

Sanitation Consumer Demand & Supply Chain Assessment for the Rural Mekong River Delta

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Fish Pond Latrine



Hygienic solution



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MAP OF THE STUDY AREAS



ACRONYMS AND ABBREVIATIONS

AD	Adopter
BCC	Behavior change communication
CPM	Center for Preventive Medicine
FGD	Focus group discussion
GOV	Government of Vietnam
GSO	General Statistics Office
HH	Household
iDE	International Development Enterprises
IDI	In-depth Interview
JMP	Joint Monitoring Programme for Water and Sanitation
MKD	Mekong Delta
MICS	Multiple Indicator Cluster Survey
MOH	Ministry of Health
Non-AD	Non-adopter
NGO	Non-Governmental Organization
O&M	Operation and maintenance
R&D	Research and development
TA	Technical assistance
UNICEF	United Nations Children Fund
VBSP	Vietnam Bank of Social Policy
VIHEMA	Vietnam's Environmental Health Management Agency
VH	Village head
VHW	Village health worker
VWU	Vietnam Women's Union
WASH	Water, Sanitation and Hygiene
WB6 Project	World Bank Mekong River Delta Water Resources Management for Rural Development Project
WHO	World Health Organization
WSP	Water and Sanitation Program

GLOSSARY OF TERMS

Adopter	Person who uses a hygienic latrine for defecation.
Dry sanitation system	A sanitation facility which does not use water to flush after being used. Pit and composting latrines are dry sanitation systems.
‘Field combat’ latrine (<i>cầu tiêu dã chiến</i>)	Latrine with direct flush to a fishpond or the river, which has a solid brick superstructure or is installed inside the home.
Hygienic sanitation	According to the Ministry of Health (MOH) of Vietnam, a hygienic latrine is a latrine which ensures isolation of human feces, prevents untreated feces from contact with animals and insects, is capable of killing the pathogens inside the feces, and does not cause offensive smell and pollution of the surrounding environment. Hygienic facilities include: flush or pour-flush toilet/latrine to piped sewer system/ septic tank/pit, ventilated improved pit (VIP) latrine, and composting toilet.
Improved sanitation	Sanitation facilities that effectively separates human excreta from human contact. Improved facilities include: flush or pour-flush toilet/latrine to piped sewer system/ septic tank/pit, VIP latrine, pit latrine with slab, and composting toilet. The term ‘improved’ has been used in reference to Multiple Indicator Cluster Survey (MICS) data only.
Non-adopter	Person who does not use a hygienic latrine for defecation, but defecates in the open and/or uses an unhygienic latrine.
Unhygienic sanitation	Open defecation and/or the use of any latrine facility that does not comply with the standards for hygienic sanitation defined by the Ministry of Health of Vietnam (see above; hygienic sanitation).
Unimproved sanitation	Sanitation facilities that do not ensure hygienic separation of human excreta from human contact. Unimproved facilities include pit latrines without a slab or platform, hanging latrines and bucket latrines. The

term ‘unimproved’ has been used in reference to MICS data only.

‘Mechanical’ latrine
(*cầu tiêu máy*)

Local term used to describe a pour flush or flush latrine. The term mostly refers to latrines that flush to a tank or pit, but is also used by some to refer to latrines which flush to an open water body.

Mobile latrine

Simple portable shelter, which is used by non-adopters, who defecate into the river. The shelter covers the lower part of the users body.

Open defecation

Defecation in fields, forests, bushes, bodies of water, or other open spaces.

Rotating defecation
(*cầu quay*)

Local term used to describe open defecation.

Wet sanitation system

Sanitation facility which depends on water to transport excreta. Flush and pour flush latrines are wet sanitation systems.

EXECUTIVE SUMMARY

BACKGROUND

Despite being one of Vietnam's better off regions, the Mekong River Delta region houses more than half of Vietnam's rural population without access to improved sanitation. The practice of using a latrine for defecation is widespread in the region; however, a majority of households continue to rely on the so-called 'hanging latrines' – simple latrine structures suspended over an open water body – for defecation. Multiple Indicator Cluster Survey data show that by 2010, 59.8 percent used this latrine type of latrine. Close to all of better off rural households in the region now have hygienic latrines and a significant jump in access happened from 2006 to 2010 among those in the middle wealth quintile. The rural households who remain without access in the region now largely belong to the two poorest wealth quintiles.

STUDY OBJECTIVES

The objective of this research was to map out the key consumer demand and sanitation supply chain factors influencing hygienic latrine acquisition among current non-adopters in the Mekong River Delta region.

METHODOLOGY

The demand and supply chain studies were carried in a total of five communes spread across four provinces of An Giang, Ca Mau, Kien Giang and Soc Trang.

Consumer Demand Assessment

Research questions and tools were developed using the SaniFOAM framework for sanitation behavior change. A qualitative approach was employed with use of focus group discussions (FGD) and in-depth interviews (IDI) to collect data. Study participants included adopters of hygienic sanitation, non-adopters of hygienic sanitation, and key informants. The study was carried out in five communes across four provinces of An Giang, Kien Giang, Soc Trang, and Ca Mau. In total, 34 FGDs and 13 IDI were conducted, including nine FGDs and one IDI were carried out with adopters, 13 FGDs and seven IDIs were carried out with non-adopters, five FGDs were done with masons, five IDI took place with retailers, and six FGDs were conducted with village officials.

Supply Chain Assessment

The research team interviewed with 39 supply chain actors in five communes throughout the Mekong Delta in rural Vietnam. Those interviewed included masons, transporters, producers of latrine materials, suppliers and retailers. Standardized questionnaires were used to conduct the interviews and were tailored for each supply chain role.

CONSUMER DEMAND ASSESSMENT FINDINGS (Part One)

Current Sanitation Practices

Current defecation practices include OD on land and into the river, fishpond latrines use (own latrine or shared), unhygienic latrines with direct flush into a fishpond or the river, and hygienic latrine use. Sanitation practices often vary from village to village.

Hygienic Latrine Acquisition Barriers and Drivers

Opportunity determinants

Access and availability

Access to and availability of latrine products and services is not a barrier to hygienic latrine building. However, the hygienic latrine options offered in the local market tend to be expensive and retailers do not stock and sell concrete rings which are a lower cost alternative to a brick substructure. Further, no products are available which will allow the owners of unhygienic field combat latrines to upgrade their facility to become hygienic and latrine products for those who do not have physical land or a land title are either non-existent or prohibitively expensive.

Sanctions

Sanctions against some unhygienic defecation practices are in place, but tend to result in hygienic latrine acquisition only when accompanied by measures that address other salient barriers to access (e.g. affordability). Where not accompanied by measures to address other barriers, sanctions have mostly resulted in a shift from one form of unhygienic defecation practice to another.

Ability Determinants

Knowledge

Awareness of the disease prevention aspects of sanitation is low among adopters and non-adopters – and is not a driver of hygienic latrine acquisition. The only hygienic latrine type known by adopters and non-adopters is the ‘mechanical latrine’, a term which covers all flush latrines. Most have seen or tried this type of latrine. Limited knowledge about the design and function of the hygienic latrine substructure among non-adopters may act as a barrier to hygienic latrine acquisition. As a result of this inadequate knowledge a) some non-adopters may opt to build a ‘field combat’ type latrine due to the belief that a fishpond is as hygienic an option as a tank and b) some non-adopters may believe that they need to build very large latrine substructures due to the belief that ‘bigger is better’.

Skills and Self-Efficacy

Adopter and non-adopters rely heavily on “expert” advice from masons. This has the potential to drive up the price of latrines (due to overdesign) and, as such, act as a potential barrier to hygienic latrine acquisition. Many adopters have built their latrine by themselves or with the help of a family member.

Affordability

Affordability – perceived and real – emerged as the perhaps most important barrier to hygienic latrine acquisition. First, non-adopters overestimate the investment needed to build a hygienic latrine, not least because they rely for this information on adopters who have built high-priced latrines and low price options are not available in the local market. Second, non-adopter’s ‘dream latrine’ often includes expensive features, such as a brick super structure and a bathroom. Third, many non-adopters have sufficient income, but are unable to come up with the cash needed to purchase a large item, such as a hygienic latrine, at one time. They require access to some form of financing to undertake a large purchase, but credit availability and options for household latrine building is limited. Additionally, non-adopters believe that the 4 million VND (now 6 million VND) latrine loans available via VBSP are insufficient to cover the cost of a hygienic latrine, due to their

lack of accurate knowledge about lower cost hygienic latrine options. Finally, a group of non-adopters are struggling to earn enough for the basic necessities of life; these households can consider neither saving nor borrowing for a hygienic latrine.

Motivation Determinants

Attitudes and Beliefs

The widely held belief that fish bred on feces taste better and are more nutritious than other fish constitutes a barrier, because it makes the fish a sellable commodity. The belief that a hygienic latrine is necessary for the elderly, sick or otherwise weak is a key driver of hygienic latrine acquisition for households with members that fall into these categories. For households without elderly, sick, or weak members, however, a latrine is considered a ‘nice to have’ rather than a ‘need to have’.

Values

A wish to secure a safe and comfortable old age for one’s parents (taking care of one’s family) is what motivates many grown children to support their elderly parent(s) to build a hygienic latrine.

Emotional, social, and physical drivers

A desire for convenience, safety, and cleanliness were cited by adopters as primary drivers in their decision to build a hygienic latrine. Many non-adopters find their defecation practice inconvenient, for example due to the time and effort required and/or worry about their safety, especially at night. Many non-adopters also find their defecation practice uncomfortable, for example when having to defecate in bad weather. Female non-adopters are bothered by a lack of privacy – and fear embarrassment – when defecating. These various discomforts have the potential to be drivers of change, especially for non-adopters who openly defecate or share fishpond latrines. Defecation in ‘field combat’ latrines is not associated with similar discomforts; among non-adopters using this type of unhygienic latrine change is unlikely to be motivated by these drivers.

Willingness to Pay

Some non-adopters are willing to invest VND 1-4 million in a hygienic latrine, but many state that they are not willing to invest any amount. For non-adopters belonging to wealth quintile II (near poor) the cost of hygienic latrine represents only slightly more of the average annual household income than for households in wealth quintile III, where 54% of households used hygienic latrine in 2010. As such, a hygienic latrine should also be within financial reach, if prioritized. Willingness to pay may be negatively affected by the following factors: i) non-adopters lack accurate information about the cost of a hygienic latrine, ii) the VND 6 million VBSP sanitation loan is seen as insufficient to build a hygienic latrine, and iii) non-adopters who sell fish from their fishpond latrines may be unwilling to forgo the income. Having the opportunity to take a VBSP sanitation loan or other low interest loan appears to affect willingness to pay in a positive direction.

Purchase Decision Making and Sanitation Shopping

Household Expenditure Priorities

Four expenditure categories were identified, including (in order of priority): essential expenditures, accidental expenditures, obligatory expenditures, and additional expenditures. Hygienic latrines belong to ‘additional’ expenditures, i.e. purchases that households will spend money on, if spare

funds are available once essential, accidental, and (to some extent) obligatory expenditures have been met. However, for many non-adopters, a hygienic latrine is at the bottom of their list of 'additional' expenditure priorities. Income generating investments are prioritized the highest. Many non-adopters are unwilling to invest their savings in or borrow for a hygienic latrine, because a latrine – in contrast, e.g. to livestock and tools – is seen as a 'dead' investment.

Sanitation Purchase Decision Making

Both men and women can propose an investment in a latrine; but women appear to do so more often. Larger purchases are usually discussed by husband and wife. Though men tend to see themselves as the final decision makers; women do make final decisions and/or are able to veto purchases in many households. In most cases, men manage the latrine construction process; women are often closely involved in the selection of materials.

Communication

Communication sources

TV is the only mass media with broad reach among households in the region. Official village meetings reach only a limited portion of households, albeit attendance is better when subsidies or loans are given. Among village officials, village heads and WU cadres interact with households with the greatest frequency.

Sources of communication about hygienic latrines

Peers (neighbors, family, and friends), who are in the process of building or have built a hygienic latrines, are the most important sources of information about these. Masons are the trusted experts when households need detailed guidance on how to build their hygienic latrine. Households do not consider village officials – including village heads, health workers, WU, etc. – to be knowledgeable about hygienic latrines and do not consult them for advice.

SUPPLY CHAIN ASSESSMENT FINDINGS (Part Two)

Supply chain actors, opportunities, and constraints

Actors in the sanitation supply chain include: a) households – make decisions to purchase latrines, b) masons – hired as trusted experts by households to design and build latrines, c) transporters – own trucks or boats and deliver materials on behalf of businesses, d) retailers – sell all or most of the materials used for hygienic latrine construction, e) distributors – buy from producers or retailers and sell on to other retailers, f) producers – that are local manufacturers of bricks, concrete rings, fiberglass tanks, etc., g) manufacturers – make one type of product at national scale, and h) financial sector – includes formal and informal lenders. Local retailers play a central role in the supply chain as households purchase all or most materials and sanitary ware from them. Masons are important actors they are trusted advisors and design and construct the materials into finished latrines. However they rarely purchase these inputs on behalf of the customer.

Supply Chain Strengths and Opportunities

- A highly competitive market means that few supply chain actors have agreements with competitors
- Nearly all supply chain actors have a preferred supplier for their products, which among other things results in better access to credit and better prices.

- Although latrine related business is currently a small percentage of total revenues (1-7%) for most actors, they indicated interest in selling higher volumes at lower prices. All retailers stated that they would be prepared to sell higher volumes of latrine products even if margins were lower; most suppliers also agreed with this statement.
- Fiberglass and plastic septic tanks form a larger part of the total latrine product and an opportunity to engage such manufacturers more proactively in the supply chain exists

Supply Chain Challenges

- Most current supply chain actors are invested in the latrine business to a very limited degree. The many components from which the most common latrine product (brick septic tank) is built from are also used for many other building applications. This will be a major challenge to engage existing actors to become more pro-active/adapt their business practices for sanitation related goods/services. The exceptions include the pan, fiberglass tanks, and plastic tanks.
- The current supply chain is unable to deliver latrine products that are affordable for the poor and very poor households. An important reason for this is masons key influence over latrine design, including material quantities and types. Findings from the supply chain assessment show that masons also frequently overestimate the cost of building a hygienic latrine, but that they do so by a smaller margin than households.
- Supply chain actors face a variety of business constraints, with availability of labor and access to credit being the most frequently cited constraints. Most retailers interviewed reported they lack capital to expand their business, as they do not qualify for low interest VBSP loans and are reluctant to borrow at high interest from commercial banks.
- The current sanitation supply chain – which supplies primarily brick septic tank latrine – is fragmented. This is the case because many different products from different manufacturers or producers go into the making of the most common latrine type and because multiple intermediaries can be found between manufacturers or producers and the end customer.
- Research and development of more affordable options has not yet led to adoption on a sustainable scale. While the affordability of some products – such as the plastic and fiberglass latrines – has been improved, these new latrine products have not been market tested via pilot marketing campaigns, although they have been installed at small scale so far

Product Range Assessment

The supply chain assessment identified five hygienic latrine products in the market; with widely different market penetration, including: a) pour flush latrine made with concrete rings (infiltration design, not sealed), b) pour flush latrine made with brick (infiltration design, not sealed), c) pour flush latrine with septic tank made with concrete rings, d) pour flush latrine with septic tank made with bricks, e) pour flush latrine with fiberglass septic tank and f) pour flush latrine with plastic septic tank. The estimated price of the underground structure (lining) of each type is listed in the table below.

No.	Latrine product (<i>source of estimate</i>)	Est. price for underground structure (mil. VND)
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1	Pour flush latrine made with concrete rings (infiltration design, not sealed) (<i>Duc, 2013</i>)	2.1
2	Pour flush latrine made with brick (infiltration design, not sealed)	Not available
3	Pour flush latrine with septic tank made with concrete rings (<i>Duc, 2013</i>)	2.3
4	Pour flush latrine with septic tank made with bricks (<i>Duc, 2013</i>)	3.2
5	Pour flush latrine with fiberglass septic tank (<i>producer, Soc Trang</i>)	2.5
6	Pour flush latrine with plastic septic tank (<i>ROTO company</i>)	4.4

* Estimated price for model suited for flooded areas was VND 7.9 million

Pour Flush Latrine with Infiltration Soak Pit Made with Concrete Rings

This latrine product consists of 1-2 offset soak pits made with concrete rings as lining . Few households in the research communes had this type of latrine. Local producers are currently the most common source of concrete rings, but these may also be produced on site. Advantages are that the rings are durable and can be produced on site where transport is challenging, and is suited for flood-prone areas, where the ground water table is not high. Disadvantages include that transport can be difficult and expensive and that consumer acceptance is low. Further, this latrine type is not suitable for areas which a) are exposed to flooding, b) have high groundwater tables, and/or c) have unstable soils.

Pour Flush Latrine with Septic Tank Made with Concrete Rings

This latrine product consists of 2-3 concrete ring chambers (sealed). Few households in the research communes had this type of latrine. Local producers are currently the most common source of concrete rings, but these may also be produced on site. Advantages are that the rings are durable, can be produced on site where transport is challenging, and are suited for flood-prone areas. Disadvantages include that transport can be difficult and expensive and that consumer acceptance is low.

Pour Flush Latrine with Septic Tank or Infiltration Soak Pit from Brick

A 2-3 chamber septic tank made from brick is the latrine product which is most commonly built by households in the area. Advantages of this product include that it is already trusted by consumers and materials to build it are already widely available. Disadvantages include that the supply of bricks is limited in some communes and increased local production of bricks does not hold any potential to lower the price.

Pour Flush Latrine with Septic Tank Made from Fiberglass

The latrine product consists of a readymade septic tank (substructure only) produced by a local manufacturer. The market penetration of this product is still very limited. Advantages of this latrine product include that the light weight makes it easy to transport, installation is inexpensive, and it can be made to order close to the site. Disadvantages are that it is little known and the price is still relatively high .

Pour Flush Latrine with Septic Tank Made from Plastic

This latrine product innovation consists of a septic tank made from hard plastic, which includes a settlement tank followed by a bio-film chamber, before the effluent is disposed. Different sizes of tanks can be purchased, ranging from effective volumes of 1 m³ to almost 7 m³ (with 1.5 m³ suitable for a family of 4-5). The plastic used for the tanks is not UV-proof and as such the tanks are meant for below ground installation only. Advantages include that it, robust, and durable, the light weight makes it easy to transport, it is suitable for flood prone areas, installation costs are low, and mass production is feasible. Disadvantages are that the cost is still relatively high, rural consumers are not familiar with the product and no last-mile delivery and installation service model has been developed.

Latrine Product Cost and Supply Chain Impact on Affordability

For all latrine types, increased efficiency in the supply chain has the potential to reduce the cost to the consumer. Supply chain efficiencies which could reduce consumer costs include advance orders to plan manufacture, labor, and distribution. Higher order levels reduce the prices through economies of scale in sourcing bulk raw material therefore paying less. Manufacturing with reasonable production runs which reduces wastage and deliveries in bulk which reduces the cost per item to deliver.

However, as was suggested by the findings in the demand assessment, affordability could remain challenging for many consumers, even if such efficiencies are achieved

RECOMMENDATIONS

Recommendation 1: Identify who to target and what behavior change is desired

Programmers should identify who to target (i.e. what non-adopter groups) and what type of behavior change is desired as a first step in designing the sanitation behavior change intervention. Target both the head household and spouse because both influence latrine acquisition decision making. Parents or parents-in-law may also be targeted due to their considerable influence.

Recommendation 2: Simplify the sanitation shopping process

Recommendation 2a: Design and introduce a set of standard latrine products to make the sanitation shopping process more transparent and predictable for consumers

Collaborate with existing supply chain actors and government to develop a limited number of standard latrine products and options (substructure and mid-structure only), which guarantee functionality and have the features households in the region desire. These options should be presented with indicative pricing range.

Recommendation 2b: Market standard latrines via one-stop shop sanitation businesses

Market options via one-stop shop sanitation businesses. The capabilities of this actor would be to speak to the household about the suitable product offerings (benefits), as well as source the necessary components and services for delivery and installation. , etc.)

Recommendation 3: Bring to market hygienic latrine products suitable for households without land and upgrading options for those with field combat latrines

Recommendation 4: Increase affordability by offering a low-cost basic option and enabling households to upgrade to their dream latrine over time.

Offer consumers lower cost basic options and enable them to upgrade over time. The basic options must be designed to provide the benefits consumers want at the lowest possible cost. Where features desired by consumers raise cost significantly, options to upgrade over time should be offered. In particular, consumers should be able to make upgrades to and expand the latrine superstructure over time.

Recommendation 5: Make latrine financing an integral part of any sanitation program and use differential latrine financing strategies for the very poor and cash poor

Financing options and/or strategies must be tailored to the specific barriers faced by different the very poor and the cash poor non-adopters, respectively. Programs aimed at increasing access to hygienic sanitation cannot rely on VBSP sanitation loans alone due to their limited availability. Other sources of finance and financing strategies which could be considered include, for example, revolving funds, retailer credit, and income timed investment. Further research may be needed to identify financing options for rural consumers wishing to build a hygienic latrine.

Recommendation 6: Prepare the supply chain to deliver the relevant standard latrine products

- Determine what standard latrine products are suitable for the targeted market. This is done by asking them how they would deal with increased volume
- Engage the relevant supply chain actors in the targeted market to ensure everyone is ready to meet higher volume requirements, by understanding individual business needs.
- Select the most suitable business model for the targeted commune(s) Different communes have different product preferences and therefore potentially different supply options and ways of doing business - for example casting rings on site instead of selling bricks. The consumer preference will drive the solution
- Engage with masons and retailers in the targeted commune(s)
- During program implementation, health staff (village health worker) should be responsible for randomly inspecting latrine installations and retailers to ensure they have material available for display and for sale.

Recommendation 7: Assist supply chain actors to overcome constraints in skilled labor availability and / or availability of business financing

- a) Increase availability of labor by establishing a masons training program and linking graduates with businesses.
- b) Improve access to financing , taking the following steps: i) seek finance institutions that give business loans, ii) understand their loan criteria and thresholds, iii) understand their appetite for funding, iv) assuming there are realistic thresholds and available funds, approach actors to: Share these thresholds and criteria with actors desiring operating capital and assist them in meeting the requirements for application

Recommendation 8: Tailor behavior change communication to the barriers and drivers relevant to each target audience as well as their current stage of change

Programs should address with communication the main barriers and drivers related to what the targeted groups know, think, and feel (see table 18). The focus of sanitation BCC should be appropriate to where in the behavior change process non-adopters find themselves. A useful model for understanding sanitation behavior change is Prochaska and DiClemente's Stages of Change.

Recommendation 9: Make face-to-face communication the pillar of BCC and emphasize different BCC activities at different stages of change

- Make face-to-face communication the pillar of BCC
- Focus on two main types of BCC activities: a) household visits and b) small groups meetings
- Ensure that communicators are trained and have communication materials to support their efforts.

Recommendation 10: Strengthen the credibility of village staff and mass organization cadres in relation to sanitation

- Train village staff and mass organization cadres on the latrine products promoted and BCC
- Make it visible who has been trained
- Provide communicators with durable BCC materials that can support them in their work.
- Ensure that all communicators have a hygienic latrine at home – not having one will undermine their message.

Recommendation 11: Tap into the power of peer networks

- Encourage adopters to talk to their family and friends about the benefits of their latrine.
- Pay particular attention individuals (peers) who are seen as credible and know persons from many different groups.
- Use events or happenings to generate buzz about latrines among peers.

Recommendation 12: Build display stations for all latrine products promoted in the local area

Build/or prepare an actual size display station to showcase the **substructure and slab parts of the latrine options** appropriate to the commune condition. Ideally, place the display station at a retailer shop or in another commune location with high potential adopter traffic. Make posters showing the display station and provide them to retail shops for display and promoter to use.

Recommendation 13: 'Brand' the standardized latrine products

Give a memorable brand name to each of the standard latrine products introduced (albeit not too many). Test the brand names with consumers. Market the latrines under their brand names.

Recommendation 14: Link supply with demand

- Notify local government or WU about sanitation loans granted.
- Inform retailers and Masons in the region so that they can plan to take the order and deliver the latrine and labor.
- Promoters connect customers with suppliers and service providers by their recommendations.
- Retailers recommend trained masons to households who come to the shop to buy materials.

Recommendation 15: Enforce ban on river and fishpond defecation, but only after an improved supply chain, demand creation, and latrine financing options/strategies are in place

1. INTRODUCTION AND OBJECTIVES

1.1 Rural Sanitation Overview

1.1.1 Rural Sanitation in Vietnam

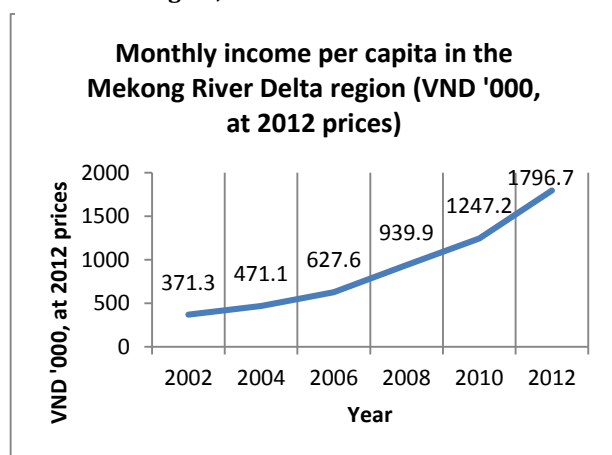
Access to improved sanitation has increased substantially in rural Vietnam over the past two and a half decades. Among rural households specifically, the WHO and UNICEF Joint Monitoring Programme (JMP) estimates that access to improved sanitation rose from 30% to 68%¹ from 1990 to 2010 and that the proportion of households practicing open defecation (OD) dropped from 43% to 6%.

Despite this progress, a large proportion of Vietnam's urban and, in particular, rural population remains without access to improved sanitation. By 2011, an estimated 14.1 million rural residents did not have access to improved sanitation.² More than half of those without access to improved sanitation live in the Mekong River Delta region of the country.

1.1.2 The Mekong River Delta Region

The Mekong River Delta region is located at the Southwestern tip of Vietnam and home to more than 17 million inhabitants, among which more than 13 million live in rural areas (GSO, 2009). The region is situated at the lower part of the delta, where the Mekong River flows toward and empties

Figure 1 Monthly income per capita in the Mekong River Delta region, 2002-2012



into the sea through a vast network of distributaries. Water is ubiquitous in the region and plays a central role in the lives and livelihoods of the inhabitants of the region. Owing to centuries of cyclical flooding, a large part of the Mekong River Delta has some of the most productive agricultural land in South East Asia. However, in other parts of the delta agricultural potential is limited due to a prolonged flood season, a lack of freshwater during dry season, and low soil quality. Common livelihoods in the region include rice cultivation, fruit cultivation, and fisheries.

The Mekong River Delta is among the better off regions of Vietnam with a per capita income of close

¹ JMP, 2010. Government of Vietnam M&E data set access to hygienic sanitation at 55% by end of 2011 (NCERWASS, 2012). The Government sets a higher standard for improved latrines than JMP, e.g the simple pit latrine with a slab and cover but *without a vent pipe*, which is recognized as an improved option by JMP, is not recognized as hygienic latrine type under the Government of Vietnam standards..

² The term 'improved sanitation' has been used in the background section, where the analysis on the current sanitation situation relies extensively on Multiple Indicator Cluster Survey (MICS) data. For a description of 'improved sanitation', please see the glossary of terms. The GOV uses the term 'hygienic sanitation' to describe latrines that comply with the nationally set standards for sanitation. The difference between the MICS and GOV standards is minimal, however, and relates only to one dry sanitation option (simple pit latrine). The terms 'improved' and 'hygienic' can be used interchangeably without problem for the Mekong Delta region, where the MICS recorded 0% of households using any form of improved dry latrine.

to 1.8 million VND³ and an official poverty rate of 10.1 percent in 2012.⁴ Like all of Vietnam, the region has seen a steady increase in per capita income since the economic reforms of the 1990s that opened up for a more market based economy (known as the *doi moi* reforms). When adjusted for inflation, income per capita nearly quadrupled in the region in the decade from 2002 to 2012 (see figure one, above).

As the home for close to 20 percent of the Vietnam's population, the Mekong River Delta region also houses a large portion of the country's poor despite the area's rising incomes and relatively low poverty rate. As such, the region's approximately 1.75 million poor comprise nearly 18 percent of Vietnam's poor.

1.1.3 Rural Sanitation in the Mekong Delta Region

The Mekong River Delta region with its rural population of more than 13 million⁵ houses more than half of Vietnam's rural population without access to improved sanitation. By 2010, 65.8 percent of rural residents – an approximate 8.7 million persons – practiced some form of unimproved sanitation.

The practice of using a latrine for defecation is widespread in the rural Mekong Delta: 96 percent of households used some form of latrine for defecation in 2010/2011 (see figure two). Just four percent of rural households were open defecators.⁶ However, the latrines used by rural households are mostly of an unimproved kind and among these the so-called 'hanging latrines' – simple latrine structures suspended over an open water body – are by far the most popular type: 59.8 percent of rural households used this latrine type in 2010/2011 (see figure two and photo one; MICS4 Vietnam, 2010/2011).⁷ Slightly more than a third (34.2 percent) of rural households used an improved latrine, close to all of which were wet latrines with flush to a septic tank (32.7 percent).

³ 2012 average exchange rate: USD 1.00 = VND 20,689.90

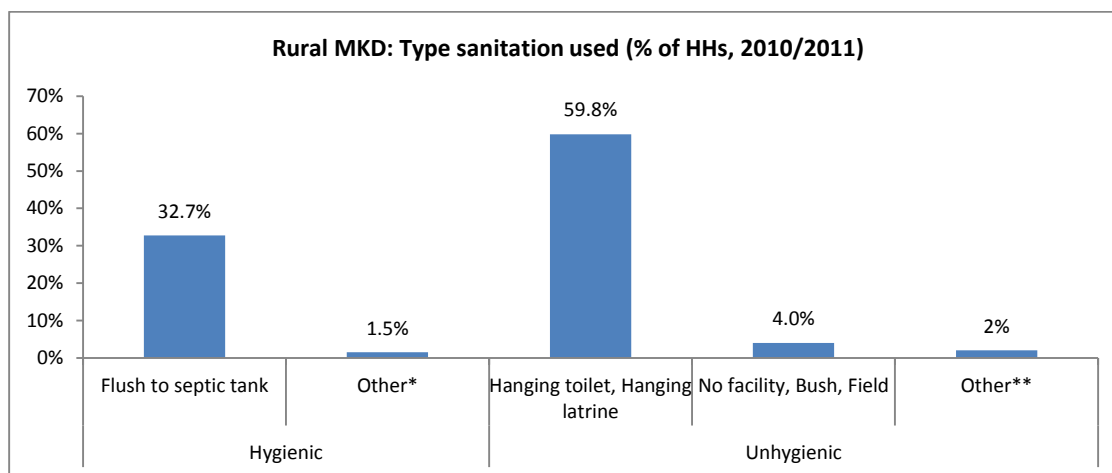
⁴ Vietnam General Statistics Office, 2012. GSO-World Bank estimates set the poverty rate in the Mekong Delta higher. In 2010, the official poverty rate for the Mekong Delta region was 12.6%, while the GSO-WB measured the rate to be 18.7 (World Bank, 2012).

⁵ 2009 GoV Census

⁶ MICS4 Vietnam 2010/2011

⁷ 'Hanging' latrines are classified as an unimproved form of sanitation by the Joint Monitoring Programme (JMP) and as an unhygienic latrine type in Vietnam. As will be seen later in the report, 'hanging' latrines over fishponds are considered 'hygienic' by many households and officials due to the erroneous belief that the fish will and can consume all the feces excreted by the latrine users. Food safety studies, however, show that feeding fish untreated human excreta introduces disease pathogens into the food chain. Further, fecal waste accumulated in most fishponds will eventually make their way into the Mekong Delta's waterways, because old pond water is pumped into nearby rivers/canals every 1-3 years.

Figure 2 Type sanitation used in rural Mekong River Delta, 2010/2011



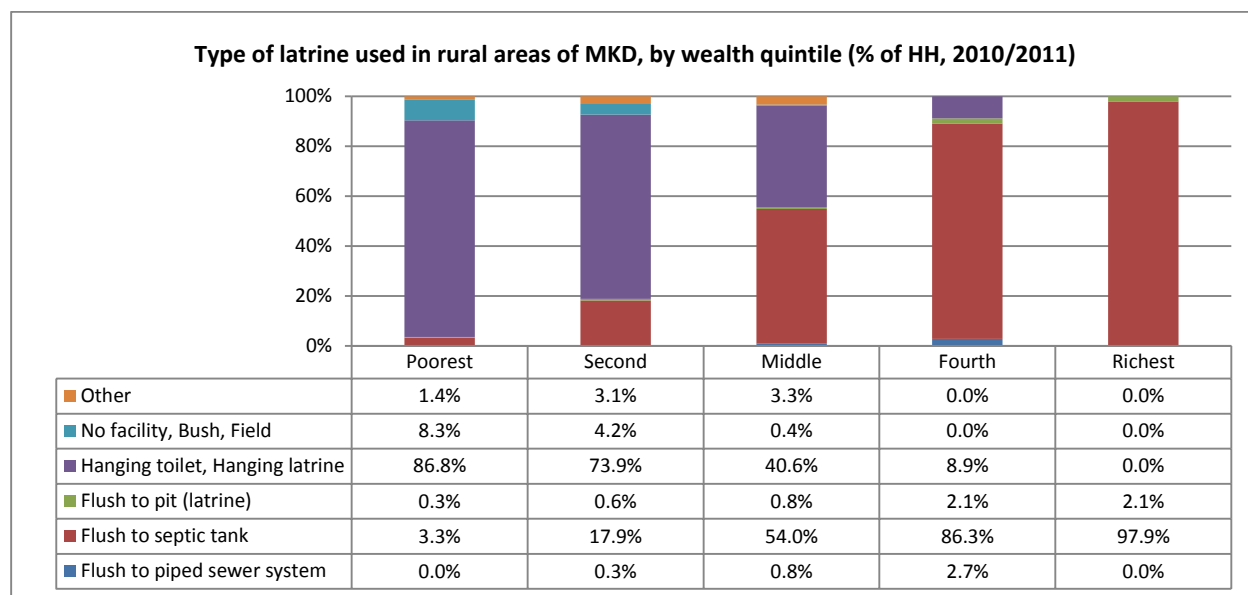
Source: MICS4 Vietnam, 2010/2011

*Flush to piped sewer or pit.

** Flush to somewhere else, bucket latrine, and answers that do not match any other response category.

Notable differences in access exist across household wealth quintiles (figure three). Those who belong to the two highest (richest) wealth quintiles almost all use improved latrines. In contrast, the vast majority of households in the two lowest (poorest) wealth quintiles rely on unimproved 'hanging latrines' for defecation (86.8% and 73.9%, respectively). More than 40 percent of households in the middle wealth quintile also use 'hanging' latrines.

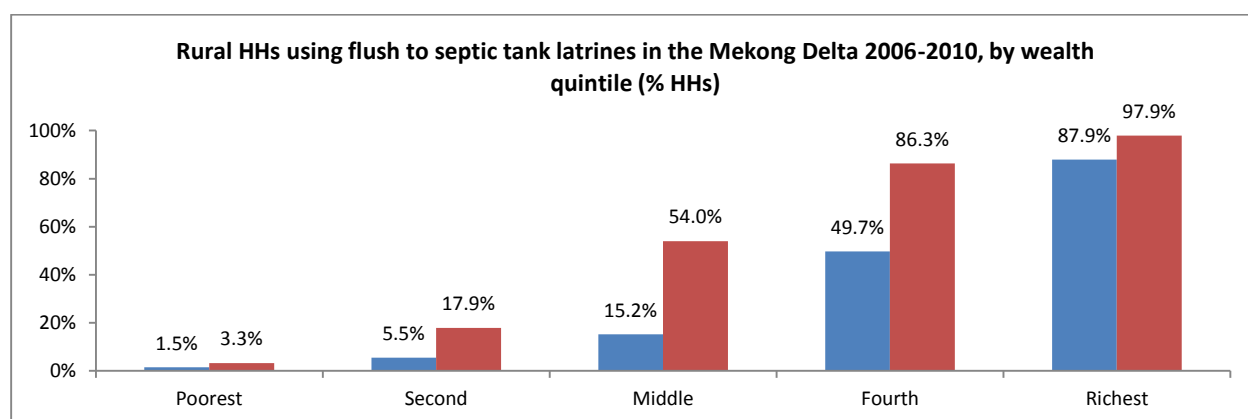
Figure 3 Type of latrine used by rural households in the Mekong River Delta, 2010/2011



Source: MICS4 Vietnam, 2010/2011

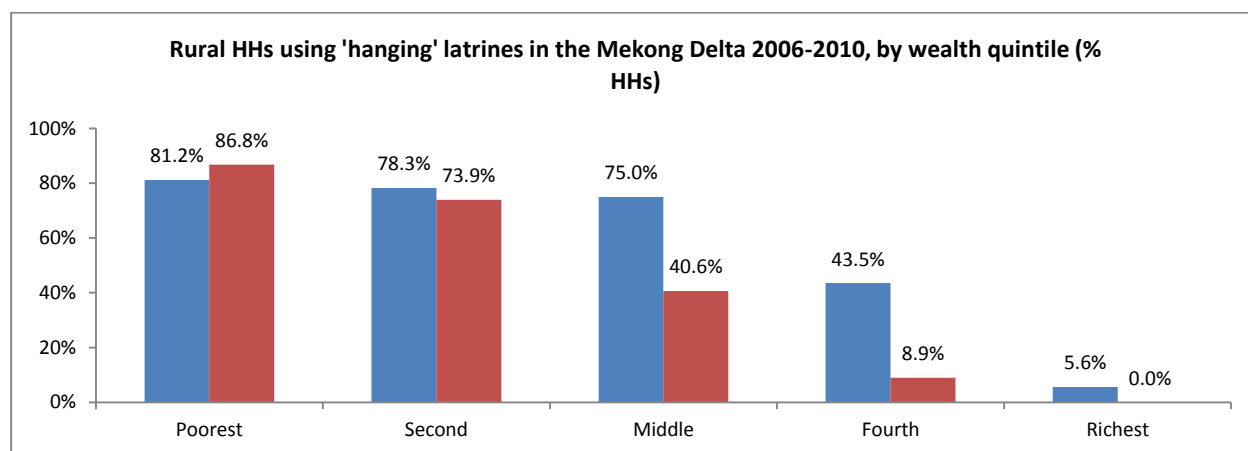
Trend data from 2006 to 2010 indicate notable increases in improved latrine usage over time (figure four) among households belonging to the middle wealth quintile. In particular, septic tank latrine usage in this quintile increased from 15.2% in 2006 to 54% in 2010. In contrast, trend data indicate only marginal increases among households from the two lower wealth quintiles (figure four and five). The proportion of households with a septic tank latrine⁸ in the poorest wealth quintile increased from 1.5% in 2006 to just 3.3% in 2010, while proportion relying on 'hanging' latrine increased from 81.2% to 86.8%.

Figure 4 Rural households using flush to septic tank latrine in the Mekong River Delta 2006-2010, by wealth quintile



Sources: MICS3, 2006; MICS4, 2010

Figure 5 Rural households using 'hanging' latrines in the Mekong River Delta 2006-2010, by wealth quintile



Sources: MICS3, 2006; MICS4, 2010

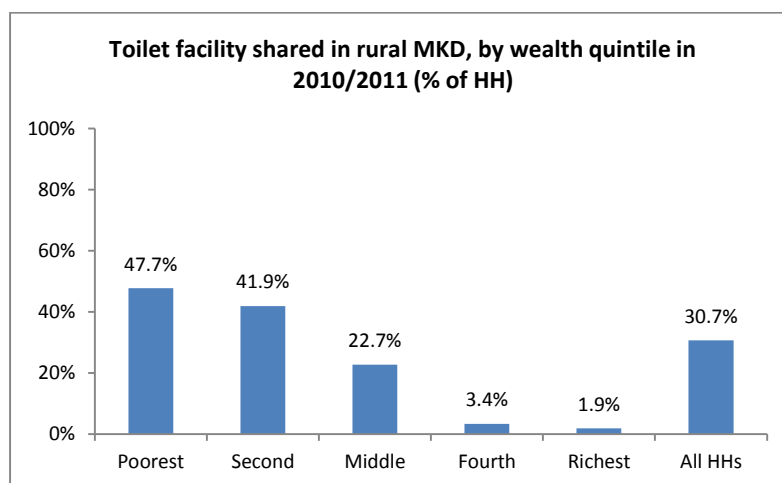
Latrine sharing is more common in the Mekong Delta region than in any other region of Vietnam. In 2010/2011, 30.7 percent of rural households shared a latrine facility with one or more other households (figure six).⁹ In particular, households in the two poorest income quintiles share

⁸ Septic tank latrines are also the most common hygienic latrine type in this wealth quintile.

⁹ In other regions of Vietnam up to nine percent of rural households shared (MICS4 Vietnam, 2010/2011)

facilities (47.7% and 41.9%, respectively). They mostly share 'hanging' latrines (few households in these quintiles use another type). Most 'sharers' (87.9 percent) in the rural Mekong River Delta share a latrine facility with one or more other households; just 12.1 percent use a public facility. MICS data indicate that sharers use unimproved latrines in almost nine out of ten cases.¹⁰

Figure 6 Latrine sharing in the rural Mekong River Delta, 2010/2011



1.1.4 Programmatic Context

The current study is being carried out as a part of the Water and Sanitation Program's (WSP) larger program of strategic technical assistance (TA) to the rural sanitation sector in Vietnam and as specific technical assistance to the World Bank supported Mekong River Delta Water Resources Management for Rural Development Project (WB6 project). However, it aims to be of relevance for the broader Mekong River Delta region.

WSP Support for Rural Sanitation in Vietnam

WSP has long been engaged with the rural water, sanitation, and hygiene sector (WASH) in Vietnam and has in recent years intensified support for rural sanitation, in particular. Since 2012, WSP has provided strategic technical assistance (TA) for the Government of Vietnam's (GOV) efforts to increase rural sanitation access under the third phase of the Rural Water Supply and Sanitation National Target Program (RWSS-NTP3). WSP's support aims to generate, capture, and share lessons learned regarding how to create demand, sustainably strengthen supply, and put in place an enabling environment that allows for rapid increases in rural sanitation access. Specific TA has included, among others, a review of existing sanitation supply chain research, an assessment of existing programmatic approaches to rural sanitation in Vietnam, a scan of the enabling policy environment, market research for Northern Vietnam, and a rural sanitation pilot implemented within the framework of RWSS-NTP3.

¹⁰ According to the MICS 2010/11 report, 2.8% of rural and urban households in the Mekong Delta region share in improved latrine, while 19.7% share an unimproved latrine (MICS Vietnam Report, 2011).

World Bank Mekong River Delta Water Resources Management for Rural Development Project

The Mekong River Delta Water Resources Management for Rural Development Project (WB6 project) is one among a number of government and development partner efforts to increase access to improved sanitation in the Mekong River Delta region. The WB6 Project aims to protect and enhance the utilization of water resources in 7 project provinces of the Mekong River Delta Region in order to sustain gains in agricultural productivity, provide access to water supply and sanitation for rural households, and contribute to climate change adaptation.

The WB6 Project includes a sanitation sub-component focusing on sanitation marketing, household sanitation and school sanitation interventions. The household sanitation component aims to achieve increased sanitation access among all households: non-poor, poor, and near-poor households through:

- evidence-based high-quality behavior change communication activities;
- local supply chain development and marketing activities that make affordable facilities; accessible to rural households through local sanitation providers;
- delivery of targeted subsidies to poor and near-poor households (USD70 to poor households, USD35 to near poor households);
- coordination at provincial level to ensure implementation progress; and
- monitoring and evaluation of results through an administrative monitoring systems.

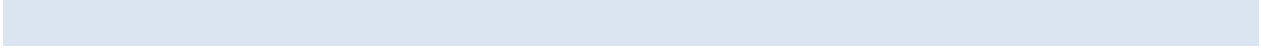
The project targets 8-16 communes in each province, spread over 2-3 districts, depending on size of communes in terms of population and number of poor and near-poor households eligible for subsidies.

1.2 Objectives

The dual formative research components and their specific objectives were:

- A. Consumer demand assessment, which aimed to gain insights into:
 - Current household sanitation practices
 - Drivers and barriers for households to transition from their current defecation practices to improved, hygienic latrines in the Mekong River Delta, and
 - Household priority setting and decision making in relation to major purchases/ investments
 - Latrine attributes/benefits preferred by consumers
 - The most effective channels and sources for communication aimed at motivating and enabling households to build a hygienic latrine
- B. Supply chain analysis, which aimed to understand:
 - The actors in sanitation supply chain
 - Barriers and opportunities for integration
 - Potential business model(s) to deliver affordable, and aspirational hygienic toilet facilities to rural Mekong River Delta households

The insights generated via the research will inform the development of strategies and activities to increase consumer demand for hygienic household sanitation and bolster the capacity of the local supply chain to deliver affordable and aspirational hygienic latrines.



2. METHODOLOGY

2.1 Study Site Selection

The demand and supply chain studies were carried in a total of five communes spread across four provinces of An Giang, Ca Mau, Kien Giang and Soc Trang. Within each province, one commune was purposefully selected for inclusion in the study with the exception of Kieng Giang where two communes were chosen. The study provinces and communes were purposively selected using a set of pre-defined criteria. Provincial selection criteria included: province is part of the WB6 Project, a high proportion of households are affected by poverty/near poverty relative to other WB6 provinces, parts of the province affected by annual flooding (2 provinces), and low levels of access to hygienic sanitation relative to other WB6 provinces (table one).

Table 1 Characteristics of study provinces and explanation of their inclusion in study

Province	WB6 communes' average			Explanation of inclusion
	Poor HH (%)	Near poor HH (%)	Improved latrine (%)	
An Giang	4	4	66	Included due to significant annual flooding, non-WB6 commune with higher poverty levels and lower coverage was selected
Ca Mau	15	6	17	Low level of access to improved sanitation, significant portion of poor and near poor HHs
Kien Giang	13	6	21	Low level of access to improved sanitation, significant portion of poor and near poor HHs
Soc Trang	20	10	28	High proportion of poor and near poor HHs, low level of access to improved sanitation

Within the four provinces, five study communes were selected using a second set of criteria. Each criteria and the rationale for using the criteria are described in table two, below.

Table 2 Criteria for study commune selection

#	CRITERIA	RATIONALE
1	Household poverty level is greater than or equal to 15 percent <u>OR</u> household poverty and near poverty levels combined are greater than or equal to 25 percent.	Communes with high poverty levels were included as non-adopters tend to belong to this category.
2	Household access to hygienic (improved) sanitation is between 20 and 35 percent.	Access should be sufficiently low to allow for identification of non-adopters, but not so low that adopters cannot be found.
3	Commune is affected by annual flooding (2 communes)	Study sought to learn about barriers and drivers to acquiring hygienic sanitation in flood prone areas.
4	Commune is not affected by annual flooding and is included among the WB6 project communes (3 communes)	Study sought to learn about barriers and drivers to acquiring hygienic sanitation in non-flood prone areas.
5	No large scale NGO or government program is currently active in the commune.	Large scale program could bias findings

Table three below present the study communes selected and their key characteristics.

Table 3 Study communes and key characteristics

Commune	Province	Poor HH (%)	Near poor HH (%)	HHs w/ hygienic latrine (%)	Flood prone
Nhon Hoi	An Giang	8	25	42	Yes

Khanh Tien	Ca Mau	18	35	33	No
Dong Hoa	Kien Giang	7	15	30	No
My Hiep Son	Kien Giang	4	8	32	Yes
Vinh Bien	Soc Trang	12	25	6	No

Source: Local commune authorities

2.2 Demand Assessment Methodology

2.2.1 Research Questions and Analytical Framework

Research questions and tools were developed using the SaniFOAM framework for sanitation behavior change (figure seven). Developed by WSP and partners, SaniFOAM is a conceptual framework for analyzing and understanding sanitation behavior change. The letters “FOAM” stand for: focus, oppportunity, ability, and motivation. SaniFOAM is designed to assist programmers to identify the key factors (determinants) which influence the practice of a desired behavior (e.g. usage of a hygienic latrine) in a target population.

Figure 7 SaniFOAM behavior change framework.



Source: Devine, J. 2009. Introducing SaniFOAM: A Framework to Analyze Sanitation Behaviors to Design Effective Sanitation Programs

A set of research questions were formulated with the aim of obtaining comprehensive insights into: a) current sanitation practices among the target population, b) barriers and drivers to hygienic latrine acquisition, c) household purchase patterns (including hygienic sanitation), d) sanitation shopping process, e) desired latrine features, and f) effective channels and sources of communication about hygienic sanitation. An overview of the detailed research questions can be found in Annex A.

2.2.2 Sampling and Data Collection Methods

This study employed a qualitative approach and used focus group discussions (FGD) and in-depth interviews (IDI) to collect data. Study participants included adopters of hygienic sanitation, non-adopters of hygienic sanitation, and key informants (village officials/staff, masons, and retailers). The study was carried out in five communes across four provinces. The findings emerging from the

qualitative research were subsequently triangulated with findings from a sanitation market survey, which was carried out with 502 households in An Giang and Soc Trang provinces by International Development Enterprises (iDE) in 2010.

Three main categories of participants were recruited to participate in the qualitative research:

Adopters of hygienic sanitation: Heads of households or spouses from households that currently own (and use) a hygienic latrine. Study participants included adopters of hygienic sanitation (“adopters” from here onwards) of both male and female gender as well as adopters belonging to different socioeconomic groups. Separate FGDs were done with male and female adopters. Similarly, separate FGDs were held for poor/near poor and non-poor adopters.

Non-adopters of hygienic sanitation: Heads of households or spouses from households which a) own and use an unhygienic latrine OR b) share an unhygienic latrine with one or several other households OR c) do not own or use any type of latrine. Study participants included non-adopters of hygienic sanitation (non-adopters from here onwards) of both male and female gender as well as adopters belonging to different socioeconomic groups. Separate FGDs were conducted with male and female non-adopters. Similarly, separate FGDs were held for poor/near poor and non-poor non-adopters.

Key informants: Individuals which due to their business/profession or community role have special knowledge and insights about household sanitation in their communities. Key informants comprised village health workers (VHW), Vietnam Women’s Union (VWU) members, village heads (VH), construction material retailers, and masons.

Study participants were selected via purposive sampling. The research team was assisted by the Vietnam’s Environmental Health Management Agency (VIHEMA) under the Ministry of Health of Vietnam (MOH) and the Provincial Centers for Preventive Medicine (CPM) in this task. The MOH and CPMs were assisted by commune authorities to recruit the study participants. Local authorities were provided with a list of recruitment criteria to assist the process.

Data collection methods consisted of FGDs and semi-structured interviews. Separate FGD and interview question guides were developed for adopters and non-adopters. One FGD guide was developed for VHWs, VWU, and VH participants, all of whom were recruited to participate in the same FGD. Separate IDI/FGD guides were developed for retailers and masons.

In total, 33 FGDs and 13 IDI were carried out: nine FGDs and one IDI with adopters, 13 FGDs and seven IDIs with non-adopters, five FGDs with masons, five IDIs with retailers, and six FGDs with village officials. Because a large number of FGDs would have been required to conduct separate FGDs with all categories of adopters and non-adopters (men, women, poor/near poor, non-poor) in each commune, the research team planned the field work in such a way that FGDS included a slightly different constellation of adopters and non-adopters in each location. Table four gives an overview of the research activities done in each commune.

Table 4 Research activities by commune

Commune (province)	FGDs			IDIs
	Adopter	Non-adopter	Key informants	
Nhon Hoi (AG)	1 x men 1 x women	1 x men 1 x women	1 x VHW, WU, VH 1 x masons	1 x retailer 1 x non-adopter, woman
Khanh Tien (CM)	1 x men 1 x women	1 x men 1 x women	1 x VH 1 x VHW, WU 1 x masons	1 x retailer 1 x non-adopter, woman 1 x adopter, man
Dong Hoa (KG)	1 x men 1 x women	1 x men 1 x women	1 x VHW, WU, VH 1 x masons	1 x retailer 1 x non-adopter, woman 1 x non-adopter, woman
My Hiep Son (KG)	1 x women	3 x men 2 x women	1 x VHW, WU, VH 1 x FGD w/ masons	1 x retailer 1 x non-adopter, woman
Vinh Bien (ST)	1 x men 1 x women	1 x men 1 x women	1 x VHW, WU 1 x masons	1 x retailer 1 x non-adopter, woman 1 x non-adopter, woman
Total #	9	13	5 x masons 1 x VH 2 x VHW, WU 3 x VHW, WU, VH	5 x retailer 7 x non-adopter 1 x adopter

The field research was carried out by a team of two experienced national consultants, both of whom were women. One facilitator and one note taker were present in all FGDs. In-depth interviews were carried out by one interviewer only. Field work was carried out in Ca Mau and Soc Trang from May 15 to May 20, 2014, and in An Giang and Kien Giang from June 4 to June 13, 2014. During the field work, the team leader was in frequent contact with the field research team to discuss and address potential challenges.

Data Recording and Analysis

Interview and FGD data were collected using standardized FGD and interview note sheets. In addition, interviews and FGDs were digitally recorded in all cases where participants gave their permission. Following the field work, all adopter and non-adopter FGDs were transcribed and translated into English. Following each field visit, the local research team held a debriefing session with the team leader in which major findings were discussed.

For the data analysis, field notes and the 22 transcribed FGDs were, as a first step coded using the SaniFOAM framework. As a next step, the coded data were organized using an Excel-based sheet. The field notes and FGD transcripts were coded and organized according to key behavioral and demographic characteristics (adopter/non-adopter/etc., gender, socioeconomic status) as well as thematic content (principally, SaniFOAM behavioral determinants). This allowed the team leader to analyze findings by adopter/non-adopter, gender, and socioeconomic status.

The findings which emerged from the qualitative data were triangulated and augmented by findings from the sanitation market survey carried out by iDE in An Giang and Soc Trang in 2010.

2.2.3 Demand Assessment Study Limitations

This study has a number of limitations. Firstly, the field research carried out by the consultant team was wholly qualitative in nature. The strength of the qualitative research is the deep insights into a

research question that it can yield. Such insights are critical in the case of drivers and barriers to hygienic latrine acquisition, latrine product preferences, etc. While qualitative research can allow the research to get a good sense of how common a particular finding is, a precise assessment of the frequency can only be obtained via accompanying quantitative research (i.e. a survey). Being a rapid consumer demand assessment, the current consumer demand study did not include a quantitative component. We have sought to make up for this study limitation by triangulating our qualitative findings with the findings from a market research survey conducted by International Development Enterprises (IDE) for the Ministry of Health of Vietnam (MOH) in 2010 in An Giang and Soc Trang provinces.

A second limitation of the study relates to field work organization. The research team received very qualified support from the MOH and provincial centers for preventive medicine for arranging FGDs and interviews with adopters, non-adopters, and key informants in each commune. However, field research arrangements ultimately relied on the support of commune partners, some of which provided the requested support with greater ease than others. While four of five communes did invite the correct participants for each FGD, one commune had invited both adopters and non-adopters of hygienic sanitation to participate in the same groups. The field research team sought to the extent possible to separate adopters and non-adopters in FGDs, but in a few instances the adopter or non-adopter status of a participant was discovered relatively late in the activity. The field research team sought to make up for this limitation by noting if/what contributions were made by adopters and non-adopters in the FGD, respectively.

A third study limitation, which the research team did not foresee was a possible bias stemming from the inclusion of non-adopters with different unhygienic defecation practices in the same FGDs. We found that some of these practices were perceived to be more socially acceptable (e.g. having an unhygienic latrine with flush to the river or defecating into a fishpond) and some were seen as less socially acceptable (e.g. open defecation into the river). This may have led some of the latter non-adopters to be less frank about their defecation practices and how they feel about them than they otherwise would have.

Fourth, some non-adopter FGD participants in My Hiep Son commune, Kien Giang, appeared to believe that the purpose of the FGDs/meetings was to identify sanitation subsidy recipients. Unfortunately, this may have biased the participants' answers towards a greater demand for sanitation and an exaggeration of some of the disadvantages of their current form of sanitation. The field research team sought to reduce this bias by making the purpose of the activity clear from the outset and emphasizing they were not associated with any subsidy providing programs or projects.

Fifth, the research team was unable to verify that the latrines of participating adopters were, indeed, hygienic latrines via visual inspection. It is therefore possible that some of the latrines could have been of an inappropriate and unhygienic design. However, adopters often provided detailed descriptions of their latrine substructures in the FGDs and these generally suggested that their latrines were built with 2-3 chambers.

Finally, local partners had greater difficulty mobilizing non-poor households to participate in the research activities than the poor and near poor. This may have biased findings more towards the perspective of the poor and near poor.

2.3 Supply Chain Study Methodology

The Deloitte team undertook interviews with 39 supply chain actors – selected in conjunction with, and conducted, by local consultants – in five throughout the Mekong Delta in rural Vietnam. These communes included Khanh Tien in Ca Mau province, Vinh Bien in Soc Trang province, Nhon Hoi in An Giang province, and My Hiep Son, and Dong Hao in Kien Giang province. Those interviewed included masons, transporters, producers of latrine materials, suppliers and retailers. Standardized questionnaires were used to conduct the interviews and were tailored for each supply chain role. Additional information is provided in Annex F.

Figure 8 Number of Respondents by Supply Chain Role

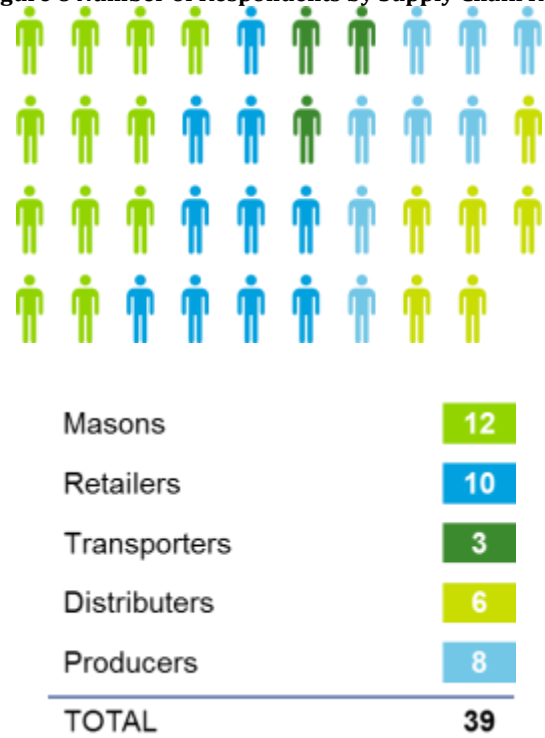


Figure 9 Number of Interviews by Region and Supply Chain Role

	Mason(s)	Retailers	Transporter	Distributor	Producers				TOTAL
					Brick	Concrete Ring	Fiberglass	Plastic	
1. Ca Mau	2	2		2			1		7
2. Soc Trang	3	2	1	1		1	1	1	10
3. An Giang	3	3		2	1				9
4. Kien Giang (2 communes)	4	3	2	1		2	1		13
TOTAL	12	10	3	6	1	3	3	1	39

2.4 A Note on the Organization of the Report

Part One of this report presents the findings and conclusions the consumer demand assessment. In this section, research findings have been organized according to the specific research objectives of the consumer demand research, including: 3.1) current defecation practices, 3.2) hygienic latrine acquisition barriers and drivers, 3.3) purchase decision making and sanitation shopping, 3.4) preferred latrine product attributes and the ‘ideal’ latrine, and 3.5) communication. Section 3.2 (barriers and drivers) is organized in accordance with the SaniFOAM sanitation behavior change frameworks and presents findings regarding barriers and drivers to hygienic latrine access for 12 of the framework’s 15 behavioral determinants. However, findings about *roles and decisions* (ability determinant) and *competing priorities* (motivation determinant) are presented in section 3.3, as the findings exemplify the purchase and decision making process. Findings on *product attributes* (opportunity determinant) are presented in section 3.4 to address latrine preferences.

Part Two presents the findings and conclusion from the supply chain analysis are presented.

Finally, section 6 of the report presents a set of integrated recommendations from the two studies.

3. CONSUMER DEMAND STUDY FINDINGS

3.1 Current Defecation Practices

3.1.1 Adults and Older Children

A variety of defecation practices were identified in the study communes, including OD on land and into the river, usage of fishpond (hanging) latrines, usage of unhygienic latrines with flush into a fishpond or the river, and usage of hygienic latrines. Common unhygienic and hygienic sanitation practices are described below.

Unhygienic Sanitation Practices

The type of unhygienic sanitation practiced depends to some extent on the opportunities for open defecation offered by the surrounding environment. Where households are located within easy reach of a river or canal, people tend to prefer open defecation into water.

Open defecation on land: OD without a fixed location on land was found in three of the five study communes, including Ca Mau, An Giang, and Kien Giang/My Hiep Son (MHS). This type of OD generally takes place in coastal communities (Ca Mau) or in communities where opportunities to defecate into water are limited (i.e. far from the river and without access to fishpond latrines). In coastal communities, OD is done on the beach or inside the mangrove forest. In inland communities, open defecation on land takes place in rice fields or bushes. In An Giang and Kien Giang, the practice is known locally as ‘rotating shitting (*cầu quay*)’.

Open defecation into the river: In An Giang, Kien Giang/Dong Hoa (DH), and Kien Giang/MHS, households for whom the river was within easy reach frequently practice no-fixed point defecation into the river.¹¹ They typically defecate from the bank or boat docks into the river, or row a boat onto the river and defecate from the railing. Some non-adopters use ‘mobile latrines’ when defecating into the river to attain some level of privacy: “[They use] a card box, and plastic bags, to make it discreet; when they go to defecate they bring it, and then tie it up and go into the river” (Village head, An Giang). Both adults and children defecate into the river; however, children defecate from what are considered ‘safer’ spots (such as a bridge) and/or are accompanied by an adult. Many of those who now practice this form of defecation have previously used simple river latrines, but shifted to no-fixed point defecation into the river (or usage of fishpond latrines) after most of the simple river latrines were destroyed by local authorities in a campaign against river defecation. Where non-adopters live closer to the river than to a fishpond latrine (more below), they often use fishpond latrines during the day and openly defecate into the river at night.

¹¹ Overall, open defecation into the river appears to be far more common than official monitoring data, such as the Multiple Indicator Cluster Survey, suggest.



Photo 1 Boat used by non-adopters to row onto the river and defecate, Kien Giang

Simple Fishpond Latrine: A fishpond latrine was the most commonly mentioned type of sanitation facility used for defecation. Fishpond latrines are erected above a – usually – deep pond, where fish are bred and feed on the feces of the latrine users. This latrine ‘facility’ is usually simple with no roof and walls that cover only the lower part of the user’s body (see photo three). Fishpond latrines are used by both adults and children (excepting toddlers); however, until the age of at least seven years, children are accompanied by an adult.

Fishpond latrines are built where some or many households have land plots of a size that will allow for the presence of a fishpond. Where residential plots are relatively large (e.g. in Ca Mau), most households have their own fishpond latrine – or share one with at most 1-2 other households. Private fishpond latrine owners use their latrine at any time of the day.

Where residential land is scarce, fishpond latrines are sometimes built by one or a few households with larger plot and shared with many households. Shared fishpond latrines tend to be located further away from the defecators’ households than private ones and appear to be used mostly in the daytime. Fishpond ‘sharers’ often use the fishpond during the day and defecate into the river (if within easy reach) or near their home at night.



Photo 2 Private fishpond latrine, Khanh Tien/Ca Mau

‘Modern’ Latrine with Flush to Open Water Body: Another common type of facility in the area is a latrine with direct flush to a nearby open water body. This type is similar to the hygienic latrines in the area in that it has a solid brick superstructure or is located inside the home. However, it lacks a substructure (see photo 4). In Ca Mau, masons reported that this type of latrine – known locally as a ‘field combat’ latrine (*cầu tiêu dã chiến*) – was the one most commonly built for customers. This type of latrine is built by households which have a private fishpond and/or live above or within a few meters from the river. It is used at any time during

the day by both adults and children (that latter without supervision) and is only shared with close relatives.



Photo 3 'Field combat' latrine, Ca Mau

Table five presents an overview of the unhygienic sanitation practices described above and the type of environment in which each was typically encountered.

Table 5 Unhygienic sanitation practices: What they are, typical context in which they are practiced, and when they are practiced

Defecation practice	What is it	Typical context in which practiced	When is it practiced
Open defecation, land	Defecation on the beach/in mangrove forest or on fields/ in bushes without a fixed spot for doing so.	<ul style="list-style-type: none"> • Easy access to beach, mangrove forest • HH not within easy reach of river • HH does not own sufficient land to dig fishpond • HH does not have access to shared fishpond 	<ul style="list-style-type: none"> • In the morning or evening (beach) • In the evening or when nobody is around (fields)
Open defecation, river	Defecation into river from river bank, dock, or boat. Mobile shelter (mobile latrine) sometimes used for privacy.	<ul style="list-style-type: none"> • HH within easy reach of the river • HH does not own sufficient land to dig a fishpond. • HH does not have access to shared fishpond. 	<ul style="list-style-type: none"> • Preferably at night time • When nobody is around
Fishpond, private	Defecation into a fishpond latrine from a simple facility; facility is owned	<ul style="list-style-type: none"> • HH owns land plot of sufficient size to make pond 	<ul style="list-style-type: none"> • Any time during the day and night

Defecation practice	What is it	Typical context in which practiced	When is it practiced
	and used exclusively by the household		
Fishpond, shared	Defecation into a fishpond latrine from a simple facility; facility is shared by anything from 2-3 up to dozens of households	<ul style="list-style-type: none"> Few HHs in community have land plots large enough for a fishpond 	<ul style="list-style-type: none"> Mostly during the day time
Field combat latrine	'Modern' latrine superstructure with flush to river or fishpond	<ul style="list-style-type: none"> HH located by or near river HH has own fishpond 	<ul style="list-style-type: none"> Any time during the day and night

Hygienic latrines

The reported rate of households with hygienic latrines – known locally as 'mechanical'¹² latrines (*cầu tiêu máy*) – ranged from 6-42 percent in the five study communes.¹³ A latrine with flush to a septic tank is by far the most common type of hygienic latrine. In some cases, households had – knowingly or unknowingly – built latrine with flush to a soak pit. There were no reports of any hygienic dry latrines in the communes. In adopter households both adults and children used the hygienic latrines (the latter without supervision) and did so at any time during the day. A few 'inconsistent' adopters reported that they only use the hygienic latrine during the night and in bad weather; otherwise, they use their fishpond latrine.

3.1.2 Toddlers

Toddlers and, in some cases, older children defecate into potties. Women are usually responsible for assisting toddlers in their defecation and disposing of their feces. Toddlers mostly defecate into potties and the mother will throw away the feces. Adopters reported throwing the waste into the latrine, while non-adopters disposed of the waste in various other locations, including fishponds, rivers, a dug hole, etc. In households using fishpond latrines, children up to the age of 7 and 8 sometimes also use potties due a concern for their safety. The mother will then also dispose of their excreta. Common places to dispose of the excreta include the river, fishponds, and the households hygienic or unhygienic latrine.

¹² All water flush latrines were lumped under this label. Generally, 'mechanical' latrines were understood to be latrines that flush to a tank or pit, but in some cases the term was also used with reference to latrines with flush to an open water body.

¹³ Data provided by commune authorities.

3.2 Hygienic Latrine Acquisition Barriers and Drivers

3.2.1 Opportunity Determinants

Opportunity determinants are factors which influence whether an individual has the opportunity to engage in hygienic sanitation.

Access and Availability

Access and availability refers to the fact that products, services, and assets/resources that enable hygienic latrine construction must be accessible and available to households, if they are to have the opportunity to practice hygienic sanitation (Devine, 2009).

Key Insights

- Access to and availability of latrine products and services is not a barrier to hygienic latrine building.
- The hygienic latrine options offered in the local market tend to be expensive and retailers do not stock and sell concrete rings which are a lower cost alternative to a brick substructure.
- No products are available which will allow the owners of unhygienic field combat latrines to upgrade their facility to become hygienic.
- Not having access to land is a barrier to hygienic latrine construction, in particular for households located along the river.
- Access to a hygienic latrine does not guarantee use, when the household at the same time owns a fishpond latrine.

Latrine building services and supplies

Access and availability of latrine building services and supplies does not constitute a barrier to building hygienic latrines in the area. Adopters and non-adopters find that latrine building services and supplies are readily available and easily accessible (if one has the financial means) where they live. Households wishing to build a latrine have a selection of masons to choose from: *“If you have money, there are a lot of masons here” (Non-AD, male, Kien Giang/DH)*. They perceive masons to have the necessary skills to build a good quality latrine, albeit those with training and experience from the city are seen as more skilled. Several retail shops selling construction supplies and sanitary wares are available in each commune and retailers will deliver the materials directly to the customer’s residence: *“Here there are several construction material private enterprises, they sell everything.” (Non-AD, male, Ca Mau)*. Material transport to the customer’s house takes place via road or waterways, depending on which gives easier access.

However, the hygienic latrine options offered in the local market tend to be expensive and retailers do not stock and sell concrete rings which are a lower cost alternative to a brick substructure (see Affordability). Further, standard or simple products that enable these households to upgrade from their field combat latrine to a hygienic facility do not appear to exist.

Land Availability

Land availability is a barrier for some non-adopters. Households located along or on the river (living in stilt houses) often have little or no physical land available. These non-adopters do not build hygienic latrines because they find that no suitable options are available for this setting

and/or because they find suitable options too expensive: *“If our houses are on the river, we don’t have land to build a latrine; it’s the same to every household, we must defecate into the river”* (Non-AD, female, Kien Giang/Dong Hoa).

Having limited land, however, can also be a driver. As such, in some communes households that had small land plots were reported to be propelled to build a hygienic latrine – as opposed to those with large plots, who had the space to dig a fishpond: *“Those who have large land built ‘mechanical’ latrines, but installed pipes to fish ponds. As for us, we don’t have much land... Without land, you have to build a tank latrine. (AD, female, Ca Mau)*

Hygienic sanitation: Access does not equal usage

Having access to a hygienic latrine does not guarantee that household members use it, when the household at the same time owns a fishpond latrine. Among these ‘adopters’, some never use their hygienic latrine, or do so only occasionally. ‘Adopters’ who occasionally use their hygienic latrine tend to see the hygienic and the fishpond latrine as having different functions. They typically see the hygienic latrine as suitable mainly for use on special occasions, i.e. at night and in bad weather: *“I use the fishpond latrine when the weather is not bad or when it’s not dark”, (AD, female, Soc Trang).* The qualitative nature of the study did not allow us to determine how common this phenomenon is.

Product Attributes

This determinant has been addressed in section 3.4 on Preferred Latrine Product Attributes.

Sanctions

Sanctions refer to explicit rules in relation to sanitation. If enforced, sanctions may act as barriers to unhygienic sanitation practices and drivers of hygienic latrine acquisition (Devine, 2009).

Key Insights

- Sanctions against some unhygienic defecation practices are in place, but tend to result in hygienic latrine acquisition only when accompanied by measures that address other salient barriers to access (e.g. affordability).
- Where not accompanied by measures to address other barriers, sanctions have mostly resulted in a shift from one form of unhygienic defecation practice to another.

Sanctions related to sanitation practices were in a place in the study communes, including: (a) a ban on river defecation (*all communes*) and (b) regulations requiring all households in new settlements have hygienic latrines (*An Giang, Ca Mau*). The ban on river defecation was enforced in all the study communes and simple river latrines were routinely destroyed by local authorities in some of these¹⁴: *“Sometimes when the Government guys go to the river and see the latrines, they destroy them all”* (Non-AD, female, An Giang). In the case of regulations requiring households in new settlements to have a hygienic latrine, the enforcement measures taken were unclear.

¹⁴ This happened mostly in An Giang and Kien Giang, because river latrines are by now not common in the communes in Ca Mau and Soc Trang. Only simple river latrines were torn down. ‘Field combat’ type latrines with flush into the river were not targeted, despite having the same impact on the environment.

FGDs showed that sanctions mostly lead to hygienic latrine building when accompanied by measures that address other salient barriers to hygienic latrine acquisition (e.g. affordability). For example, households living in these settlement areas in An Giang were given preferential access to loans from the VBSP to build a hygienic latrine: *“Those at the residential quarter were given loans of 9 million dong to build a house and a latrine as well. We built it ourselves”* (AD, female, An Giang).

Where sanctions have not been accompanied by such measures, non-adopters continue to defecate into the river despite the ban – albeit from the banks, docks, or boats on the river – or have shifted to fishpond defecation, if they have the option¹⁵:

“They disseminate that it’s not allowed to build latrines in the river, which will pollute the water. And many people understand; very few people use them; they use the other type of latrine [i.e. fishpond]” (Non-AD, female, Kien Giang/MHS).

“It is forbidden, but people still do it all the time; they do it in secret, not letting other people see them” (Non-AD, female, An Giang).

Social Norms

Social norms – whether observed or inferred – are the tacit rules that govern how individuals in a group or society behave. Social norms may that permit or sanction specific sanitation practices may influence sanitation behavior (Devine, 2009).

Key Insights

- In areas with high rates of hygienic latrines, non-adopters were more likely to perceive having a hygienic latrine as the social norm.
- Some sanitation practices (especially OD) are seen as less socially acceptable than others; those engaging in sanitation practices of low social acceptability often to go great lengths to avoid detection and complaints.
- Local officials’ continued use of fishpond latrines is a barrier to change, as it reinforces the social acceptability of the practice.

Open Defecation

Local authorities’ long-standing campaigns against river defecation (open defecation and from simple latrines) have made the practice less socially acceptable than it once was. As such, adopters and non-adopters now find the practice less desirable than using a hygienic latrine or a fishpond latrine. Those who engage in OD into the river tend to go to great lengths to avoid detection and complaints, e.g. by defecating at night: *“They don’t complain because they don’t know. We do that at night, nobody sees us, so nobody complains”* (Non-AD, male, An Giang). As a result, OD into the river has become associated with various discomforts (see Emotional, Social, and Physical Drivers). Albeit they do not see their practice as desirable, those who engage OD into the river continue to consider it ‘normal’, because they see others engage in it too.

¹⁵ We did not encounter any adopters in our research who stated that they had built a hygienic latrine owing to the sanctions against fishpond latrines. However, it is feasible that the ban has played a role in the decision making of some adopters. zsdssw2

Fishpond Latrines

Non-adopters see defecation into a fishpond latrine as a normal and acceptable practice, because it is done by many households and it has been practiced for a long time:

Here almost every household has always had a fishpond latrine (Non-AD, male, Ca Mau).

"[We] all use fish pond, so we feel it is normal to defecate in a fishpond if I have my fish pond that is owned by my household" (Non-AD, female, Soc Trang)

Fishpond defecation is seen as more socially acceptable than defecation into the river. Many village staff and other persons of high social standing use this type of defecation, thus contributing to the perception of social acceptability: *"Vegetable garden and fishpond. Now big officials do that way when they retire" (AD, male, Soc Trang)*. In some locations, adopters also consider the practice acceptable.

Unhygienic Latrines with Flush to Water Body

Unhygienic latrines with flush to a river/fishpond were common in all study communes. Adopters and non-adopters tend to make little distinction between these – ‘field combat’ – latrines and hygienic latrines (‘official’) in terms of social acceptability. For example, unhygienic latrines with flush into a river enjoyed far greater social acceptability than the practice of OD into the same river. Our findings suggested that this may in part be the case because defecating and flushing is seen as cleaner than defecating directly into the water.

Hygienic Latrine

In areas with high rates of hygienic latrines, non-adopters were more likely to perceive having a hygienic latrine as the social norm and feel a greater urgency to build a latrine than in areas where they were less common: *"They see other households build this and that, [the other households] have latrines, while they have to defecate in the open, so they try to gather money to build it" (Non-AD, male, An Giang)*. Where few households have hygienic latrines, however, this is not the case.

3.2.2 Ability Determinants

Ability determinants are factors which influence whether an individual has the ability to acquire a hygienic latrine and/or engage in hygienic sanitation.

Knowledge

Inaccurate or incomplete knowledge, as well as lack of knowledge altogether, can prevent individuals from engaging in hygienic sanitation behaviors (Devine, 2009).

Key Insights

- Awareness of the disease prevention aspects of sanitation is low among adopters and non-adopters – and is not a driver of hygienic latrine acquisition.
- The only hygienic latrine type known by adopters and non-adopters is the ‘mechanical latrine’, a term which covers all flush latrines. Most have seen or tried this type of latrine.
- Limited knowledge about the design and function of the hygienic latrine substructure among non-adopters may act as a barrier to hygienic latrine acquisition. As a result of this inadequate knowledge a) some non-adopters may opt to build a ‘field combat’ type latrine due to the belief

that a fishpond is as hygienic an option as a tank and b) some non-adopters may believe that they need to build very large latrine substructures due to the belief that 'bigger is better'.

Knowledge of Hygienic Sanitation

Adopters and non-adopters rarely mentioned disease prevention and/or health benefits as one of the advantages of having a hygienic latrine, although they did appreciate that it made defecation physically safer for the elderly and sick. This would suggest that disease prevention is not at the forefront of consumers' mind when they invest in hygienic sanitation.

Hygienic Latrine Knowledge

Hygienic Latrine Types

Adopters and non-adopters have limited knowledge about hygienic latrine types. The only hygienic latrine type known by adopters and non-adopters is the 'mechanical latrine', a term which covers all flush latrines: *"There are 4 types of latrine; firstly, fishpond latrine; secondly, mechanical latrine; thirdly, 'rotating latrine', and fourthly, 'burying latrine' (cat sanitation), which means they dig a hole and then cover it with soil," (Non-AD, male, Kien Giang/MHS).* All FGD and interview participants knew about the 'mechanical' latrine and most had seen or tried one. Women were more likely *not* to have seen and/or tried a 'mechanical latrine' than men.

Generally, a 'mechanical latrine' is understood to be a latrine with a flush mechanism and an underground tank or pit; however, some think that any latrine with a flush belongs to this category: *"I plan that in the future, if we build a 'mechanical' latrine, I would also let it out down there [into fishpond], so that it's clean" (Non-AD, female, Ca Mau).*¹⁶

Hygienic Latrine Design

Households know little about the design and function of the hygienic latrine substructure. Many know that the 'mechanical latrine' should have an underground tank with 2-3 chambers, the function of which is thought to be to prevent the latrine from getting stuck and smelling. Some think that a sealed tank is necessary to avoid problems, while others think that the tank should not be sealed:

"Yes, an unpaved bottom is safer than a paved bottom. If the bottom is paved, it's like a jar; we flush water in here, and it only flows through this pipe. Sometimes when it rains, it doesn't go through fast enough, and so it's pushed back to the top" (Non-AD, male, An Giang).

"The pour flush type doesn't have a concrete bottom. It's built so that it will soak away into the ground, but it's not hygienic. It soaks away, but in the high water season, it will be pushed upward" (AD, female, Kien Giang/DH).

Adopters and non-adopters also do not have accurate knowledge about the necessary volume of the latrine tank (in the case of septic tank latrines). The latrine tanks of adopters ranged in volume from 1 m³ to 12 m³ or more. Avoiding a blocked latrine is a primary concern and a large tank is

¹⁶ In Ca Mau, a distinction was made between 'official' latrines (septic tank, pour flush) and 'field combat' latrines (flush to an open water body).

seen as necessary to avoid the latrine filling up too quickly. The concern about latrine tank size may be associated with the lack of awareness among most adopters and non-adopters of the need for regular (every few years) removal of sludge from the settlement chamber of the septic tank. In 2010, 72% of adopters surveyed in An Giang and Soc Trang had no idea what to do when their latrine tank was full (IDE, 2010).¹⁷

Skills and Self-Efficacy

Where households self-build latrines, skill is an important determinant. Additionally, the confidence individuals have in their ability to build a latrine and/or manage the construction process may act as a driver or barriers to hygienic latrine acquisition (Devine, 2009).

Key Insights

- Adopter and non-adopters rely heavily on “expert” advice from masons. This has the potential to drive up the price of latrines (due to overdesign) and, as such, act as a potential barrier to hygienic latrine acquisition.
- Many adopters have built their latrine by themselves or with the help of a family member.

Managing the Latrine Building Process

Non-adopters are confident in their ability to manage the latrine building process. They know how to find a mason with the right skills and where to go to purchase materials; and they perceive this process as being easy. Adopters often manage to have their latrine built just 1-2 weeks after obtaining financing for the facility.

While households have confidence that they can manage the hygienic latrine building process with ease, they tend to rely heavily on “expert” advice from masons when it comes to the design of the substructure. This reliance has the potential to drive up the price of latrines (due to overdesign) and/or result in operation and maintenance (O&M) problems.¹⁸ No formal or informal mechanisms are in place to help households certify that the design of their latrine is accurate.

Self-Built Hygienic Latrines

Many adopter and non-adopter households have masons or mason helpers in the family, who have learned how to build a hygienic latrine. A number of the adopters participating in the study had their latrine built by such a family member to save on costs. The earlier sanitation market survey found that 40% of adopters in Soc Trang and 11% of adopters in An Giang had built their own latrine (IDE, 2010). As with the hired masons, the quality of the self-built latrines depends on the builder’s level of knowledge and skill.

Roles and Decisions

This determinant has been addressed in section 3.3 on Purchase Decision Making and Sanitation Shopping.

¹⁷ It should be noted that some adopters were aware of the need for sludge removal and had their latrines built in such a way that the settlement chamber could be accessed.

¹⁸ ‘Septic tanks’ built without a sealed bottom is an example of costly erroneous design.

Affordability

Affordability refers to a household's ability to pay for a sanitation product or service or to engage in a sanitation behavior (Devine, 2009).

Key Insights

Affordability – perceived and real – emerged as the most common barrier to hygienic latrine acquisition. Reasons why it is a barrier include:

- Non-adopters overestimate the investment needed to build a hygienic latrine, not least because they rely for this information on adopters who have built high-priced latrines.
- Non-adopter's 'dream latrine' often includes expensive features, such as a brick super structure and a bathroom.
- Lower cost options are not available in the local sanitation market.
- Cash poverty: Many non-adopters have sufficient income, but are unable to come up with the cash needed to purchase a large item, such as a hygienic latrine, at one time. They require access to some form of financing to undertake a large purchase, but access to the main source of financing for household sanitation (VBSP loans) is limited.
- Credit arrangements for hygienic latrine building hygienic are typically much more limited than for productive inputs and consumer goods; this constitutes a barrier for the cash poor.
- Deep poverty: A group of non-adopters are struggling to earn enough for the basic necessities of life; these households can consider neither saving nor borrowing for a hygienic latrine.

Additionally

- Due to their lack of accurate knowledge about lower cost hygienic latrine options, many non-adopters believe that the 4 million VND (now 6 million VND) latrine loans available via VBSP are insufficient to cover the cost of a hygienic latrine.

Not being able to afford a hygienic latrine was the reason non-adopters most frequently gave for not having built one. Many non-adopters said that they would like a latrine, but believed that they would not be able to afford it.

"I also like it [hygienic latrine], but I can't afford it" (Non-AD, female, Kien Giang/MHS).

"I wish I would have money to spare and I would build it. But I don't have money to do it" (Non-AD, female, Kien Giang/DH).

"My household is also in difficulties; because we don't have money, we can't build a clean one; we would build a mechanical latrine so that it'd be clean" (Non-AD, male, Soc Trang).

In the 2010 sanitation market study, affordability was likewise the most common reason given by non-adopters for not having a latrine: 43% of respondents¹⁹ stated that they were unable to afford a hygienic latrine (IDE, 2010).

¹⁹ N=103

There are a number of reasons why affordability is a barrier to hygienic latrine acquisition among Mekong Delta households.

Overestimated Cost

Most non-adopters overestimate the investment needed to build a hygienic latrine. In the FGDs, male and female non-adopters typically thought that a decent quality hygienic latrine must cost at least 10 million VND: *“10 million dong wouldn’t be enough to build a latrine. Even 12 million dong wouldn’t be enough” (Non-AD, male, Kien Giang/MHS)*. In areas where houses were built on stilts, the estimated price was closer to VND 20 million.

In reality, cost estimates for pour flush and septic tank latrines show that a pour flush latrine or a septic tank latrine with a corrugated iron super structure can be built for as little as VND 2.8 million and VND 3.2 million, respectively (see table six; Duc, 2013). This puts a hygienic latrine within the range of what was considered affordable by some of the non-adopters: *“If we spent our own money, we would spend about 2-3 million dong; we don’t have much; we would have to work for a long time, about 4-5 months to be able to gather 2-3 million dong” (Non-AD, male, An Giang)*.

Table 6 Hygienic latrine cost, estimated minimum

	Pour flush	Septic tank (concrete ring)	Septic tank (brick)	Septic tank (flood proof, raised)
Million VND				
Corrugated iron super structure	2.6	3.2	3.7	3.2
Brick super structure	3.8	4.0	4.9	n/a

Source: Duc, 2013

Non-adopters overestimate the needed investment for two main reasons. First, many non-adopters lack accurate cost information. There were often large differences in the hygienic latrine cost estimates given by non-adopters in the same commune. For some, a VND 10 million latrine included a bathroom, while others believed that this amount of money was only enough to build the latrine. Second – and perhaps more importantly – non-adopters base their cost estimates on what other households have paid. Many adopters did, indeed, reporting paying VND 10 million or more for their hygienic latrine. Contributing to this high price was the inclusion of a bathroom, over dimensioned substructures, brick super structures, etc.: *“[The latrine cost] 20 million dong or more, a bathroom and latrine” (Village head, An Giang)*.

Due to their lack of accurate knowledge about lower cost hygienic latrine options, many non-adopters believe that the 4 million VND (now 6 million VND) latrine loans available via VBSP are insufficient to cover the cost of a hygienic latrine.

Lower Cost Options Not Available in the Local Sanitation Market

Affordability is also a barrier because lower cost versions of hygienic latrine are not available in the local markets. Local latrine building service providers – i.e. masons – do not offer standard low cost

versions of hygienic latrines, which customers can chose.²⁰ Retail shop owners interviewed did not stock and sell concrete rings, which are a low cost alternative to brick tanks.²¹

Consumers do not know how to build a hygienic latrine at lower cost without compromising quality and functionality. The most common ways to reduce cost is to self-build if there is a mason in the family, and/or to entirely omit the substructure (Ca Mau) and to build only the super structure.²² Only few adopters have used low cost materials for the super structure of their latrine, but some non-adopters appeared willing to do so if it would put building a hygienic latrine within their financial reach (e.g. if given access to a VBSP sanitation loan): *“We could build the understructure (with bricks), and make the superstructure with tin sheets to cut cost”* (Non-AD, female, An Giang).

Cash Poverty – ‘Buy first, pay later’ the norm

Cash poverty is another affordability related barrier to hygienic latrine acquisition. Despite sufficient income, many non-adopters are unable to come up with the cash needed at once to make a big purchase, such as a hygienic latrine. Instead, FGDs showed that households typically borrow to finance larger purchases or buy items on credit, including consumer goods and inputs for their production/business:

“In general we don’t have capital, so if we need something, we’ll borrow money with interest”
(Non-AD/poor, female, An Giang).

“Now when we buy fertilizers, we buy them on credit, and pay it back when the harvest is over”
(AD, male, Soc Trang).

Households pay off the loans on a monthly basis or whenever they have a large amount of income. Paying off debt is prioritized, especially when it is borrowed from private moneylenders who charge 5-10% interest per month. While consumer goods (such as TVs) and agricultural inputs can often be bought with delayed or installment payments, credit arrangements for hygienic latrine building hygienic are typically much more limited²³ and this constitutes a barrier for the cash poor: *“I went there and saw a latrine, I really like it but it’s too expensive; they wouldn’t let us buy on credit”* (Non-AD, male, Soc Trang).

It is important to note that cash poor households during times of peak income may have more cash. Times of peak income depend on the main source of household income. Table seven provides an overview of peak income periods for different occupations based on what was reported by FGD and interview participants.

Table 7 Timing of peak income, by main source of income

Main source of HH income	Peak earning months
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²⁰ They do, however, offer standard low cost unhygienic latrines (i.e. field combat latrines).

²¹ In two cases (An Giang and Kien Giang/MHS), the retail shop owners had tried to introduce the technology a few years before, but that there was a lack of demand (see further under Product Attributes).

²² I.e. build a ‘field combat’ latrine.

²³ Retailers and masons do provide partial credit for a limited period of time to some households. Who to provide credit is at the discretion of the individual retailer/mason.

Rice farming	February-April, November-December
Shrimp farming	February-March
Fresh water fishing	August-October (flood season)
Masonry	October-April (dry season)

Limited Availability of/Access to VBSP Sanitation Loans

VBSP low interest lending for sanitation is one source of finance which enables cash strapped households to build a hygienic latrine (see box 1 for a description of the loans. A large number of non-adopters expressed an interest in the loans to build a hygienic latrine, and demand for the loans generally seems to surpass supply: *“I would like to take a loan to build a latrine” (Non-AD, female, Kien Giang/MHS).*²⁴ In four of the five communes, however, poor non-adopters in particular had a difficult time gaining access to the loans²⁵:

“It has never happened that the district people come here and see that some households are too poor so they give them some money; it has never happened. I’ve tried to borrow money a few times, but they haven’t given me anything” (Non-AD/poor, female, An Giang).

“They provide loans of 8 million dong, but not to poor households. They only gave the loans to those households; these households can’t get the loan” (Non-AD/poor, female, Kien Giang/DH).

In other cases, they were unable to qualify due to too much existing debt with the VBSP: *“I still owe the Government 12 million dong, it was a loan for poor households for animal husbandry” (Non-AD/poor, male, An Giang).*²⁶

Deep Poverty

While some non-adopters are merely cash poor, a group of non-adopters are struggling to earn enough for the basic necessities of life. An analysis by Duc has shown that the cost of even the least expensive wet latrine (the only type accepted by consumers) is equivalent to 22% of the annual income of households in the lowest income quintile (Duc, 2013, see table nine below). Some of the poorest of the households worry about money for food and can consider neither saving nor borrowing for a hygienic latrine: *“If I had taken the 4 million dong loan, we wouldn’t have money to*

²⁴ The 2010 sanitation market study also found demand to be greater than supply. The study found that just 4.1% of adopters had borrowed for sanitation overall, but that there was dramatic increase in the number and percentage of households who borrowed for sanitation from the VBSP from 2007 onwards (iDE, 2010).

²⁵ Findings from the 2010 sanitation market survey show that a majority of non-adopter households did not know about the VBSP sanitation loans. However, participants in most of the FGDs for this study appeared to have at least some degree of familiarity with the loans.

²⁶ A strong driver for non-adopters’ interest in the VBSP sanitation loans may be the favorable loan terms (0.8% interest/month) compared to the private loans often taken in the area. With monthly interest payments of VND 32,000 on a VND 4 million VBSP loans compared to monthly payments of VND 200,000-400,000 on a private loan, the VBSP loans could to many seem like an opportunity that is too good to pass up: *“If the local authorities lent me money, I would borrow whatever they allowed” (Non-AD, male, An Giang).* This study as well as the 2010 sanitation market study found that households rarely borrow from informal sources to build a hygienic latrine (iDE, 2010)

pay back because we're poor. How could we pay back? We don't make enough to eat..." (Non-AD/poor, female, Soc Trang).

Some poor non-adopters see having a hygienic latrine as being so far beyond their financial capacity that they cannot even dream about having one: *"Only rich households have mechanical latrines; poor households don't dare dream about that"* (Non-AD, female, Soc Trang). In other cases, poor non-adopters believe that a hygienic latrine is or will be perceived by others as a frivolous thing for a poor household to invest in; and that poor households ought to have more important priorities (i.e. competing priorities) to worry about:

"We're poor, we have to worry about our unstable lives; I don't feel it's very appropriate to use a mechanical latrine" (Non-AD/poor, male, Kien Giang/DH).

"We're poor, if we borrowed money to build a mechanical latrine, they would tell us off, saying "poor but show-off" (Non-AD/poor, male, Kien Giang/MHS).

BOX 1: GOVERNMENT SUBSIDIZED LOANS FOR SANITATION

Loans for household sanitation are available via the Vietnam Bank for Social Policy, the Government of Vietnam's (GOV) micro credit arm. Via the VBSP's Decision 62 program, rural households throughout Vietnam can obtain a loan to build a hygienic latrine. From 2003 to 2013, each household could borrow up to VND 4 million for a sanitation facility. In 2014, the amount each household can borrow for sanitation was increased to VND 6 million. To be eligible for the loan, households:

- Must have long-term residency in a rural area with VBSP presence.
- Should have no sanitation facility, or a facility that is not up to the national standard (e.g. one that has been degraded).
- Must be a member of a Savings and Credit Group (SCG).

Maximum loan term is five years. Annual interest rate is 10.8% (0.9%/mo.). It should be noted that the HHs can build any eligible sanitation facility (e.g. a latrine or an animal pen) with the loan. Generally, demand for these sanitation loans exceeds supply in most areas of Vietnam.

3.2.3 Motivation Determinants

Motivation determinants deal with the factors which may motivate an individual to change – or not change – sanitation behavior.

Attitudes and Beliefs

Attitudes and beliefs refer to individuals' understanding and perceptions of i) sanitation behaviors, ii) those who practice them, and iii) sanitation products and services. Beliefs are not necessarily factually correct and can work to prevent as well as motivate hygienic sanitation practices (Devine, 2009).

Key Insights

→ The widely held belief that fish bred on feces taste better and are more nutritious than other fish is a barrier to hygienic latrine acquisition and usage, because it makes the fish a sellable commodity. The desire to breed fish on human feces – for sale or own consumption – provides fishpond owners with a disincentive to acquire and/or use a hygienic latrine.

- The belief that a hygienic latrine is necessary for the elderly, sick, or otherwise weak is a key driver of hygienic latrine acquisition for households with members that fall into these categories.
- For households without elderly, sick, or weak members, however, a latrine is considered a ‘nice to have’ rather than a ‘need to have’.

Beliefs Related to Unhygienic Sanitation Practices

The commonly held belief that fish bred in fishpond latrine ponds are more nutritious and taste better than fish that have been fed another diet is a barrier to hygienic latrine acquisition and usage in areas where their consumption is common (*“They say non-latrine fish do not taste as good as latrine fish” (AD, female, Kien Giang/DH).*²⁷ In some communes, fishpond fish were reported to be a sought-after delicacy and were bred for sale or own consumption, giving fishpond owners with a disincentive to acquire and/or use a hygienic latrine and the owners of larger fishponds an incentive to encourage other households to use their fishpond latrines.

Another number of common – and erroneous – beliefs related to river defecation and fishpond latrines were identified, but at present these do not appear to play a critical role as barriers to hygienic latrine acquisition. They included: a) the belief held by river defecators that they can avoid causing pollution, if they defecate in the right place, i.e. where the current is strong and the water will ‘carry away’ the feces: (*“It goes out into the river, it’s clean, where water flows,” AD, female, Kien Giang/MHS*),²⁸ b) the belief held by many non-adopters and adopters that latrine fishponds are kept clean as long as there are fish in the pond, because they fish will consume all the feces (*“The fish in the fish pond will eat everything,” AD, male, Soc Trang*), and c) the belief that fishpond latrines do not cause pollution because they are not connected to any other water body.²⁹ The beliefs relating to fishpond were shared by both adopters and non-adopter and, as such, do not seem to play a role in hygienic latrine acquisition.

Beliefs Related to Hygienic Latrines

The belief that a hygienic latrine is only really necessary for those who are elderly, sick, or otherwise weak (as well as beneficial for children) is ubiquitous. For these groups, hygienic latrines are seen as a necessity which makes defecation safer and more convenient, primarily because the latrine is located inside or near the home.³⁰ It is a belief that functions as both a driver and a barrier to hygienic latrine acquisition. On the one hand, aging adopters generally cited this belief as the primary reason why they had decided to build a hygienic latrine. For many, doing so was seen as an

²⁷ Fishpond latrine fish are believed to be suitable for consumption as long as nobody defecates into the pond for some time before the fish are harvested. This ‘no defecation’ period differed from place to place, from a few days to a few months.

²⁸ In An Giang, non-adopters who defecated into the river also regularly bathed there and appeared untroubled by these simultaneous uses: *Bathing in the river is comfortable (Non-AD, female, An Giang).*

²⁹ However, latrine fishpond owners generally exchange the water in their ponds every 1-3 years to prevent the fish from dying and the pond from smelling. The old fishpond water (and sludge) is then pumped into the local waterways and fresh water is, in turn, pumped from the local waterway into the fishpond.

³⁰ It should be noted that ‘field combat’ latrine offer the same type of convenience and that some of the ‘hygienic/mechanical’ latrines built, in fact, could be of this type. Based on adopters’ descriptions of their latrines, however, only few of the FGD participants had ‘field combat’ type latrines.

integral part of preparing for a comfortable old age: *“I felt that I was getting old, and it was too far away; if I built one inside the house, it would be easier for me to go there; that’s the first reason”* (AD, male, Ca Mau).

On the other hand, hygienic latrines were generally seen as not necessary unless there are elderly, sick, weak, or very young household members. That is, a hygienic latrine is believed not to be real necessity for healthy adults:

“We don’t have children in the house. For adults there’s nothing to be afraid of [in using the fishpond latrine]” (Non-AD, female, Ca Mau).

“It’s different with young people, but for older people, [a hygienic latrine] is beneficial” (AD, male, Ca Mau).

As a result, young and/or healthy non-adopters may consider building a hygienic latrine unnecessary, despite having many of the same inconveniences and safety concerns as the elderly and sick (see section on *Emotional, Physical and Social Drivers*).

Values

Values are central and enduring ideas shared by the members of a community about what is good or desirable and what is not. In relation to sanitation, values that favor or are consistent with the adoption of hygienic sanitation practices can motivate individuals to act (Devine, 2009).

Key Insights

- A wish to secure a safe and comfortable old age for one’s parents (taking care of one’s family) has motivated many grown children to support their elderly parent(s) to build a hygienic latrine.
- Some non-poor adopters saw non-adopters as less disciplined and civilized/educated than themselves.

Taking Good Care of One’s Family

From FGDs and interviews, it became clear that people place a very high value on taking good care of their family, in particular their elderly family members and children. The value attached to taking good care of one’s family has motivated many adult children to support their aging or elderly parents to build a hygienic latrine, because having a hygienic latrine is seen as a necessity for a comfortable and safe old age.

“We have a lot of children, so they contributed money to help us [build a hygienic latrine]; we were old and sick and no one took care of us, what if we fell? Therefore they built it for us” (AD, female, Kien Giang/MHS).

“I saw that my mother was getting old and senile, so I decided to build a latrine to make it easy for her to use” (AD, female, Kien Giang/DH)

In Soc Trang, local authorities had already tapped into this value in their latrine promotion efforts and testimonies from adopters suggested they had done so with some level of success: *“The local [authority] encouraged us to build it, to make it more convenient for old senile people to urinate or*

defecate; if they had to go outside, they might fall... Now, I've built it inside the house" (AD, male, Soc Trang).

Adopters Perceptions of Non-Adopters

Adopters see non-adopters as being of lower socioeconomic standing and as having less "stable" lives. Poor adopters tend to sympathize with non-adopters and see them as being victims of unfortunate circumstances: *"We feel sorry for them, but what to do. Those without latrines are those without a place to live, who move from place to place," (AD/poor, male, An Giang).* Other adopters – all of whom were not poor – see non-adopters as less disciplined and see their lack of a hygienic latrine as the result of being unable to work hard and save:

"Some people want to become rich; some just want to enjoy life and don't want to work, spending every penny they earn, they just don't care, life is short. According to this point of view, you don't know if you're still alive tomorrow, you may die today, so if you have money, spend it, and worry about it tomorrow (laughter) That's the reason why they're constrained; if everyone is truly focused on their work, they won't be too poor to afford a latrine. I'm not talking about cases where they're too sick or lack manpower" (Village head/non-poor, Ca Mau).

They don't save, they're not determined to do it either; if they're determined, they can do it" (AD/non-poor, female, Kien Giang/DH).

Further, some adopters – also generally non-poor – see having a hygienic latrine as more civilized and see non-adopters as less polite or civilized than those who use a hygienic latrine:

"It's civilized and clean and nice, so everyone agrees to build it" (AD, male, Kien Giang/DH)

"Only one part of the fishpond latrine is covered; we feel it's not polite to sit there... A ['mechanical'] latrine is very clean and looks civilized" (AD, male, Soc Trang).

Emotional, Social, and Physical Drivers

Drivers are strong – positive or negative – thoughts and feelings that motivate behavior. Drivers may be associated with unmet emotional, social, or physical needs (Devine, 2009).

Key Insights

- A desire for convenience, safety, and cleanliness were cited by adopters as primary drivers in their decision to build a hygienic latrine.
- Many non-adopters find their defecation practice inconvenient, for example due to the time and effort required.
- Many non-adopters find their defecation uncomfortable, for example when having to defecate in bad weather.
- Some non-adopters find their defecation practice embarrassing because others may see them.
- Many non-adopters worry about the safety of their defecation practice, for example when having to walk to and from the defecation place at night.
- These discomforts have the potential to be drivers of change.

- The non-adopter groups for whom the above drivers are most salient include: 1) open defecators (river and fields) and 2) fishpond latrine sharers.
- Women in particular are bothered by the lack of privacy and discomfort of open defecation and usage of shared fishpond latrines.
- Defecation in ‘field combat’ latrines is not associated with similar discomforts; among non-adopters using this type of unhygienic latrine change is unlikely to be motivated by these drivers.

Physical Driver: Convenience

Both male and female adopters cited convenience as one of the primary *drivers* behind their decision to build a hygienic latrine.

“When I heard they mobilized people to build latrines, I was OK with that right away. Because I had diarrhea; I wanted to go back to the latrine right when I just got back from the river. I couldn’t stand going back and forth like that” (AD, female, Kien Giang/DH).

“And it’s inside or right next to the house, it’s convenient. In the past, we had to light a lamp to go there; and back then there was no lamp, we could only afford a flashlight, and then we would trip and fall. And snakes everywhere” (AD, male, Soc Trang).

‘Convenience’ was also one of the two most common reasons adopters gave for building a hygienic latrine in the 2010 sanitation market survey (58% of adopters cited this as a reason they had built a hygienic latrine) (IDE, 2010). What adopters find convenient about a hygienic latrine is that it is easy get to because it is inside or near the house, there is no need to accompany small children, they do not need to share it with other households, there is a light inside for use at night, and that it is possible to bathe and defecate in the same place (if the household has built a bathroom too). It is noteworthy that men appear to be just as motivated by the convenience of having a bathroom as women do.

Many non-adopters see hygienic latrines as a convenient and desirable alternative to their current defecation practice. Those who experienced inconveniences, in particular, were individuals who shared fishpond latrines, defecated into the river (from the bank or a boat), or defecated openly in the rice fields/bushes.

For *non-adopters using a shared fishpond latrine*, the distance to the latrine (in some cases several hundred meters) and the need to wait for other users to finish their turn were seen as inconveniences.

“The pond is big, but there’s only one latrine; it’s very busy in the morning. Someone already sits there, I have to wait for so long; they sit there reading newspapers, god, like forever, without getting out. They should go to the fields if they want to read newspapers” (Non-AD, female, Kien Giang/MHS).

Further, fishpond users (owners and sharers) found these latrines particularly inconvenient to use at night or during rainy weather due to difficulty in getting to the latrine. Those with children

and/or elderly parents found having to accompany these household members to the latrine inconvenient.

Non-adopters who openly defecate into the river found the distance to the defecation place inconvenient³¹, in particular at night and during bad weather: *“But it’s a very long way from our house to the river. If we had one right in our house, when we’re sick, or we want to go to toilet at night, it would be convenient. It’s a long way to go to the river”* (Non-AD, female, An Giang). Another inconvenience experienced by this group was the need to wait until night time to be able to defecate in privacy and without risk of complaints. Women are more concerned about privacy during defecation than men and an inconvenience experienced by women, in particular, was the need to spend a lot of time looking for an undisturbed spot if they needed to defecate during the day time. Women, in particular, also found having to accompany children to defecate inconvenient.

Non-adopters who open defecate onto fields found the effort needed to find an undisturbed spot for defecation inconvenient.

Convenience was, however, not an issue for non-adopters with a fishpond or river latrine inside or within a few steps from the house, in particular if the latrine was of the ‘field combat’ type.

Physical Driver: Comfort

In FGDs, adopters often mentioned ‘comfort’ as one of the primary advantages of having a hygienic latrine. The latrine is typically seen as comfortable, because it is located indoors, where defecation can take place in privacy: *“It’s more comfortable to have an indoor latrine”* (AD, female, Kien Giang/DH). Hygienic latrines are also seen as being particularly comfortable to use during bad weather.

Non-adopters see hygienic latrines as comfortable and, in many cases, consider their own defecation practice to be uncomfortable. All non-adopters, who defecate outside, find the practice uncomfortable during rainy and stormy weather: *“When it rains, we have to wear a poncho and a conical hat. It’s extremely miserable”* (Non-AD, male, Ca Mau). Some also find defecating outside uncomfortable in very hot weather.

Another source of discomfort for non-adopters is the inability to defecate when one needs to. Men and women who share fishpond latrines mentioned having to wait for others to defecate or being hurried by others when defecating as being sources of discomfort: *“Sometimes I’m sitting inside, but people keep hurrying me and I can’t stand it!”* (Non-AD, female, Kien Giang/DH). For women, who defecate into the river in particular, it is a source of discomfort to have to ‘hold it’ when not being able to find a spot deemed private enough for defecation:

“Many times in the rice season, a lot of people park [their boats] at the dock, so we can’t go there... Very uncomfortable. We can’t defecate there and it’s annoying and we don’t have [a

³¹ This was particularly the case in An Giang, where defecation happened from a boat that the open defecators had rowed onto the river.

latrine]; we wish that we could build a latrine so that it would be convenient for us” (Non-AD, female, An Giang).

It is important to note, however, that many fishpond latrine owners perceive their defecation practice as comfortable, because they find defecation outdoors to be cooler and less ‘stuffy’ than an indoor (hygienic) latrine. In Ca Mau and Soc Trang, several adopters who own a hygienic and a fishpond latrine prefer using the fishpond latrine because of this perceived quality: *“The fishpond latrine is cooler, comfortable” (AD, female, Soc Trang).* They reserve the hygienic latrine for use in bad weather and at night.

Once again, comfort is not an issue – and, as such, is unlikely to be a driver – for non-adopters with indoor ‘field combat’ type latrines. These latrines afford their users with the same type and level of comfort as a hygienic latrine.

Physical Driver: Safety

Adopters cited concerns about safety as one of the primary motivations to build a hygienic latrine inside or next to the home. These adopter households were often – but not exclusively – elderly or had members who were elderly, sick, and/or small children:

Back then we had to bring a lamp, scrambling across a monkey bridge which is made of a tree trunk; it was very scary; we fell all the time. We fell and then had to have a shower, very dirty... And snakes and such” (AD, male, Soc Trang).

“[When using the fishpond latrine I felt] afraid; I’m old; I’m very happy to have this latrine. It would be terrible to slip when it rains,” (AD, female, An Giang).

“My grandson goes in there [into the hygienic latrine], I don’t need to worry” (AD, male, Soc Trang)

Safety is also a concern for many non-adopters and, as such, a strong potential driver, in particular for those who use fishpond latrines as well as those who openly defecate into the river. What non-adopters worry about includes falling into the fishpond or river, especially in the case of children and the elderly and especially at night: *“The old might fall down while defecating at night because it’s slippery. If that happens and nobody knows, they might be found stiffened the following morning” (Non-adopter, FGD, male, Ca Mau).*

Non-adopters are also concerned about slipping and falling when walking to and from fishpond or river latrines located at some distance from their homes at night, especially during rainy weather.

Some non-adopters – in particular, women – worried about meeting ghosts when defecating far away from the home at night: *“[Some people defecate on the fields or in the river] at night. They’re afraid of ghosts if they have to go far, so they go to the river” (Non-AD, female, Kien Giang/MHS).* They perceive the hygienic latrine as safe from ghosts, because it is located close to the household: *“A mechanical latrine is close to the house, so we don’t have to be scared of ghosts at night,” (Non-AD, male, Kien Giang/DH).*

Once again, safety is not a concern and, as such, not a potential driver for households with 'field combat' type latrines.

Social Driver: Embarrassment

For women, in particular, embarrassment at being seen defecating is a concern. Female adopters, thus, point to the ability to defecate in privacy as one of the advantages of having a hygienic latrine:

"It's comfortable to defecate in an indoor one. If we go to the river, there are boats travelling back and forth at the dock, and people going back and forth to the market" (AD, female, An Giang).

Many female non-adopters express embarrassment and discomfort at being seen defecating by the river and/or in a fishpond latrine: *"[I feel] embarrassed... When I sit in [the fishpond latrine], each time I go down there, people pass by so it's a bit difficult"* (Non-AD, female, Kien Giang/MHS). In some cases, the discomfort is made even greater because female non-adopters try to postpone defecation into fishpond latrines or the river until nobody else is around.

Female non-adopters often expressed a wish to have a hygienic latrine, because it would allow them to defecate in privacy without fear of embarrassment: *"It is more comfortable if using a machine latrine. Nobody can see us. With fishpond latrines, we have to wait until nobody is around"* (Non-AD, female, Kien Giang/MHS).

Table 8 Summary table of physical, emotional, and/or social discomforts typically associated with non-adopter defecation practices

	Convenience	Comfort	Safety	Embarrassment
OD on fields	<ul style="list-style-type: none"> Time/effort needed to find private spot for defecation. 	<ul style="list-style-type: none"> Defecating outside in bad weather 	<ul style="list-style-type: none"> Meeting a ghost at night (esp. women) 	<ul style="list-style-type: none"> Being seen defecating (women)
OD into river	<ul style="list-style-type: none"> Distance to river Needing to wait until night time to defecate in privacy Time needed to find private spot to defecate in daytime (esp. women) Time spend accompanying children 	<ul style="list-style-type: none"> Defecating outside in bad weather Having to hold 'it', if unable to find a private spot 	<ul style="list-style-type: none"> Fear of falling into river, esp. elderly and esp. at night Slipping and falling on the way to defecation place at night Meeting a ghost at night (esp. women) 	<ul style="list-style-type: none"> Being seen defecating (women)
Fishpond, shared	<ul style="list-style-type: none"> Latrine located at distance Getting to latrine at night Waiting for other to finish their turn Time spend accompanying children or elderly to use latrine 	<ul style="list-style-type: none"> Defecating outside in bad weather Having to hold 'it' when waiting Having to hurry when others need to go 	<ul style="list-style-type: none"> Fear of falling into fishpond, esp. elderly and esp. at night Slipping and falling on the way to defecation place at night Meeting a ghost at night (esp. women) 	<ul style="list-style-type: none"> Being seen defecating (women)
Fishpond, own	<ul style="list-style-type: none"> Getting to latrine at night Time spend accompanying children or elderly to use latrine 	<ul style="list-style-type: none"> Defecating outside in bad weather 	<ul style="list-style-type: none"> Fear of falling into fishpond, esp. elderly and esp. at night 	<i>See note*</i>
Field combat latrine	None	None	None	None

* FGD and interview data on this subject were too limited to come to any conclusions.

Competing Priorities

Findings are presented in section 3.3 on Purchase Decision Making and Sanitation Shopping.

Intention

Intention is defined as an individual's plan on whether or not to engage in a given behavior. Intention is considered to be a strong predictor of behavior change (Devine, 2009).

While many non-adopters expressed an interest in having a hygienic latrine, hardly any expressed an actual intention (i.e. a plan). Intention was found to be neither a key barrier nor driver of hygienic latrine acquisition.

Willingness to Pay

Willingness to pay refers to how much and under what circumstances households are willing to pay for sanitation.

Key Insights

- Some non-adopters are willing to invest VND 1-4 million of their household funds to build a hygienic latrine; however, many state that they are not willing to invest any amount.
- For non-adopters belonging to wealth quintile II (near poor) a hygienic latrine should be within financial reach, if prioritized.

Factors that negatively affect willingness to pay include:

- Non-adopters lack accurate information about the cost of a hygienic latrine.
- The erroneous perception that a VND 6 million VBSP sanitation loan is insufficient.
- Non-adopters who sell fish from their fishpond latrines are unwilling to forgo the income.
- Not owning the land on which the non-adopter lives.

Factors that positively affect willingness to pay include:

- Having the opportunity to take a VBSP sanitation loan or other low interest loan.

Adopters participating in the study had contributed anywhere from VND zero³² to 30 million for their hygienic latrines. Most, however, cited the cost of their latrine to be in the area of VND 10 million.

Due to the absence of recent quantitative data, the precise amount non-adopters are willing to pay for or contribute to the construction of a hygienic latrine cannot be determined. When asked in the FGDs how much they would be able or willing to contribute, non-adopters who were willing to pay for a latrine, estimated that they could afford a payment or contribution in the range of VND 1 million to 4 VND million. In many cases, poor and non-poor non-adopters alike were not willing to pay or contribute anything to a latrine.

³² Subsidy recipients who built simple superstructure.

The 2010 sanitation market survey found 21% non-adopters considered a latrine investment of VND 2-3 million – the minimum amount needed to build a hygienic latrine – affordable immediately or within one year, while 71.8% found it to be ‘never affordable’.

For many near poor non-adopters, however, a hygienic latrine should be within financial reach, if it is prioritized. A 2013 analysis shows that the cost of a simple pour flush or septic tank latrine equals 8-9% of annual income of for households in wealth quintile II in the Mekong Delta (table nine, below; 2010 data) (Duc, 2013). This is only slightly more than for households belonging to wealth quintile III (6%), among which 54% had a septic tank latrine by 2010.

Table 9 Cost of hygienic latrines as % of average HH income in 2010, wealth quintiles I and II

	Pour flush	Septic tank (concrete ring)	Septic tank (brick)	Septic tank (flood proof, raised)
Cost as % of annual HH income				
Quintile I (poorest 20%)	22	24	32	27
Quintile II (second poorest 20%)	8	9	12	10
Quintile III (middle 20%)	6	6	8	7

Source: Duc, 2013

Factors Affecting Willingness to Pay

In the following factors that were found to affect household willingness to pay are presented.

Lack of Accurate Information about Cost

Our findings suggested that willingness to borrow for a hygienic latrine would likely increase with a lower hygienic latrine price tag: “Back then loans of 4 million dong were provided, but it would cost 6-7 million dong to build it, so people didn’t take the loans” (Non-AD/poor, female, Soc Trang). As such, non-adopters overestimates of the cost of a hygienic latrine may affect their willingness to pay in a negative direction. More accurate cost perceptions may result in an increase in willingness to pay.

Fishpond Latrines as a Source of Income

For some non-adopters (and some adopters), fishpond latrines generate income which they are unwilling to forgo. This was particularly the case in the study commune in Soc Trang, where latrine pond fish were sold to fishmongers at a price of VND 23,000 per kilo. Households with large fishpond latrines – which they shared with non-adopters who did not have any latrine – could earn up to “tens of millions of dong” annually from their fish harvest. Households with smaller fishponds could not earn large sums of money, but relied on selling fish from their ponds to buy food during hard times. Households – in some cases, even those who also have a hygienic latrine– are unwilling to give up these fishpond latrines and the income they generate.

Expectation of Subsidies

Another factor, which negatively affects willingness to pay, is expectations of subsidies. Subsidies for hygienic latrines had been given by government or NGO programs in all study communes. This

has created in some non-adopters – generally poor ones – the expectation that a latrine should be given to them for free: *“I’m a poor household; they should give me some million dong. If I had a latrine, I could use it when I got sick”* (Non-AD/poor, female, Ca Mau). Relatively few non-adopters were waiting for a subsidy only. Far more expressed an interest in gaining access to a loan for sanitation.

Land Ownership

Households that do not own the land they live on are not willing to invest in a hygienic latrine because of the risk that they may be evicted from this land and, hence, lose the investment: *“10 out of 10 people who stay on someone else’s land, no latrine. Because it’s someone else’s land; we don’t know when they’ll kick us out, or when we’ll move.”* (Non-AD, male, An Giang). These households are unlikely to make any hygienic latrine investment until they have attained secure land tenure or a movable sanitation facility becomes available in the market (see *Recommendations*)

Access to Government Credit for Household Sanitation

The opportunity to access a VBSP loan for hygienic sanitation can work to boost non-adopters’ willingness to pay for sanitation. When given access to VBSP sanitation loans, FGDs showed that adopters often had contributed a substantial amount of money – in addition to the loan – to build a latrine according to their preferences: *“We were happy as hell when we got the loan; we wanted to build a latrine at the time. With that amount, we contributed some more to build it”* (Non-AD/non-poor, FGD, woman). Some – but not all – non-adopters expressed a similar willingness to contribute funds if given access to a VBSP sanitation loan: *“If the Government gave us a loan, and if it was 1-2 million dong short, we would be able to make it up; we wouldn’t have too much”* (Non-AD/poor, female, An Giang).³³

3.3 Purchase Decision Making & Sanitation Shopping³⁴

In interviews and FGDs with adopters and non-adopters, the research team explored decision making around large household purchases in general and hygienic latrines in particular. The discussions covered which investments/purchases are prioritized, who is involved in decision making, and how purchases are financed. The sanitation shopping process was discussed with adopters and key informants (masons and retailers).

3.3.1 Household Expenditure Priorities

Key Insights

→ Four general expenditure categories emerged from discussions with households. In order of priority they include: essential expenditures, accidental expenditures, obligatory expenditures, and additional expenditures.

³³ As noted above, some non-adopters did not wish to consider the applying for the loans, because they thought the loan amount was insufficient to build a hygienic latrine. In two cases, non-adopters had taken the loan, but spent the money on something else because of this perception.

³⁴ This section covers information relevant to the behavioral determinants “roles and decision making” and “competing priorities”

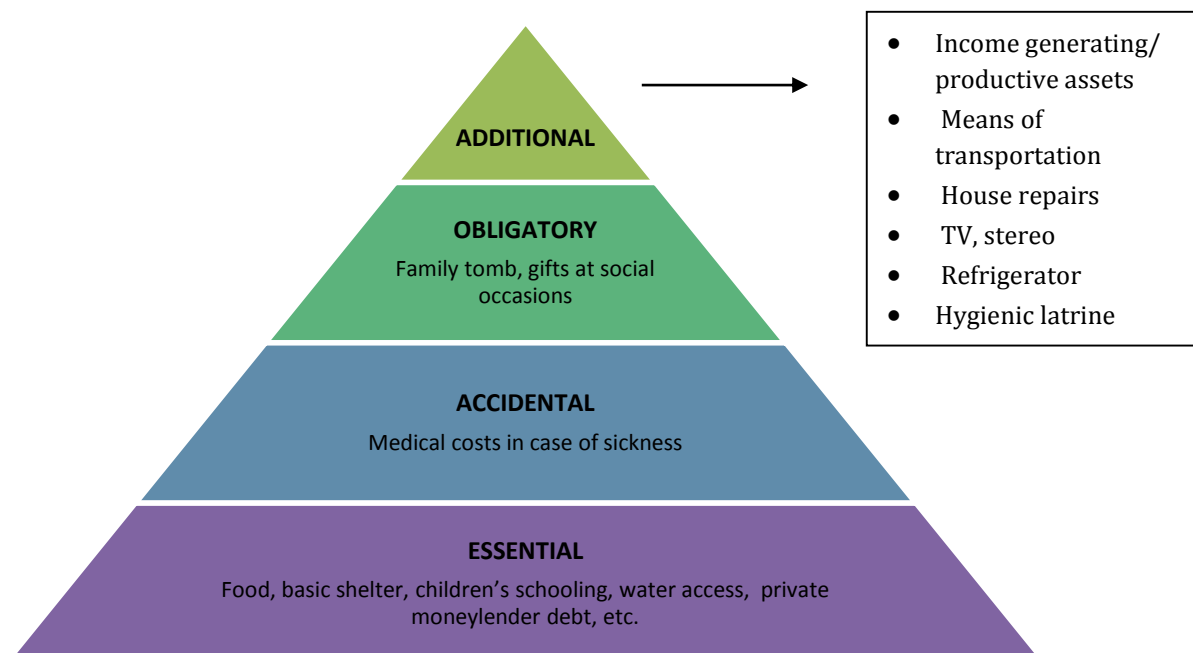
- Hygienic latrine investments belong in the category of ‘additional’ expenditures, i.e. purchases that households will spend money on, if spare funds are available once essential, accidental, and (to some extent) obligatory expenditures have been met.
- For many non-adopters, a hygienic latrine is at the bottom of their list of ‘additional’ expenditure priorities. Income generating investments are prioritized the highest, but expenditures such as house repairs and TVs are also seen as more important.
- Many non-adopters are unwilling to invest their savings in or borrow for a hygienic latrine, because a latrine – in contrast, e.g. to livestock and tools – is seen as a ‘dead’ investment.

From the research team’s discussions with adopters and non-adopters about if and how they are able to afford a hygienic latrine and what their highest spending priorities are, four general expense categories emerged (illustrated in figure 10, below):

- **Essential expenditures** –Expenditures households must seek to meet, including food, basic shelter, children’s schooling, water access, private moneylender debt³⁵, etc. If money is available in the household, it will first be spent on expenses belonging to this category. Otherwise, they will borrow or buy on credit. In non-adopters households with insufficient funds to cover essential expenditures, saving or borrowing to build a hygienic latrine is generally out of the question: *“If I had taken the 4 million dong loan, we wouldn’t have money to pay back because we’re poor. How could we pay back? We don’t make enough to eat, why build a too nice latrine?” (Non-AD/poor, female, Soc Trang).*
- **Accidental expenditures** –Expenditures associated with illness and other family emergencies. As with essential expenditures, households will use any available money, sell assets, or borrow to pay expenses in this category. Poor non-adopters often reported having difficulty saving up because of unforeseen accidental expenditures: *“When we manage to save a few hundred thousand dong, my children get sick” (Non-AD, male, Kien Giang/DH).*
- **Obligatory expenditures** – Expenditures that are obligatory to meet, if money is available in the household, but for which it is not common to borrow. They include gifts for social occasions and other debt (including to the VBSP).
- **Additional expenditures** – These are goods or assets that households will spend money on, if spare funds are available once essential, accidental, and (to some extent) obligatory expenditures have been met. They include income-generating assets (additional to their core business/profession), means of transportation, TVs, refrigerators, house repairs, and hygienic latrines. If considered a high priority, households may borrow to invest in the items in this category or buy them on credit.

³⁵ Private moneylender debt is included in this category, because repayment is highly prioritized by households due to monthly interest rates of up to 10 percent.

Figure 10 Major household expenditure categories



Hygienic latrines typically compete for household resources with other expenditures in the 'additional' category. When asked how they spend the funds in case they have an extra VND 10 million available, the vast majority of non-adopters preferred to invest the money in income-generating assets, such as livestock or tools, but expenditures such as house repairs and TVs were also seen as more important. A hygienic latrine is found mostly at the bottom of many non-adopters' list of spending priorities. First, non-adopters tend to perceive it as a 'nice to have', rather than a 'need to have' and most other items are seen as more necessary: *"Sometimes we had 10 million dong in the house, but we wanted to spend it on other things, and so we couldn't build a latrine. It's not that we don't want to do it"* (Non-AD, male, Kien Giang/DH). Second, many see hygienic latrines as a 'dead' investment. According to this logic, an investment in a hygienic latrine is wasted because it will not return a profit to the household and, once it is built, the money will be 'trapped', because the latrine cannot be sold again in case the household needs the cash:

"If we built a latrine, we wouldn't have any money left; a cheap one costs 10-something million dong already. The money spent there wouldn't produce anything" (Non-AD, female, An Giang).

In certain situations, hygienic latrines do move up the list of expenditure priorities, such as (a) when a household member becomes sick, disabled, or elderly and (b) when dedicated financing (e.g., VBSP sanitation loans) for sanitation is made available. As noted earlier, 'willingness to pay' for hygienic sanitation may also be positively affected if hygienic latrines are marketed at a lower price.

BOX 2: SPENDING ON SOCIAL EVENTS

FGD participants pointed, in particular, to events and parties in the community as a drain on their household budgets. At each event a gift of VND 100,000-200,000 is expected from each attending family:

"We have to attend events all the time; now they also invite us to birthday parties and death anniversary parties, and babies' one-month old parties. We only go if they're close to us; we don't go to parties of those who are not close to us; but we can spend even 10 million dong on this" (Non-AD, male, Kien Giang/DH)

"Yesterday spent 700,000vnd on attending events only; we can't bring only 100,000 dong to an event of our family member. We must bring 200,000 dong" (AD/non-poor, female, An Giang)

Going to the events is a social obligation that can only be avoided if the household absolutely has no money. Households also go to the events in the expectation that the hosting household will come – and give money – when they later have a party. FGD participants shared the perception that presents at events and parties were one among their greatest expenses. Data from the 2010 sanitation market survey back up this perception. Gifts for events and parties constituted 26% and 22% of monthly household expenditures in Soc Trang and An Giang, respectively, which was more than any other category of expenses (excluding expenditures on income producing activities) (IDE, 2010).

No information was obtained about how much the hosting household typically 'earns' from the social event. However, it is reasonable to believe that it is a larger sum. It may thus be effective to target households with events or parties planned for a hygienic latrine investment.

3.3.2 Sanitation Purchase Decision Making

Key Insights

- Both men and women can propose an investment in a latrine; women more often do so.
- Larger purchases are usually discussed by husband and wife.
- Though men tend to see themselves as the final decision makers; women do make final decisions and/or are able to veto purchases in many households.
- In most cases, men manage the latrine construction process; women are often closely involved in the selection of materials.

The process of making a decision to make a large purchase or investment is characterized more by being consultative and consensus seeking rather than unilateral in nature.

Latrine purchase proposal

Both women and men (wife and husband) are able to propose larger purchases. Women are seen as being more interested in having a hygienic latrine than men and appear to propose building a hygienic latrine slightly more often than men: *"In general if the women heard that we could build a latrine, they would be even happier than the men" (Non-AD, male, An Giang).*

A proposal to purchase or invest in a larger item is often made when an opportunity for financing arises. A proposal may be made in response to the opportunity to finance a specific item or in response to the opportunity to access a loan:

"I bought an ice cream freezer to sell ice cream... At that time we bought it with 5 million dong, but paid 700,000 dong upfront, and for the rest, we pay several tens of thousands of dong each time... they came here from somewhere else, and advertised it to us" (Non-AD, female, Kien Giang/MHS).

"Borrow money and then discuss [what to spend the money on] together and then it's done" (Non-AD, male, Kien Giang/MHS).

In other cases, a proposal to invest is made and discussed in advance and the household will wait for a financing opportunity to arise: *"My wife and I have discussed already; if we had money, we would build a latrine first" (Non-AD, male, An Giang).*

Children may also propose a purchase (typically a television), but no cases of children proposing to build a hygienic latrine were encountered.

Making the Final Decision

Once a proposal has been made, it is almost always discussed within the household. Husband and wife normally discuss the purchase: *"The husband and wife discuss together and reach an opinion" (Non-AD, female, Kien Giang/MHS).* For younger couples, parents and parents-in-law are often consulted, while older couples consult their children.

Though, male FGD participants often stated that they make the final decision about larger purchases, the FGDs revealed that women also have considerable influence on the decision making process. Women, in many cases, were able to make the final decision about a purchase or to veto their husband's proposal to make one, if they disagree:

"My husband complained a lot when I built the latrine. He thought that we could defecate outside (AD, female, Kien Giang/DH).

If I had money, about 10-15 million dong, I would buy 1-2 cows to keep them there, and cut grass for them to eat. That's my idea. But that amount of capital, I don't dare, because my wife doesn't agree. She bought gold; she didn't agree with the idea of raising cows (AD, male, Soc Trang).

Overall, women see the decision making process around larger purchases as more consensus oriented than do men (although, many men also saw it as consensus oriented): *"Everyone in the family would decide" (Non-AD, female, Kien Giang/MHS).* Women also to a greater extent see themselves as being able to make the final purchase decision than do men. A certain balance in decision making is maintained in many families because the husband is regarded as the main income earner, while the wife is entrusted with managing the family's finances.

Roles in the Latrine Building Process

According to the 2010 sanitation market study, the male head of household managed the process of building the hygienic latrine in 62% of cases; the wife had done so in 11% of cases.³⁶ In another 11% of cases, the eldest child in the family had managed the process. The findings from the present study suggest that women's involvement in the latrine building process may be somewhat greater. According to this study's interviews with masons and retailers, women often show a strong interest in the latrine building process and are, in particular, involved in the selection of materials to use. Women were reported by retailers to be more interested in the aesthetics of the latrine than men, whom one retailer described as "less demanding."

3.3.3 The Sanitation Shopping Process

What does the typical sanitation shopping process look like in the area? To learn about this process, the research team asked adopters about how they had proceeded with the construction of their hygienic latrine.³⁷ The typical steps in the sanitation shopping process are described below. The process is illustrated for households relying on a service provider (i.e. mason) to build their hygienic latrine and self-builders, respectively, figures 11 and 12. Since most adopters own flush latrines with a septic tank, this experience may reflect their behavior in relation to building that particular type of latrine.

Step one: Information seeking

When households have made the decision to build a latrine, a first step in the sanitation shopping process is often to seek informal advice about latrine design, materials, etc. Friends, neighbors, and masons are often the sources households turn to for advice. Self-builders with experience in building latrines typically skip this step.

Step two: Identify a skilled service provider

As a second step, households identify a skilled service provider to build their facility, usually a mason with experience in building hygienic latrines. They often rely on the advice given by peers in this process. In some cases, adopters test the knowledge of the service providers to ensure that they have the right qualifications. Adopters and non-adopters reported that there are many qualified service providers to choose between. It is typically the husband who is tasked with identifying the service provider. Self-builders skip this step.

Step three: Negotiate latrine design with service provider

The next step is to negotiate with the service provider the specific design of the hygienic latrine to be built. As such, the final design is highly dependent on the experience and knowledge of the individual masons. The budget available for the job is a decisive factor in this negotiation. If the budget is small, some masons will agree to build a small, one-chamber septic tank. (All service providers interviewed stated that they did not agree to build a latrine with this design; but that other masons did). Once a design has been agreed upon, the service provider gives the household a list of the materials to buy for the construction. Some service providers will accompany the

³⁶ N=282

³⁷ This does not include adopters, who had received fully subsidized latrines.

household to a construction and sanitary ware material retail store, but in most cases the household does this on their own. Once again, self-builders skip this step.

Step four: Purchase construction materials and sanitary ware

In each study commune, there are several retail stores that stock all materials needed to build a hygienic latrine. Households will take the materials list provided by the service provider to these retail stores. Retailers reported that households will seek their advice when choosing among different material options (e.g. different latrine pans). Households will shop around to see which retail shop they can get the best offer from. Retailers shared that it is more often the wife who is responsible for this part of the process.

Step five: Material transport

Once selected, the materials are transported to the household. All adopters stated that transport was available and provided by the retailer.

Step six: Service provider/household member builds latrine

As a final step in the latrine building process, the hired mason or the household members builds the hygienic latrine. There are no subsequent monitoring and certification procedures in place to ensure that the latrine built is of adequate design and quality. As such, design and quality – as well as price – hinges greatly on the knowledge and skills of the service provider/self-builder.

Figure 11 Sanitation shopping process: Mason built hygienic latrine

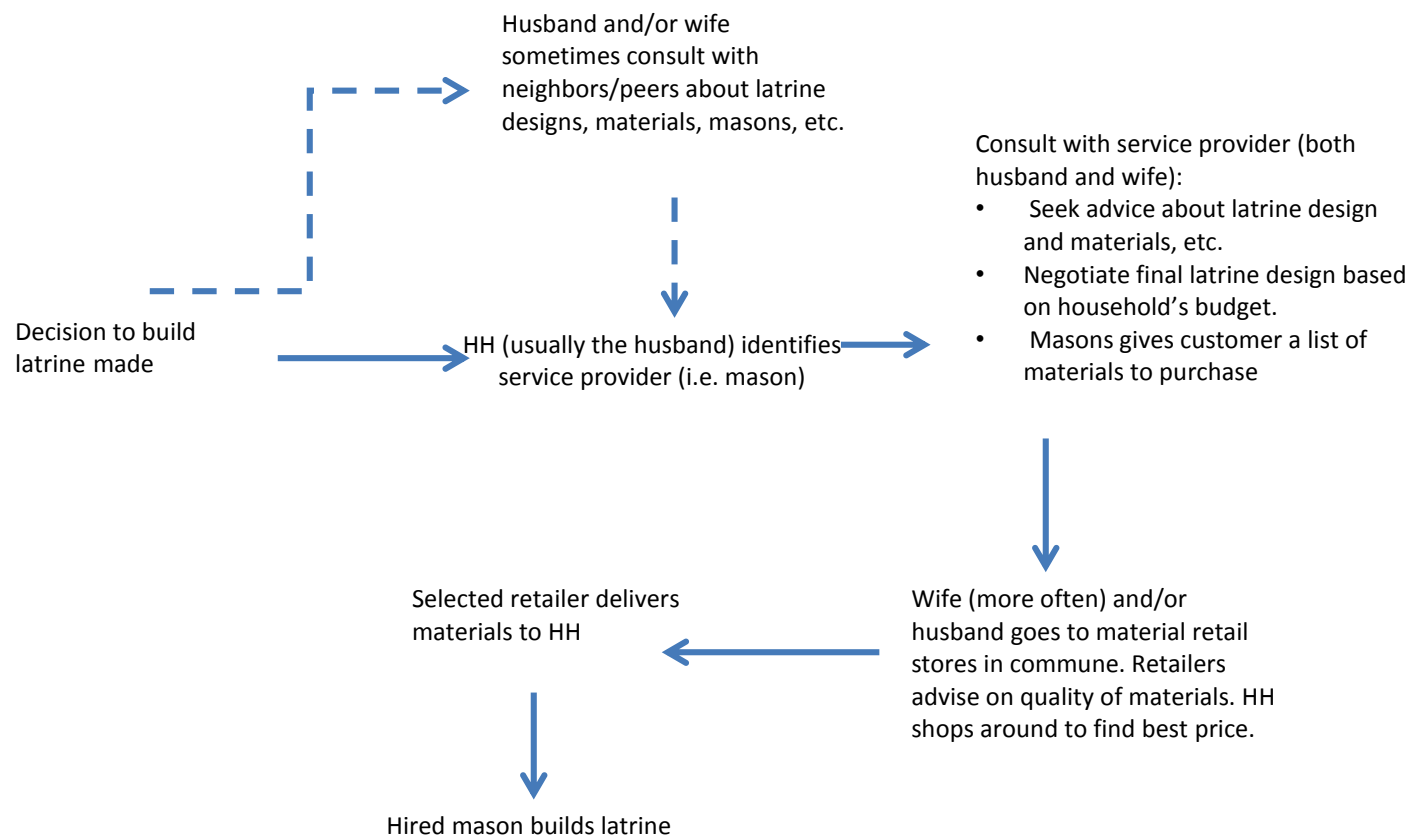
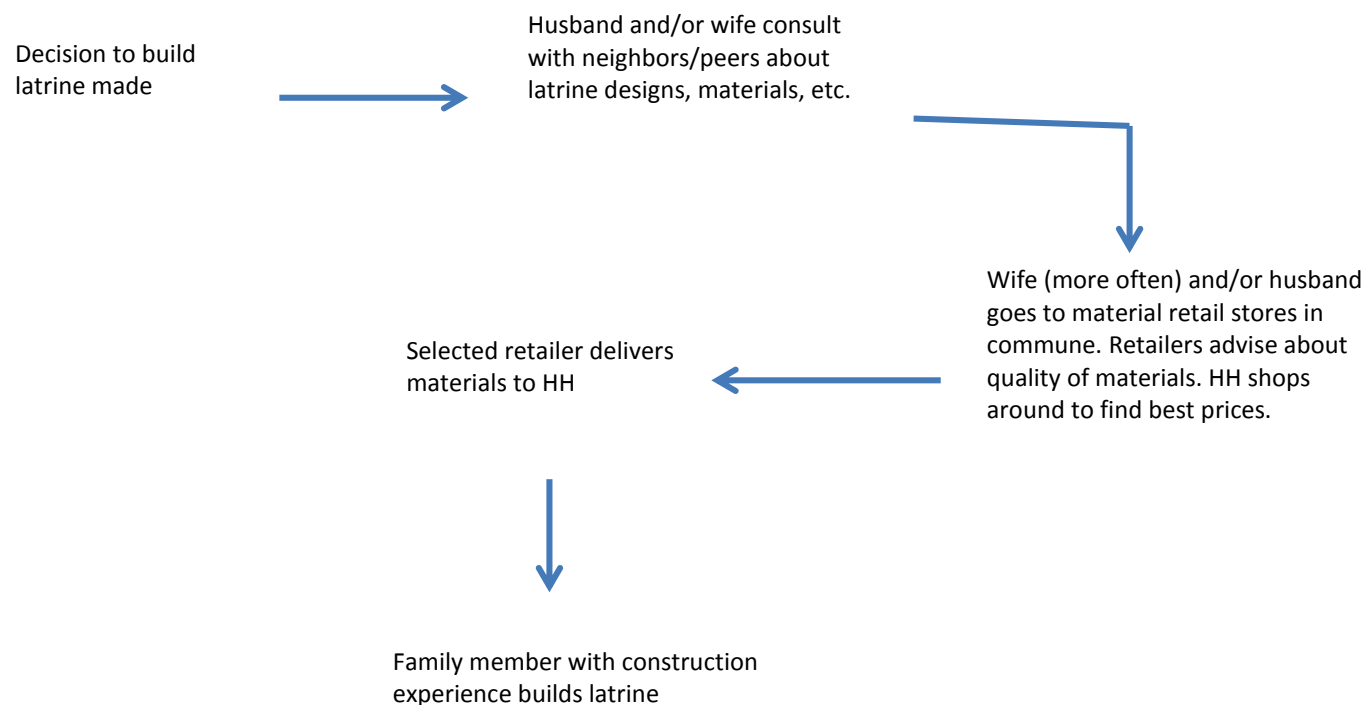


Figure 12 Sanitation shopping process: Self-builders



3.4 Preferred Latrine Product Attributes

Key Insights

- The features consumers most appreciate in a hygienic latrine are that it is clean, free of smell, not 'stuffy', and convenient to use.
- Cleanliness is strongly associated with the latrine having a flush mechanism.
- Features that are thought to keep a latrine free of smell include a flush mechanism and enameled tiles on floors and walls.
- To be free of smell, adopters and non-adopters generally believe a hygienic latrine must have an underground tank built from brick with 2-3 chambers.
- Non-adopters are concerned about hygienic latrines being stuffy – the size of and materials used for the super structure are seen a critical to prevent such 'stuffiness.'
- Features that make a latrine convenient are location in/near the home and having a bathroom (i.e. being able to bathe and defecate) in the same place.

It is critical to know what latrine attributes consumers prefer to be able to target them with the right product(s). To tease out these preferences, the research team asked adopters and non-adopters about the benefits and disadvantages of different hygienic and unhygienic latrines. Adopters were asked about their hygienic latrine's features (such as construction materials chosen, tank design, inclusion of bathroom, etc.) and why they chosen build the latrine with these features.

Non-adopters were asked about the features they would like in a hygienic latrine should they one day build one.

From the FGDs and interviews, we found that the attributes consumers – adopters and non-adopters alike – most appreciate in a hygienic latrine include that it is clean, free of smell, not ‘stuffy’, and convenient to use.

Clean: Women, especially, appreciate ‘cleanliness’ as an attribute in hygienic latrines. What makes a latrine clean is the pour flush mechanism which removes the feces after defecation, so that the user does not have to see it: *After using, just flush it with water and it’s immediately clean (Non-AD, female, Kien Giang/MHS).* A water cistern (i.e. a flush latrine) is seen as extra desirable by some; they felt this feature was necessary to ensure cleanliness: *“I would do like other people, with a water cistern so that it’s clean; if there’s no water cistern, it will never be clean” (Non-AD, female, An Giang).*

Free of smell: Both men and women emphasize being ‘free of smell’ as an important attribute in a hygienic latrine. Again, the flush mechanism is seen as important to keep away smell. Enamelled tiles on floor and walls are also thought to keep the latrine free of smell:

The latrine must have 4 brick walls. But we must line it with enameled tiles, because a latrine, either we don’t build it, or we build it properly, otherwise it would be smelly, it would penetrate into the concrete. (Non-AD, male, Ca Mau)

In the hygienic latrine, the design of the underground tank/pit and the materials used for it are seen as critical to avoiding smell. It must be built so that blockages and overflowing (and, hence, bad smell) are avoided. There is general agreement that a latrine tank built from brick with two to three latrine chambers is necessary to avoid smell: *With two chambers, it wouldn’t smell. If there’s only 1 chamber, it will overflow, it will stink (Non-AD, female, An Giang).* The use of concrete rings for the tank/pit was common only in An Giang, where these were given as an in-kind subsidy.³⁸ Many of the latrines built with the rings had become smelly and households are now unwilling to use the rings: *“If the Government had a loan to give to me, I would build a brick one, I wouldn’t use concrete rings” (Non-AD, male, An Giang).*³⁹

Not ‘stuffy’: A desirable attribute in a latrine, which was mentioned mostly by non-adopters, is that it is not ‘stuffy’. The size of the superstructure and the materials used are perceived to have an influence on whether or not a latrine is ‘stuffy’. A larger latrine is thought by some non-adopters to be less ‘stuffy’: *If we built a mechanical latrine which is large enough, it would be normal, not stuffy. If it’s stuffy, we can put a fan in there,” (Non-AD, male, Soc Trang).* Similarly, brick walls are preferred by some because they make the latrine cooler

³⁸ Subsidy beneficiaries received concrete rings and a latrine pan.

³⁹ Avoiding smell is also of importance to fishpond latrine owners. They will go to great lengths to keep their pond free of smell. This includes regularly pumping the old water out from the pond (and into the waterways) and pumping new water into it. The water in the pond is exchanged every 1-3 years, a procedure which can cost up to 1 million VND per time.

(i.e. less stuffy), whereas corrugated iron walls and/or roof will make the latrine hot. Some non-adopters also seem to prefer having latrine and bathroom in one large room – rather than two rooms – to make the latrine less ‘stuffy’.⁴⁰

Convenient: Adopters and non-adopters perceive and appreciate hygienic latrines as convenient, because they are located near or inside the home: “An indoor latrine is the most convenient... No need to go far, no need to wait, and you can use it comfortably” (Non-AD, male, Kien Giang/MHS). ‘Being able to have a bathroom and latrine in one is seen as another convenience of a hygienic latrine: “We had both a [river] latrine and a bathroom, but they were not convenient. While we bathed, we couldn’t use the toilet; now we’ve got this toilet where we can bathe at the same time,” (AD, female, Kien Giang/DH). Both men and women appreciate this feature: “The latrine is advantageous, and there’s a place to bathe as well,” (Non-AD, male, Kien Giang/DH).

The 2010 market survey similarly found that cleanliness, absence of smell, and convenience were the most appreciated attributes in a latrine by adopters as well as non-adopters – and that the septic tank and pour flush latrines were seen as having these attributes, in particular (IDE, 2010).⁴¹ In the present study, respondents saw also septic tank and pour flush latrines as having these attributes, in particular: “The mechanical latrine is cleaner and more comfortable” (Non-AD, male, Kien Giang/MHS). However, unhygienic latrines – in particular of the ‘field combat’ type – may also have one or several of the preferred attributes. Table 10, below, lists the preferred latrine attributes and design/material choices associated with each attribute.

Table 10 Preferred product attributes and associated design/material choices

Attribute	Associated design and material choices
Clean	Pour flush mechanism
No smell	No blockage, back flow
	Substructure from brick with 2-3 chambers
	Enameled tiles on the floor and walls
Not ‘stuffy’	Building a ‘large enough’ superstructure
	Brick walls
Convenient	Close to the HH

⁴⁰ Some adopters and non-adopters perceive the fishpond latrine as being less stuffy than a hygienic latrine, because it is out in the open.

⁴¹ Survey respondents were asked about the main qualities of their preferred latrine. Most respondents preferred pour flush latrines to a septic tank (ST) or to an infiltration tank (IT). These were seen as having the main qualities of being clean (ST: 85%, IT: 95%), no bad smell (ST: 41%, IT: 40%) and convenient (ST: 59%, IT: 60%).

Toilet and bathroom in one place

What an ‘ideal’ latrine might look like has been ascertained from adopters’ descriptions of their current latrines and non-adopters’ descriptions of the features they would like in a hygienic latrine. Table 11 describes the features consumers ideally would like their latrine to have, features they – or at least some – are willing to settle for, and features which are seen as not acceptable.

Table 11 Hygienic latrine options: Ideal, Acceptable, Not Acceptable

	IDEAL	ACCEPTABLE	NOT ACCEPTABLE
Latrine type	Flush to septic tank ('mechanical' latrine)	<ul style="list-style-type: none"> • Flush to pit • Flush to pond/river* 	Dry sanitation system**
Super structure	<ul style="list-style-type: none"> • Brick walls • Corrugated iron roof • Ceramic tiles on floor and inside walls • Combined with bathroom 	<ul style="list-style-type: none"> • Partial brick walls • Partial or no tiling • Walls from low cost materials, such as corrugated iron, plastic sacks, wood, etc. • No bathroom 	Corrugated iron sheet super structure (Soc Trang only)
Slab/pan	<ul style="list-style-type: none"> • Sitting toilet (for elderly) • Squatting pan (others) • Pull flush (cistern) • Pour flush 	<ul style="list-style-type: none"> • Pour flush 	
Underground	2-3 chamber tank built with brick	<ul style="list-style-type: none"> • Ceramic jars (some ADs only) • Plastic containers (only built by subsidized HHs) 	Concrete ring tanks/pits (An Giang, Kien Giang)

* Unhygienic latrine type; ** No study participant had or expressed a wish to have any form of dry sanitation system.

While non-adopters often aspire to build a latrine with ‘ideal’ features, many of them are willing to compromise and build a ‘good enough’ latrine at a lower cost:

“Now we’re poor so we would like a complete latrine which wouldn’t smell. We couldn’t build a luxurious one like other people.” (Non-AD, female, An Giang)

“We would build the understructure first; later when we had money, we would build the superstructure” (Non-AD, female, Kien Giang/MHS)

Finally, it is important to note that some – lower cost – unhygienic latrine types are seen as having some or most of the attributes preferred by consumers. From a consumer perspective ‘field combat’ latrines have practically the same features as do hygienic latrines (flush mechanism, tiles, proximity to home, etc.). Fishpond latrines are seen by some as being less ‘stuffy’ than any indoor latrine and may have little smell, if they are used by a limited number of people and well maintained. (To keep

their pond free of smell, fishpond latrine owners regularly pump the old pond water into a nearby waterway and pump fresh water back in. This is done every 1-3 years.

3.5. Communication

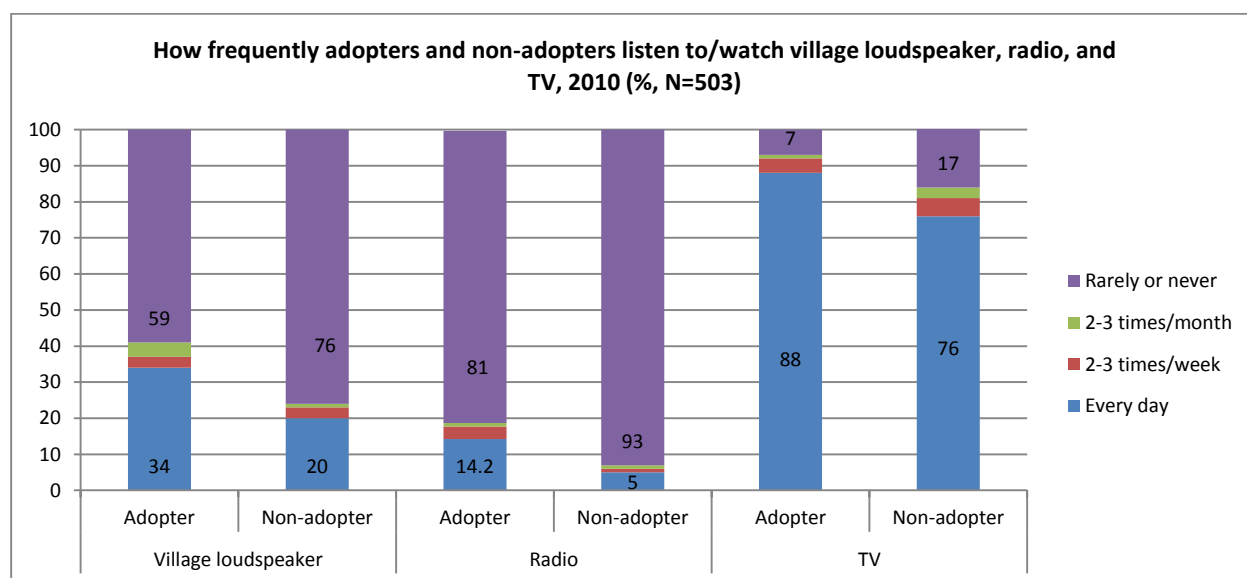
3.5.1 Communication Sources

Key Insights

- TV is the only mass media with broad reach among households in the region.
- Official village meetings reach only a limited portion of households; most non-adopters (and adopters) attend these meetings only sporadically or never. However, attendance tends to be better when subsidies or loans are given.
- Among village officials, village heads and WU cadres interact with households with the greatest frequency.

TV is the media preferred by most adopters and non-adopters in the Mekong Delta; other mass media have very limited reach. By 2012, 93.7% of households in the region owned a color TV (GSO, 2012). The 2010 sanitation market survey showed that 88% of adopters and 76% of non-adopters watch TV on a daily basis (figure 13, below; IDE, 2010). Their favorite TV content is news (86%) and films (42%). The vast majority of adopters and non-adopters rarely or never listen to the radio (81% and 93%), just as most rarely or never listen to messages in the loudspeakers in their village (59% and 76%).

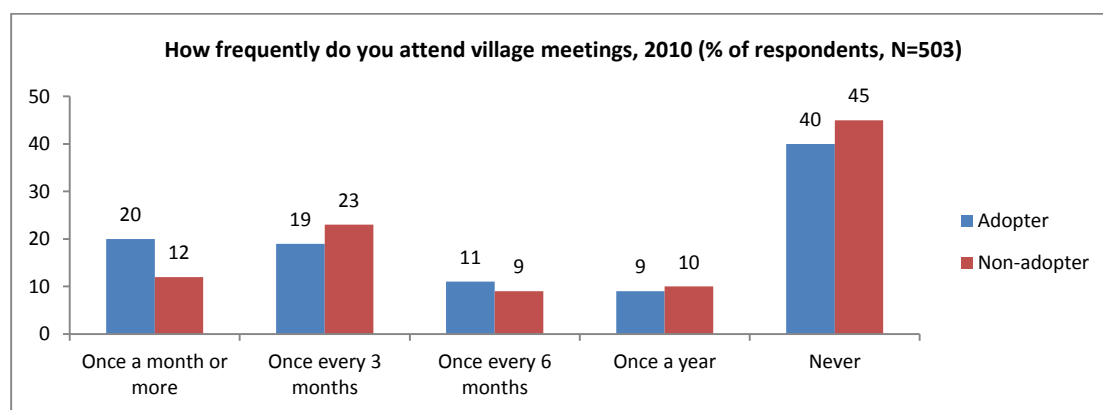
Figure 13 How frequently adopters and non-adopters listen to/watch different media, 2010 (An Giang and Soc Trang)



Source: IDE, 2010

Village meetings are poorly attended and, as such, not likely to be good venue for communication about hygienic sanitation. Albeit adopters are more likely to attend village meetings every month or more (20% vs. 12%), the vast majority of both adopters and non-adopters attend these meetings only sporadically or never (see figure 14, below). From FGDs with village heads, the research team learned that getting community members to attend village meetings can be difficult, with many expecting a monetary incentive and transportation in order to do so. Village heads complained that meetings are only well attended when the annual poverty assessment is done or when there is an opportunity to obtain loans or a subsidy.

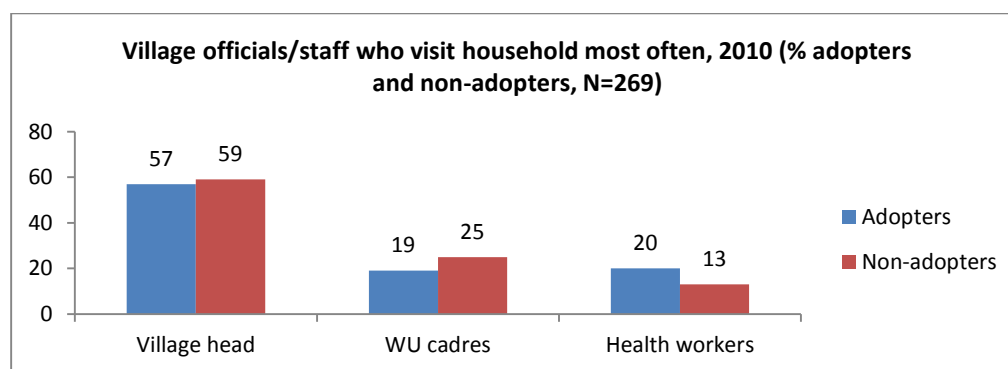
Figure 14 Frequency of attending village meetings, 2010 (An Giang and Soc Trang)



Source: IDE, 2010

Among village officials and staff, village heads are the ones with the greatest communication reach. A majority of adopters (57%) and non-adopters (59%) identified the village heads as the official which most frequently visited their household (IDE, 2010). One quarter of non-adopters were visited frequently by WU staff, while just half of that (13%) were visited most frequently by the village health workers (VHW) (figure 15, below). Overall, the reach of VHWs in the region appears limited. Just 20% of the 2010 sanitation market survey participants were visited by village health workers every month or more frequently, while 47% never received any visits (IDE, 2010).

Figure 15 Village officials/staff who visit household most often, An Giang & Soc Trang 2010



Source: IDE, 2010

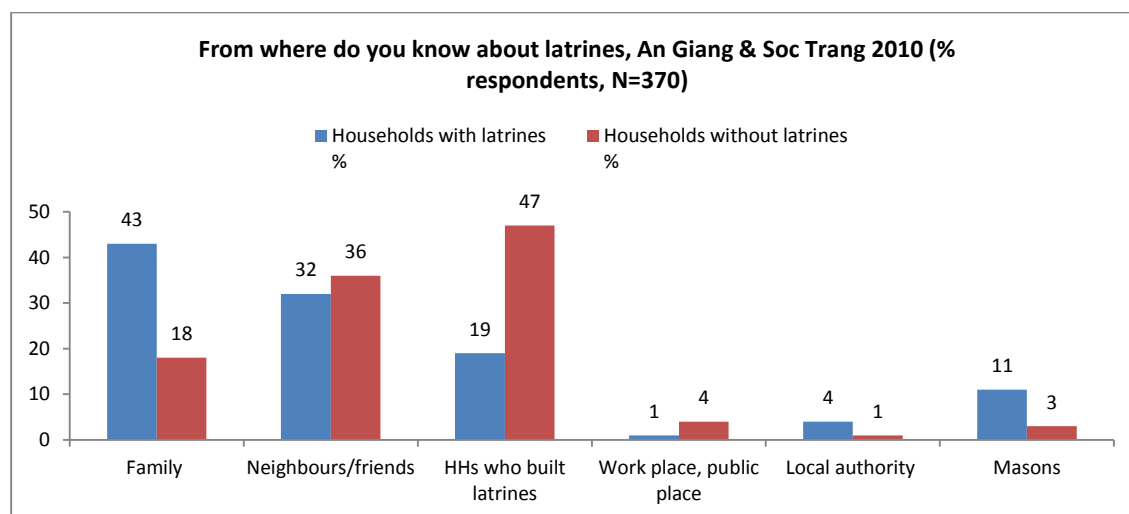
3.5.2 Sources of Communication about Hygienic Latrines

Key Insights

- Peers (neighbors, family, and friends), who are in the process of building or have built a hygienic latrines, are the most important sources of information about these.
- Masons are the trusted experts when households need detailed guidance on how to build their hygienic latrine.
- Households do not consider village officials – including village heads, health workers, WU, etc. – to be knowledgeable about hygienic latrines and do not consult them for advice.

Neighbors, family, and friends are the most important sources of information about hygienic latrines, how to build them, what materials to use, which masons to hire, where to find financing, etc. Non-adopters will often ask households who are in the process of building a latrine about these details: *“I would ask those who have latrines about how they did it. In general those who have done it have more experience. If something failed, they would tell us that it failed so that we could learn from it,”* (Non-AD, male, Kien Giang/MHS). This finding is in line with the findings from the 2010 sanitation market survey, where 47 percent of non-adopters responded that they knew about latrines from peers who had built one (see figure 16, below; IDE, 2010).

Figure 16 From where do you know about latrines, An Giang & Soc Trang 2010



Source: IDE, 2010

While households ask peers about latrine building in general, they turn to masons when they need more detailed information to plan for how to build their own hygienic latrine. They consider masons the primary experts and will follow their advice. Non-adopters will also often ask masons about these details when they are in the process of constructing a latrine for another household in the community.

Village staff – including village heads, health workers, WU, etc. – are not considered knowledgeable about hygienic latrines, on the other hand. Non-adopters do not consult them to learn about this topic: *“No, we would only ask them [village staff] mainly about loans”* (Non-AD, female, Kien

Giang/MHS). In the sanitation market survey less than one percent of non-adopters knew about latrines from village staff, health workers, etc (IDE, 2010). The village health workers and WU cadres interviewed had limited knowledge about hygienic latrine building and instead referred households to masons for this type of information: *“If people want to know details about septic tanks, they should go to ask a mason, because we don’t know exactly. In some cases, people asked me, but I didn’t know well so I asked them to see a mason”* (Village health worker, Soc Trang).

4. SUPPLY CHAIN STUDY FINDINGS

4.1 Supply Chain Actors, Opportunities, and Constraints

This section presents findings on the actors currently present in the household sanitation supply chain in the Mekong River Delta. Findings are also presented regarding the strengths/opportunities and challenges of the supply chain and its actors. Finally, it is analyzed which supply chain actors have the strongest potential to become sanitation entrepreneurs.

4.1.1 Supply Chain Actors

Table 12 provides an overview of the actors currently found in the supply chain as well as their specific roles.

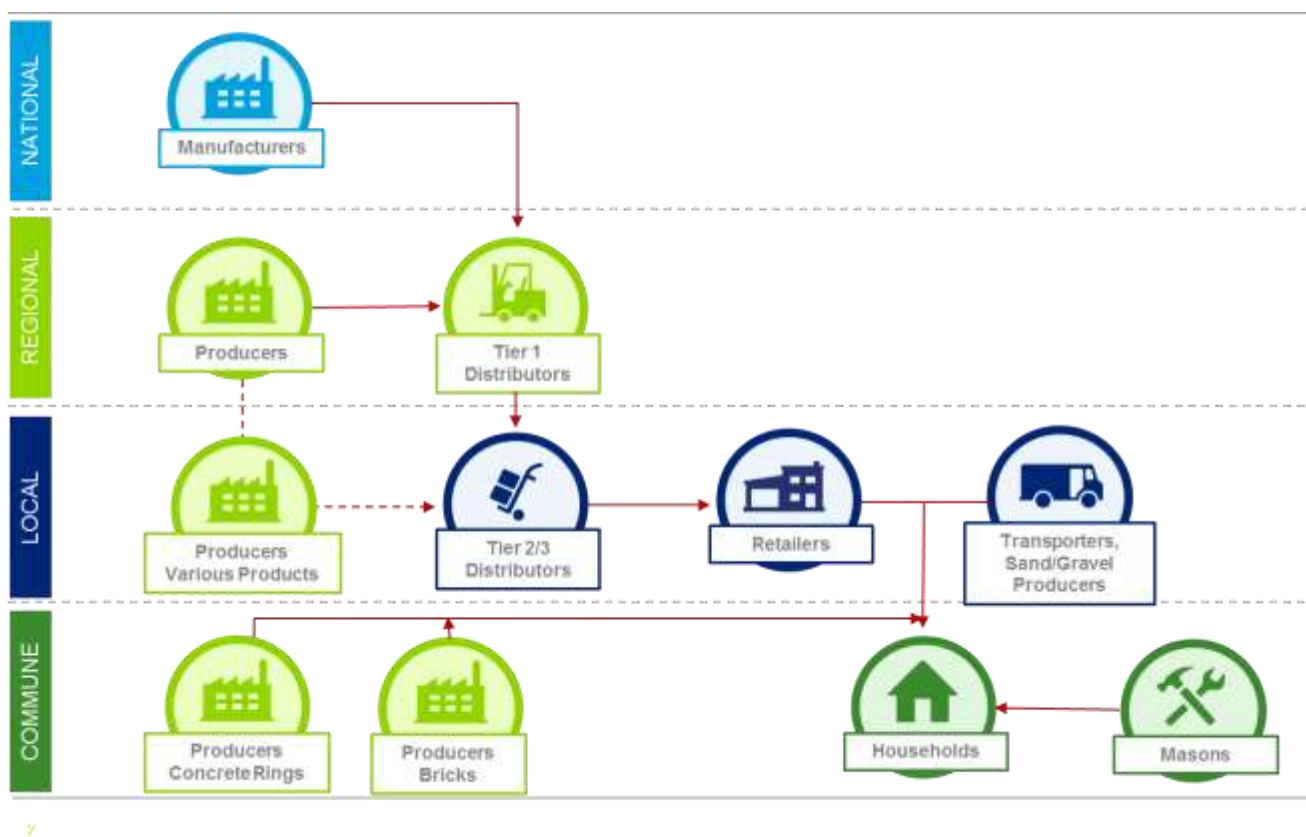
Table 12 Overview of supply chain actors

Actor	Description and role
Households	Make the decision to purchase latrines. They seek information about latrines from neighbors, and hire masons to design and build their latrine. Households purchase materials from retailers based on the advice of masons.
Masons	Are located in the community in all communes and are skilled artisans. When information is sought about latrines, they are the trusted advisors in the eyes of the community. Master masons obtain contracts from customers, work personally to design and build the latrines, and employ teams to do the physical labor. Team members receive allowances/fees depending on their skill, master and skilled masons get higher allowances/fee than assistance mason. Most of masons do not register their work because it is not requested by the government as they are considered a small business.
Transporters	Are owners of transport like trucks and boats and deliver on behalf of businesses and households. They deliver all types of products including sand, cement, stone and bricks, and often work for a specific retailer or as “mobile retailers” for retail shops.
Retailers	Are businesses that buy and sell a diverse range of latrine components and general construction materials, and carry many or all of the requirements to build a latrine. They are present in all communes.

Distributors	Purchase several types of components from manufacturers and/or producers, and supply retailers. There may be up to three tiers of distributors between manufacturer and retailer.
Producers	Refer to local manufacturers, making products like bricks, concrete rings, fiberglass tanks, plastic tanks and jars.
Manufacturers	Usually make one type of product, for example, cement, at a national scale.
Financial Sector	Actors are present in both formal and informal sectors. Formal actors include the Bank of Social Policy, which has the lowest interest rate, and proof of collateral or capacity to pay is not required. Commercial banks are also formal actors, which charge higher rates and require proof of capacity to pay or collateral. The informal sector includes friends and family, informal lenders which charge very high interest rates, “credit” through retailers in the form of interest free late or post-harvest payments, and revolving community funds.

The following figure (figure 17) illustrates the interaction between the actors in the existing value chain. It should be noted that local retailers play a central role in the supply chain as households mostly purchase all construction materials and sanitary ware inputs for the construction of their latrines from these retailers. Masons are not directly involved in the value chain; however, as was noted in the consumer demand assessment, households rely on masons for guidance regarding their latrine design and, as such, the type and quantity of materials to purchase.

Figure 17 Current value chain: Actors and relationships



4.1.2 Supply Chain Strengths/Opportunities

Competitiveness: A highly competitive market means that few supply chain actors have collaborative agreements with competitors

Agreements with competitors were rare across all actors in the supply chain. At most, one or two respondents from each group state they had an agreement. Overall, most stated they did not have an agreement with top reasons stated including high competition and lack of trust. These agreements refer to any collaboration in purchasing, pricing or jointly approaching the market.

Figure 18 Do you have any agreements with your competitors?



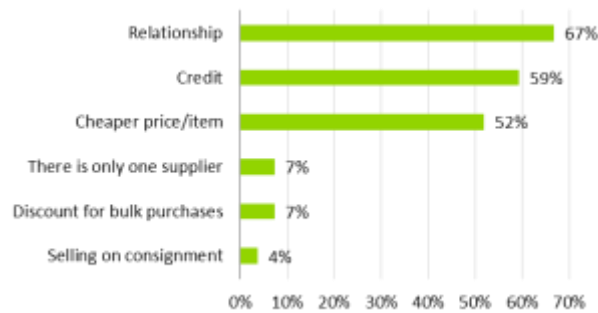
Supplier relationships are important and support competitive pricing

Nearly all respondents from each supply chain group reported that they had a preferred supplier for their products. All producers who were interviewed responded affirmatively to this statement (see figure 19). The top reasons for having a regular supplier included establishing a relationship with a supplier (67%), ability to access credit (59%), and feeling that their regular supplier provided a cheaper price per item compared to others (52%) (see figure 19). As such, preferred supplier relationships also appear to support a competitive market.

Figure 19 Do you have regular suppliers of your products?



Figure 20 Why do you prefer having a regular supplier?



Although latrine related business is currently small, actors indicated interest in selling higher volumes at lower prices

Most respondents had difficulty estimating the percentage of their business that was latrine related; this may partially be due to the fact that most estimated that the percentage was “very low.” Of those who did provide estimates, responses were as little as 1% to as high as 7% of the business sales volume.

All retailers stated that they would be prepared to sell higher volumes of latrine products even if margins were lower; most suppliers also agreed.

Both groups were less interested if these sales were to rural or poor areas, citing transportation difficulties.



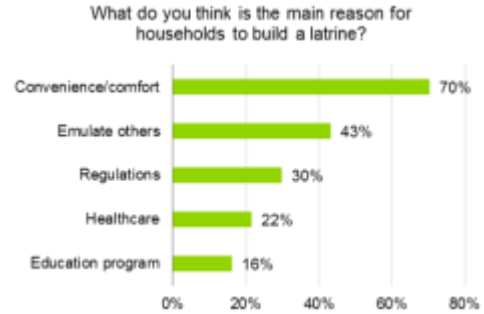
All actors estimated that latrines only contributed a small amount to their sales (1% to 7%) this means that they had little focus on selling latrines and were able to run their business successfully without high latrine sales. Because the average of pans sold was less than 3 per month (31 per year) it was difficult to generate enthusiasm for focusing on latrine sales.

BOX 3: SUPPLY CHAIN ACTOR PERCEPTIONS OF CONSUMER DEMAND BARRIERS AND DRIVERS

Actors in the supply chain were asked about their perceptions of the main reasons households currently do not build hygienic latrine, how demand can be stimulated, and what the government can do to increase hygienic sanitation coverage in rural areas. Their answers suggest that they see better affordability, increased demand creation, and lower prices as key to improving demand.

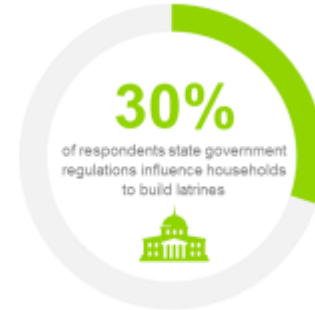
Main Reason for Households to Build a Latrine

Although several respondents stated that the Vietnam government prohibits the use of fish-pond latrines, only 30% indicated that this ban was a main reason for households to build a latrine, suggesting that the regulation may not be uniformly enforced and regulated in rural areas. Convenience and comfort (70%) and to emulate others (43%) were the top reasons cited, followed by regulations (30%) and healthcare (22%).



How demand can be stimulated

Top suggestions to help stimulate demand include providing information to customers on latrine options (38%), improving the quality of products (36%), providing information on sanitation (16%), and lowering product cost (14%). Of retailers interviewed, 63% believed informing customers about latrine options could help grow their latrine-related business.

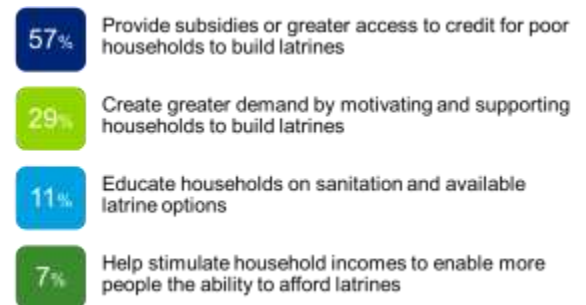


However, all retailers indicated that their customers' primary sources of information on latrine options were masons or neighboring households. Therefore, customers arrive at the retailer simply to buy needed materials, having already selected a latrine type and previously determining a bill of materials.



How government can improve sanitation coverage in rural areas

All actors (except masons) were asked how government can improve rural sanitation coverage. As can be seen in the figure to the right the most common suggestion was for the government to provide subsidies or credits (57%), followed by demand creation (29%). Other suggestions included more training for masons, standardizing products, and being more proactive in enforcing regulations to build hygienic latrines.



4.1.3 Supply Chain Challenges

Most current supply chain actors are invested in the latrine business to a very limited degree

In relation to the supply chain for the most commonly built hygienic latrine (i.e. brick septic tank), it is a challenge that a latrine consists of so many different components from different sources (see figure 21 below). Largely due to latrine components being common to several building applications, the only unique product is the pan.⁴² Cement, bricks, sand and sheets or panels of various types are used for several building applications. In the case of brick and concrete ring septic tank latrines, no actors are heavily invested in the latrine business, pan manufacturers are the notable exception as they are fully invested, and the single application of their product for latrines is their business. Retailers and masons generate most revenue from general construction or government contract work. Households hire mason labor and purchase materials from retailers. Transport is arranged by retailer.

Figure 21: Actors Interviewed and Materials Supplied

Actor	Labor	Bricks	Cement	Pipes	Concrete Rings	Plastic Tank	Pan	Wall /Roof
Mason	✓							
Transport	✓							
Retailer			✓	✓			✓	✓
Supplier – each supply only 1 or 2 items			✓		✓	✓		✓
Producer one per item		✓	✓	✓			✓	
Producer Concrete Rings			✓					

However, **it is important to note the producers of fiberglass and, in particular, plastic septic tanks have the potential for a stronger focus and investment in the latrine business.** This is the case because both actors produce and sell a product which unique use is for latrines.

Current volume, velocity and predictability of sales not sufficient to sustain role player interest

Another challenge to generating role player interest in the sanitation business is that the volume and velocity of latrine product related sales is too low to merit their sustained and strong attention. In the words, hygienic latrine orders are few and sporadic. To make the sanitation business more attractive for supply chain actors a higher volume and a more rapid movement of products (velocity) will be required. Greater predictability of business via predefined and planned sales

⁴² It should be noted that the plastic septic tank and the fiberglass septic tank also are unique products. However, these products are currently not widely available in the rural supply chain.

could also make the business more attractive, as this facilitates planned production, and therefore scheduled delivery and labor.

Current value chain is unable to deliver affordable latrine options to poor and very poor households

The current supply chain is unable to deliver latrine products that are affordable for the poor and very poor households. An important reason for this is masons key influence over latrine design, including material quantities and types.

Masons are the key experts for households when it comes to hygienic latrine construction. Each household negotiates the design of their latrine with a mason and then proceeds to engage with the supply chain to purchase the quantity and type of materials recommended by the mason. Due to lack of knowledge, many households interviewed in the demand study believe that latrine costs range from VND 10M+.

Findings from the supply chain assessment show that masons also frequently overestimate the cost of building a hygienic latrine, but that they do so by a smaller margin than households. According to estimates worked out by iDE, the cost of an MOH approved standard brick septic tank substructure and slab amounts to VND 3.22 million.⁴³ As can be seen in figure 22, masons' estimates for a similar facility ranged from VND 2.78 million to VND 6.62 millions, thus exceeding the iDE estimate by up to more than 100 percent.

Figure 22 Estimated Total Brick Septic Tank Costs, MOH estimate vs. mason estimates



As can be seen in figure 23 below, masons' estimates for individual material and labor inputs in some cases surpass iDE estimates by more than 200-300 percent (cement, sand). The greatest cost variances were found for brick, cement, gravel, sand, and masonry fees. Further, variances in the

⁴³ "MOC Est." Cost estimation was based on the : 1/ List of construction materials from Guidelines on latrine construction and maintenance - MOH" ; 2/ List of materials for building pilot latrine, provided by IDE and 3/ prices of construction materials, issued by MOC in November 2010

amount/cost of bricks, cement and masonry fees have the greatest potential to drive up the cost of a hygienic septic tank brick latrine.

Figure 23 Estimated Brick Septic Tank Latrine Costs by Material, MOH estimates and variance

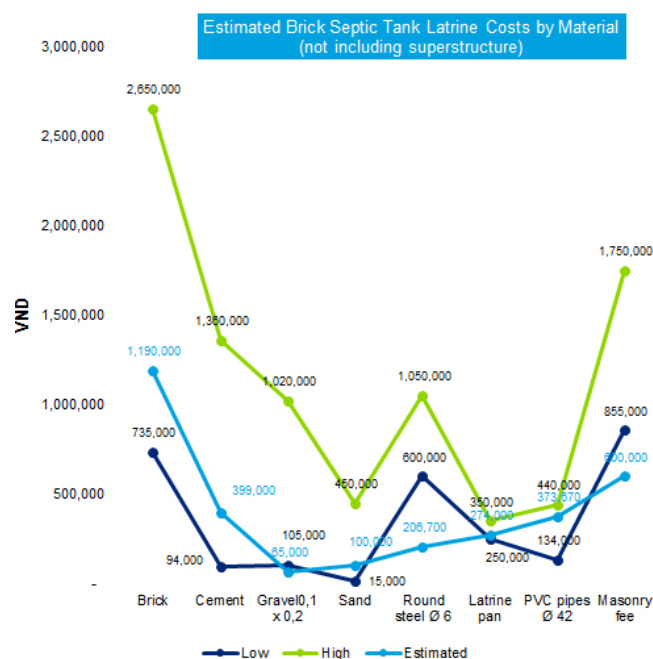
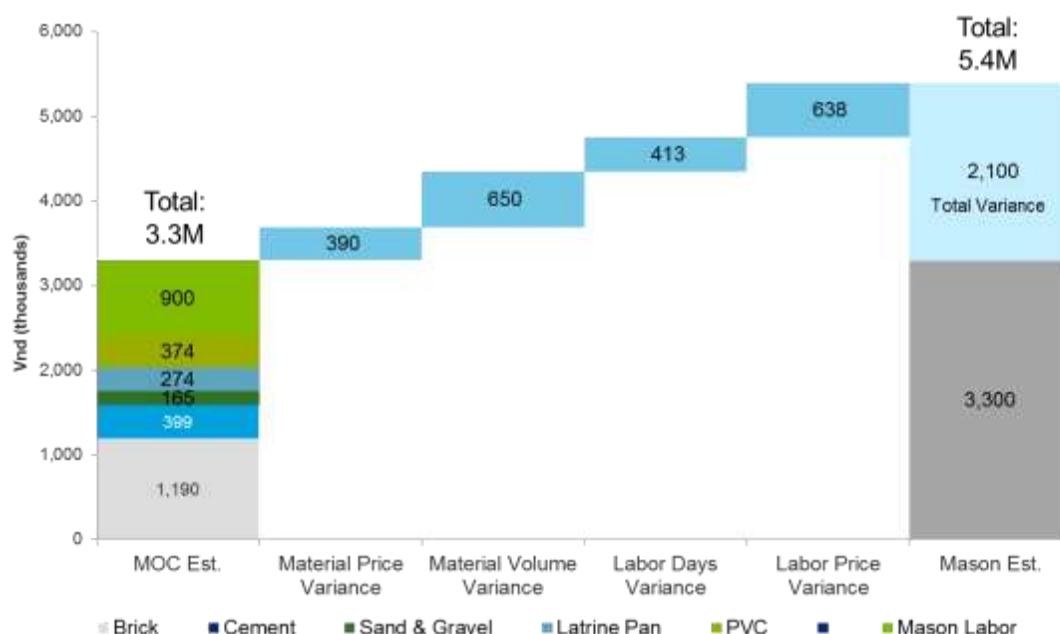


Figure 24 below illustrates the variance in price between the iDE estimate and the estimate provided by masons in Kien Giang (VND 5.4 million), specifically. The Kien Giang masons' estimate of latrine substructure price is nearly two third more than that of the government standard estimate due to positive variances in labor hours required, price of labor, amount of materials required, and material prices. This confirms the demand assessment finding that masons tend to advise households to build oversized latrines which require greater amounts of labor and material inputs than necessary.

Figure 24 Cost Estimate for Brick Septic Tank (not including superstructure), Kien Giang masons vs. iDE estimate

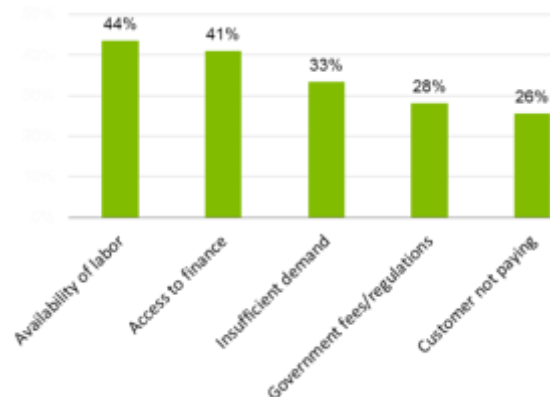


Supply chain actors face a variety of business constraints

Actors point to availability of labor⁴⁴, finance, and low demand as the top three constraints to their business (figure 25). Masons (55%) and Suppliers (63%) were the most likely to cite availability of labor as an issue, particularly during dry/harvest season. Conversely, training of staff was the least cited constraint

⁴⁴ Most masons state that each stage of building a latrine requires 2 to 3 masons to complete the work with 2 being the most frequently cited. Typical staffing involves 1 skilled mason and 1 lower skilled/assistant mason; however, there is some variability depending on the difficulty of the task. Pit digging can be done by 1 to 2 lower skilled masons. On average it takes 6 days for a team of 2-3 masons to complete a latrine; the high estimates were of 22 or 15 days (*removed from average*); the shortest amount of time was 4 days.

Figure 25 What are the main constraints to your business, all actors



In the case of masons and transporters, a barrier to business expansion may be their lack of business registration. While nearly all retailers (88%) and suppliers (100%) stated that their business was registered due to government requirements for registration, very few masons (9%) and transporters (33%) reported that their business was registered. **It should be noted that masons are not required to register when they are small businesses.** Not being registered as a business, however, limits masons' and transporters' access to formal credits and, as such, may make it difficult for them to expand their business.

Further, most of the retailers interviewed reported that they lack capital to expand their business. Not being poor, they are unable to access low interest business loans from the VBSP. They are reluctant to borrow from commercial banks due to the high interest rates. Other obstacles to borrowing from commercial banks included a lack of collateral, such as land use certificates or savings cards).

Supply chain is fragmented

The current sanitation supply chain – which supplies primarily brick septic tank latrine – is fragmented. This is the case because many different products from different manufacturers or producers go into the making of the most common latrine type and because multiple intermediaries can be found between manufacturers or producers and the end customer.

There are several drawbacks to a fragmented supply chain. First, at each level intermediaries must earn a profit from the sale of the input and, as such, many intermediaries add to the final cost of the latrine facility. Second, any attempt to manage the supply chain is more challenging with a fragmented supply chain than with one that includes fewer actors, because it involves the management of a multitude of actors.

Research and development of more affordable options has not yet led to adoption on a sustainable scale

Research and development on more affordable latrine options has been small scale.⁴⁵ While the affordability of some products – such as the plastic and fiberglass latrines – has been improved, these new latrine products have not been market tested via pilot marketing campaigns.⁴⁶ Absent market testing, it is unclear if the products currently are marketable with consumers.

4.1.4 Supply Chain Actor Potential to Emerge as Sanitation Entrepreneurs

The findings from the field research suggest that sanitation entrepreneurs could emerge only among retailers or masons, as both are used to dealing with the household and the product range. It is important to note that these conclusions reflect feedback on the actors we identified as presently part of the supply chain. There could be business owners or individuals outside this group that may find the opportunity attractive.

- Technical Capabilities - Masons have the best competence technically but do not have the same business and retailing or sales sense as retailers.
- Business Knowledge - Retailers have this knowledge but do not have a grasp on potentially the most important part of the latrine, the construction of the pit and container, whether a brick enclosure, plastic vessel, jar, fiberglass or concrete rings.
- Sales capabilities - Both Retailers and Masons have to spend some time selling their capabilities or products.
- Training - It would be a straight forward requirement to train the skills that each of these parties requires giving them technical, and business knowledge.
- Partnerships may be viable if both parties collaborated to fulfill this need, but volume would be important. To achieve volume, financing mechanisms would need to enable a large number of reasonable loans to households.

4.2 Product Range Assessment

The supply chain assessment identified six hygienic latrine products in the market; with widely different market penetration, including: a) pour flush latrine made with concrete rings (infiltration design, not sealed), b) pour flush latrine made with brick (infiltration design, not sealed), c) pour flush latrine with septic tank made with concrete rings, d) pour flush latrine with septic tank made

⁴⁵ Actors who have done sanitation products in Mekong delta include: a) Research and development center for Materials and Environmental Technology in Ho Chi Minh City (flood proof latrine), b) fiber glass manufactory in Kien Giang (supply fiber glass latrines to of Long An Red Cross Association and Kien Giang Natural Resource and Environment Department in 2007-2008), c) fiber glass producer in An Giang, and d) ROTO Company.

⁴⁶ According to information provided by ROTO management, 6,800 plastic septic tanks were sold in 2013. Only 860 of these were sold via sales agents. The remaining tanks were sold to NGO projects. In 2014, 300-400 septic tanks have been via sales agents.

with bricks, e) pour flush latrine with fiberglass septic tank and f) pour flush latrine with plastic septic tank.

This section describes each of these latrine products and its supply chain, compares positives and negatives of these latrine products, the current supply chain for the products, their current cost, and an analysis of where supply chain efficiency needs to be enhanced to lower the price of each product.

It should be noted that findings pertain only to the substructure and slab of each facility, because latrine superstructure can differ vastly in design and price.

4.2.1 Latrine Product Description, Supply Chain, and Advantages/Disadvantages

Pour Flush Latrine with Infiltration Soak Pit Made with Concrete Rings

This latrine product consists of 1-2 offset soak pits made with concrete rings as lining. Few households in the research communes had this type of latrine. Local producers are currently the most common source of concrete rings, but these may also be produced on site.

Advantages of the latrines made with concrete rings are that the rings are durable and can be produced on site where transport is challenging.

Disadvantages of the concrete ring technology include that transport (of the finished rings and mould) can be difficult and expensive. Further, this latrine type is not suitable for areas which a) are exposed to flooding, b) have high groundwater tables, and/or c) have unstable soils. . Finally, as was found in the consumer demand assessment, the acceptance of this latrine product is among some consumer groups.

In the case of these latrine types, supply chain efficiencies that can reduce consumer costs include advance orders to plan manufacture, labor and plan distribution. Higher order levels reduce the prices through economies of scale in sourcing bulk raw material therefore paying less. Manufacturing with reasonable production runs which reduces wastage and deliveries in bulk which reduces the cost per item to deliver.

Pour Flush Latrine with Septic Tank Made with Concrete Rings

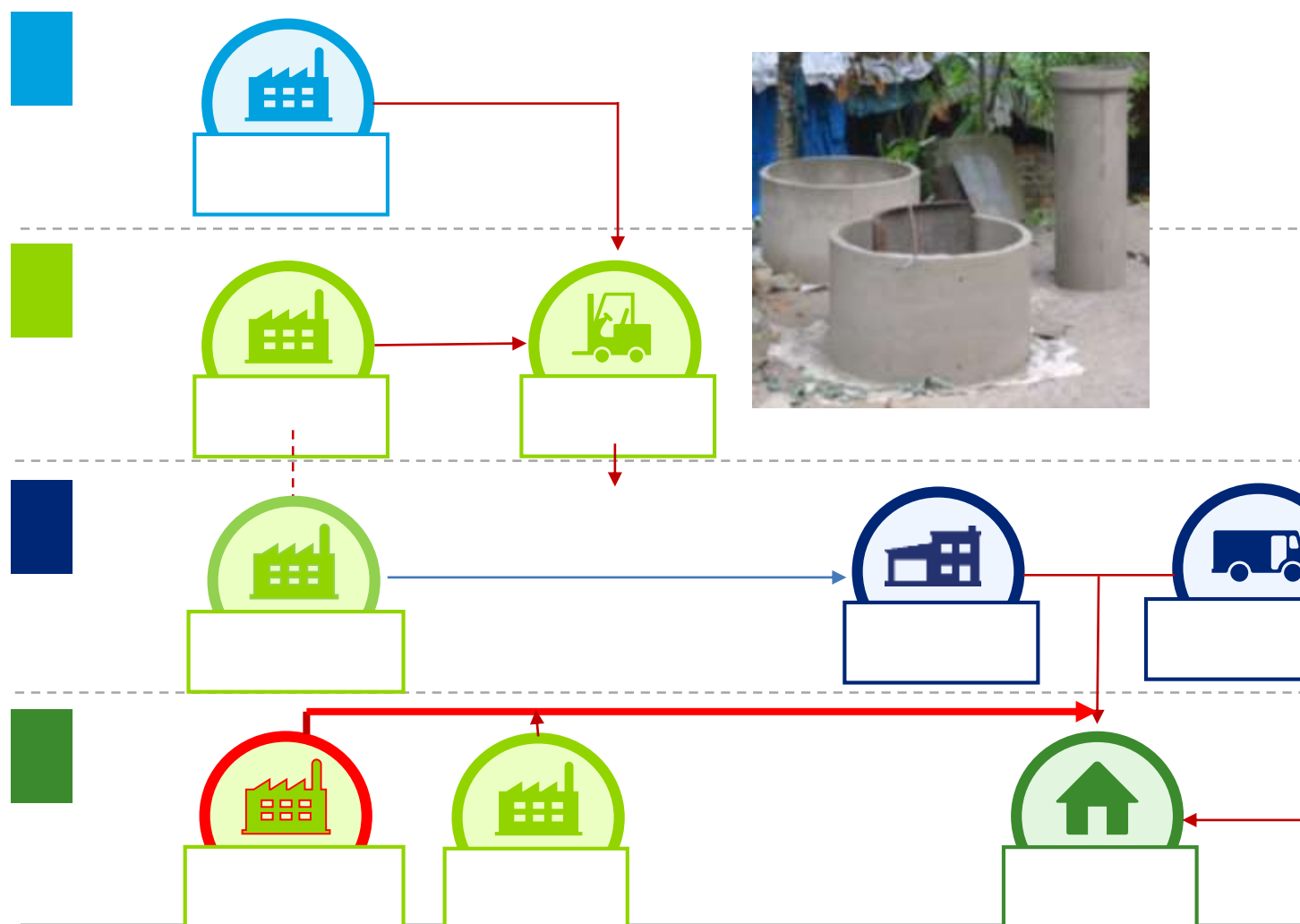
This latrine product consists of 2-3 concrete ring chambers (sealed). Few households in the research communes had this type of latrine. Local producers are currently the most common source of concrete rings, but these may also be produced on site.

Advantages of the pour flush latrines made with concrete ring septic tanks are that the rings are durable and can be produced on site where transport is challenging. Another particular advantage in the Mekong River Delta area is that this technology is suited for flood-prone areas.

Disadvantages of the concrete ring technology include that transport (of the finished rings and mould) can be difficult and expensive. Further, the technology is not suited for all designs. Finally, as was found in the consumer demand assessment, the acceptance of this latrine product is among some consumer groups.

In the case of these latrine types, supply chain efficiencies that can reduce consumer costs include advance orders to plan manufacture, labor and plan distribution. Higher order levels reduce the prices through economies of scale in sourcing bulk raw material therefore paying less. Manufacturing with reasonable production runs which reduces wastage and deliveries in bulk which reduces the cost per item to deliver.

Figure 26 Current supply chain for pour flush latrine with concrete ring septic tank or infiltration tank



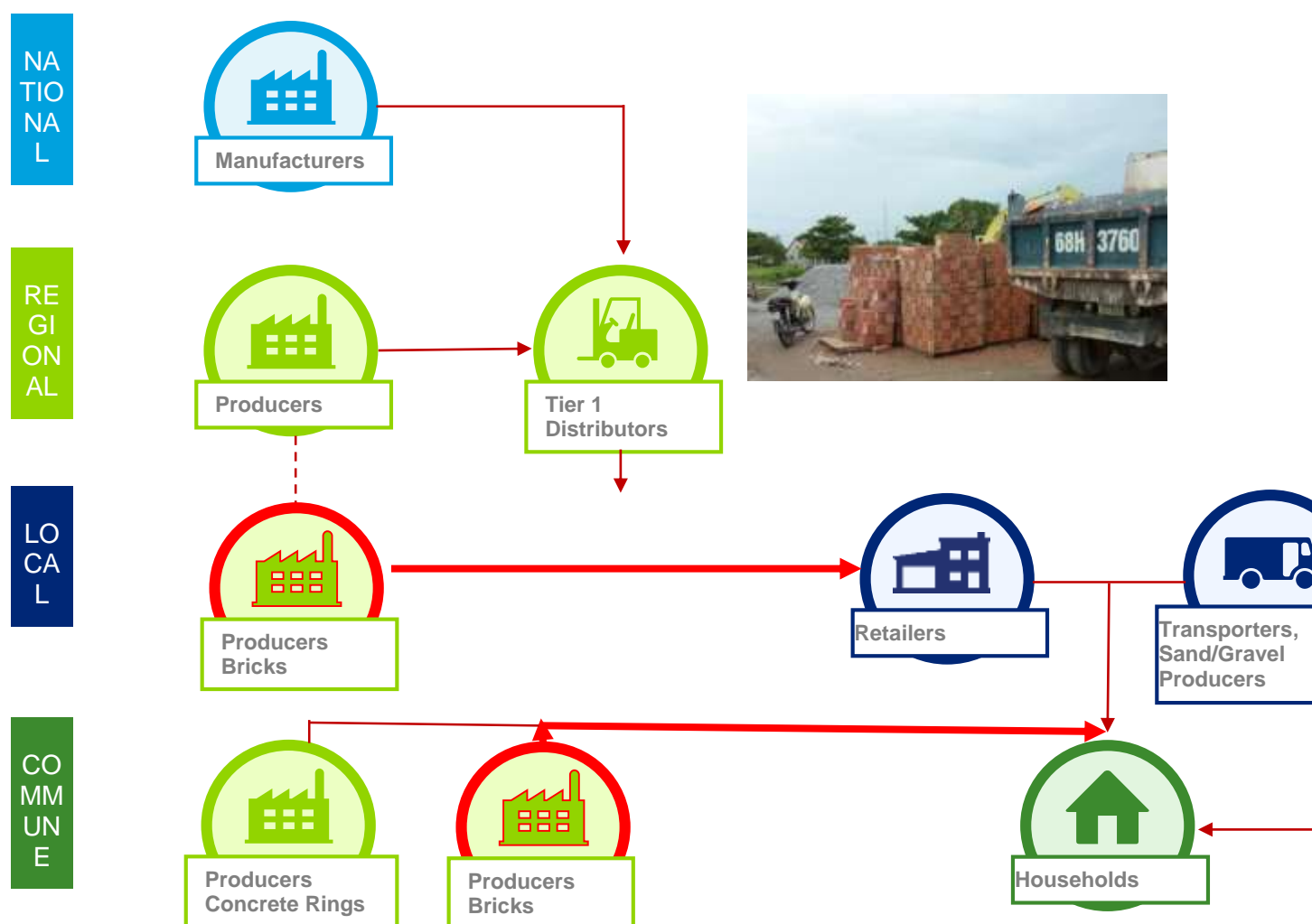
Septic Tank Latrine from Brick

Pour Flush Latrine with Septic Tank or Infiltration Soak Pit from Brick

A 2-3 chamber septic tank made from brick is the latrine product which is most commonly built by households in the area. It is the type of latrine masons generally recommend that households build.

Figure 27 below illustrates the current supply chain for septic tank latrines built from brick. As can be seen from the illustration, the key material needed for this facility (brick) is generally sourced at local or commune level from retailers or directly from brick producers.

Figure 27 Current supply chain for pour flush latrine with septic tank built from brick



Advantages of this product include that it is already trusted by consumers and that the materials required to build this latrine type are already widely available and accessible to consumers in the local market. Another advantage of this product is that a standard design, which has been approved by the MOH, already exists.

A disadvantage of this type of latrine was found to be the supply of the key input (bricks) is limited, because these also constitute key input in many other forms of construction. Additionally, increased local production of the key input (bricks) does not hold any potential to lower the price. Finally, brick manufacturing is a major source of pollution.

As with concrete ring latrines, supply chain efficiencies that can reduce the costs to the consumer of the brick septic tank. Efficiencies that can reduce cost include advance orders to plan manufacture, labor and plan distribution. Higher order levels reduce the prices through economies of scale in

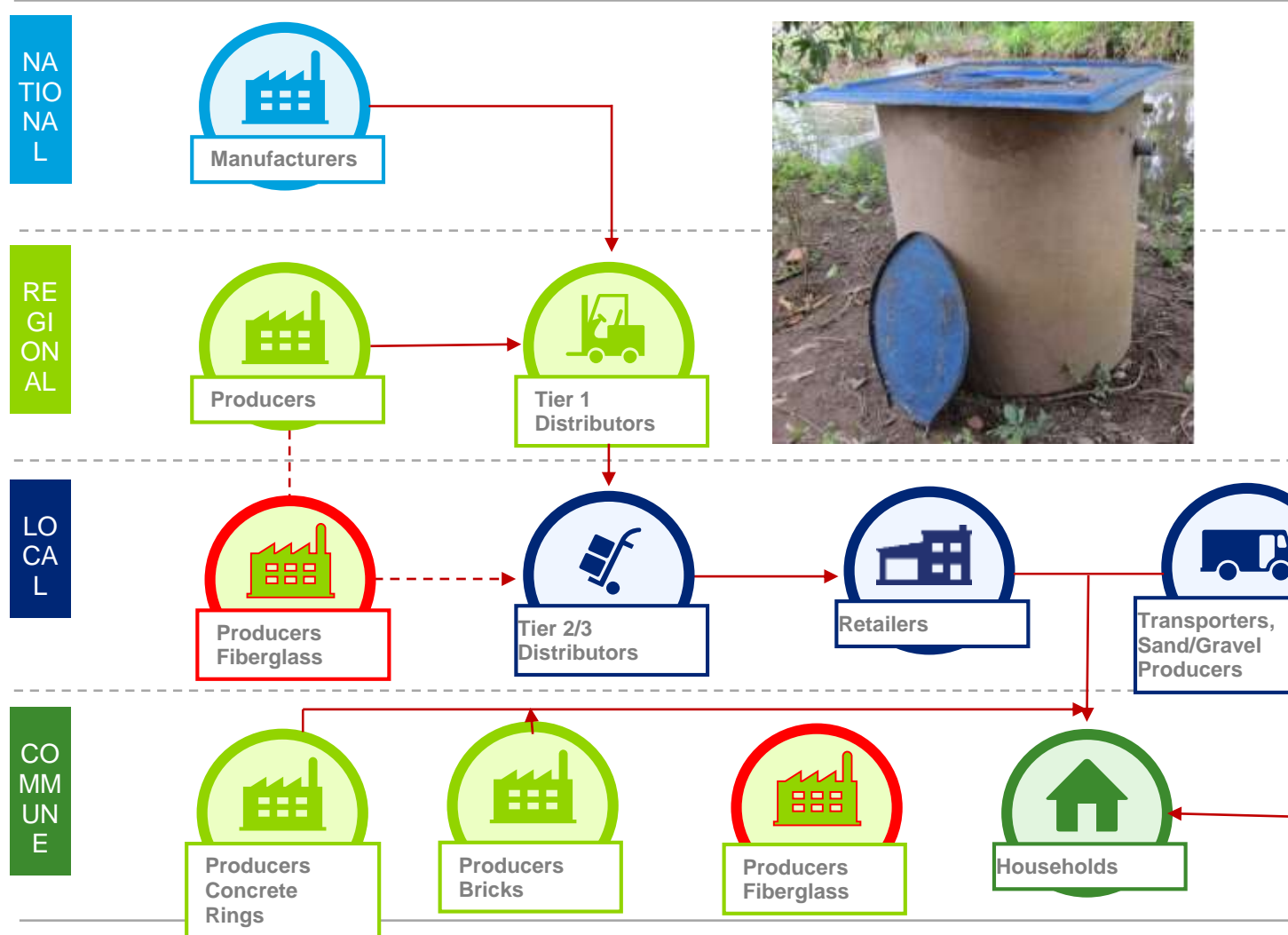
sourcing bulk raw material therefore paying less. Manufacturing with reasonable production runs which reduces wastage and deliveries in bulk which reduces the cost per item to deliver.

Pour Flush Latrine with Septic Tank Made from Fiberglass

The latrine product consists of a readymade septic tank (substructure only) produced by a local manufacturer. The research team found that septic tank latrines made from fiberglass were available in some of the research communes. However, the market penetration of this product is still very limited. In the research communes, all fiber glass latrines installed had been subsidized latrine by a sanitation project.

Figure 28 illustrates the supply chain for this product, which shows that the main material input for the latrine (fiberglass tank) is delivered by actors at local or commune level.

Figure 28 Current supply chain for pour flush latrine with fiberglass septic tank latrine



Advantage of this latrine product include that it is lightweight and therefore easy to transport. Further, installation of this latrine product is inexpensive because little labor is required for

installation (vs. brick septic tank and concrete ring latrines). It is also an advantage that the fiberglass tank can be made to order close to the site in the same way as a concrete ring when molds are brought to the site.⁴⁷ However most would be made in a factory at local level. Finally, tests of the technology have shown that the effluent complies with MOH standards.

Fiberglass septic tank latrines are, however, still relatively unknown and are therefore not yet trusted by consumers. In addition to this disadvantage, the cost is still relatively high and at scale production will be necessary to drive down the price.

Supply chain efficiencies that can reduce consumer costs include advance orders to plan manufacture, labor and plan distribution. Higher order levels reduce the prices through economies of scale in sourcing bulk raw material therefore paying less. Manufacturing with reasonable production runs which reduces wastage and deliveries in bulk which reduces the cost per item to deliver.

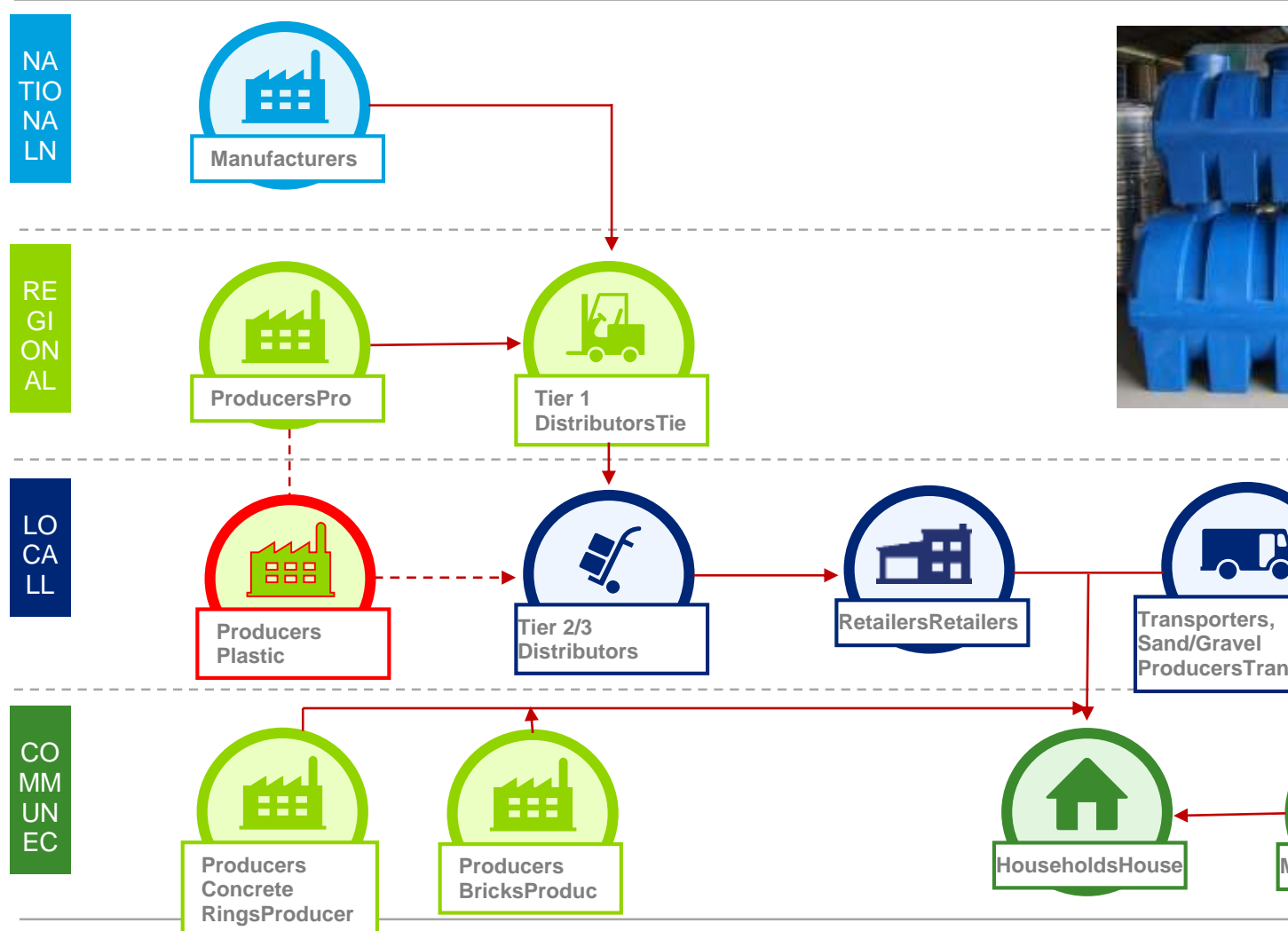
Pour Flush Latrine with Septic Tank Made from Plastic

This relatively recent latrine product innovation consists of a three-chamber septic tank made from hard plastic. Different sizes of tanks can be purchased. The plastic used for the tanks is not UV-proof and as such the tanks are meant for below ground installation only. The research team encountered this product in urban areas; however, penetration of the rural market appears to be extremely limited still.

As illustrated in figure 29, below, the major input for the plastic septic tank latrine is produced and delivered at local level. The plastic tanks are produced and sold by ROTO company, a Can Tho based large plastics manufacturer which also produces plastic water containers that are sold throughout the Mekong River Delta. Currently, ROTO sells the septic tanks via its network of 500 distributors in the region. These distributors are mostly found at city and district level.

-
- ⁴⁷ Interview with fiberglass manufacturers suggested that there were 1- 2 larger fiber glass manufacturers and many smaller scale local producers in Ca Mau and Kien Giang provinces. The manufacturers can produce large boats in large quantity. The local producers can produce small boat in smaller quantities. In Soc Trang and An Giang provinces, there were only small local producers.

Figure 29 Current supply chain for pour flush latrine with plastic septic tank




Advantages of the plastic septic tank are that it is visible, robust, and durable. In addition to being robust, the latrine tank is lightweight, which makes it very easy to transport. An important advantage is that it is highly suitable for flood prone and flooded areas. Further, installation costs are low and mass production of the tank is feasible (with the opportunity for economies of scale and lowered costs). The main disadvantage of this technology is that the cost currently is relatively high (see next section). Further, consumers in rural areas are not familiar with and do not yet trust the technology. The one manufacturer ROTO, is marketing actively and has appointed over 500 distributors to add these septic tanks to their existing water tank range. Their motivation to create a realistic and competitive solution will add momentum to sales.

Also for plastic septic tanks, advance orders to plan manufacture, labor, and plan distribution could increase the efficiency of the supply chain and thus reduce the cost to consumers. Higher order levels reduce the prices through economies of scale in sourcing bulk raw material therefore paying less. Manufacturing with reasonable production runs which reduces wastage and deliveries in bulk which reduces the cost per item to deliver.

Latrine Product Comparison

Benefits and disadvantages of the latrine products currently present in the market are compared in figure 30.

Figure 30 Latrine product comparison

Product Comparisons		
Positives		Negatives
<u>Fiberglass / Composite</u> Lightweight easy to transport Low installation cost Can make to order on site		<u>Fiberglass / Composite</u> Unknown Not yet proven Expensive (Scale to reduce price)
<u>Plastic tanks</u> Lightweight easy to transport Ideal for flooded areas Visible Can make large volume at scale		<u>Plastic Tanks</u> Relatively unknown Need to be trusted Expensive (Scale to reduce price) Needs promotion and support
<u>Bricks</u> Trusted Available locally Recommended by Masons Is the basis for design		<u>Bricks</u> Limited supply Manufacturing pollutes Scale at local sources does not reduce price
<u>Concrete Rings</u> Can be made on site Durable Good for flooded areas		<u>Concrete Rings</u> Transport expensive Not suitable for all designs Not liked by some consumers

4.2.3 Latrine Product Cost and Supply Chain Impact on Affordability

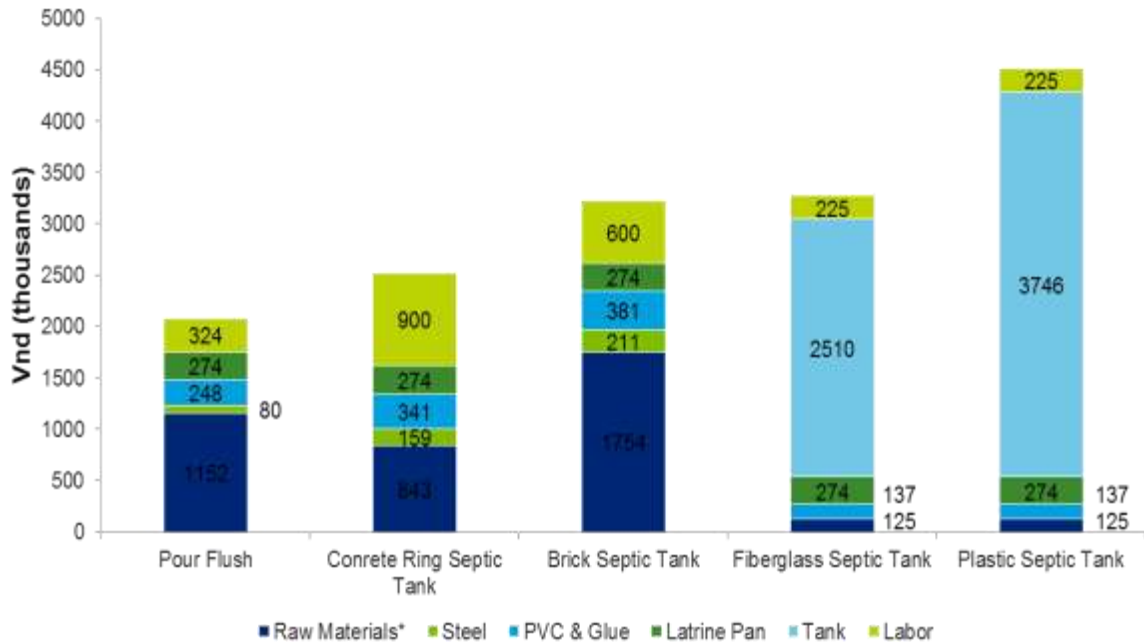
The research team analyzed the inputs needed for the substructure of each latrine product to assess the pricing⁴⁸ of each (total and by input). The resultant detailed pricing per latrine product can be seen in figure 31 below.

This analysis shows that while pour flush latrine with septic tank latrines from brick currently is the latrine product most promoted by masons and most commonly built by households, pour flush latrines with a septic tank or infiltration tanks made from concrete rings are the most inexpensive products available in the market.

The analysis also shows that pour flush latrines with fiberglass and plastic septic tanks are currently the most expensive – though still competitive – options, but at the same time those with the greatest potential for price reductions.

Figure 31: Pricing by Latrine Type Option, substructure only (excluding transportation)

⁴⁸ All cost estimates based on prices of construction materials, issued by MOC in November 2010, updated to 2014. Pour flush, brick septic tank, and concrete ring septic tank materials based on list of materials for building pilot latrine, provided by IDE. Plastic tank cost estimate based on manufacturer price for tank and specified material quantities. Fiberglass tank based on manufacturer price for tank, additional materials needed assumed similar to plastic tank. Superstructure costs are not considered dependent on latrine type, and therefore excluded from this comparison.



*Raw Materials include brick, cement, gravel, and sand

For all latrine types, increased efficiency in the supply chain has the potential to reduce the cost to the consumer. Supply chain efficiencies which could reduce consumer costs include advance orders to plan manufacture, labor, and distribution. Higher order levels reduce the prices through economies of scale in sourcing bulk raw material therefore paying less. Manufacturing with reasonable production runs which reduces wastage and deliveries in bulk which reduces the cost per item to deliver.

In the case of pour flush latrines with fiberglass and plastic septic tanks, substantial price reductions could be obtained via a reduction in the price of the tanks themselves, because the tanks make up 77 percent and 83 percent, respectively, of the total input. Large scale production of either technology is therefore likely to result in substantial price reductions. Further, transport and labor costs add less to the price of these products than other products (figure 32). However, greater rates of adoption and demand for these products among consumers are needed to generate the increased business volume that can lower the unit price of these latrine products. Currently, challenges to a greater rate of adoption of these products include that they have not been market tested with rural consumers, that they are not widely available to purchase from retailers, and that few consumers are aware of them.

Figure 32 Supply chain impact on affordability, comparisons of average cost of main inputs (product, labor, transport) and comparison of availability.

Product	Product Cost	Labor Cost	Transport Cost	Availability
Bricks	Base Line	Base Line	Base line	Everywhere
Concrete Rings	Lower	Lower	Higher	Some areas
Plastic Tanks	Higher	Lower	Lower	Dealer network potential sales
Composite Tanks	Higher	Lower	Lower	Some locations, little known
Most Competitive	Concrete Rings	Plastic & Composite Tanks	Plastic & Composite Tanks	Bricks and Plastic Tanks

Costs provided by Masons

4.3 Financing Options

The supply chain study sought to identify which financing options – beyond VBSP sanitation loans – may be available to households to finance their latrine construction. Table 13 provides an overview of the formal and informal financing options identified and lists the positives and drawbacks of each option.

Table 13 Formal and informal financing options, positives and drawbacks

Financing Option	Type	Positives	Drawbacks
VBSP sanitation loans	Formal	<ul style="list-style-type: none"> • Lowest interest rate • Formal proof of capacity to pay not required 	<ul style="list-style-type: none"> • Limited availability
Commercial banks	Formal		<ul style="list-style-type: none"> • Higher interest rates • Proof of capacity to pay or collateral required
Credit from retailer, masons	Informal	<ul style="list-style-type: none"> • Interest free • Opportunity to delay payment until after harvest • Available for latrine building 	<ul style="list-style-type: none"> • Short repayment period • Offered to trusted customers only

Community revolving fund ⁴⁹ (<i>revolving fund set up by mass organization</i>)	Informal	<ul style="list-style-type: none"> • Low interest rate • High level of trust • Little risk 	<ul style="list-style-type: none"> • Long potential wait time to borrow from revolving fund
Tontine (<i>revolving fund set up by group of households</i>)	Informal	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Higher interest • High risk
Friends and family	Informal	<ul style="list-style-type: none"> • Low or no interest • Flexible repayment period • High level of trust 	<ul style="list-style-type: none"> • Often unwilling to lend for a hygienic latrine
Private money lender	Informal		<ul style="list-style-type: none"> • Very high interest rates (5% plus/month) • Unethical business methods

⁴⁹ The 2010 sanitation market study found membership of this type of fund to be common in Soc Trang. This type of group is usually set up by a mass organization, such as the WU, and includes a number of households who to contribute money and assist each other in doing business. Normally this kind of credit has low interest, just enough to maintain the operation of the group. This kind of credit bears little risk as it is guaranteed by the WU (iDE, 2010).

5. SUMMARY OF KEY FINDINGS & RECOMMENDATIONS

5.1 Summary of Key Findings

5.1.1 Consumer Demand Assessment Key Findings

Current sanitation practices

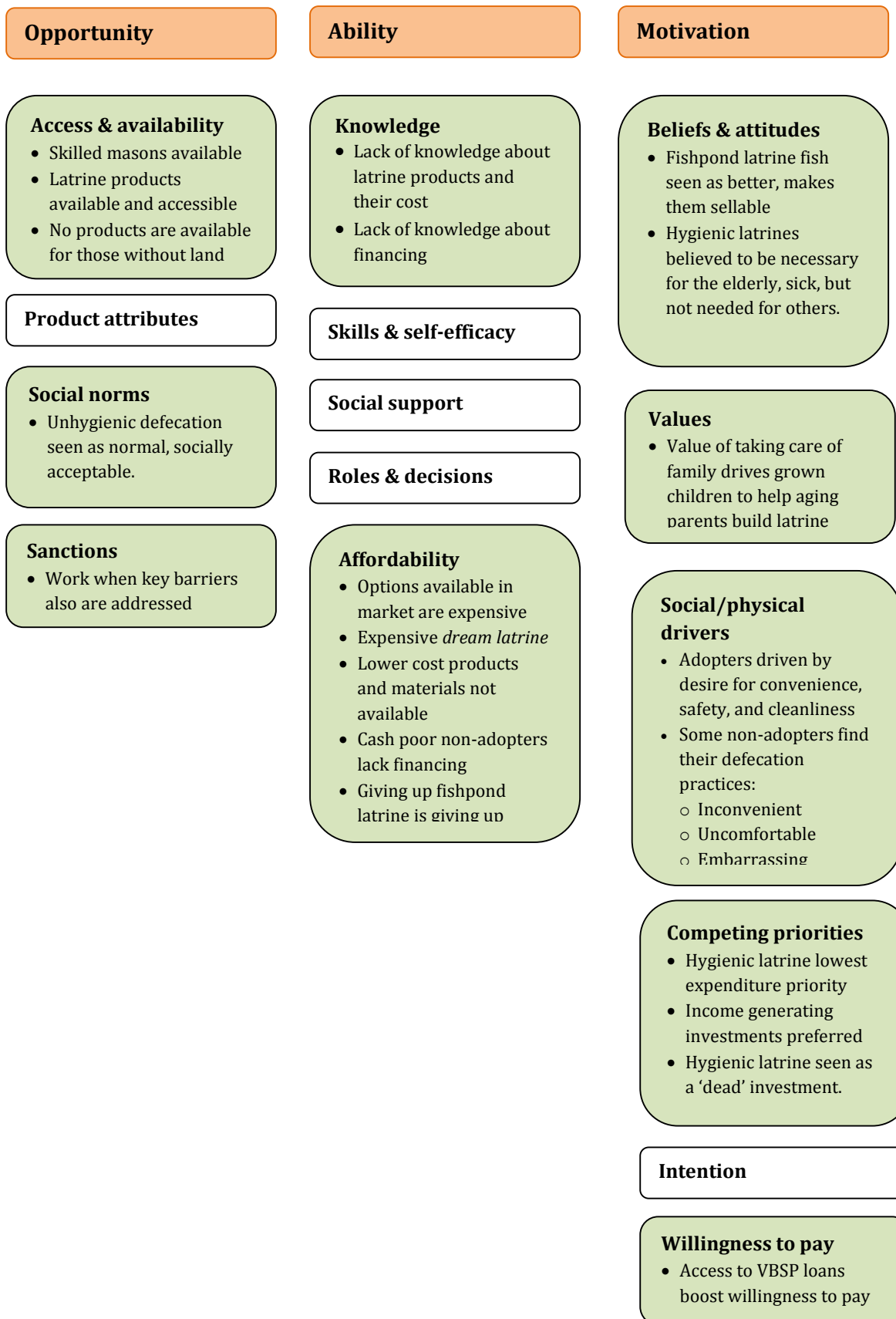
A variety of defecation practices exist in the rural Mekong River Delta region, including:

- Open defecation on land
- Open defecation into rivers or canals
- Defecation into a shared fishpond latrine
- Defecation into fishpond latrine owned by household
- Defecation into unhygienic (field combat) latrine
- Occasional adopters

An overview of non-adopter practices can be found in table five (section 3.1.1). Among adopters, latrines with flush to a brick septic tank predominate. Sanitation practices – including hygienic latrine usage – often vary from village to village; however, according to MICS data a majority of non-adopters use a fishpond latrine (own or shared).

Key factors that influence hygienic latrine ownership and use

Which are the key factors that influence hygienic latrine ownership and use? The figure below summarizes the factors which the demand assessment suggests influence hygienic latrine ownership and use to the greatest extent in the rural Mekong River Delta. Each factor is described in greater detail below.



Access and availability

- Masons who are able to build a hygienic latrine (albeit of unknown quality) are easily accessible to households.
- Retail stores which stock construction supplies and sanitation ware can be found in every commune.
- Latrine products suited for what appears to be a significant number of households, which have no physical land (e.g. those living above the river) or do not have a title to the land on which they live, are either prohibitively expensive or do not exist.

Social norms

- Many unhygienic defecation practices are seen as normal and socially acceptable (fishpond defecation, field combat latrines).

Sanctions

- Sanctions against unhygienic defecation practices result in hygienic latrine acquisition only when accompanied by measures that address other salient barriers to access (e.g. affordability). Where not accompanied by such measures to address, sanctions have mostly result in a shift from one form of unhygienic defecation practice to another.

Knowledge

- Non-adopters lack knowledge about hygienic latrine products and their cost and, in particular, knowledge about good quality low cost hygienic latrines.
- Non-adopters lack knowledge about latrine financing, including the adequacy of VBSP sanitation loans and alternative financing options/strategies.

Affordability

- Hygienic latrine products delivered by the local market tend to be expensive, costing an estimated average of VND 10 mil. (i.e., cost of latrine typically built by adopters).
- Non-adopters' 'dream latrines' often includes expensive features, such as a brick super structure and a bathroom, driving up the cost of the facility.
- Rural consumers cannot easily access some lower cost latrine construction materials (concrete rings) or complete substructures (fiberglass septic tank, plastic septic tank⁵⁰).
- Many non-adopters are unable to come up with the cash needed to purchase a large item and lack financing options and strategies. VBSP sanitation loans appear to be their main source of financing, but demand for these loans exceeds supply.
- Fishpond latrines generate an income for their owners which they may be reluctant to give up.

Beliefs and attitudes

- The belief that fish bred in latrine ponds are more nutritious and better tasting than fish that have been raised on another diet make latrine pond fish a sellable commodity.
- A hygienic latrine is seen necessary for the elderly, sick, and weak (and, to some extent, children), because it is safer and more convenient. However, it is perceived not to be a real

⁵⁰ See Supply Chain section.

necessity for those who are young and healthy (even though these non-adopters have convenience, comfort, safety, and privacy concerns).

Values

- The value placed on ‘taking care of one’s family’ has motivated many grown children to support their elderly parent(s) to build a hygienic latrine.

Emotional/physical/social drivers

- A desire for convenience, safety, and cleanliness were cited by adopters as primary drivers in their decision to build a hygienic latrine
- Some non-adopters saw their defecation practices as inconvenient due to the time and effort needed – hygienic latrines were seen as a convenient alternative.
- Non-adopters see hygienic latrines as comfortable and some (especially women) see their own defecation practice as uncomfortable.
- Many non-adopters see their defecation practice as unsafe, in particular at night.
- Female non-adopters express embarrassment at being seen defecating by the river and/or in a fishpond latrine

Competing priorities

- A hygienic latrine is at the bottom of many non-adopters list of expenditure priorities. Income generating investments are prioritized the highest.
- Many non-adopters are unwilling to invest their savings in or borrow for a hygienic latrine, because a latrine – in contrast, e.g. to livestock and tools – is seen as a ‘dead’ investment.

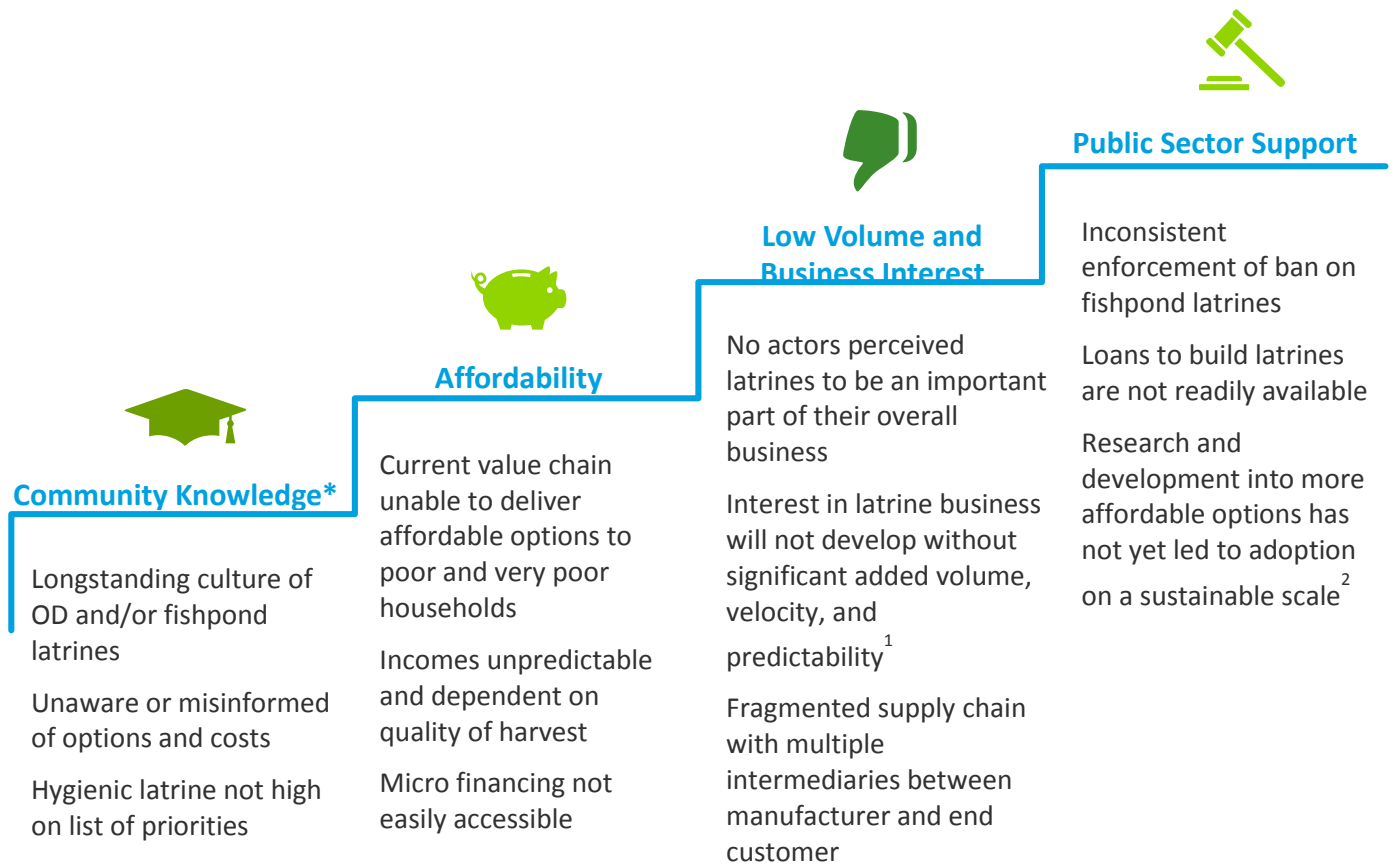
Willingness to pay

- Many households are willing to invest in a hygienic latrine if given access to a VBSP sanitation loan (or other form of affordable financing)

5.1.2 Supply Chain Analysis Key Findings

The figure below summarizes the main challenges to reaching the desired level of access to hygienic sanitation as per the supply chain analysis.

Figure 33: Fundamental challenges to reaching 500,000 Households (65% of Mekong Delta)



* Findings from demand research

5.2 Recommendations

Recommendation 1: Identify who to target and what behavior change is needed

Programmers should identify *who to target* and *what type of behavior change is desired* as a first step in designing the sanitation behavior change intervention.

Programmers must start by determining which non-adopter group(s) to target and what change is desired. Programmers should consult local authorities – especially village heads – to (a) identify areas where the non-adopter groups targeted are common *or* (b) identify which non-adopter behaviors are most common in the areas they are planning to target.

The type of behavior change desired will differ according to the non-adopter target group. Table 14 provides an overview of non-adopter groups and the desired behaviors for each group.

Table 14 Non-adopter groups and desired behaviors to attain hygienic sanitation

Non-adopter group	Current practice	Desired behaviors		
		Facility	Practice	O&M
<i>Open defecators</i>	Do not have any form of latrine; defecate in the open on fields or into the river.	Build a hygienic latrine	Cease OD and consistent use of hygienic latrine	Safe and timely removal of septic sludge (septic tank) and/or fecal waste (pour flush)
<i>Fishpond sharers</i>	Use simple fishpond latrine owned by another household.	Build a hygienic latrine	Cease OD and consistent use of hygienic latrine	
<i>Fishpond owners</i>	Own and use a simple fishpond latrine.	Build a hygienic latrine	Consistent use of hygienic latrine and removal of fishpond latrine	
<i>Field combat owners</i>	Own and use an unhygienic latrine with a solid superstructure and flush to an open water body.	Connect current latrine to hygienic substructure (i.e. install a tank or pit)	n/a	
<i>Occasional 'adopters'</i>	Own a hygienic latrine but usually defecate in their fishpond latrine; hygienic latrine is reserved for special occasions (bad weather, night).	Removal of fishpond latrine	Consistent use of hygienic latrine	

Demand research findings suggest that sanitation behavior change interventions generally should target the following household members equally:

- 1) Wives – because wives have considerable influence over household expenditure decision making in many households and more often than men propose investing in a hygienic latrine.
- 2) Husbands – because husbands almost always have a strong influence on decisions about large expenditures and in many households will make the final decision.

Parents, who live with their grown children, are another group that may be targeted, because they are frequently consulted by couples before a large purchase is made and, in some households, are the final decision makers (although, this is less common).

Finally, programs may consider targeting school age children, for example, via events at schools to make having a hygienic household latrine a priority for them. Our findings show that parents, in some cases, decided to invest in a television at the request of their children.

Recommendation 2: Simplify the sanitation shopping process

Consumers tend only to build hygienic latrines, if they can access a product (i.e. a hygienic latrine) which they find appealing and affordable. However, the sanitation shopping process currently offers consumers neither price nor quality guarantees. Though latrine building services and supplies are available in abundance in the Mekong River Delta, consumers are unable to buy any single latrine product. ‘Mechanical latrines’ – a label under which all flush latrines are lumped – vary enormously in size, design, and price⁵¹, as each consumer must negotiate the design of their particular latrine with the mason they have hired build it. Variation is particularly great when it comes to the substructure.

Recommendation 2a: Design and introduce a set of standard latrine products to make the sanitation shopping process more transparent and predictable for consumers

It is critical to introduce into the market latrine products, which are suitably priced and which consumers know they can trust. Standard latrine products will make the latrine shopping process simpler for consumers and make the price and quality of hygienic latrines more predictable. Although government estimates of material requirements and pricing exist, they are not widely known or followed, and may not be realistic for all areas.

- Collaborate with existing supply chain actors to develop a limited number of standard latrine products (substructure and slab only), which guarantee functionality and have the features households in the region desire. Based on the supply chain and demand research, standard substructure and slab options could, for example, include:

SUBSTRUCTURE

- a) Concrete rings (soak pit)
- b) Concrete rings (septic tank)
- c) Brick septic tank

+

SLAB

- a) Slab with squatting pan
- b) Slab with sitting bowl

⁵¹ The variation is particularly great when it comes to the design and size of the substructure. Consumers see this part of the latrine as important because it is seen as critical to preventing smell (a desired benefit in a hygienic latrine), but few are certain about the design and size needed to give this desired benefit.

d) Plastic septic tank⁵²

e) Fiberglass septic tank⁵³

- When developing these options, existing research on consumer preferences and aspirations should inform their design. Where insufficient knowledge is available, additional research should be carried out with consumer.
- Incorporate aspects of user centered design and testing in the development process.
- Widely publicize several latrine options with pricing bands, including standard bill of materials and mason labor hours. By establishing a bill of quantities, volumes, related pricing bands, design parameters become clear. Turning these design and quantity parameters into graphics, will allow the consumer, loan provider and installers like Masons, to grasp the size, complexity and scope of multiple installations.
- Ideally local government authorities should conduct quality assurance on installations.
- Over time, standard superstructure product development should also be done, following the same steps as for standards latrines.
- Offer standard options for the substructure and slab⁵⁴ via retailers and give consumers the opportunity to customize their superstructure according to what they can afford (see recommendation 4).

Recommendation 2b: Market standard latrines via one-stop shop sanitation businesses

Market options via engagement of a so-called one-stop shop sanitation business. The capabilities of this actor would be to speak to the household about the suitable product offerings (benefits), as well as source the necessary components and services for delivery and installation. The proposed actor could already be involved in the sanitation supply chain (interested retailer, small ring producers that wishes to diversify).

Recommendation 3: Bring to market hygienic latrine products suitable for households without land and upgrading options for those with field combat latrines

Why

A number of non-adopter groups face special product related barriers to hygienic latrine access. For these groups, none of the hygienic latrine options, which are now commonly available in the rural sanitation market, offer good solutions to the challenges they face. Table 15 provides an overview of these groups and the challenges they face. Programs targeting any of these groups must bring to market suitable and affordable hygienic latrine solutions in order to succeed.

What

Identify or develop and market hygienic latrine solutions, which address the specific barriers faced by these target groups. Findings from the supply chain study suggest that products already exist

⁵² See supply chain section for description

⁵³ Ibid

⁵⁴ A separate set of latrine products may need to be developed for consumers who live areas exposed to flooding. However, our research suggested that the number of households located in flood prone areas is declining due local authorities policies of building dykes and resettling households in flood safe areas.

which will make it easier and/or less expensive for these groups to acquire a hygienic latrine. Table 15 provides an overview of the groups, barriers, faced, type of solutions required, and potential solutions. Further research may be needed to develop more suitable options and thorough market testing of each product will be required.

Table 15 Non-adopter groups and product related barriers they face

Group	Barrier faced	Type solution required	Potential solution(s)
Household without land (living above/near river)	Suitable products are prohibitively expensive	<ul style="list-style-type: none"> • Light weight and impermeable septic tank • Affordable 	<ul style="list-style-type: none"> • Plastic septic tank* • Fiberglass septic tank
Household without ownership of land	Do not wish to invest in permanent hygienic latrine facility due to the risk of eviction.	<ul style="list-style-type: none"> • Latrine facility that can be moved • Affordable 	<ul style="list-style-type: none"> • Plastic septic tank*
Field combat latrine owners	No easy path for upgrading to hygienic latrine currently exists	<ul style="list-style-type: none"> • Easy to install substructure(s) • Affordable 	<ul style="list-style-type: none"> • Plastic septic tank*

Notes: * Only where below ground or otherwise UV-protecting installation is possible

Recommendation 4: Increase affordability by offering low-cost basic options (medium term) and enabling households to upgrade to their dream latrine over time (long-term).

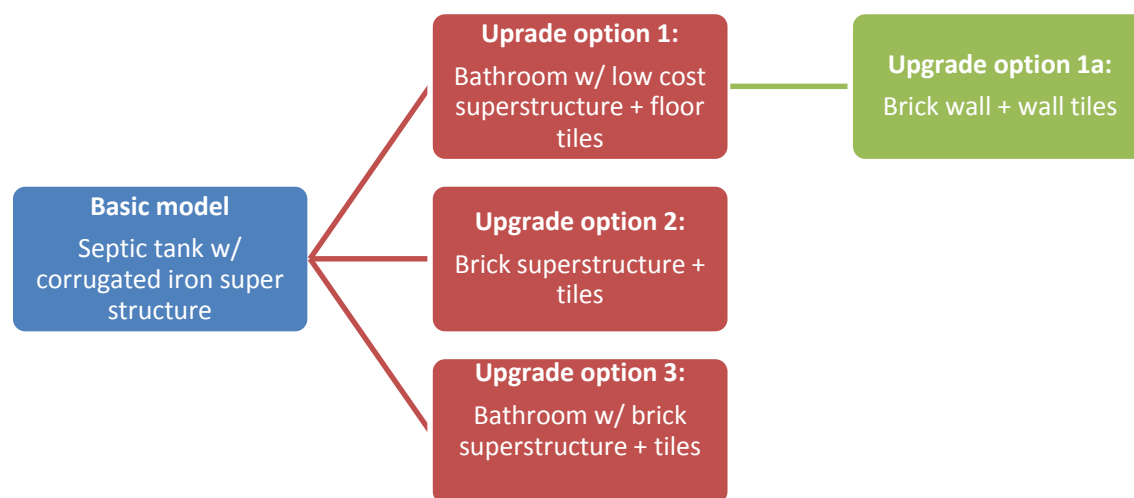
Why

The hygienic latrines currently available in the local market are tailored to better off households: many adopters have paid in excess of VND 10 million for their latrine. Affordable lower cost hygienic latrines which feature attributes that consumers prefer are a necessity to enable poor and near poor non-adopters to acquire hygienic sanitation. In addition to an oversized substructure, features that consumers desire in the latrine superstructure often drive up the price of hygienic latrines. These features include a large superstructure, brick walls, tiles on wall and floor, etc.

What

- Where the features desired by consumers will raise the cost of the basic latrine product excessively, options to upgrade over time should be offered. In particular, consumers should be able to make upgrades to and expand the latrine superstructure over time. An example of possible upgrading options, which correspond to consumers' desired latrine features, is shown in figure 34.
- Develop these options using consumer research and conduct additional research done where needed.
- Incorporate aspects of user centered design and testing in the development process.

Figure 34 Potential options for upgrades



Recommendation 5: Make latrine financing an integral part of any sanitation program and use differential latrine financing strategies for the very poor and cash poor

Why

Financing is critical from a consumer demand perspective. Along with the high cost of current latrine products, limited access to financing for latrine construction is perhaps the most critical barrier to hygienic latrine acquisition. From a supply chain perspective, access to affordable funding is also critical, because it enables the supply pipeline to perform cost effectively, especially if access to financing is steady and predictable.

While many – or most – non-adopters will need to access financing or to make use of a financing strategy to acquire a hygienic latrine, the financing options and/or strategies must be tailored to the specific barriers faced by different non-adopter groups. Demand assessment findings show that those facing finance-related barriers can be divided into two rough groups:

- a. The very poorest (a small group) – among whom a hygienic latrine competes with basic necessities (such as food) for household funds.
- b. The cash poor (larger group) – among whom the availability of a large sum of money – and not income per se – is the main finance-related barrier to hygienic latrine access.

For both of the above groups, access to financing is a precondition for hygienic latrine acquisition. Different financing strategies are needed for each group.

What

The consumer demand and supply chain assessments identified a number of existing and potential formal and informal household sanitation finance opportunities. Currently, VBSP sanitation loans appears to be the most common – and the most sought after – source of hygienic latrine financing. However, programs aimed at increasing access to hygienic sanitation cannot rely on this source of household finance alone, because demand for the loans already exceeds supply. Table 16 provides

an overview of financing opportunities and indicates for what group each opportunity might suitably be used.

Table 16 Financing opportunities and suitability

Financing opportunity	Description	Suited for	
		Very poor	Cash poor
Formal			
VBSP loans	<ul style="list-style-type: none">Loans up to VND 6 million for latrine facility, lowest rate.No loans given to households without land title.Formal proof of ability to pay not required, but often poor households cannot get the loan		√
Commercial bank	<ul style="list-style-type: none">App. 12% interest p.a.Collateral and proof of ability to pay required		√
Subsidies	<ul style="list-style-type: none">Grants given by government programs or NGO projects	√	
Informal			
Family (esp. elderly), grant	Financial support from family, especially for elderly parents.	√	√
Family and friends, loan	Loan from family or friends		√
Revolving fund	Common informal arrangement, where a group of households in a community pay into a shared pool and take turns obtaining a loan from the pool.	√	√
Retailer credit	Delayed payment for part of latrine construction materials given by retailers to trusted customers.		√
Income time investment	Timing investments with periods of peak income. Sanitation programs elsewhere in Vietnam have succeeded in making household invest some of peak income in a hygienic latrine by having the household sign a commitment to this effect in advance.		√
Event timed investment	Certain events, such as weddings and one-month birthdays, may be opportunities to finance a latrine investment. Guests customarily give gifts of VND100-200K per family. Non-adopters with an event coming up could be targeted to commit to use part of the		√

Financing opportunity	Description	Suited for	
		Very poor	Cash poor
	monetary gifts received for a hygienic latrine.		

Further research is recommended to identify other financing options in the Mekong River Delta context as well as possibilities for partnerships with financing institutions and credit granting government programs.

A note on subsidies:

The FGDs suggested that non-adopters prefer cash subsidies over in-kind subsidies, because they wish to decide what latrine to build. Due to the risk of that a cash subsidy could be diverted for other purposes, vouchers should be considered. It is important that it is clearly communicated who is eligible and who is not eligible for a subsidy, that these eligibility criteria are strictly adhered to, and that the beneficiary selection process is transparent. Otherwise, other – non-needy – non-adopters may be encouraged to postpone their latrine investment and ‘wait their turn’.

Recommendation 6: Prepare the supply chain to deliver the relevant standard latrine products

Supply chain findings suggest that the existing supply chain is effective and able to efficiently deliver to households the supplies required to build their desired latrine facility. Our recommendations therefore aim to enhance the ability of the supply chain actors to increase their volumes and remain efficient while improving costs through economies of scale.

To prepare the supply chain to deliver the standard latrine products, the following should be undertaken:

- Determine, through consumer opinion and preference, what standard latrine products are suitable for the targeted market.
- Engage the relevant supply chain actors in the targeted market (see business models, below) to ensure everyone is ready to meet higher volume requirements, by understanding individual business needs. See figure 35, below, for the questions to be asked in order to understand the individual business needs for different supply chain actors.

Figure 35 Preparing the supply chain for a new business model

	Plan	Source	Make	Deliver
Producers	What notification do they need to plan for large delivery runs, what is the lead time?	Will they be able to source all the material needed for increased volume?	When they manufacture, how long can they store before delivering?	Are they equipped to deliver to rural areas to optimize transport costs?
Wholesalers and Agents	What notification do they need to have inventory to support increased sales?	Are they able to establish reliable sources of supply for the increased volumes?	Are they able to negotiate with their principals to have production meet demand?	Are they equipped to deliver to rural areas to optimize transport costs?
Retailers	Will they be able to act as an agent for the manufacturer by processing the transaction and having the manufacturer or distributor deliver?	Will they be able to source from suppliers that supply the items specified in the approved Bill of Materials?	Can they communicate delivery requirements in time for suppliers to meet the delivery schedule for consistently high volumes?	Can they establish reliable relationships with transporters to make vehicles available to deliver in bulk when required?
Transporters	How much notification is required to make a suitable vehicle and driver available?	Can they source vehicles from other fleets if volumes increase beyond their capacity?	Can they establish direct communication channels with manufacturers to align with production availability?	Are they equipped to deliver to rural areas to optimize transport costs, even if they need multiple vehicle types?
Masons	How much notification is required to make suitable equipment and skilled staff available?	Can they easily train additional skilled labor and source more equipment if scale increases?	Can they make the required structure consistently compliant with the specifications and bill of materials?	Can they reliably and consistently schedule delivery dates, be on site to inspect goods arriving and schedule work to suit available materials?

- Select the most suitable business model for the targeted commune(s) by considering the following factors: a) appropriate latrine solutions (especially in flood-prone areas), b) local availability of solutions and materials (concrete rings, fiberglass/plastic tanks, c) total solution cost given local market prices and mason labor rates, d) transportation conditions, and e) capacity of actors including masons, retailers, and suppliers to support additional latrine installations.
- Engage with masons and retailers in the targeted commune(s), including:
 - Prepare a list of retailers and masons in the commune (*task to be done by the commune health staff, who is responsible for sanitation promotion in the commune*)
 - Provide training for masons *if necessary and if enough budget is available*. Training may cover how to build/install the latrine products promoted, bills of quantity for the products, latrine product marketing (using promotional materials, finding new customers, etc.), etc.
 - Provide training for retailers *if necessary and if enough budget is available*. Training may cover bills of quantities for the promoted latrine products, latrine product marketing, and business skills.
- During program implementation, health staff (village health worker) should be responsible for randomly inspecting latrine installations and retailers to ensure they have material available for display and for sale.

Recommendation 7: Assist supply chain actors to overcome constraints

Why

The two most commonly mentioned constraints to doing business by all supply chain actors are:

- a) Availability of labor
- b) Access to business financing

Addressing these concerns will require work from the supply chain facilitator to help these actors with financial training and a training program that steadily makes artisans available to apprenticeship programs and on the job practical skills.

What

c) Increase availability of labor

- Establish a formalized apprenticeship program to develop skilled masons focused on latrine construction
- Identify skilled or master masons who will participate by taking on apprentices
- Recruit laborers and pair them with master/skilled masons who have highest latrine business volume to develop latrine-specific masonry skills
- Develop a schedule for the apprenticeship program, and criteria for successful completion.
- When apprentices graduate, they are ready to independently offer latrine building services to new customers, or lead teams constructing latrines under trainer's business
- Households seeking masons and master masons seeking more skilled masons to build latrines should be made aware of available recent graduates, and their extensive latrine focused training, which ensures selection of an appropriate solution, quality construction, and adherence to standard design and bill of materials.
- Assist suppliers to mitigate labor shortages around harvest time through production schedule planning and inventory management support

d) Improve access to financing

- Seek finance institutions that give business loans
- Understand their loan criteria and thresholds
- Understand their appetite for funding
- Assuming there are realistic thresholds and available funds, approach actors to:
- Share these thresholds and criteria with actors desiring operating capital
- Assist them in meeting the requirements for application

Recommendation 8: Tailor behavior change communication to the barriers and drivers relevant to each target audience as well as their current stage of change

Why

Many of the barriers and drivers of hygienic latrine access have to do with what non-adopters know, think, and feel. Communication has a central role to play in addressing these barriers and tapping into these drivers. Table 17 below provides an overview of the most important barriers and drives of sanitation behavior change which can be fully or partially addressed via communication (i.e. those who are related to what non-adopters know, think, and feel). The table also shows for what non-adopter group each barrier or driver is relevant. Some of barriers and drivers to building a hygienic

latrine, which can be affected via communication, are shared by all or most non-adopters; other barriers and drivers are experienced by only one or some non-adopter groups.

Table 17 Barriers and drivers that can be addressed via communication, by non-adopter group

Barriers	Drivers
All non-adopters	
<ul style="list-style-type: none"> Do not know what a hygienic latrine is Lack knowledge related to affordability: <ul style="list-style-type: none"> Believe the cost of a hygienic latrine is higher than it needs to be. No exposure to or knowledge about good quality low-cost hygienic latrines Think having a large latrine tank is need to prevent smell and blockage Do not know that VBSP sanitation loans are sufficient to build a hygienic latrine Lack information on financing options beyond VBSP sanitation loans A hygienic latrine is perceived not to be a real necessity for those who are young and healthy (even though these non-adopters have convenience, comfort, safety, and privacy concerns) A hygienic latrine is seen as 'dead' investment 	<ul style="list-style-type: none"> A hygienic latrine is seen necessary for the elderly, sick, and weak (and, to some extent, children), because it is safer and more convenient. Value taking care of family - take care of family by building hygienic latrine Associate having a hygienic latrine with being wealthy; see adopters as having comfortable lives with big houses, businesses, and lots of land. Desire convenience, safety, and cleanliness associated with a hygienic latrine
Fishpond owners	
<ul style="list-style-type: none"> Defecation into a fishpond latrine seen as normal and socially acceptable Believe that fishpond latrines are clean, because the 'fish eat all the feces'. Fish bred in latrine ponds are seen as more nutritious and better tasting than fish that have been raised on another diet. 	<ul style="list-style-type: none"> See defecation practice as unsafe, in particular at night. Female non-adopters express embarrassment at being seen defecating by the river and/or in a fishpond latrine (<i>less strong than other groups</i>) Some adopters feel it is more civilized to have a latrine where the defecator cannot be seen.
Fishpond sharers	
<ul style="list-style-type: none"> Defecation into a fishpond latrine seen as normal and socially acceptable Believe that fishpond latrines are clean, because the 'fish eat all the feces'. 	<ul style="list-style-type: none"> Defecation seen as inconvenient due to time and effort needed – hygienic latrines seen as a convenient alternative. See hygienic latrines as comfortable and some (especially women) see their own defecation practice as uncomfortable

Barriers	Drivers
	<ul style="list-style-type: none"> • See defecation practice as unsafe, in particular at night. • Female non-adopters express embarrassment at being seen defecating by the river and/or in a fishpond latrine • Some adopters feel it is more civilized to have a latrine where the defecator cannot be seen.
Field combat latrine	
<ul style="list-style-type: none"> • Little distinction is made between 'field combat' latrines and hygienic latrines in terms of social acceptability. • Field combat latrines offer the same experience as hygienic latrines (convenience, comfort, safety, privacy). 	
River defecators	
<ul style="list-style-type: none"> • Believe that they can avoid polluting, if they defecate where the water flows (i.e. into the current) 	<ul style="list-style-type: none"> • Open defecation into the river is seen as a less socially acceptable practice than fishpond defecation. • Defecation seen as inconvenient due to time and effort needed – hygienic latrines seen as a convenient alternative. • See hygienic latrines as comfortable and some (especially women) see their own defecation practice as uncomfortable. • See defecation practice as unsafe, in particular at night. • Female non-adopters express embarrassment at being seen defecating by the river and/or in a fishpond latrine • Some adopters feel it is more civilized to have a latrine where the defecator cannot be seen.

What

Programs should address with communication the main barriers and drivers related to what the targeted groups know, think, and feel (see table 17 above).

The focus of sanitation BCC should be appropriate to where in the behavior change process non-adopters find themselves. A useful model for understanding sanitation behavior change is Prochaska and DiClemente's Stages of Change model according to which individuals typically go through five stages when changing behavior: pre-contemplation, contemplation, preparation, action, and maintenance (see figure 36 below).

Figure 36 Prochaska and DiClemente's stages of behavior change model



The focus of communication to promote hygienic latrine acquisition will differ according to which of these stages of change non-adopters find themselves. Table 18 below gives a general description of each stage of change, what it means in terms of sanitation behavior change, and what type of communication typically will be required at each stage.

Table 18 Stages of change: Description and sanitation communication focus by stage of change

Stage	General description	In sanitation terms	Communication focus
Pre-contemplation	Person is not aware of the behavior and/or the need to change; they are unaware of the benefits of change and the negatives of not changing.	Non-adopter unaware of hygienic latrines and/or the benefits* of having and using a hygienic latrine.	<i>Raising awareness</i> <ul style="list-style-type: none"> • What is a hygienic latrine • Benefits* of hygienic latrines • Hygienic latrines as a social norm <i>Motivation</i> <ul style="list-style-type: none"> • Benefits* of hygienic latrine (drivers) • Disadvantages of current defecation practice (drivers) • Hygienic latrines as a social norm • Ease of change (e.g. cost is less than you imagine)
Contemplation	Person has become aware of benefits of change and considers changing. They are still not sure that the benefits of change outweigh the benefits of maintaining their current behavior	Non-adopter considers building a hygienic latrine, but is still not convinced that building one is better than maintaining existing practice.	<i>Motivation</i> <ul style="list-style-type: none"> • Benefits* of hygienic latrine (drivers) • Disadvantages of current defecation practice (drivers) • Hygienic latrines as a social norm <i>Knowledge</i> <ul style="list-style-type: none"> • Available products

Stage	General description	In sanitation terms	Communication focus
			<ul style="list-style-type: none"> • What available products cost
Preparation	Person is ready to take action	Non-adopter prepares to build hygienic latrine.	<i>Motivation</i> <ul style="list-style-type: none"> • Benefits* of hygienic latrine (drivers) • Disadvantages of current defecation practice (drivers) <i>Knowledge</i> <ul style="list-style-type: none"> • Available products • Where to buy them • What the products cost • How to finance
Action	Person takes action to change	Non-adopter builds and uses hygienic latrine.	<i>Motivation</i> <ul style="list-style-type: none"> • Benefits* of hygienic latrine (drivers) <i>Knowledge</i> <ul style="list-style-type: none"> • Available products • Where to buy them • What they cost • How to finance
Maintenance	Person maintains new behavior	New adopters keeps using hygienic latrine for defecation.	<i>Motivation</i> <ul style="list-style-type: none"> • Benefits* of hygienic latrine (drivers) • Hygienic latrine use as a social norm

Note: * “Benefits” refer to the benefits as seen from the target group’s subjective perspective, not to health or other objective benefits.

Annex C contains a table with the most salient barriers and drivers – as well as the changes that should be the target of BCC (i.e., what non-adopters should know/think/believe/feel as a result of the BCC). This table may be used by programmers to develop communication objectives for their sanitation program.

Recommendation 9: Make face-to-face communication the pillar of BCC and emphasize different BCC activities at different stages of change

Why

Findings from this study and the earlier market study show that people learn about hygienic latrines via their peer networks. When they need more technical advice or information they turn to masons. Communicating via peers, masons, and other trusted individuals is likely to be the most effective way to reach non-adopters with information and behavior change messages.

What

- Make face-to-face communication the pillar of BCC

- Focus on two main types of BCC activities:
 - Household visits – to allow communicators to work with non-adopters to address the specific barriers they face to hygienic latrine acquisition and emphasize the drivers most salient in each case.
 - Small group meetings – to enable the emergence of peer pressure and to allow communicators to identify and address shared barriers to change.

The suggested timing and focus of each type communication activity is listed in table 19 below.

- Ensure that communicators are trained and have communication materials to support their efforts.

Table 19 Suggested BCC activities and focus by stage of change

Stage	Suggested communication activities and focus
Pre-contemplation	<i>Small group meetings:</i> <ul style="list-style-type: none"> • Raise awareness • Motivation
Contemplation	<i>Household visit:</i> <ul style="list-style-type: none"> • Motivation • Consult to identify and address barriers to change <i>Small group meetings:</i> <ul style="list-style-type: none"> • Motivation • Communicate about latrine products and prices
Preparation	<i>Household visit:</i> <ul style="list-style-type: none"> • Assist household in planning for change <i>Small group meetings:</i> <ul style="list-style-type: none"> • Households share advice related to planning for change • Motivation via peer pressure
Action	<i>Household visit:</i> <ul style="list-style-type: none"> • Assist household in making change <i>Small group meetings:</i> <ul style="list-style-type: none"> • Households share advice related to making change • Motivation via peer pressure
Maintenance	<i>Household visit:</i> <ul style="list-style-type: none"> • Monitor and motivate all household members to consistently use hygienic latrine for defecation

Recommendation 10: Strengthen the credibility of village staff and mass organization cadres in relation to sanitation

Why

Village staff and mass organization cadres are the most available resource to facilitate and carry out BCC with non-adopters. However, they currently enjoy a very low level of credibility in the area of household sanitation. To take advantage of this resource as communicators, programs must therefore start by building their credibility.

What

- Train village staff and mass organization cadres on the latrine products promoted as well as on how to effectively carry out the planned BCC activities (household visits and small group meetings).
- Make it visible to community members that village staff and cadres have received formal training on the latrine products being promoted, e.g. by giving them branded apparel (for example, t-shirts) to wear.
- Provide communicator with durable BCC materials that can support them in their work.
- Ensure that all communicators have a hygienic latrine at home – not having one will undermine their message.

Recommendation 11: Tap into the power of peer networks

Why

Behavioral research has shown that almost everything in our lives is influenced by our peer, including our action and our feelings. Whether we have a latrine and what latrine we have is not exception. As such, demand research findings suggest that peers exert a strong influence on whether or not households build a latrine as well as what latrine they build. To the extent possible, communication aimed at motivating and enabling non-adopters to build a hygienic latrine should therefore involve peers.

What

- BCC communicators should encourage households that have built the promoted latrine products to talk to their family and friends about the benefits of the product.
- Pay particular attention to enrolling the assistance of individuals (peers) who are seen as credible and know persons from many different groups. (Research has shown that individuals with a network that cuts across social and economic groups are more effective at spreading new ideas).
- Use events or happenings – competitions, lottery for a free latrine, etc. – to generate buzz about the latrine products promoted among peers.

Recommendation 12: Build display stations for all latrine products promoted in the local area

Why

To build consumer trust in the new latrine products, it is critical that they are able to see and experience the product before investing in it. Due to the high cost of building demonstration models in each village, it is proposed that a display is built at commune level and advertised for consumers to come and see.

What

- Build/or prepare display station for to showcase the **substructure and slab parts of the latrine options** which are appropriate to the commune condition. The size of the displayed models should be actual size so that people who want to build a latrine or masons can come to see and can measure the dimensions and copy the design of the latrine. *Budget for the display station may be sourced in the following ways*

- 1) Commune budget (*preferred*): Use commune budget for building display station, if sufficient.
- 2) Public-private partnership: In case the commune has limited budget, local commune authority should seek contributions from concrete ring producers, plastic septic tank producer, and/or composite septic tank producer. The contributions sought should be the materials and products made by these actors.

In case the budget is very limited and there is no contribution from producers, the substructure of just a brick septic tank latrine should be displayed so that people can come to see and copy.

- Ideally, the display station should be located at a retailer shop – and, preferably, a retailer or other supply chain actor that serves as a one-stop shop sanitation business. In case the retailer shops do not have enough room for the display station, it may be located in a public place which has a lot of potential customer traffic, such as the commune health station.
- Make posters showing the display station. The posters should include: a photo of the displayed latrine options, address of the display station, and contact information for a) the one-stop shop sanitation business where materials for the models can be purchased and guidance given (preferable) and/or b) a promoter (health staff) who can provide more detailed information.
- Provide the posters to the one-stop shop sanitation businesses and other retail shops for display in their shop along with the bills of quantities for each type of latrine. The poster and bills of quantities should be displayed next to each other.
- Provide the poster and other promotion materials to one-stop shop sanitation businesses, promoters and masons as well for use in their promotional work/ business.

Recommendation 13: 'Brand' the standardized latrine products

Why

The current sanitation shopping is confusing for consumers, because latrines of different sizes and designs all go by the same name, i.e. 'mechanical' latrines. There is not *one specific product or line of products* that consumers trust. Rather, consumers' trust in the mason they have hired to build their latrine is the only 'guarantee' they have.

Introducing standard latrine products under brand names could help make them more visible and memorable to consumers. A brand name for the standard latrine product will also help the new latrine products stand out and avert the risk they end up under the nebulous 'mechanical latrine' label. Over time, the latrine product brand(s) will come to be known and trusted by consumers.

What

- Give a memorable brand name to each of the standard latrine products introduced (albeit not too many).
- Test the brand names with consumers to ensure that they are memorable and elicit a positive connotation before the products are introduced.
- Market the latrines under their brand names, e.g. by using the names on the latrine displays and display posters.

Recommendation 14: Link supply with demand

- When consumers look for credit and are approved to receive a loan to buy a latrine, the local government or Women's Union should be notified that the loan has been granted, this can be arranged with the credit provider. Then, the retailers and Masons in the region should be informed so that they can plan to take the order and deliver the latrine and labor. If these links can be arranged, improved supply chain performance and service can be realized.
- Promoters connect customers with suppliers and service providers by recommending retailers and masons that have been trained on the latrine products promoted.
- Retailers recommend trained masons to households who come to the shop to buy materials.

(See annex G for a detailed overview of roles and responsibilities in relation to this task)

Recommendation 15: Enforce ban on river and fishpond defecation, but only after an improved supply chain, demand creation, and latrine financing options/strategies are in place

Why

The GOV has a powerful tool to bring about increased hygienic latrine access available in the official the ban on river and fishpond defecation. As was seen in the demand research findings, however, this ban is now only selectively and occasionally enforced. In communes where critical barriers to hygienic latrine access have been addressed – principally by introducing lower cost options into the supply chain and making affordable financing available – the ban on river and fishpond defecation could be a powerful addition to sanitation promotion efforts. If the ban is reinforced and compliance is monitored adoption is the only solution. Enforcement of the ban is also likely to speed up adoption due to concerns of non-compliance.

What

- Community workers describing installation program benefits inspect and draw attention to non-compliance
- Oversight of implementing latrine installations by VIHEMA record GPS co-ordinates of fish pond latrines to assist future monitoring
- Community adopters are encouraged to communicate the benefits of their new installations

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ANNEXES

Annex A: List of detailed study questions (demand assessment)

RESEARCH OBJECTIVE	RESEARCH QUESTIONS
Current sanitation practices	<ul style="list-style-type: none"> Where do children (under age 3, above age 3) and adult HH members defecate? Does occasional or frequent OD take place? Do seasonal differences in sanitation practices exist? What are the reasons for OD?
Barriers and drivers of hygienic latrine acquisition and/or OD	<p>Social norms and sanctions</p> <ul style="list-style-type: none"> To what extent and in what ways do social norms (rules that govern behavior) support existing sanitation practices? (hygienic vs. unhygienic) Do sanctions exist? To what effect? <p>Social support</p> <ul style="list-style-type: none"> In what ways do social networks lend support to or influence latrine investment and usage? <p>Attitudes & Beliefs, Values</p> <ul style="list-style-type: none"> What relevant and influential attitudes and beliefs exist related to sanitation products and services and/or sanitation behaviors? What do they believe happens to the waste once it leaves their latrine? Is this beneficial or harmful, and if so, how? What values would be associated with their concept of a hygienic latrine (such as being modern, high society, etc.)? <p>Emotional, social, and/or physical drivers</p> <ul style="list-style-type: none"> What do HHs feel is positive about their current sanitation access/practices? What disadvantages do HHs perceive their current sanitation access/practices to have? What are the most important features of a 'good' place for defecating? What is a 'safe' place for defecation? What may make a place unsafe? To what extent were adopters motivated by some degree of dissatisfaction with the previous unhygienic sanitation practice? What were the reasons? <p>Knowledge, Skills, Self-efficacy</p> <ul style="list-style-type: none"> Do HHs know the health benefits of latrines/negative health effects of 'hanging' latrines? Do HHs have the knowledge they need to build a latrine? (e.g. latrine designs, cost, etc.)? What options for financing latrine construction do HHs know about? (Credit, saving, subsidy, etc.)

RESEARCH OBJECTIVE	RESEARCH QUESTIONS
	<ul style="list-style-type: none"> • How confident are non-adopters in their ability to navigate the latrine building process? • How confident are non-adopters in their ability to be able to raise funds to build a hygienic latrine? <p>Affordability</p> <ul style="list-style-type: none"> • Do consumers perceive improved latrine construction to be affordable? Why / why not? • Are consumers able to afford improved latrines? When, how, etc. are they able to afford improved latrine building?
Purchasing: Priorities, decision making, and financing	<ul style="list-style-type: none"> • How do HHs prioritize purchases/investments? Which investments are most important, etc.? Why? • Who is involved in HH purchase decision making? Roles? • How do HHs get funds for making purchases? What are their financing strategies (e.g. saving, borrowing, etc.)? • What priority does HHs put on investing in a hygienic latrine? Why? • Why do HHs choose to invest in a hygienic latrine? • How do HHs finance latrine purchases? What financing options are available to them and which are they willing to use (esp. credit)?
Sanitation shopping	<ul style="list-style-type: none"> • Where do HHs seek and obtain advice? • What are the steps in the shopping/building process? • Are the necessary products and services available? • Are non-adopters aware of how and where to buy latrine building materials? Where and how to find service provider? • Satisfaction with existing products and services, latrines? • What payment and financing options exist? Willingness to use?
Features desired in a latrine & the ideal latrine	<ul style="list-style-type: none"> • What attributes or benefits do consumers desire in a latrine? What attributes/features do consumers dislike? • What features does the ideal latrine have? Which features are ‘must haves’ and which are ‘good to have’? • Are products and services that enable consumers to build latrines of the quality and with the attributes they desire available?
Effective communication channels, sources	<ul style="list-style-type: none"> • Which sources/persons influence HH purchases? (first movers, opinion leaders, key influencers) • What communication sources do HHs rely for advice and information about latrines?

Annex B: Study participant recruitment criteria

Group*	Recruitment criteria
Adopter	<p><u>Non-poor group:</u></p> <ul style="list-style-type: none"> • HH was not included in the commune list of poor and near poor in 2013 and 2014. • HH owns a hygienic latrine • No HH member has an official position within the commune or village (e.g. village head, CPC chair, WU head, etc.) • Participants must come from at least 3 different villages • No participants must live within four houses of another participant. • No two participants must be related to each other. <p><u>Poor/near poor group:</u></p> <ul style="list-style-type: none"> • HH was included in the commune list of poor and near poor in 2013 and 2014. • HH owns a hygienic latrine • No HH member has an official position within the commune or village (e.g. village head, CPC chair, WU head, etc.) • Participants must come from at least 3 different villages • No participants must live within four houses of another participant. • No two participants must be related to each other.
Non-adopter	<p><u>Non-poor group:</u></p> <ul style="list-style-type: none"> • HH was not included in the commune list of poor and near poor in 2013 and 2014. • HH sanitation status: a) HH has an unhygienic latrine, b) HH does not have its own latrine, but shares an unhygienic latrine, and c) HH does not have its own latrine and does not share one with other HHs either. • No HH member has an official position within the commune or village (e.g. village head, CPC chair, WU head, etc.) • Participants must come from at least 3 different villages. • No participants must live within four houses of another participant. • No two participants must be related to each other. <p><u>Poor/near poor group:</u></p> <ul style="list-style-type: none"> • HH was included in the commune list of poor and near poor in 2013 and 2014. • HH sanitation status: a) HH has an unhygienic latrine, b) HH does not have its own latrine, but shares an unhygienic latrine, and c) HH does not have its own latrine and does not share one with other HHs either. • No HH member has an official position within the commune or village (e.g. village head, CPC chair, WU head, etc.) • Participants must come from at least 3 different villages. • No participants must live within four houses of another participant. • No two participants must be related to each other.
WHW group (to be mixed with WU group)	<ul style="list-style-type: none"> • Must have been VHW for at least two years • Group must include at least one VHW from at least three different villages
WU group	<ul style="list-style-type: none"> • Village WU head • Group must include WU heads from at least three different villages

Material retailer	<ul style="list-style-type: none"> • Must own a retail shop selling construction materials needed for latrine building • Preferable if the retail shop also sells sanitary wares (e.g. ceramic latrine pans) • Must have owned the shop for at least two years
Mason	<ul style="list-style-type: none"> • Trained mason or masons helper • Must have built at least five hygienic household latrines • Must have built at least two hygienic household latrines in the last year

* Village heads were later added as a study participant group during the field work in the first study commune.

Annex C: Barriers to and drivers of sanitation behavior change and targeted change

BEHAVIORAL DETERMINANT	Targeted change: Non-adopters know/ think/ believe/ feel...
ALL NON-ADOPTERS	
Ability/Affordability Hygienic latrines are seen as unaffordable	<ul style="list-style-type: none"> ✓ About affordable latrine products of a good quality and options for upgrading. ✓ About ways to finance the purchase of a hygienic latrine.
Motivation/Beliefs Only the old, sick, and weak really need a latrine	<ul style="list-style-type: none"> ✓ You don't need to be old, sick, and weak to be bothered by the discomforts of unhygienic sanitation – everyone deserves the comfort of a hygienic latrines.
Motivation/Values Those who have hygienic latrines have wealthy, comfortable lives	<ul style="list-style-type: none"> ✓ With an affordable latrine, I can feel as comfortable as the wealthy.
RIVER DEFECATORS	
Opportunity/ Social norms River defecation is a normal practice (as seen by river defecators)	<ul style="list-style-type: none"> ✓ Fewer and fewer persons practice river defecation; it is not a normal practice anymore.
Motivation/Beliefs River defecation is ok, because if I defecate at the right place in the river, I do not pollute the water.	<ul style="list-style-type: none"> ✓ River defecation is not ok, because it pollutes the water no matter where it is done.
Motivation/Drivers Convenience	<ul style="list-style-type: none"> ✓ My defecation practice takes too much time and effort. ✓ A hygienic latrine would be more convenient.
Motivation/Drivers Safety	<ul style="list-style-type: none"> ✓ My defecation practice is too dangerous for me and my family members, especially at night. ✓ A hygienic latrine will make defecation safer.
Motivation/Drivers Comfort	<ul style="list-style-type: none"> ✓ My defecation practice feels very uncomfortable. ✓ Having a hygienic latrine would make my life more comfortable.
Motivation/Drivers Embarrassment	<ul style="list-style-type: none"> ✓ I need a hygienic latrine to avoid embarrassment.
FISHPOND DEFECATORS (sharers)	
Opportunity/Social norms Fishpond defecation is a normal and acceptable practice.	<ul style="list-style-type: none"> ✓ Fishpond defecation is no different from river defecation (seen as less acceptable). ✓ Fishpond defecation is no longer a normal practice.
Motivation/Drivers Convenience	<ul style="list-style-type: none"> ✓ My defecation practice takes too much time and effort. ✓ A hygienic latrine would be more convenient.
Motivation/Drivers Safety	<ul style="list-style-type: none"> ✓ My defecation practice is too dangerous for me and my family members, especially at night. ✓ A hygienic latrine will make defecation safer.
Motivation/Drivers Comfort	<ul style="list-style-type: none"> ✓ My defecation practice feels very uncomfortable.

BEHAVIORAL DETERMINANT	Targeted change: Non-adopters know/ think/ believe/ feel...
	√ Having a hygienic latrine would make my life more comfortable.
Motivation/Drivers Embarrassment	√ I need a hygienic latrine to avoid embarrassment.
FISHPOND DEFECATORS (owners)⁵⁵	
Opportunity/Social norms Fishpond defecation is a normal and acceptable practice.	√ Fishpond defecation is no different from river defecation (seen as less acceptable). √ Fishpond defecation is no longer a normal practice.
Motivation/Beliefs Fishpond latrines are clean because the fish eat all the feces.	√ The fish in the pond do not keep it clean – the pond is full of fecal contamination (<i>Note: water tests from fishpond would be needed to make this case</i>) √ The pond in my backyard is full of feces.
Motivation/Beliefs Fishpond fish are good to eat.	√ When I eat your fish, I eat your feces (<i>message most effectively targeted to broader community to reduce demand for latrine pond fish</i>).
Motivation/Drivers Convenience	√ My defecation practice takes too much time and effort. √ A hygienic latrine would be more convenient.
Motivation/Drivers Safety	√ My defecation practice is too dangerous for me and my family members, especially at night. √ A hygienic latrine will make defecation safer.
FIELD COMBAT LATRINE USERS	
Opportunity/Social norms Using a field combat latrine is just the same as using a hygienic latrine.	1. Using a field combat latrine is just the same as defecating into the river/a fishpond.

⁵⁵ Also valid for 'field combat' latrine owners, where the latrine flushes into a fishpond latrine.

Annex D: Existing Business Models

Model 1: Onsite Installation of Concrete Ring Latrine

Suitable for: Small scale on-site production and installation, services only

Description:

In this business model, masons or who own concrete ring production molds will – at the request of the customer – bring the mold to the customers households and produce the concrete rings for a septic tank or infiltration tank on site. The mason will also install the tank for the customer. In this business model the customer will purchase the construction materials used to make the latrine (including the concrete rings).

Strengths:

- Low initial investment is required for starting business
- Flexibility: able to reach all customers (even those located far off the main roads).
- Low risk
- Low transport cost
- Cost is low, well suited for poor

Challenges

- Cost competitiveness: cost of fabricating concrete rings on-site is higher than the cost of fabricating concrete ring off-site because it is a separate production – but there is a transport cost saving – assessing one versus the other will vary for each commune
- Concrete ring quality is not very consistent
- Cannot respond to larger orders

Model 2: Off-Site Production + Onsite Installation of Concrete Ring or Fiberglass Latrine

Suitable for: Medium Scale Off-Site Production with Installation

Description:

These service providers are generally producers of concrete rings or Fiberglass containers and whose business is centered on the nearby area. They buy input materials from agents/retailers then produce concrete rings at a central production facility and sell them to households in the commune where the workshop is located and in nearby communes. Upon receiving an order from a customer, they will transport latrine concrete rings or Fiberglass containers to the household and install them.

Strengths:

- Can easily control the quality of the concrete rings or fiberglass containers
- Flexibility: Easily make changes to the latrine technology, quick response to demand
- Ability to go to scale.
- Cost competitive: cost of concrete rings produced off-site is lower than the cost of concrete rings produced on-site due to economies of scale.
- The fiberglass containers are cost effective because they have low transport and installation costs

Challenges:

- Cannot reach to HHs who located in place that means of transportation cannot access

- Transportation costs can be high for concrete rings even if there is access
- Higher risk with not enough demand and potential transport damages, except for fiberglass containers
- Incentives: producer can easily shift to other more potential business, in the case of fiberglass, these people traditionally make boats.



Model 3: Concrete Ring Business Model

Suitable for: Retail selling and manufacture of the products supplied

Description:

These providers are generally retail shops, who sell construction materials and have branched into the production of concrete rings. The shops often have production facilities where they make concrete rings and trucks which they use to deliver supplies and materials to customers. The shops will occasionally receive orders for concrete ring latrines. Providers respond to these orders by transport the concrete rings to customer's house and sending a masons team to install the latrine.

Strength:

- Incentives: have a greater incentive to participate in the sanitation business because they earn a profit not just from the production of the concrete rings, but also from the sale of the concrete to produce the rings.
- Ability to go to scale
- Quick response to demand
- Quality control: as model 2
- Flexibility: may easily make changes to the latrine technology
- Cost competitive: as model 2

Challenges

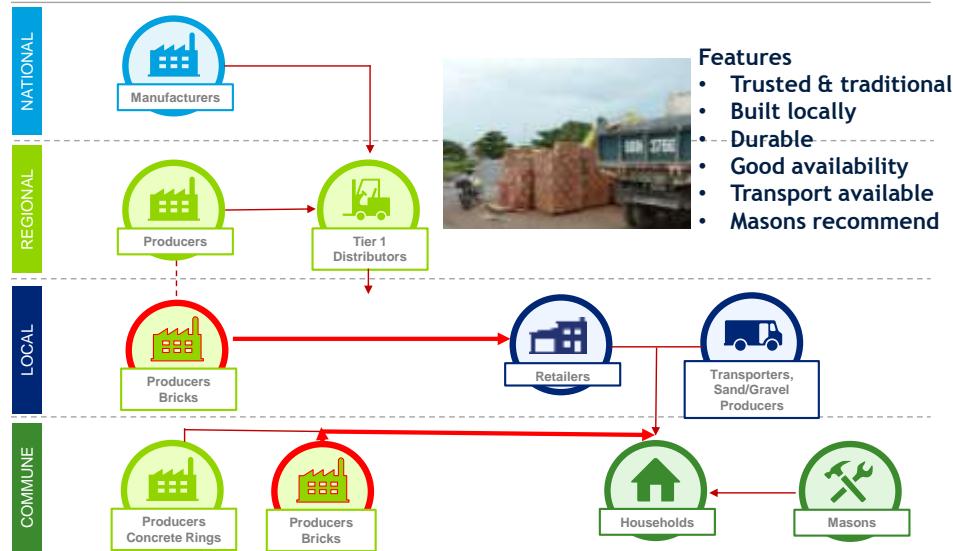
- Cannot reach to HHs who located in place that means of transportation cannot access
- Incentives: producer can easily shift to other more potential business.

Preparing the Supply Chain for a new business model Concrete Ring Suppliers are not regularly used

The trade off between making on site and being ready to meet higher volume requirements is a challenge. They may do well in certain areas if they are officially recommended by government authorities.

Concrete Rings	Who do they need to advocate for them, what marketing or performance tests do they need?	Will they be able to source all the material needed for increased volume like moulds to make on site?	Because delivery is difficult it is not practical to make inventory.	They need to make on site to avoid delivery. They need to compare their cost to the delivered cost of others.
Wholesalers and Agents	What notification do they need to have inventory to support increased sales?	Are they able to establish reliable sources of supply for the increased volumes?	Are they able to negotiate with their principals to have production meet demand?	Are they equipped to deliver to rural areas to optimize transport costs?
Retailers	Will they be able to act as an agent for the manufacturer by processing the transaction and having the manufacturer or distributor deliver?	Will they be able to source from suppliers that supply the items specified in the approved Bill of Materials?	Can they communicate delivery requirements in time for suppliers to meet the delivery schedule for consistently high volumes?	Can they establish reliable relationships with transporters to make vehicles available to deliver in bulk when required?
Transporters	How much notification is required to make a suitable vehicle and driver available?	Can they source vehicles from other fleets if volumes increase beyond their capacity?	Can they establish direct communication channels with manufacturers to align with production availability?	Are they equipped to deliver to rural areas to optimize transport costs, even if they need multiple vehicle types?
Masons	How much notification is required to make suitable equipment and skilled staff available?	Can they easily train additional skilled Labor and source more equipment if scale increases?	Can they make the required structure consistently compliant with the specifications and bill of materials?	Can they reliably and consistently schedule delivery dates, be on site to inspect goods arriving and schedule work to suit available materials?

Bricks are sometimes sold to Retailers and Households



Preparing the Supply Chain for a new business model – Brick suppliers are well established

Brick suppliers sell through retailers and also sometimes go direct to the market, they are well established, favored by Masons and sell all they can make. They also sell to any construction requirement so are not dependent on

	Plan	Source	Make	Deliver
Brick Producers	Is there any way they can scale production facilities?	Will they be able to source all the material needed for increased volume?	Can they find a way keep inventory at distributors and scale up if demand takes off??	Are they able to deliver to rural areas? They can cut costs using the low weight to ride on existing loads
Wholesalers and Agents	What notification do they need to have inventory to support increased sales?	Are they able to establish reliable sources of supply for the increased volumes?	Are they able to negotiate with their principals to have production meet demand?	Are they equipped to deliver to rural areas to optimize transport costs?
Retailers	Will they be able to act as an agent for the manufacturer by processing the transaction and having the manufacturer or distributor deliver?	Will they be able to source from suppliers that supply the items specified in the approved Bill of Materials?	Can they communicate delivery requirements in time for suppliers to meet the delivery schedule for consistently high volumes?	Can they establish reliable relationships with transporters to make vehicles available to deliver in bulk when required?
Transporters	How much notification is required to make a suitable vehicle and driver available?	Can they source vehicles from other fleets if volumes increase beyond their capacity?	Can they establish direct communication channels with manufacturers to align with production availability?	Are they equipped to deliver to rural areas to optimize transport costs, even if they need multiple vehicle types?
Masons	How much notification is required to make suitable equipment and skilled staff available?	Can they easily train additional skilled Labor and source more equipment if scale increases?	Can they make the required structure consistently compliant with the specifications and bill of materials?	Can they reliably and consistently schedule delivery dates, be on site to inspect goods arriving and schedule work to suit available materials?

Model 4: Plastic Tank Manufacturer Business Model

Suitable for: Retail selling and manufacture of the products supplied

Description:

These providers are manufacturers selling through a dealer network of retail shops, who sell construction materials. The shops also sell water tanks and other latrine components and have trucks which they use to deliver supplies and materials to customers. The shops will occasionally receive orders for tanks from households. Providers respond to these orders by transport the plastic tank to customer's house and sending a team to install the complete latrine.

Strength:

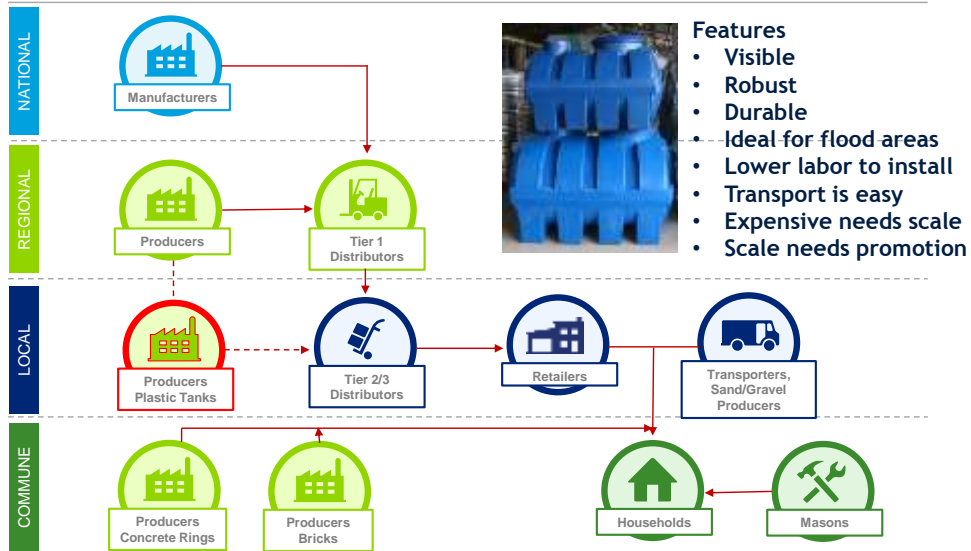
- Incentives: have a greater incentive to participate in the sanitation business because they sell tanks and associated latrine products.
- Ability to go to scale
- Quick response to demand
- Quality control that results from bulk manufacture.
- Cost competitive, the higher the sale volume the more competitive the price

Challenges

- Unknown technology and will take time to build consumer trust and business.

Preparing the Supply Chain for a new business model – Plastic Tank are new to this market				
New products need to be reviewed by engineers and recommended for specific latrine solutions where appropriate. These tanks can be made in large volumes, are easy to deliver and install. They are very appropriate for flooded areas but need promotional help to scale.				
	Plan	Source	Make	Deliver
Plastic Tank Producers	Who do they need to advocate for them, what marketing or performance tests do they need to prove their worth?	Will they be able to source all the material needed for increased volume?	Can they keep inventory and invest to scale up if demand takes off??	Are they able to deliver to rural areas? They can cut costs using the low weight to ride on existing loads.
Wholesalers and Agents	What notification do they need to have inventory to support increased sales?	Are they able to establish reliable sources of supply for the increased volumes?	Are they able to negotiate with their principals to have production meet demand?	Are they equipped to deliver to rural areas to optimize transport costs?
Retailers	Will they be able to act as an agent for the manufacturer by processing the transaction and having the manufacturer or distributor deliver?	Will they be able to source from suppliers that supply the items specified in the approved Bill of Materials?	Can they communicate delivery requirements in time for suppliers to meet the delivery schedule for consistently high volumes?	Can they establish reliable relationships with transporters to make vehicles available to deliver in bulk when required?
Transporters	How much notification is required to make a suitable vehicle and driver available?	Can they source vehicles from other fleets if volumes increase beyond their capacity?	Can they establish direct communication channels with manufacturers to align with production availability?	Are they equipped to deliver to rural areas to optimize transport costs, even if they need multiple vehicle types?
Masons	How much notification is required to make suitable equipment and skilled staff available?	Can they easily train additional skilled Labor and source more equipment if scale increases?	Can they make the required structure consistently compliant with the specifications and bill of materials?	Can they reliably and consistently schedule delivery dates, be on site to inspect goods arriving and schedule work to suit available materials?

Plastic tank manufacturers at local level can potentially become cost effective with volume



Preparing the Supply Chain for a new business model – Fiberglass / Composite suppliers are new actors

New products need to be reviewed by engineers and recommended for specific latrine solutions where appropriate. These tanks can be made to order and are easy to deliver and install. They are relatively unknown so credibility needs to be developed.

	Plan	Source	Make	Deliver
Fiberglass Producers	Who do they need to advocate for them, what marketing or performance tests do they need?	Will they be able to source all the material needed for increased volume?	Can they keep inventory and scale up if demand takes off??	Are they able to deliver to rural areas? They can cut costs using the low weight to ride on existing loads
Wholesalers and Agents	What notification do they need to have inventory to support increased sales?	Are they able to establish reliable sources of supply for the increased volumes?	Are they able to negotiate with their principals to have production meet demand?	Are they equipped to deliver to rural areas to optimize transport costs?
Retailers	Will they be able to act as an agent for the manufacturer by processing the transaction and having the manufacturer or distributor deliver?	Will they be able to source from suppliers that supply the items specified in the approved Bill of Materials?	Can they communicate delivery requirements in time for suppliers to meet the delivery schedule for consistently high volumes?	Can they establish reliable relationships with transporters to make vehicles available to deliver in bulk when required?
Transporters	How much notification is required to make a suitable vehicle and driver available?	Can they source vehicles from other fleets if volumes increase beyond their capacity?	Can they establish direct communication channels with manufacturers to align with production availability?	Are they equipped to deliver to rural areas to optimize transport costs, even if they need multiple vehicle types?
Masons	How much notification is required to make suitable equipment and skilled staff available?	Can they easily train additional skilled Labor and source more equipment if scale increases?	Can they make the required structure consistently compliant with the specifications and bill of materials?	Can they reliably and consistently schedule delivery dates, be on site to inspect goods arriving and schedule work to suit available materials?

Annex E: Supply Chain Actor Strengths and Weaknesses in Relation to Household Sanitation Business

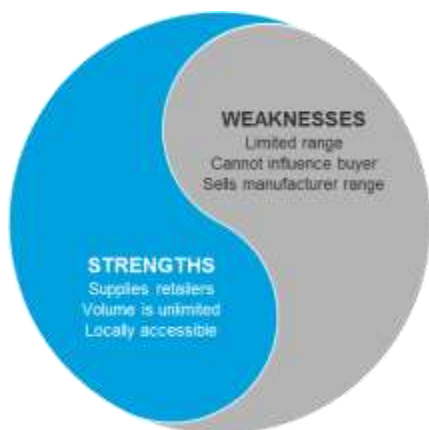
MASONS



RETAILERS



DISTRIBUTOR



PRODUCER



MANUFACTURER



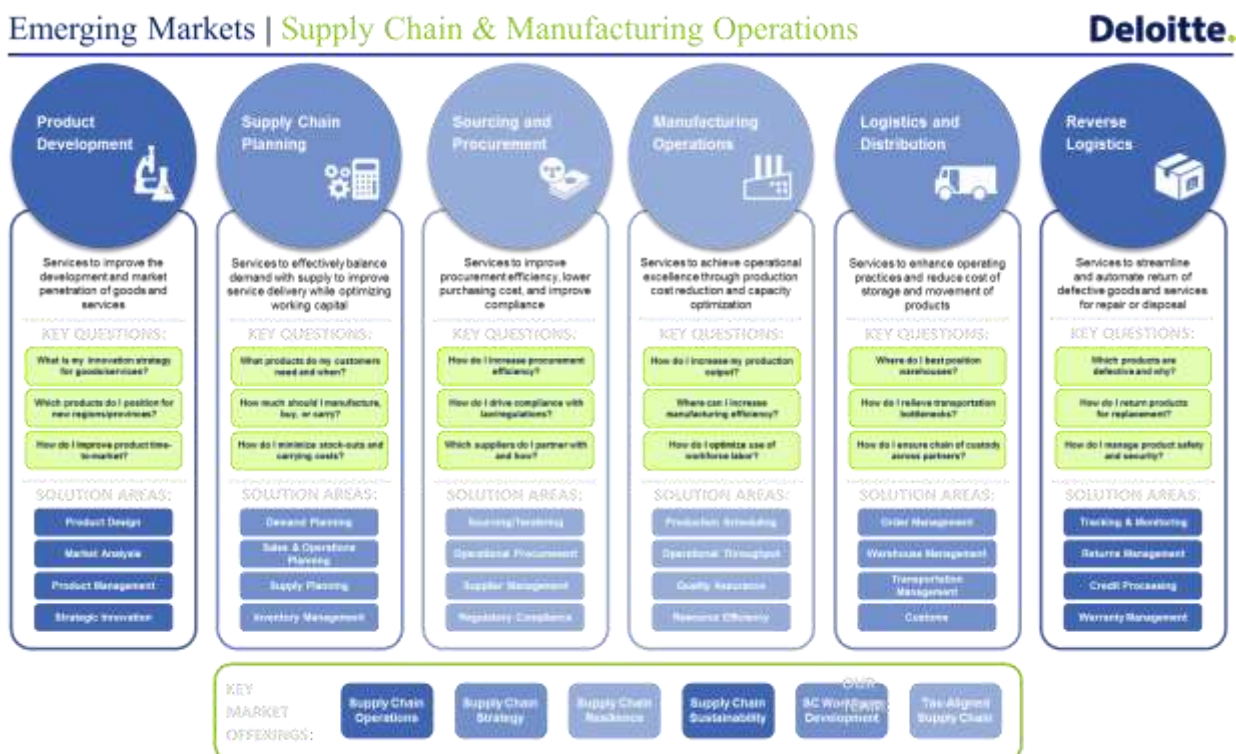
Annex F: Supply Chain Research Methodology, Additional Information

Overview of Approach

A qualitative research design will be applied for the supply chain analysis to include mapping of sanitation actors along the supply chain and structured interviews with the identified target population.

The supply chain assessment approach is supported by Deloitte's Integrated Supply Chain (DISC) method (Figure 1), a standard framework to rapidly diagnose the current state of client supply chains and identify improvement opportunities that deliver significant value.

Figure 37: Deloitte's Integrated Supply Chain Methodology



The following sections outline each phase of Deloitte's research methodology that will be leveraged to conduct the supply chain analysis.

Project Kick-Off

Conduct project kick-off with key World Bank/WSP stakeholders to understand research objectives and business issues driving research needs. Areas of interest to be discussed during this meeting will include:

- Study background, including the program issue(s), material and/or policy/programs of interest in the study;
- Goals, objectives, and external factors, including obtaining a thorough understanding of the relevant program issue(s); and
- Existing data availability.

Conduct Literature Review

Perform literature review and analysis of available background materials, sanitation marketing work in Vietnam, supply chain assessments carried out in other countries in the region for rural sanitation (e.g., Cambodia, Indonesia), existing survey data-sets in Vietnam that have information on sanitation (e.g., MICS, VLSIS), and additional materials on supply chain methodology and assessments.

Document Research Objectives & Questions

Based on information collected from the kick-off meeting with WSP and literature review, identify business issues, gaps in information/knowledge, and potential hypotheses for testing to construct research objectives and questions.

Research Objectives

The overarching objective of the research is develop potential business models for delivery of affordable and aspirational hygienic latrines in the Mekong provinces. A set of specific research objectives has been formulated in order to assess the demand potential and seek recommendations to improve current business models. The specific research objectives include:

- Understanding household purchasing behaviors and preferences in supply/installation
- Understanding supply actors capabilities and activities in the communes which were researched for demand assessment
- Identifying sources of supply and installation
- Assessing availability and access to products, materials, and/or services
- Understanding the challenges or barriers in expanding the rural sanitation market
- Assessing scalability of production
- Assessing the demand potential and seek recommendations to assist supply chain actors in increasing sales
- Identifying opportunities to reduce cost and improve affordability

Research Questions

For each research objective, a set of relevant research questions has been developed. The following table lists the research questions associated with each specific objective.

RESEARCH OBJECTIVE	RESEARCH QUESTIONS
<p>Understand household purchasing behaviors and preferences in supply/installation</p> <p>REMOVE</p>	<p>Factors influencing purchase:</p> <ul style="list-style-type: none"> • What factors and/or sources influenced the decision to acquire a new latrine system? • What would help influence other people in the community to install hygienic latrine systems? <p>Cost:</p> <ul style="list-style-type: none"> • How much did it cost to have the system installed? • How did they fund the system? (e.g., subsidy, loan, credit) <p>Supply and installation preferences:</p> <ul style="list-style-type: none"> • What retailers do households use to supply and install latrines? • Do households have a preference in which Masons are used for supply and installation? Why or why not?
<p>Understand supply actors capabilities and activities in the communes</p>	<ul style="list-style-type: none"> • What services and products do they typically provide? • How often do actors collaborate with other individuals or organizations in their supply chain when building and supplying latrines? • Do manufacturers and distributors provide support to retailers? • What is the role of district stores? Do they sell to the retailers or do they just receive orders?
<p>Identify sources of supply and installation.</p>	<p>Masons</p> <ul style="list-style-type: none"> • Do households request specific types of materials or ask for advice? • Who typically supplies materials and from where? <p>Retailers</p> <ul style="list-style-type: none"> • Where/from whom do retailers buy their products? • Are there any alternative supply sources? • Do they have a preference on supply or materials? • Do retail outlets have multiple supply source options and what role do they play in sourcing?
<p>Assess availability and access to products, materials, and/or services</p>	<ul style="list-style-type: none"> • Are there latrines available in local markets that are affordable for poor households? • Are sanitation construction materials and services easily accessible to all communes/villages? • What barriers are limiting the accessibility of materials or services?
<p>Understand the challenges or barriers in expanding the rural sanitation market</p>	<ul style="list-style-type: none"> • What are the barriers or challenges in providing affordable latrines?

RESEARCH OBJECTIVE	RESEARCH QUESTIONS
Assess scalability of production	<ul style="list-style-type: none"> • What is preventing manufacturers from scaling up? Demand, capital, support, other?
Assess demand potential and seek recommendations to assist supply chain actors in increasing sales	<ul style="list-style-type: none"> • Do retailers wish to increase business? If so, what is the single biggest challenge in increasing business size? • What is currently being done to increase sales, if anything? • What support can be provided from the government or other organizations to help drive improved business success in supplying improved sanitation to rural areas? • Would local manufacturers consider being an agent/franchise holder for a manufacturer?
Identify opportunities to reduce cost and improve affordability	<ul style="list-style-type: none"> • Is there a way to supply more products at lower price? • What can be done to reduce the cost of operations to drive down the price substantially for consumers?

Identify Target Population

The target population will be identified based on the research objectives and questions. To answer the research questions posed, the qualitative field research will include two main categories of participants:

- **Supply chain actors**
 - **Masons** (grouped by differing skills +/- 8) – to include 3 interviews at 5 communes (15 interviews total)
 - **Retailer** – See 2 per commune as indicated by the household interviews as the highest source of supply (10 interviews total)
 - **Distributors** – See 1 per type of product group per district as suggested by the retailer (10 interviews total)
 - **Local Manufacturers** – interview at least one per commune per category or district wherever they are active and can influence a reduction in cost. Maximum interviews would be 15 with the assumption that three are active per commune.
- **Households with hygienic latrines**

The supply chain analysis will cover at least 4 communes in 4 districts in 4 provinces, of which at least one is in a province where recurrent flooding is prevalent in order to understand supply chain issues specific to these environments. The proposed communes are as follows:

- Nhon Hoi
- Khanh Tien
- Dong Hoa
- My Hiep Son

- Vinh Bien

Determine Data Collection Method

Assess and determine the appropriate mode or mix of modes (i.e., web-based, paper-based, telephone, and in-person surveys or a mixed mode approach) to meet research objectives identified in previous stage. Due to the limited number of respondents available in the target population and constraints of environment, structured interviews will be the method of data collection.

Design Survey Instrument

Determine Questionnaire Content

Develop tailored survey questionnaire with consideration for the target population and the research model to ensure that: 1) questions adequately measure the constructs to be studied, and 2) proposed questions will result in data that will appropriately address the research objectives.

Determine Question Structure

Based on the content and intent of each question, the best response format of each question will be determined (i.e., closed-ended vs. open-ended; dichotomous vs. multiple choice; Likert scale; etc.), keeping in mind the analysis techniques appropriate for each type of response format. Appropriate response scales will be constructed for each question, as needed.

Construct Question Phrasing

Construct tailored question language for each target population of interest. Language will be carefully selected to ensure questions are straightforward and clear, using ordinary, unambiguous wording. Special care will be taken to construct any questions about sensitive issues in a discreet manner to ensure participant ease, discourage response bias, and encourage truthful elicitation.

Determine Question Sequence

To determine a logical sequence of the questions, aspects of each question will be taken into consideration. Surveys will begin with warm-up/introductory questions (i.e., simple and/or interesting questions to gain cooperation and confidence of respondents), and subsequent questions will be grouped in such a way to keep like topics together, provide logical flow, and appropriately place sensitive, difficult questions.

Collect Data

Launch the fieldwork, including training and management of data collection team and communications to target survey population. Team interviewers will audio record and enter all interview responses in a standardized Excel data collection spreadsheet to develop a database of individual survey responses.

Prior to launching the field research, the international team leader will train the team of national field researchers. The training will cover the following:

- Background of the assignment including objective and purpose;
- Overview of existing information, including findings from existing data and research;
- Main research objectives and detailed questions to be answered;
- Overview and discussion of the planned research activities;
- Review of questionnaire and data collection tools; and
- Data recording process and expected standard for note taking.

Any challenges or issues interviewers encounter while completing an interview will be documented, and a mitigation strategy will be employed to ensure issues are addressed and corrected in a timely manner, and that data quality and respondent satisfaction is not compromised.

Annex G: Linking Supply with Demand

Step/activity	Who should be responsible
Notify local government or WU about sanitation loans granted.	<p>The district branch of VBSP is responsible for notify commune Pepole's Committee (CPC) and mass organizations which are assigned for managing credit groups.</p> <p>Actual borrowing process is often as follows: CPC will set up credit groups which are managed by one or some mass organizations such as the Farming Association, Woman Union. When the bank have fund for loans, they will inform to the CPC, and then they will ask the credit group to estimate the demand for loans in the area. After receiving the list of households who are chosen for borrowing, credit group will develop the loan document, confirmed by CPC, and send to the bank. After reviewing the entire loan document, the bank will inform the result (the approved loan) to credit group and this team will send this information to the households, and finally, these households receive money directly from the bank. This process takes from 1 to 2 months.</p>
Inform retailers and Masons in the region so that they can plan to take the order and deliver the latrine and labor.	Head of credit groups (WU, Farming Association)
Promoters connect customers with suppliers and service providers by their recommendations	<p><i>Promoter agents motivate households in the communes to build latrines. When there is an interested consumer, agents will inform the producers, the producers will bring concrete rings to customers house and install latrine. After receiving the payment, producers will give commission of VND 100,000 per each latrine to sell agents.</i></p>
Retailers recommend trained masons to households who come to the shop to buy materials	