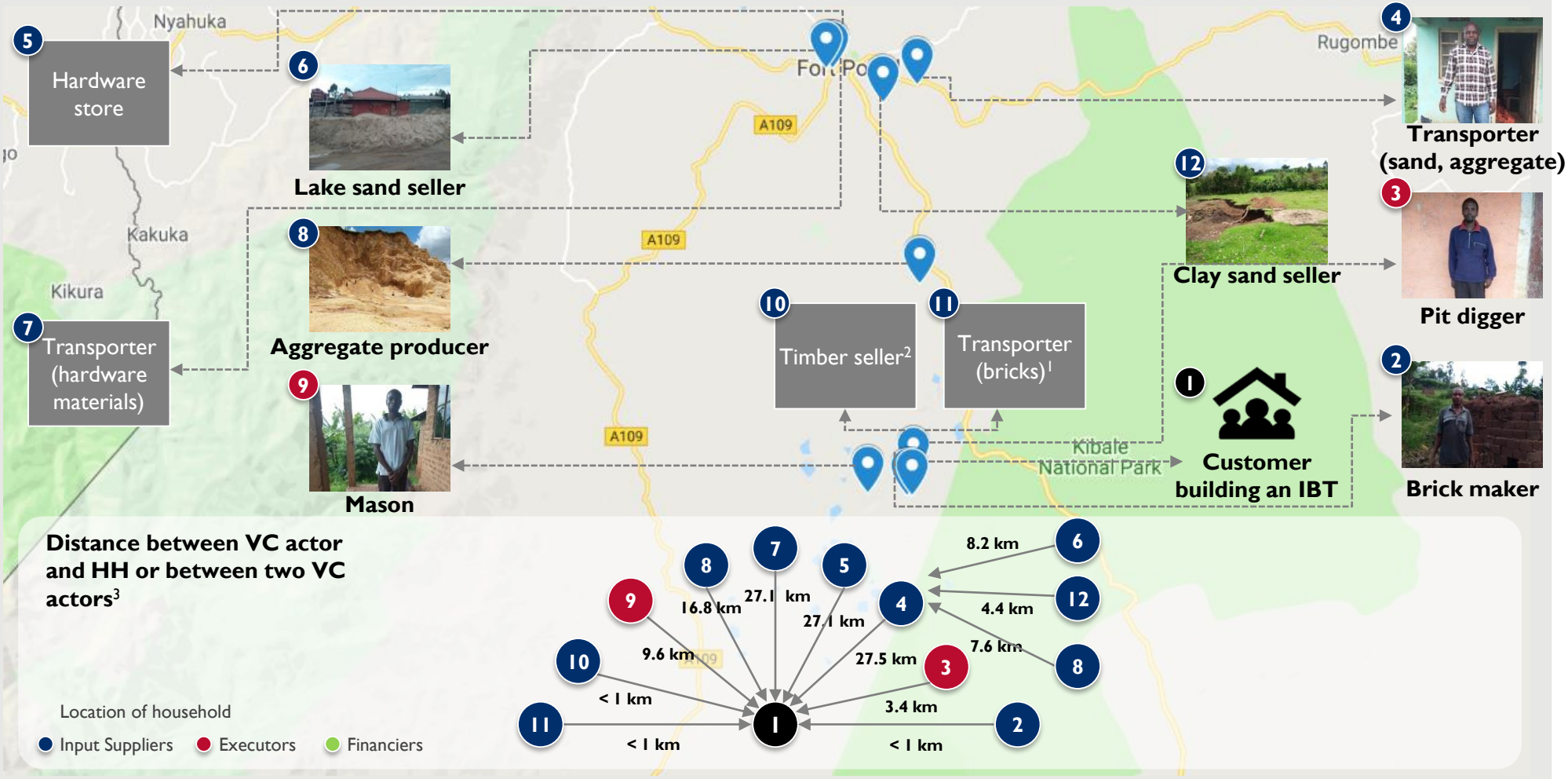
- Male-headed household, with 5 members; Located in Iruhura A village in Kasenda sub-county
- *Highest education level in household:* College/ University level
- *Occupation(s) of household head:* Farming
- *House characteristics:* Own house largely constructed using permanent materials (i.e., cement walls, iron sheet roof)
- *Non-drinking water source:* Protected spring
- *Select assets owned:* Motor cycle, mobile phone, solar light system, chair, bed

Toilet descriptors

- Two-stance IBT with curtain wall and no bathroom; Constructed 2.5 years ago
- *Substructure description:* 55 ft. deep unlined pit
- *Interface description:* Floor made of cement/ concrete
- *Superstructure description:* Walls made of burnt bricks; roof made of iron sheets
- *History of toilet ownership:* Current toilet is the first IBT built by the household when they moved to this house; had constructed and used unimproved toilets before
- *Total cost of toilet:* UGX ~2.5M
- *Loan taken for toilet construction, if any:* None
- *Key challenge in toilet construction:* "We faced financial difficulties during toilet construction due to the high cost." – Household head

1. Source: Uganda National Census, 2014
2. Source: Uganda Demographic and Health Survey (UDHS), 2016

Trace back of an IBT found in rural Kabarole (2/2)



1. We did not interview the transporters of bricks and other hardware materials. We have assumed that these transporters were identified in the same location as the source of the relevant materials
2. We did not interview the timber seller. However, the household head mentioned that the timber seller was located within the same village
3. We have estimated the distance between two GPS points using the shortest routes suggested by Google Maps. Actual distance traveled may vary, if alternate routes are used

Source: Qualitative interviews conducted by S4H in Kabarole

Trace back of an IBT found in urban Gulu (1/2)

House

Toilet superstructure

Toilet interface

District snapshot

Demographic profile[1]		Sanitation profile[2]	
Population (2014)	436,300	**% of HH with basic service**	13%
% urban population	34%	**% of HH with limited service**	26%
Average HH size	5.0	**% of HH with unimproved service**	50%

Household descriptors

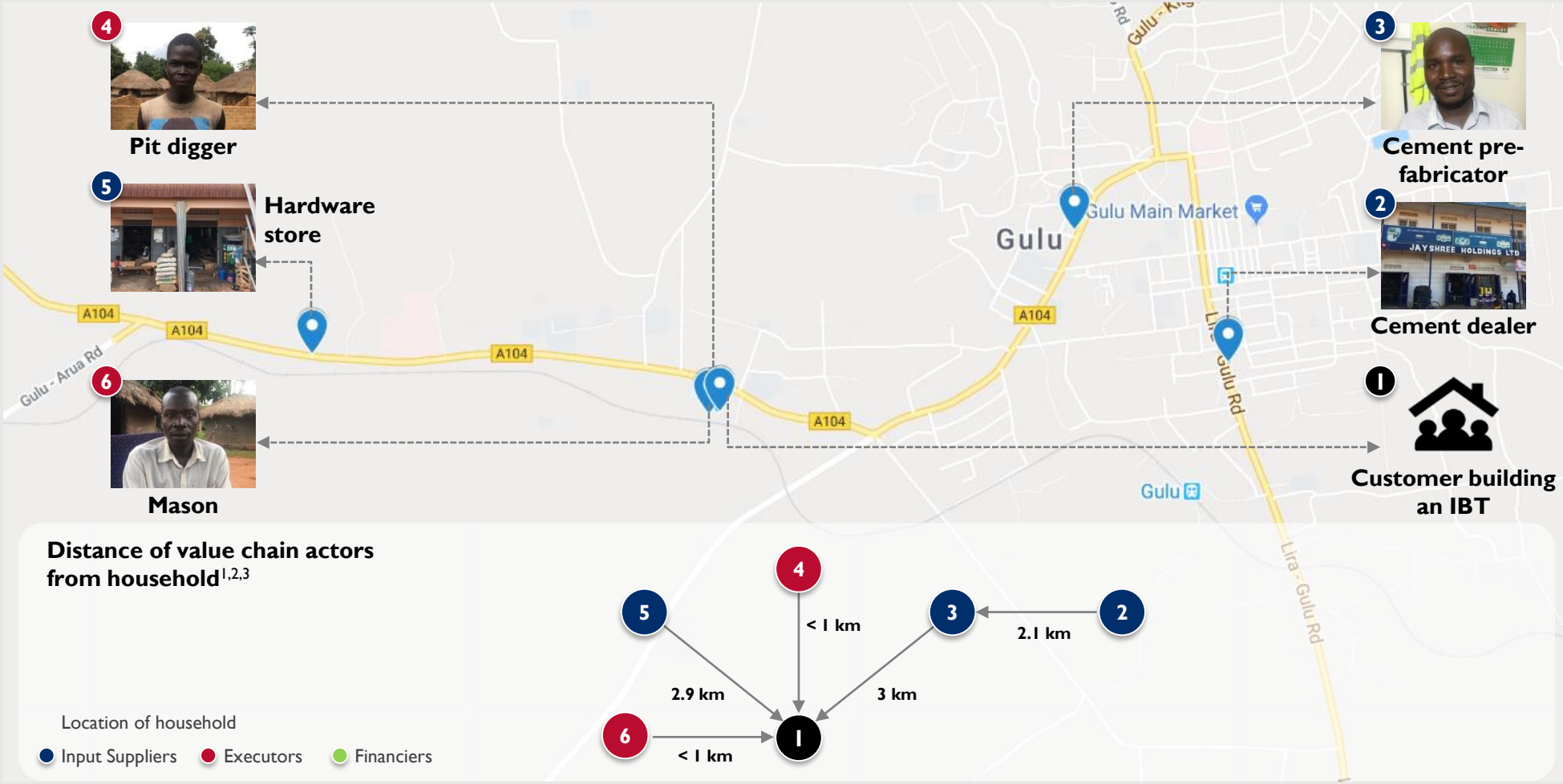
- Female-headed household, with 5 members; Located in Bwobo Aywaaya village in Gulu Municipality
- *Highest education level in household:* A-level
- *Occupation(s) of household head:* Teaching
- *House characteristics:* Own house largely constructed using temporary materials (i.e., wood and mud walls, grass thatched roof, etc.)
- *Non-drinking water source:* Piped water into compound, yard/ plot
- *Select assets owned:* Bicycle

Toilet descriptors

- Single-stance IBT with no bathroom or curtain wall; Constructed 3 years ago
- *Substructure description:* 25 ft. deep unlined pit
- *Interface description:* Floor made of cement/ concrete
- *Superstructure description:* Walls made of unburnt bricks; roof made of iron sheets
- *History of toilet ownership:* Second IBT constructed by household after previous one collapsed
- *Total cost of toilet:* UGX ~350K
- *Loan taken for toilet construction, if any:* None
- *Key challenge in toilet construction:* "I know that the current walls of the toilet are not strong and am worried about them collapsing" – Household head

1. Source: Uganda National Census, 2014
2. Source: Uganda Demographic and Health Survey (UDHS), 2016

Trace back of an IBT found in urban Gulu (2/2)



1. We have estimated the distance between two GPS points using the shortest routes suggested by Google Maps. Actual distance traveled may vary, if alternate routes are used
2. Brick maker, sand miner, and aggregate producer are not denoted on this map as the respective materials were not purchased/ paid for by the household customer – the household made their own bricks from mud and obtained the required sand and aggregate from their neighbor
3. Sand seller and aggregate producer supplying to the cement pre-fabricator were not interviewed. We have not denoted them on the map as we are unaware of their location

Source: Qualitative interviews conducted by S4H in Gulu

Trace back of an IBT found in rural Gulu (1/2)

House

Toilet superstructure

Toilet interface

District snapshot

Demographic profile[1]		Sanitation profile[2]	
Population (2014)	436,300	**% of HH with basic service**	13%
% urban population	34%	**% of HH with limited service**	26%
Average HH size	5.0	**% of HH with unimproved service**	50%

Household descriptors

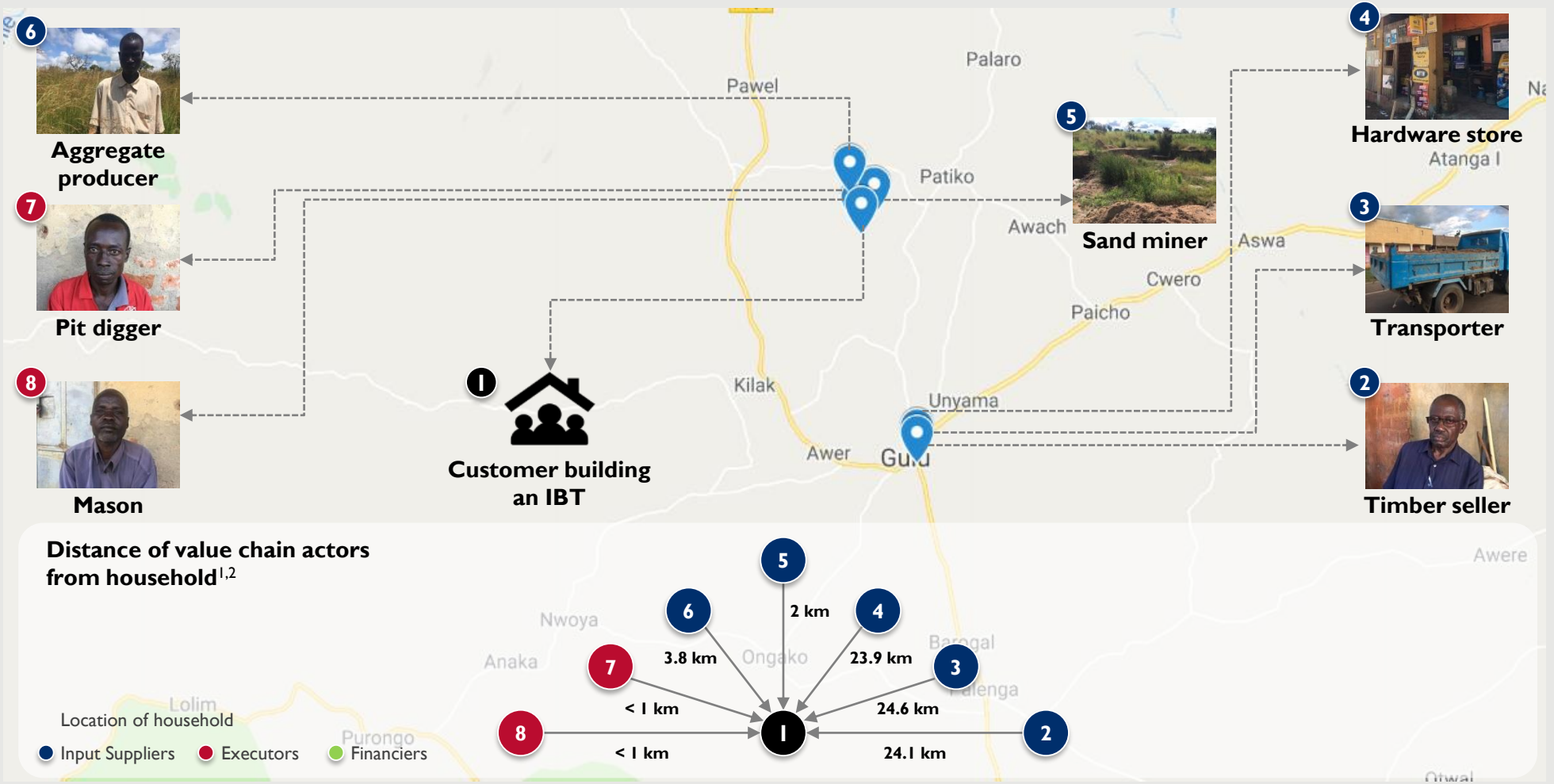
- Male-headed household, with 11 members; Located in Awoonyim village in Patiko sub-county
- *Highest education level in household:* A-level
- *Occupation(s) of household head:* Operating a general store
- *House characteristics:* Own house largely constructed using permanent materials (i.e., cement walls, iron sheet roof)
- *Non-drinking water source:* Unprotected spring
- *Select assets owned:* Motor cycle, bicycle, mobile phone

Toilet descriptors

- Two-stance IBT with a curtain wall and no bathroom; Constructed 3 years ago
- *Substructure description:* 25 ft. deep unlined pit
- *Interface description:* Floor made of cement/ concrete
- *Superstructure description:* Walls made of burnt bricks; roof made of iron sheets
- *History of toilet ownership:* First IBT built by the household; had constructed two unimproved toilets earlier, which filled up. Decided to build an IBT as it would be easier to clean.
- *Total cost of toilet:* UGX ~2M
- *Loan taken for toilet construction, if any:* None
- *Key challenge in toilet construction:* "Transporting materials from Gulu town was very expensive" – Household head

1. Source: Uganda National Census, 2014
2. Source: Uganda Demographic and Health Survey (UDHS), 2016

Trace back of an IBT found in rural Gulu (2/2)



1. We have estimated the distance between two GPS points using the shortest routes suggested by Google Maps. Actual distance traveled may vary, if alternate routes are used. However, the distance between the customer and the sand miner/ aggregate producer is the straight line distance plotted on Google Maps as the roads between these locations are not currently plotted on the platform
2. Brick maker is not denoted on this map as the household did not purchase/ pay for bricks for their toilet; made their own bricks from mud

Source: Qualitative interviews conducted by S4H in Gulu

Trace back of an IBT found in rural Ngora (1/2)

House

Toilet superstructure

Toilet interface

District snapshot

Demographic profile[1]		Sanitation profile[2]	
Population (2014)	141,900	% of HH with basic service	19%
% urban population	11%	% of HH with limited service	12%
Average HH size	6.0	% of HH with unimproved service	60%

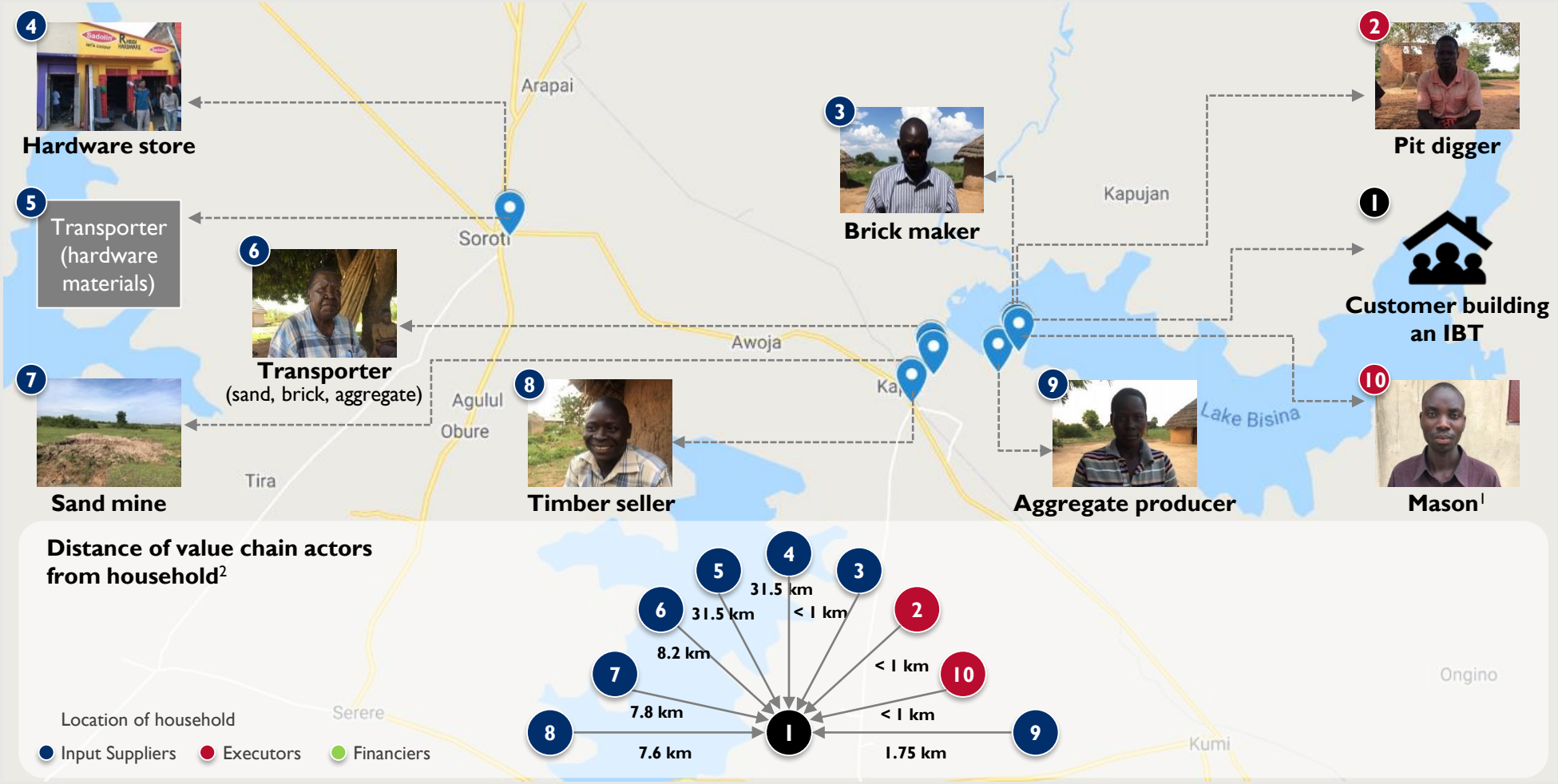
Household descriptors

- Male-headed household, with 15 members; Located in Kakor village in Kapir sub-county
- *Highest education level in household:* O-level
- *Occupation(s) of household head:* Fishing
- *House characteristics:* Owns two housing structures – one largely constructed using permanent materials and the other largely constructed using temporary materials
- *Non-drinking water source:* Unprotected spring
- *Select assets owned:* Mobile phone, table, chair

- Two-stance IBT with 2 bathrooms and curtain walls; Constructed 2 years ago
- *Substructure description:* 12 ft. deep unlined pit
- *Interface description:* Floor made of cement/ concrete
- *Superstructure description:* Walls made of burnt bricks; roof made of iron sheets
- *History of toilet ownership:* First IBT built by the household; had constructed eight unimproved toilets earlier, which became unusable due to termite infestations
- *Total cost of toilet:* UGX ~1.3M
- *Loan taken for toilet construction, if any:* Borrowed undisclosed amount from family
- *Key challenge in toilet construction:* "The cost of pit digging and purchasing materials to construct the toilet were very high." – Household head

1. Source: Uganda National Census, 2014
2. Source: Uganda Demographic and Health Survey (UDHS), 2016

Trace back of an IBT found in rural Ngora (2/2)



1. The mason typically works in the village in which the household is located. Therefore, his distance from the household has been assumed to vary between 0.5-1 km.
2. We have estimated the distance between two GPS points using the shortest routes suggested by Google Maps. Actual distance traveled may vary, if alternate routes are used

Source: Qualitative interviews conducted by S4H in Ngora

Trace back of an IBT found in rural Buyende (1/2)

House

Toilet superstructure

Toilet interface

District snapshot

Demographic profile[1]		Sanitation profile[2]	
Population (2014)	323,100	**% of HH with basic service**	27%
% urban population	7%	**% of HH with limited service**	12%
Average HH size	5.3	**% of HH with unimproved service**	48%

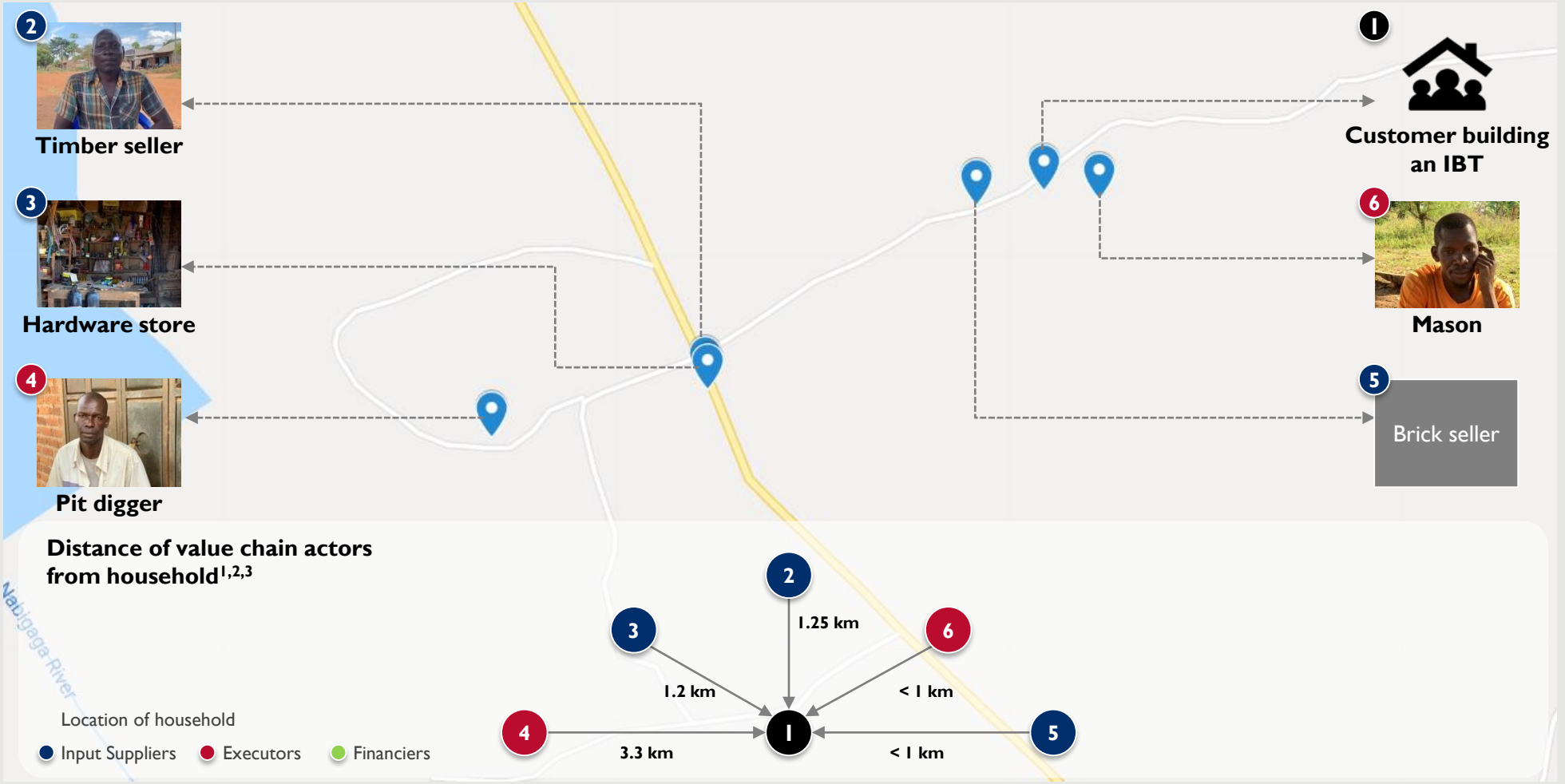
Household descriptors

- Female-headed household with 10 members; Located in Buyokero village in Buyende sub-county
- *Highest education level in household:* O-level
- *Occupation(s) of household head:* Not available, as question was not asked
- *House characteristics:* Own house largely constructed using permanent materials (i.e., brick walls, iron sheet roof)
- *Non-drinking water source:* Tube well/ borehole
- *Select assets owned:* Radio, bicycle

- Two-stance IBT with no bathroom or curtain wall; Constructed 1 year ago
- *Substructure description:* 48 ft. deep unlined pit
- *Interface description:* Floor made of cement/ concrete
- *Superstructure description:* Walls made of burnt bricks; roof made of iron sheets
- *History of toilet ownership:* Current toilet is the first one constructed in this house; had constructed 2 IBTs when they lived at another location
- *Total cost of toilet :* UGX ~583K
- *Loan taken for toilet construction, if any:* None
- *Key challenge in toilet construction:* "The cost of pit digging was very high." – Household head

1. Source: Uganda National Census, 2014
2. Source: Uganda Demographic and Health Survey (UDHS), 2016

Trace back of an IBT found in rural Buyende (2/2)



1. We have estimated the distance between two GPS points using the shortest routes suggested by Google Maps. Actual distance traveled may vary, if alternate routes are used
2. Sand miner and aggregate producer are not denoted on this map as these materials were not used by the household for construction of their toilet; the toilet slab was built by making a cemented surface over a timber base
3. A transporter/ boda-boda operator is not denoted on this map as the household customer transported the brick and hardware materials using a bicycle

Source: Qualitative interviews conducted by S4H in Buyende

Trace back of an IBT found in urban Buyende (1/2)

House

Toilet superstructure

Toilet interface

District snapshot

Demographic profile[1]		Sanitation profile[2]	
Population (2014)	323,100	**% of HH with basic service**	27%
% urban population	7%	**% of HH with limited service**	12%
Average HH size	5.3	**% of HH with unimproved service**	48%

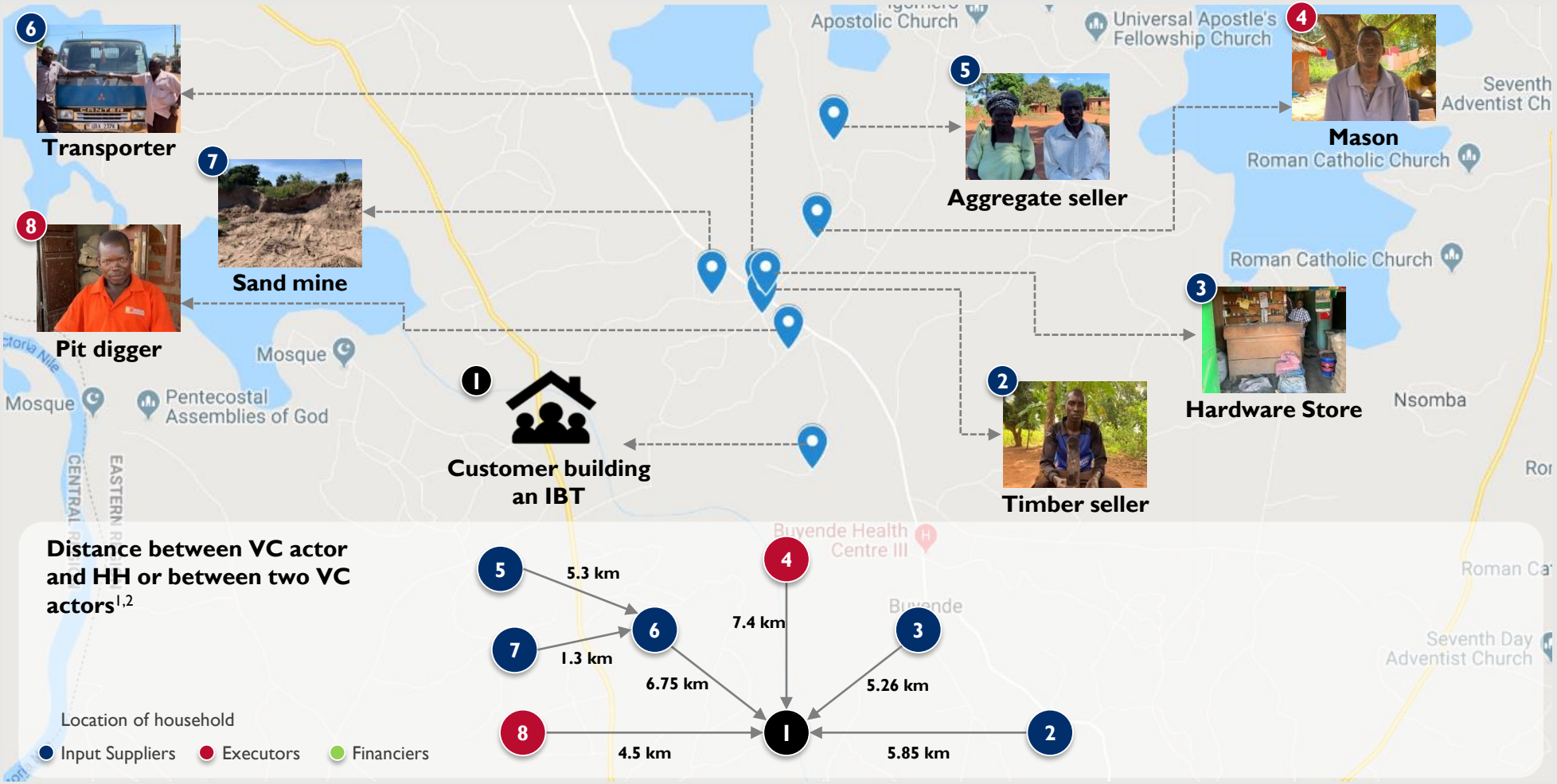
Household descriptors

- Male-headed household with 5 members; Located in Buwande village in Buyende Town Council
- *Highest education level in household:* Primary
- *Occupation(s) of household head:* Not available, as question was not asked
- *House characteristics:* Own house largely constructed using permanent materials (i.e., brick walls, iron sheet roof)
- *Non-drinking water source:* Tube well/ borehole
- *Select assets owned:* Motorcycle, bicycle

- Two-stance IBT with curtain wall and no bathroom; Constructed 2 years ago
- *Substructure description:* 43 ft. deep unlined pit
- *Interface description:* Floor made of cement/ concrete
- *Superstructure description:* Walls made of burnt bricks; roof made of iron sheets
- *History of toilet ownership* First IBT built by the households; had an unimproved toilet earlier
- *Total cost of toilet:* UGX ~2.47M
- *Loan taken for toilet construction, if any:* None
- *Key challenge in toilet construction:* "The pit digger was unreliable. He would come one day and dig a bit and then disappear for a few days after which we would have to go look for him." – Household head

1. Source: Uganda National Census, 2014
2. Source: Uganda Demographic and Health Survey (UDHS), 2016

Trace back of an IBT found in urban Buyende (2/2)



1. We have estimated the distance between two GPS points using the shortest routes suggested by Google Maps. Actual distance traveled may vary, if alternate routes are used
2. Brick maker is not denoted on this map as the household purchased bricks from another household, who had excess material left over from their own construction work

Source: Qualitative interviews conducted by S4H in Buyende

Trace back of an unimproved toilet found in rural Bukomansimbi (1/2)

Toilet superstructure

Toilet interface

District snapshot

Demographic profile[1]		Sanitation profile[2]	
Population (2014)	151,400	**% of HH with basic service**	27%
% urban population	9%	**% of HH with limited service**	13%
Average HH size	4.4	**% of HH with unimproved service**	58%

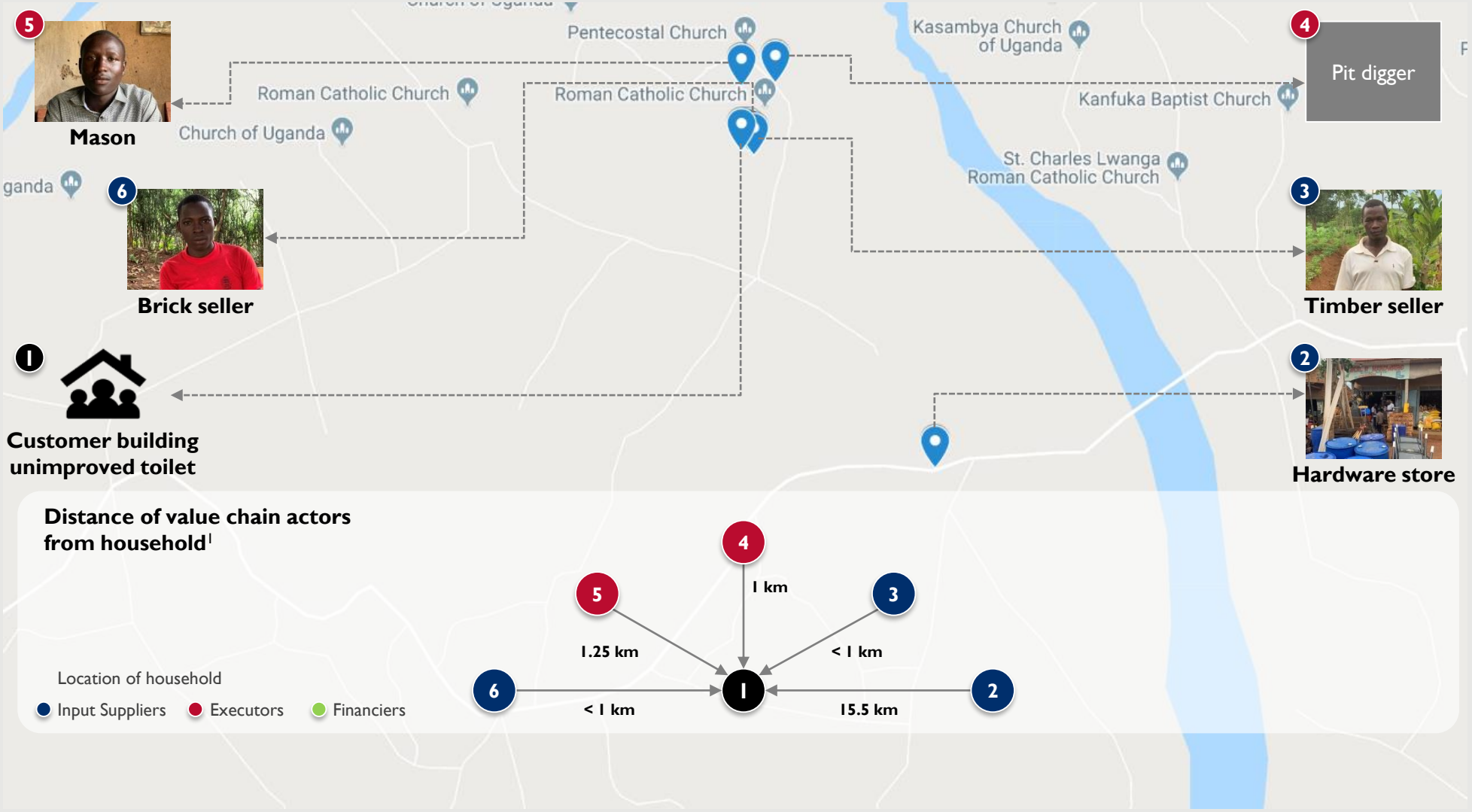
Household descriptors

- Male-headed household with 6 members; Located in Mijinwa village in Bigasa sub-county
- *Highest education level in household:* Primary
- *Occupation(s) of household head:* Farming
- *House characteristics:* Own house largely constructed using permanent materials (i.e., brick walls, iron sheet roof)
- *Non-drinking water source:* Tube well/ borehole
- *Select assets owned:* Bicycle

- Two-stance unimproved toilet with no bathroom or curtain wall; Constructed 9 months ago
- *Substructure description:* 22 ft. deep unlined pit
- *Interface description:* Floor made of wooden poles, mud, and sand
- *Superstructure description:* Walls made of burnt bricks; roof made of iron sheets
- *History of toilet ownership:* Household had only constructed unimproved toilets thus far; previous number of toilets constructed is unknown
- *Total cost of toilet:* UGX ~348K
- *Loan taken for toilet construction, if any:* None
- *Key challenge with existing toilet:* None stated

1. Source: Uganda National Census, 2014
2. Source: Uganda Demographic and Health Survey (UDHS), 2016

Trace back of an unimproved toilet found in rural Bukomansimbi (2/2)



1. We have estimated the distance between two GPS points using the shortest routes suggested by Google Maps. Actual distance traveled may vary, if alternate routes are used
2. Source: Qualitative interviews conducted by S4H in Bukomansimbi

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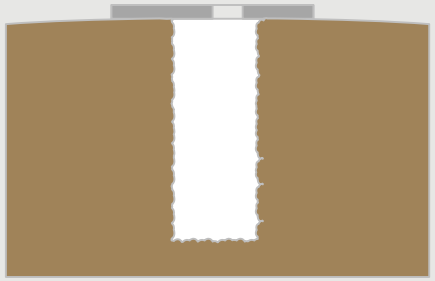
Toilet cost build-up in rural Uganda (1/4)

Two-stance IBT with a bathing area and a curtain wall

Sub-structure



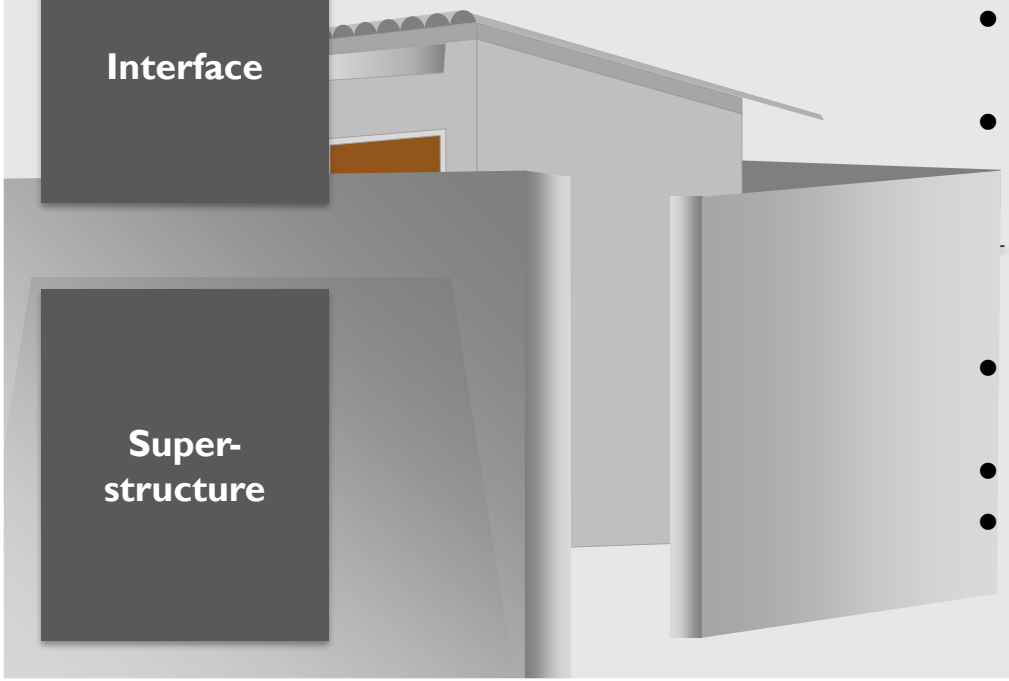
- Single unlined pit
- 15 feet deep

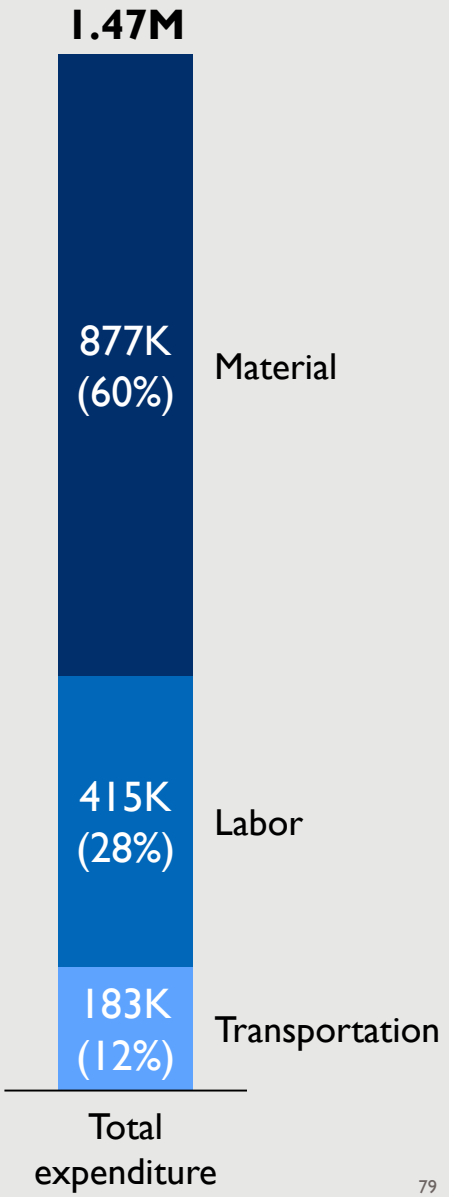
Interface

- Two-stances
- Floor made of cement covering the entire pit
- No pan, squat hole cut into the floor

Super-structure

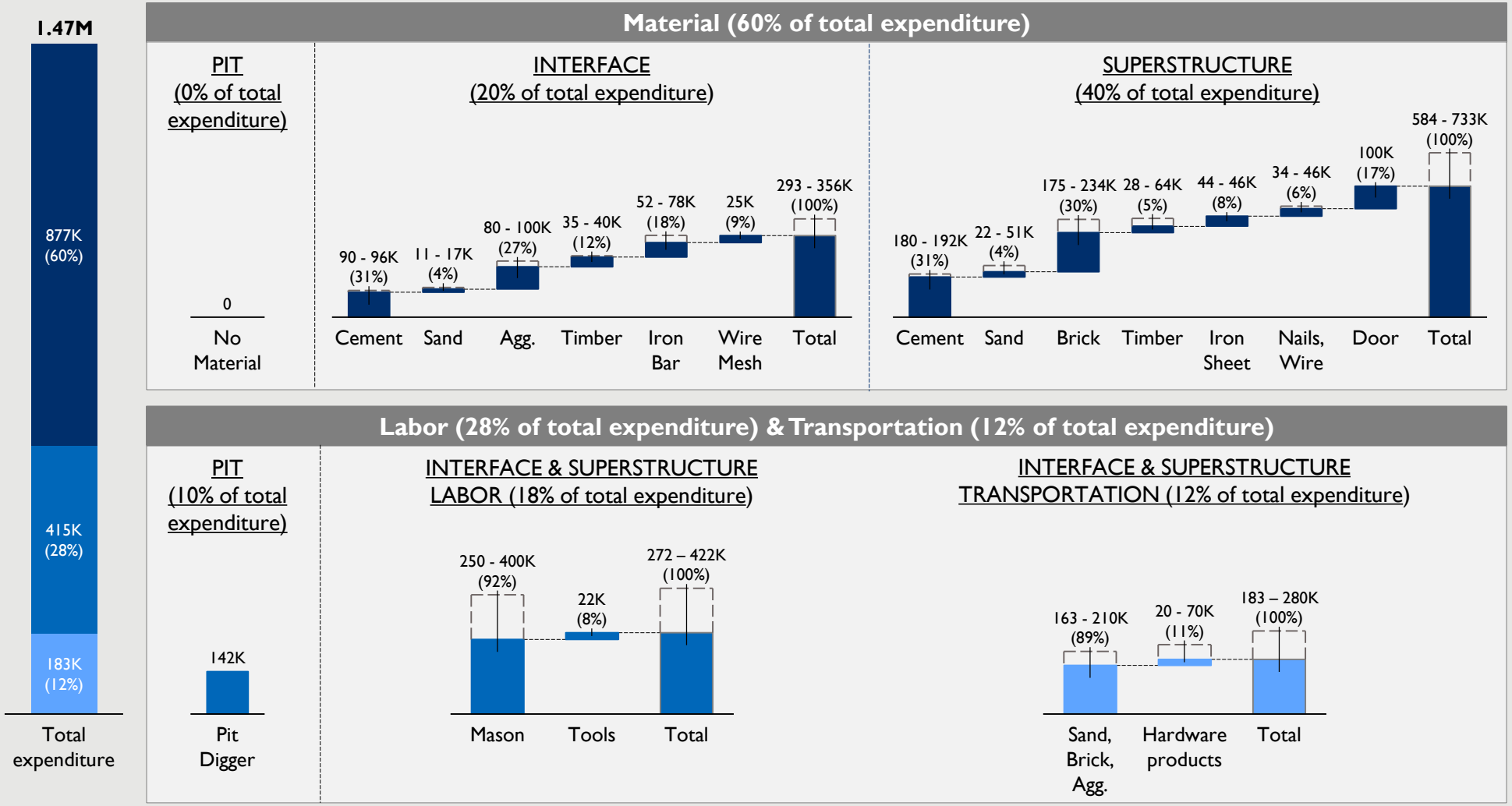
- Plastered walls made of burnt brick and cement
- Roof made of iron sheets
- Wooden door on both toilet stances





Toilet cost build-up in rural Uganda (2/4)

Total cost ranges between UGX 1.47 million and UGX 1.93 million[1]



Note(s): (A) All figures are in UGX
(B) K stands for thousand, M stands for million

1. All percentages on the graphs are with respect to the lower ends of material, labor and transport costs, which build-up to a toilet costing 1.47 million

Toilet cost build-up in rural Uganda (3/4)

List of materials and rate per unit of material used in the toilet

Toilet Part	Characteristics	Material Cost[1]			Labor Cost[1]		Transporter Cost[1]	
		Material Purchased	Quantity Purchased	Amount Paid Per Unit (UGX)	Labor Hired	Amount Paid (UGX)	Transporter Hired	Amount Paid (UGX)
Substructure	• Single unlined pit • Pit depth 15 feet[2]	No Material	-	-	Pit Digger	9,500 per foot of the pit dug	-	-
Interface[3]	• Two-stances • Floor made of cement covering the entire pit • No pan used, squat hole is cut into the floor	Cement[4]	3 bags	30,000 to 32,000 per bag	(see next slide)		(see next slide)	
		Sand	1 ton	11,250 to 17,000 per ton				
		Aggregate[5]	1 ton	80,000 to 100,000 per ton				
		Bricks[6]	100 bricks	-				
		Timber	5 pieces	7,000 to 8,000 per piece				
		Iron Bar	2 to 3 bars	26,000 per bar				
		Wire Mesh	1 sheet	25,000 per sheet				

1. Data on the list of material and quantities of each material is based on 5 mason interviews. Data on the range of prices paid by customers is based on FSG analysis conducted on the quantitative and qualitative interviews with the respective value chain actors that sell these materials to HH customers 2. Pit diggers typically dug pits that were either 15 feet or 40 feet deep, however, there wasn't huge variation in the rate per foot charged for both the pit depths 3. Interface is casted on-site 4. Quantity of cement, sand and aggregate used for interface could vary based on the mason's construction practices 5. Stated price is for 0.5 inch stones, which, as per masons, is used more commonly for toilet construction comparted to aggregate of other sizes (e.g., 1 inch) 6. Some masons mentioned the use of 50 – 100 bricks to surround the interface. For simplicity, the material cost of these bricks has been added to the superstructure

Toilet cost build-up in rural Uganda (4/4)

List of materials and rate per unit of material used in the toilet

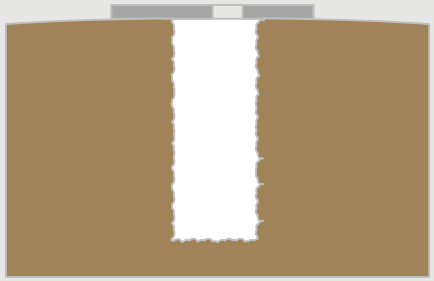
Toilet Part	Characteristics	Material Cost			Labor Cost		Transporter Cost	
		Material Purchased	Quantity Purchased	Amount Paid Per Unit (UGX)	Labor Hired	Amount Paid (UGX)	Transporter Hired	Amount Paid (UGX)
Superstructure	• Plastered walls made of burnt brick and cement • Roof made of iron sheets • Wooden door on both the toilet stances	Cement	6 bags	30,000 to 32,000 per bag	Mason[2]	250,000 to 400,000 for constructing both, the interface and the superstructure	Transporter for sand, brick and aggregate[4]	163,000 to 210,000 for material used for both, interface and superstructure
		Sand	2 tons	11,250 to 17,000 per ton				
		Brick	1,500 to 2,000 bricks	117 per brick				
		Timber	4 to 8 pieces	7,000 to 8,000 per piece				
		Door	2 doors[1]	50,000 per door	Tools for Mason[3]	22,500 for tools used for both, the interface and the superstructure	Transporter for hardware products[5]	20,000 to 70,000 for products used for both, interface and superstructure
		Iron Sheet	2 sheets[1]	22,250 to 23,000 per sheet				
		Wire	2 kilos	8,000 per kilo				
		Nails	3 to 5 kilos	6,000 per kilo				

1. The bathing area typically does not have a door and is open to the sky 2. In addition to labor cost, households may also incur some cost for providing food to the masons, porters, and pit diggers for the duration of the construction period 3. Customers may have to arrange for some basic tools like hoe, spade, wheelbarrow for the mason. 4. A trip made by the transporter for each product includes the distance from the tipper center (i.e., where the truck is usually parked) to the material supplier site + the distance from the material supplier site to the customer's house + the distance from the customer's house back to the tipper center. In practice, when a single transporter is hired to supply all three products, they may be able to optimize the routes so as to reduce the number of kilometers traveled; this would reduce the transportation cost for the customer by some amount. Transporters may not come back to the tipper center after delivering each product to the customer and may instead go to the next material supplier directly, thus optimizing the route. Instead of assuming 3 independent trips, we have factored for this optimization and assumed 2.33 trips, making the total trip distance to be 80 – 115 km for all three products. The stated cost also includes loading/ unloading charges 5. Customers might transport hardware store products in different ways; the cost of transportation depends on the vehicle used (motorbike, truck), the quantity of products to be transported and the number of trips made to and from the hardware store. The cost here assumes 2 trips of a boda-boda on the lower end, and 1 trip of a transporter on the upper end

Toilet cost build-up in urban Uganda (1/4)

Two-stance IBT with a bathing area and a curtain wall

Sub-structure



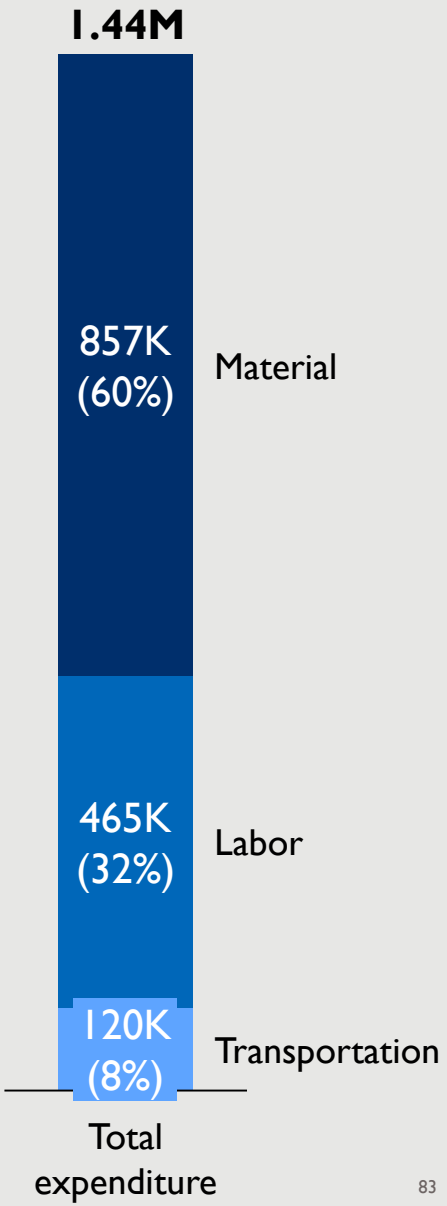
- Single unlined pit
- 15 feet deep

Interface

- Two-stances
- Floor made of cement covering the entire pit
- No pan, squat hole cut into the floor

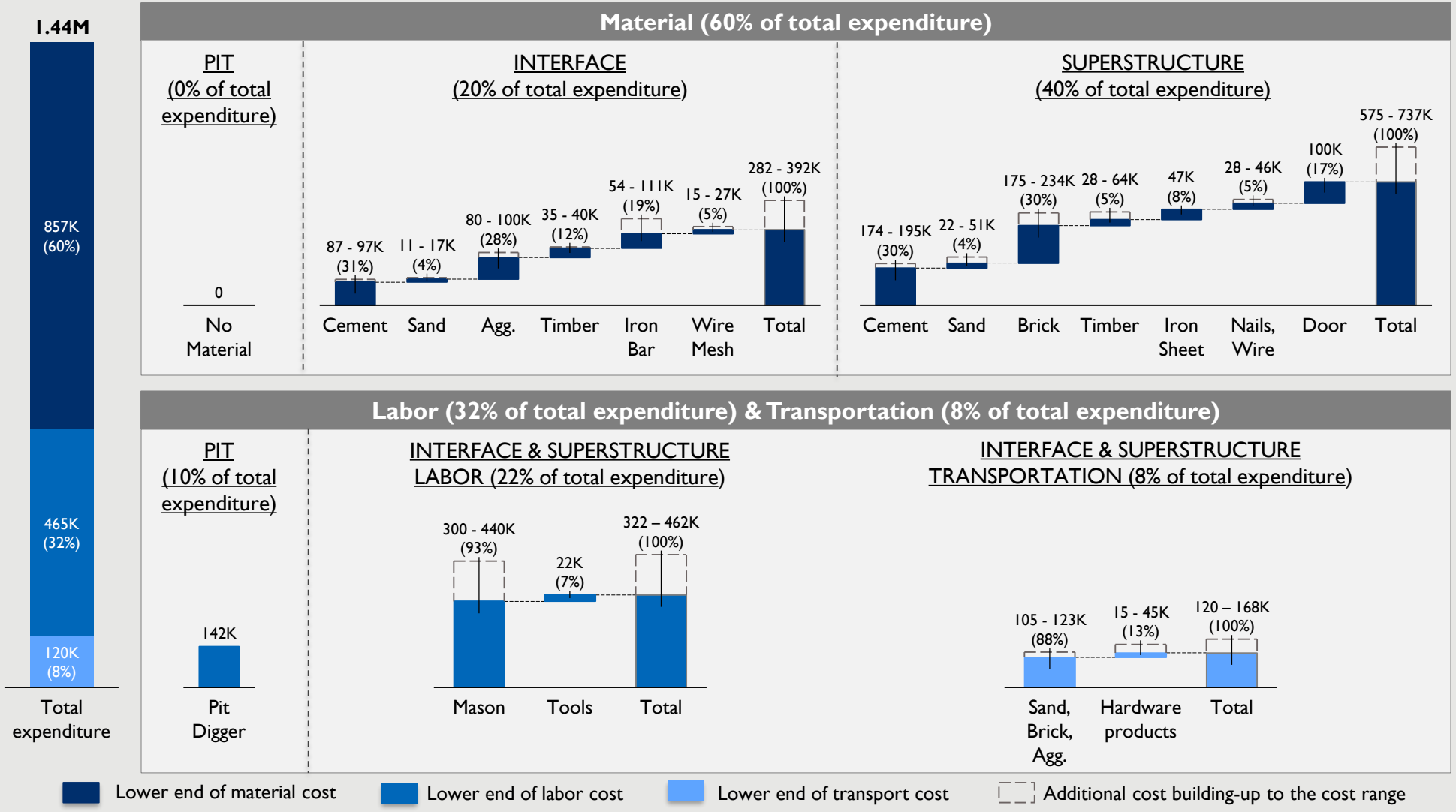
Super-structure

- Plastered walls made of burnt brick and cement
- Roof made of iron sheets
- Wooden door on both toilet stances



Toilet cost build-up in urban Uganda (2/4)

Total cost ranges between UGX 1.44 million and UGX 1.9 million[1]



Note(s): (A) All figures are in UGX
(B) K stands for thousand, M stands for million

1. All percentages on the graphs are with respect to the lower ends of material, labor and transport costs, which build-up to a toilet costing 1.44 million

Toilet cost build-up in urban Uganda (3/4)

List of materials and rate per unit of material used in the toilet

Toilet Part	Characteristics	Material Cost[1]			Labor Cost[1]		Transporter Cost[1]	
		Material Purchased	Quantity Purchased	Amount Paid Per Unit (UGX)	Labor Hired	Amount Paid (UGX)	Transporter Hired	Amount Paid (UGX)
Substructure	• Single unlined pit • Pit depth 15 feet[2]	No Material	-	-	Pit Digger	9,500 per foot of the pit dug	-	-
Interface[3]	• Two-stances • Floor made of cement covering the entire pit • No pan used, squat hole is cut into the floor	Cement[4]	3 bags	29,000 to 32,500 per bag	(see next slide)		(see next slide)	
		Sand	1 ton	11,250 to 17,000 per ton				
		Aggregate[5]	1 ton	80,000 to 100,000 per ton				
		Bricks[6]	100 bricks	-				
		Timber	5 pieces	7,000 to 8,000 per piece				
		Iron Bar	2 to 3 bars	27,000 to 37,000 per bar				
		Wire Mesh	1 sheet	15,000 to 27,000 per sheet				

1. Data on the list of material and quantities of each material is based on 5 mason interviews. Data on the range of prices paid by customers is based on FSG analysis conducted on the quantitative and qualitative interviews with the respective value chain actors that sell these materials to HH customers 2. Pit diggers typically dug pits that were either 15 feet or 40 feet deep, however, there wasn't huge variation in the rate per foot charged for both the pit depths 3. Interface is casted on-site 4. Quantity of cement, sand and aggregate used for interface could vary based on the mason's construction practices 5. Stated price is for 0.5 inch stones, which, as per masons is used more commonly for toilet construction comparted to aggregate of other sizes (e.g., 1 inch) 6. Some masons mentioned the use of 50 – 100 bricks to surround the interface. For simplicity, the material cost of these bricks has been added to the superstructure

Toilet cost build-up in urban Uganda (4/4)

List of materials and rate per unit of material used in the toilet

Toilet Part	Characteristics	Material Cost			Labor Cost		Transporter Cost	
		Material Purchased	Quantity Purchased	Amount Paid Per Unit (UGX)	Labor Hired	Amount Paid (UGX)	Transporter Hired	Amount Paid (UGX)
Superstructure	• Plastered walls made of burnt brick and cement • Roof made of iron sheets • Wooden door on both the toilet stances	Cement	6 bags	29,000 to 32,500 per bag	Mason[2]	300,000 to 440,000 for constructing both, the interface and the superstructure	Transporter for sand, brick and aggregate[4]	105,000 to 123,000 for material used for both, interface and superstructure
		Sand	2 tons	11,250 to 17,000 per ton				
		Brick	1,500 to 2,000 bricks	117 per brick				
		Timber	4 to 8 pieces	7,000 to 8,000 per piece				
		Door	2 doors[1]	50,000 per door	Tools for Mason[3]	22,500 for tools used for both, the interface and the superstructure	Transporter for hardware products[5]	15,000 to 45,000 for products used for both, interface and superstructure
		Iron Sheet	2 sheets[1]	23,700 per sheet				
		Wire	2 kilos	5,000 to 8,000 per kilo				
		Nails	3 to 5 kilos	6,000 per kilo				

1. The bathing area typically does not have a door and is open to the sky 2. In addition to labor cost, households may also incur some cost for providing food to the masons, porters, and pit diggers for the duration of the construction period 3. Customers may have to arrange for some basic tools like hoe, spade, wheelbarrow for the mason. 4. A trip made by the transporter for each product includes the distance from the tipper center (i.e., where the truck is usually parked) to the material supplier site + the distance from the material supplier site to the customer's house + the distance from the customer's house back to the tipper center. In practice, when a single transporter is hired to supply all three products, they may be able to optimize the routes so as to reduce the number of kilometers traveled; this would reduce the transportation cost for the customer by some amount. Transporters may not come back to the tipper center after delivering each product to the customer and may instead go to the next material supplier directly, thus optimizing the route. Instead of assuming 3 independent trips, we have factored for this optimization and assumed 2.33 trips, making the total trip distance to be 46 – 57 km for all three products. The stated cost also includes loading/ unloading charges 5. Customers might transport hardware store products in different ways; the cost of transportation depends on the vehicle used (motorbike, truck), the quantity of products to be transported and the number of trips made to and from the hardware store. The cost here assumes 1 trip of a boda-boda on the lower end, and 1 trip of a transporter on the upper end

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Input suppliers | Aggregate producer

Typical actor profile[1]



Age & gender	44 years (average); 73% are male
Years in business	~7 years (average)
Full-time employees (avg.)	70% did not have any full-time employees; they were sole entrepreneurs cutting stones
Training	7% received training; were typically trained by family/ friends
Education level	~65% received some primary education; 15% received some secondary or higher education
Sources of income	52% stated aggregate production as the primary source; 36% stated it as a secondary source Other sources include farming, trading, among others

Role in the sanitation value chain

Overview

- Cuts stone into multiple sizes of aggregate; the aggregate is typically used with sand and cement to create a concrete mix for construction purposes
- Within toilets, half-inch or quarter-inch sized aggregates are typically used, as part of the concrete mix, to build the toilet slab
- Aggregate producers are typically found at a sub-county, or county level
- Unit margin on a batch of 1 ton of half-inch aggregate is ~40%

Key inputs

- 27%[1] own the land from which they source aggregate; ~85%[1] reported sharing the land with other aggregate producers
- Tools required to cut the stone to size are typically purchased by the entrepreneur

Operations

- Aggregate producers typically pre-cut 4-8 tons of stones in anticipation of customer orders; produce as much as 30-40 tons per month during dry season
- 80%[1] do not provide transportation services to their customers; households may hire a transporter to have the aggregate delivered

Customers[1]

- 96%[1] stated households and/or transporters as their top 2 customer types
- 98%[1] stated that customers come from the same district as the aggregate producer; 29%[1] of these stated that customers come from the same village/ town council/ municipality
- All aggregate producers stated that customers hear about them through friends/ neighbors, and/or that they are generally known in the area as someone who sells aggregate
- 28% of aggregate producers do not provide credit to customers; 100%[1] customers pay for the aggregate with cash

Key linkages within value chain

- 48%[1] refer their customers to hardware stores and/ or sand sellers

Source: Qualitative interviews conducted by S4H

1. Based on interviews with 52 aggregate producers in the 10 research districts. 29 of these were conducted in rural settings and 23 were conducted in urban settings

Input suppliers | Brick maker

Typical actor profile[1]



Age & gender	33 years (average); 96% are male
Years in business	6.5 years (average)
Full-time employees (avg.)	58% did not have full-time employees; others had 2 full-time employees, who typically help in preparing mud, and shaping and burning bricks
Training	22% received some technical training; majority of which was through technical training institutes
Education level	46% received some primary education; 40% received some secondary or higher education
Sources of income	50% stated brick making as the primary source; 50% stated it as a secondary source. Other sources include farming, fishing, among others

Role in the sanitation value chain

Overview

- Makes bricks (clay/ mud, burnt/ unburnt) that are used for construction purposes
- Within toilets, bricks could primarily be used to build the superstructure and/ or to line the walls of the pit. A few bricks might also be used around the interface
- Brick makers are often found within the same village though households may not always directly interact with them to buy bricks
- Unit margin on a batch of 10,000 bricks is ~60%

Key inputs

- 58%[1] own the land from which they produce the bricks; others may take it on rent
- Firewood, grass, hoe, water, and molds are other materials that are used in the brick making process and are typically bought, or sourced locally without any cost

Operations

- Bricks are typically made in batches of 10,000 during the dry season (~Nov – Feb); many brick makers make 2 – 3 batches in a year
- 76%[1] of brick makers do not provide transportation services to their customers; households may hire a transporter to have the bricks delivered

Customers[1]

- 96% stated Household and/ or Transporter as their top 2 customers
- 98% stated that their customers come from within the same district as the brick maker; 38% of these stated that customers come from the same village/ town council/ municipality
- 82% stated that customers hear about them through friends/ neighbors, or see them making bricks
- 68% did not provide credit to their customers; brick makers are paid for their bricks in cash

Key linkages within value chain

- 54%[1] brick makers refer their customers to cement and/ or sand sellers

Source: Qualitative interviews conducted by S4H

1. Based on interviews with 50 brick makers in the 10 research districts. 32 of these were conducted in rural settings and 18 were conducted in urban settings

Input suppliers | Sand miner

Typical actor profile[1]



Age & gender	38 years (average); 93% are male
Years in business	~6.5 years (average)
Full-time employees (avg.)	64% did not have any full-time employees; hired temporary labor based on customer demand
Training	11% received technical training; majority of these attended a training institute
Education level	~60% received some primary education; 28% received some secondary or higher education
Sources of income	~49% stated sand mining as the primary source; 33% stated it as a secondary source Other sources include farming, brick making, among others

Role in the sanitation value chain

Overview

- Mine and sell sand used for construction purposes; 91%[1] sell plaster/ river sand, and others sell lake sand, which is finer and more expensive
- Within toilets, sand could be used to build the slab along with cement and aggregate as part of the concrete mix; it could also be used with cement to build a brick superstructure and to plaster the walls
- Sand miners are typically found at a sub-county or county level
- Unit margin on a batch of 1 ton of plaster sand is 35-40%

Key inputs

- 34%[1] own the land from which they mine sand; they rent from the owners
- Sand miners typically own the tools required for mining such as spade, pick axe, etc.

Operations

- On average sand miners only mine sand for 4 months[1] (November to February) of the year, during the dry season; sand miners may mine up to 30-40 tons[1] per month during this time, and can turnaround orders within 1-2 days
- 78%[1] do not provide transportation services to their customers; households may hire a transporter to have the sand delivered

Customers[1]

- 91%[1] stated households and/or transporters as their top 2 customer types
- All[1] sand miners stated that customers come from within the same district as the sand miner; 26%[1] stated that customers come from the same village/ town council/ municipality
- 97%[1] stated that customers hear about them through friends/ neighbors, and/or that they are generally known in the area as someone who sells sand
- 44%[1] of sand miners offer credit to their customers; All[1] customers pay for the sand with cash

Key linkages within value chain

- 48%[1] refer their customers to hardware stores and aggregate producers

Source: Qualitative interviews conducted by S4H

1. Based on interviews with 45 sand miners in the 10 research districts; 32 of these were conducted in rural settings and 13 were conducted in urban settings

Input suppliers | Cement pre-fabricator

Typical actor profile[1]



Age & gender	38 years (average); 83% are male
Years in business	~7.5 years (average)
Full-time employees (avg.)	Have 4 full-time employees, who help fabricate the various cement products
Training	73% received some technical training; 77% of these were trained at a technical institute
Education level	43% received secondary education; 30% received some college/ university education
Sources of income	64% stated cement pre-fabrication as the primary source; 33% stated it as a secondary source Other sources include farming, trading, among others

Role in the sanitation value chain

Overview

- Fabricate and sell cement products (like toilet slabs, cement rings, cement blocks) for various construction applications
- For toilets, fabricate cement slabs, which can be used as an alternative to a slab cast on-site by a mason; also fabricate cement rings which can be used to line toilet pits, but this is not commonly used by households
- Cement pre-fabricators are typically found at largely municipalities/ town centers
- Unit margin on a 60 cm by 60 cm slab is 25% - 34%

Key inputs

- 43%[1] own the land from which they fabricate cement products; the rest may rent
- Purchase materials to produce the slabs (i.e., cement, sand, and aggregate) themselves
- Cement pre-fabricators typically own the tools required to fabricate cement products, such as molds, spades, etc.

Operations

- On average, cement pre-fabricators get orders for toilet slabs for only 4-5 months per year, during the dry season (December to March); they manufacture 10-15 slabs[1] per month, on average
- Household customers typically arrange for transportation of the slab to their home

Customers[1]

- All[1] cement pre-fabricators stated households, and/ or contractors among their top 2 customer types
- As cement pre-fabricators are concentrated in urban centers, most customers come from within the district
- Customers typically hear of cement pre-fabricators via their friends/ neighbors
- 50%[1] offer credit to their customers; All[1] customers pay for cement slabs with cash

Key linkages within value chain

- 73%[1] refer customers to other actors relevant to toilet construction such as hardware stores and sand miners

Source: Qualitative interviews conducted by S4H

1. Based on interviews with 30 cement pre-fabricators in the 10 research districts. 8 of these were conducted in rural settings and 22 were conducted in urban settings

Input suppliers | Hardware store

Typical actor profile[1]

Age & gender	40 years (average); 84% are male
Years in business	7 years (average)
Full-time employees (avg.)	78% of stores have 1 – 3 full-time employees working at the store, who primarily help in dealing with customers and managing inventory
Training	22% received some technical training; majority of which was through a technical training institute
Education level	71% received some secondary; 24% received college education
Sources of income	53% stated hardware store as the primary source; 44% stated it as a secondary source. Other sources include agriculture, among others

Role in the sanitation value chain

Overview

- Sell various hardware materials required for construction; these include cement, iron bars, nails, tools, pipes, etc.
- Some also sell sanitation-specific products such as plastic pans, plastic SanPlats etc.
- Hardware stores are mostly found in the urban centers of a district, with smaller stores also present in rural trading centers of some districts
- Unit margin on a single unit of product varies from 3% to 11%

Key inputs

- 62%[1] hardware stores rent the space from where they operate their business
- Products of various categories and brands are stocked to cater to customer preferences. Suppliers include other hardware stores, dealers, distributors, company outlets, and producers; transportation is often provided by distributors and dealers but rarely by other suppliers
- 58%[1] did not receive credit from any of their suppliers

Operations

- Most of the sales occurs on a walk-in basis; frequent and larger customers, like builders, also place their order over the phone. Oct – Jan are good months for the business of more than 50%[1] hardware stores
- 60%[1] do not provide any transportation to their customers

Customers[1]

- 95% stated Households and 71% stated Masons as one of their top 2 customers
- 71% stated that their customers are from the same village/ town council
- 80% stated that customers hear about their store from friends/ neighbors; 73% stated that their hardware store is generally known in their area
- 71% provide credit to their customers; hardware stores are typically paid for their products in cash, though a few might accept mobile money or bank transfers

Key linkages within value chain

- 29%[1] refer their household customers to sand sellers and/ or masons

Source: Qualitative interviews conducted by S4H

1. Based on interviews with 45 hardware stores in the 10 research districts. 18 of these were conducted in rural settings and 27 were conducted in urban settings

Input suppliers | Transporter

Typical actor profile[1]


Age & gender	35 years (average); 100% are male
Years in business	6.5 years (average)
Full-time employees (avg.)	Typically transporters have 1 – 2 employees, who help in driving the truck and loading/ off-loading materials
Truck registration	38% had their trucks registered with a transporter association
Education level	31% received some primary education; 65% received some secondary or higher education
Sources of income	42% stated transportation business as the only source of their income

Role in the sanitation value chain

Overview

- Connects customers with suppliers of brick, sand, and aggregate by buying the material on behalf of the customer and transporting it to them; also provide a 'transportation only' service for moving various goods from one area to another
- Transporters are typically found in the urban centers of a district, with fewer transporters also present in rural trading centers of some districts
- 46%[1] of the transporters used a truck with capacity between 2.5 and 4 tons; 45%[1] used a truck with capacity more than 5 tons
- Unit margin on a 4T trip of sand and aggregate varies from 20% to 40%

Key inputs

- 51%[1] owned the truck they use for transportation; 48%[1] took it on rent
- Input materials are typically acquired directly from production sites; transporters travel ~14 km, on average, to the supplier sites for sand, brick and aggregate
- Some materials, such as cement and iron bars, are sourced from hardware stores

Operations

- Customers typically place an order directly with transporter; 80%[1] stated that their customers don't travel to the material supplier's site with them
- Off-loading service was always provided at the time of delivery

Customers

- 100%[1] served household customers; other customers include institutions, contractors, churches
- Customers typically come from within the same district as the transporter
- Customers primarily hear about transporters through referrals from other customers or value chain actors
- 58%[1] provide credit to their customers; transporters are typically paid for their service and the products in cash, though a few might accept mobile money

Key linkages within value chain

- 46%[1] refer their customers to sand sellers and/ or masons

Source: Qualitative interviews conducted by S4H

1. Based on interviews with 48 transporters in the 10 research districts. 20 of these were conducted in rural settings and 28 were conducted in urban settings

Executors | Pit Digger

Typical actor profile[1]


Age & gender	39 years (average); 98% are male
Years in business	9.5 years (average)
Partner-ship	85% of the pit diggers may have ~2 more pit diggers that work with/ for them on larger pit digging jobs
Training	6% received some technical training; majority of which was through NGOs
Education level	25% received no education at all; 65% received some primary education
Sources of income	35% stated pit digging as the primary source; 63% stated it as a secondary source. Other sources include farming, daily wage labor work, among others

Role in the sanitation value chain

Overview

- Manually digs pits for various purposes like toilets, rubbish pits, placenta pits etc.
- Within toilets, digs pits of varying dimensions and for various customers including households, schools, churches, health facilities etc. Most dig rectangular pits but some may also dig circular pits
- Pit diggers are primarily found locally at a village level
- Unit margin on digging a15 feet deep pit is ~75%

Key inputs

- Tools needed to dig the pits are typically purchased by the pit digger; households may arrange for a few tools
- Tools may need to be replaced after 8 - 10 pit digging jobs

Operations

- Pit diggers visit the toilet site, discuss the customer requirements, and negotiate on a price before starting the job. May work individually or with 1-2 helpers or additional pit diggers depending on the size of the pit
- A 15 feet pit is dug in 2-3 days; customers may also provide food to the pit diggers during this time

Customers[1]

- Besides household customers, 57% stated schools and 25% stated hospitals as their customers
- 75% stated that their household customers come from within the same village
- 90% stated that customers hear about them from friends/ neighbors and/ or see them working; 84% stated that they are generally known in their area as a pit digger
- 52% did not provide credit to their household customers; pit diggers are paid for their service in cash

Key linkages within value chain

- 73%[1] refer their customers to masons and/ or hardware stores

Source: Qualitative interviews conducted by S4H

1. Based on interviews with 51 pit diggers in the 10 research districts. 34 of these were conducted in rural settings and 17 were conducted in urban settings

Executors | Mason

Typical actor profile[1]



Age & gender	35 years (average); 100% are male
Years in business	~10 years (average)
Full-time employees (avg.)	None of the masons had full-time employees; hire temporary labor based on customer demand
Training	75% received some technical training; 63% of these were trained at a technical institute
Education level	39% received some primary education; 37% received some secondary or higher education
Sources of income	69% stated masonry as the primary source; 31% stated it as a secondary source Other sources include farming, trading, among others

Role in the sanitation value chain

Overview

- Masons construct various structures such as houses, churches, schools, etc.
- For toilets, masons construct the slab and superstructure on-site, often working with a team of others masons and/or porters
- Masons are found at a village/ town council/ municipality level
- Unit margin on construction of a rural 2-stance IBT is 44% - 47%; margins are slightly higher for urban masons due to higher prices charged to customers

Key inputs

- Materials required to construct the toilet, such as cement, brick, hardware materials, etc., are typically purchased directly by the customer
- Masons typically own the tools required to construct the toilet; if not, they are provided by the customer

Operations

- On average, masons typically get toilet construction jobs for only 4-5 months per year, during the dry season (November to February and/or June to August)
- On average, masons work on 5-7 household toilet jobs per year[1]

Customers[1]

- All[1] masons stated households and/or schools as their top 2 customer types
- All[1] masons stated that customers come from within the same district as them; 59%[1] stated that customers come from the same village/ town council/ municipality
- All[1] masons stated that customers hear about them through friends/ neighbors, and/or that they are generally known in the area as someone who can construct toilets
- 70%[1] of masons offer credit to their customers for household and/or schools toilet jobs; all customers pay for the job with cash

Key linkages within value chain

- 88%[1] refer their customers to pit diggers and/ or hardware stores

Source: Qualitative interviews conducted by S4H

1. Based on interviews with 51 masons in the 10 research districts. 28 of these were conducted in rural settings and 23 were conducted in urban settings

Executors | Contractor

Typical actor profile

Age & gender	47 years (average); mostly male
Years in business	~10 years (average)
Full-time employees (avg.)	Employ a few full-time employees, but most are temporary labor hired based on customer demand
Training	Most contractors receive some training from a technical institute, either in business or in construction
Education level	Most contractors receive some secondary or higher education
Sources of income	Most contractors have contracting as their primary or secondary income source; other sources include farming, carpentry, and trading, among others

Role in the sanitation value chain

Overview

- Contractors provide end-to-end construction services for structures such as schools, health centers, etc.
- Contractors typically obtain contracts to construct institutional toilets, and build the complete toilet, including the pit
- Contractors are found at a district level, but are typically willing to work on projects at any location within a district, based on customer demand
- Unit margin on construction of a 5-stance VIP is 7% - 9% post tax

Key inputs

- Type and grade of materials required to construct the toilet, such as cement, brick, hardware materials, etc., are specified by the contract, and are purchased by the contractor from suppliers, who are mostly VAT-registered
- Contractors hire pit diggers and masons as part of their construction team, based on job requirements; some contractors repeatedly hire the same pit diggers/ masons if they trust the quality of their work
- Contractors' construction team owns the tools required to construct the toilet

Operations

- Contractors get toilet construction jobs via an RFP (Request For Proposal) issued by institutional customers; may get jobs at any time of the year
- On average, contractors work on 2-6 toilet jobs per year, and take 2-3 months to complete a job

Customers

- Most contractors stated that local/ district Governments, and/or NGOs are their top 2 customers
- Most contractors stated that customers come from within the same district
- Most contractors stated that customers hear about them via the RFP process
- Most contractors stated that they are paid once the toilet has been constructed and/ or inspected; All contractors are paid via a bank transfer

Source: Qualitative interviews conducted by S4H

Financiers | VSLA

Typical VSLA profile[1]

Age of group	45% of the groups started 3 – 5 years ago; 34% of the groups started less than 2 years ago
Number of members	35 (average); 7 – 350 (range)
Location of members	76% were from the same parish/ ward as the VSLA group
Occupation of members	66% stated agriculture/ farming; 19% stated trading of products/ services
Sanitation-specific loan product	6% of the VSLAs had a separate loan product for toilet construction, maintenance, or repairs
Members that took loans for sanitation	1 – 3 members, in 6% of the VSLAs, took a loan for toilet construction or improvement purposes in the past one year

Financier role

Overview

- VSLAs (Village Savings and Loan Associations) are community led saving and lending groups that collect and manage savings of members and also give out loans
- VSLAs are typically found at the sub-county level and can either be registered or operate informally; they typically don't have another branch under the same association
- Leadership typically comprises of 1 chairman, 1 secretary and 1 treasurer

Membership and evaluation[1]

- The most common prerequisites to becoming a group member include
  - Paying one-time membership fee (91%); Being a resident of the same sub-county (34%); having a proof of stable income (23%)

Loan disbursement requirements[1]

- 95% require members to save periodically with the group in order to take out a loan; average saving requirement is ~UGX 10,000 per week
- 68% require collateral prior to giving a productive loan; 64% require collateral prior to giving a non-productive loan

Loan usage and terms[1]

- Members tend to take more loans in Jan – Feb and Aug – Sep
- Top 3 reasons for taking loans include:
  - Agricultural loans (49%): Average loan amount given is ~UGX 200,000; average monthly interest rate is 6%
  - Other business loans (68%): Average loan amount given is ~UGX 350,000 average monthly interest rate is 6%
  - Loans for paying school fees (62%): Average expected repayment period for all non-productive loans is 3 months
- All of the loan takers repay their loan installments by depositing cash during the group meetings; 1 – 2% might also pay via mobile money

Source: Qualitative interviews conducted by S4H

1. Based on interviews with 47 VSLAs in the 10 research districts. 25 of these were conducted in rural settings and 22 were conducted in urban settings

Financiers | SACCO

Typical SACCO profile[1]

Age of group	35% of the groups started 6 – 10 years ago; 34% of the groups started 3 – 5 years ago
Number of members	370 (average); 8 – 3800 (range)
Location of members	31% were from the same sub-county as the SACCO group; 31% were from the same parish/ ward
Occupation of members	54% stated agriculture/ farming; 25% stated trading of products/ services
Sanitation-specific loan product	14% of the SACCOs had a separate loan product for toilet construction, maintenance, or repairs
Members that took loans for sanitation	2 – 5 members, in 14% of the SACCOs, took a loan for toilet construction or improvement purposes in the past one year

Financier role

Overview

- SACCOs (Savings and Credit Cooperative Organizations) are saving and lending groups that are owned, governed and managed by the group members
- Typically SACCOs are found in a few sub-counties and urban centers of a district, and are registered; they might have another branch under the same organization
- Leadership typically comprises of chairperson, vice-chairperson, secretary, vice-secretary, treasurer, a few committee and a few sub-committee members

Membership and evaluation[1]

- The most common prerequisites[1] to becoming a group member include
  - Paying one-time membership fee (85%); having a proof of stable income (37%); being a resident of the same sub-county (34%)

Loan disbursement requirements[1]

- 85% require members to save periodically with the group in order to take out a loan; average saving requirement is ~UGX 10,000 per week
- 74% require collateral prior to giving a productive loan; 63% require collateral prior to giving a non-productive loan

Loan usage and terms[1]

- Members tend to take more loans in Jan – Feb and Aug – Sep
- Top 3 reasons for taking loans include:
  - Agricultural loans (40%): Average loan amount given is ~UGX 340,000; average monthly interest rate is 6%
  - Other business loans (80%): Average loan amount given is ~UGX 600,000 average monthly interest rate is 7%
  - Loans for paying school fees (49%): Average expected repayment period for all non-productive loans was 3 months
- 85% of loan takers repay their loan installments by depositing cash during the group meetings; 15% pay via mobile money or at a bank branch

Source: Qualitative interviews conducted by S4H

1. Based on interviews with 35 SACCOs in the 10 research districts. 20 of these were conducted in rural settings and 15 were conducted in urban settings

Appendix - Table of contents

Approach to determine unit profitability for value chain actors (1/2)

We estimated unit margins for value chain actors using data primarily from qualitative interviews since price and cost information was asked more consistently in these interviews. Quantitative data has helped provide a directional sense for this analysis

Actor	***Unit definition***	*Rationale for choice of unit*	*Range of unit margin (%)*	***Costs excluded in unit margin analysis[2]***
Aggregate producer	1 ton half-inch aggregate	Half-inch is among the commonly used sizes of aggregate to cast the cement slab	40% - 42%	N/A
Brick maker[1]	1 batch of 10,000 bricks	Typical batch size for small-scale brick makers	~59%	• Cost of land purchase/ rental excluded • Cost of food and transport for labor excluded
Sand miner	1 ton plaster/ river sand	Plaster/ river sand is the most common sand type sold	35% - 40%	• Cost of land purchase/ rental excluded
Hardware store	1 50-kg cement bag	Typical unit of purchase	3.5% - 4.5%	• All costs other than material purchase and transport excluded
	1 plastic toilet pan	Typical unit of purchase	9% - 11%	
	1 unit of other hardware material (e.g., 1 iron sheet, 1 iron bar)	Typical unit of purchase	3% - 7%	
Cement pre-fabricator	One 60 cm x 60 cm cement slab	Among the most common slab sizes sold by cement pre-fabricators	25% - 32%	• Cost of land purchase/ rental excluded • Cost of tools excluded
Transporter[1]	One 4 ton load of aggregate	4 ton is the most common truck size	~20%	• Truck depreciation costs excluded • Interest cost excluded
	One 4 ton load of sand	4 ton is the most common truck size	~40%	

Source: FSG analysis based on qualitative interviews conducted by S4H, and quantitative value chain interviews

1. Developed point estimates due to insufficient data
2. Taxes are not account for in unit margin calculations for value chain actors, except for contractors

Approach to determine unit profitability for value chain actors (2/2)

We estimated unit margins for value chain actors using data primarily from qualitative interviews since price and cost information was asked more consistently in these interviews. Quantitative data has helped provide a directional sense for this analysis

Actor	***Unit definition***	*Rationale for choice of unit*	*Range of unit margin (%)*	***Costs excluded in unit margin analysis[2]***
Pit digger[1]	2-stance, 15 ft. deep pit	Most common pit depths found among household toilets	~75%	N/A
	2-stance, 40 ft. deep pit		~75%	
Mason	2-stance IBT built in a rural setting	Most common type of IBT constructed by masons	44% - 47%	N/A
	2-stance IBT built in an urban setting		40% - 59%	
Contractor	5-stance VIP toilet	Most common type of toilet constructed by contractors	7% - 9%	N/A

Source: FSG analysis based on qualitative interviews conducted by S4H, and quantitative value chain interviews
1. Developed point estimates due to insufficient data
2. Taxes are not account for in unit margin calculations for value chain actors, except for contractors

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