# SanMark: Private Sector-led Sanitation Services in Bangladesh

## Deep Dive Sanitation Market Assessment Report

April 9, 2012

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

wsp water and sanitation program

iDE

# Today's Objectives

To review our insights and learnings from the field as they relate to strengthening the market for hygienic sanitation and start mapping a set of opportunities for sanitation marketing in Bangladesh's **Rajshahi** district.

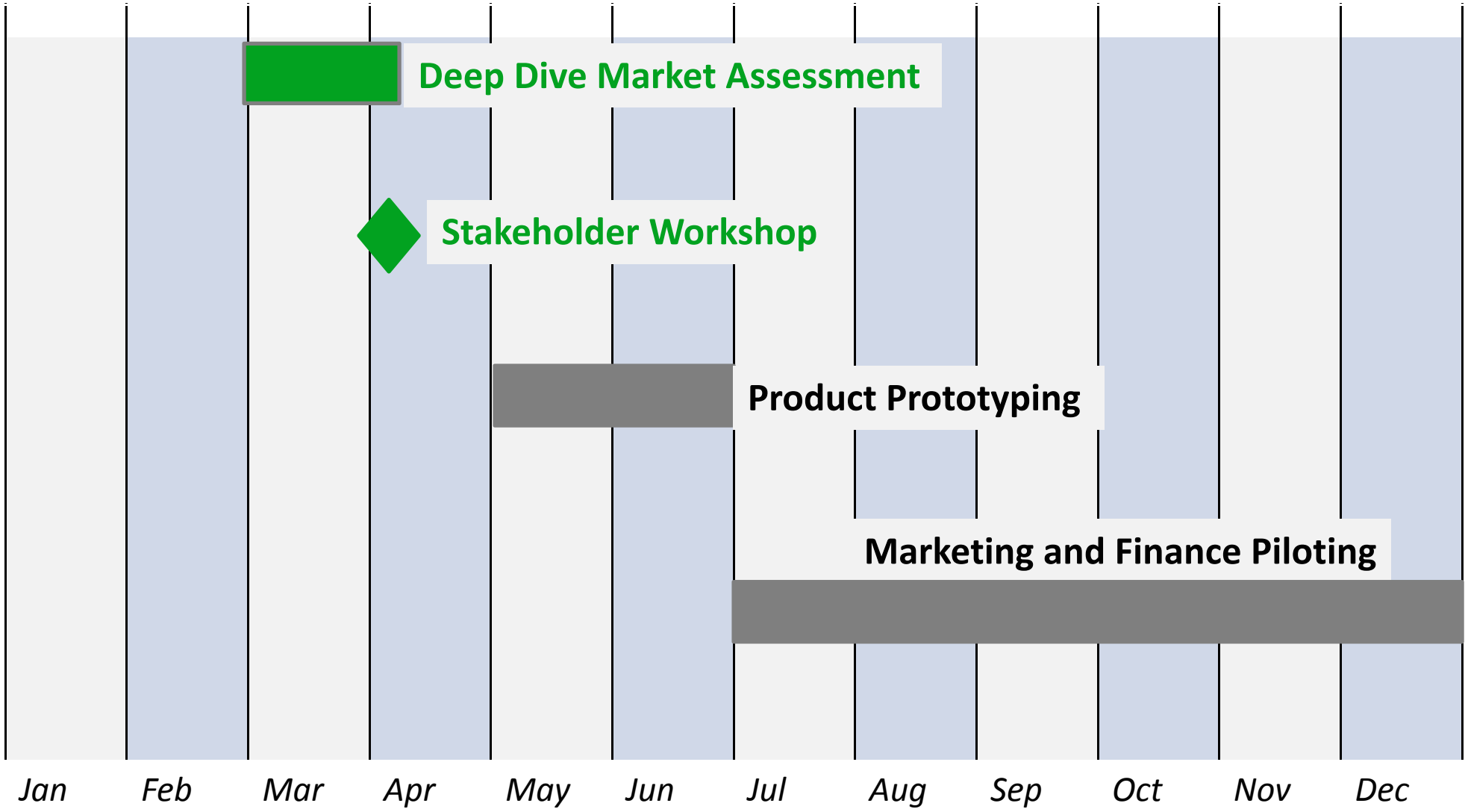
# Project Background

SDC, WSP, and iDE have teamed up to explore the potential to strengthen a hygienic sanitation marketplace in the Rajshahi district of Bangladesh.

The project will seek to create a viable market system for quality (hygienic) latrine provision in Rajshahi. It will achieve this through developing the skills of latrine businesses, introducing a financial product to help poor customers buy latrines, designing a new latrine product based on demand drivers which can be branded and promoted, and forming public private platforms to underpin coordination at the local level.

By employing human-centered design methodologies, through this Deep Dive Market Assessment IDE is working to understand the needs, wants and constraints of Bangladeshi villagers, the supply chain, and the enabling environment to eventually identify the best products, business models, promotion strategies, and partners to develop a thriving marketplace for hygienic sanitation.

# Where we are.


Deep Dive Market Assessment
Stakeholder Workshop
Product Prototyping
Marketing and Finance Piloting
Jan
Feb
Mar
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Dec

# What we have learned:
# Insights and Themes from Bangladesh's Rajshahi district

# Research Process Overview.

# Study Regions.

# People We Met.

Villagers

Latrine Businesses, Suppliers & Sweepers

Masons & Mistrees

Government & NGOs

# Latrines We Saw.

Off-Set Pit

Direct Pit

Unlined Pit

# Methods We Used.

One-to-One Interviews

Prototype Focus Groups

Latrine Option Cards

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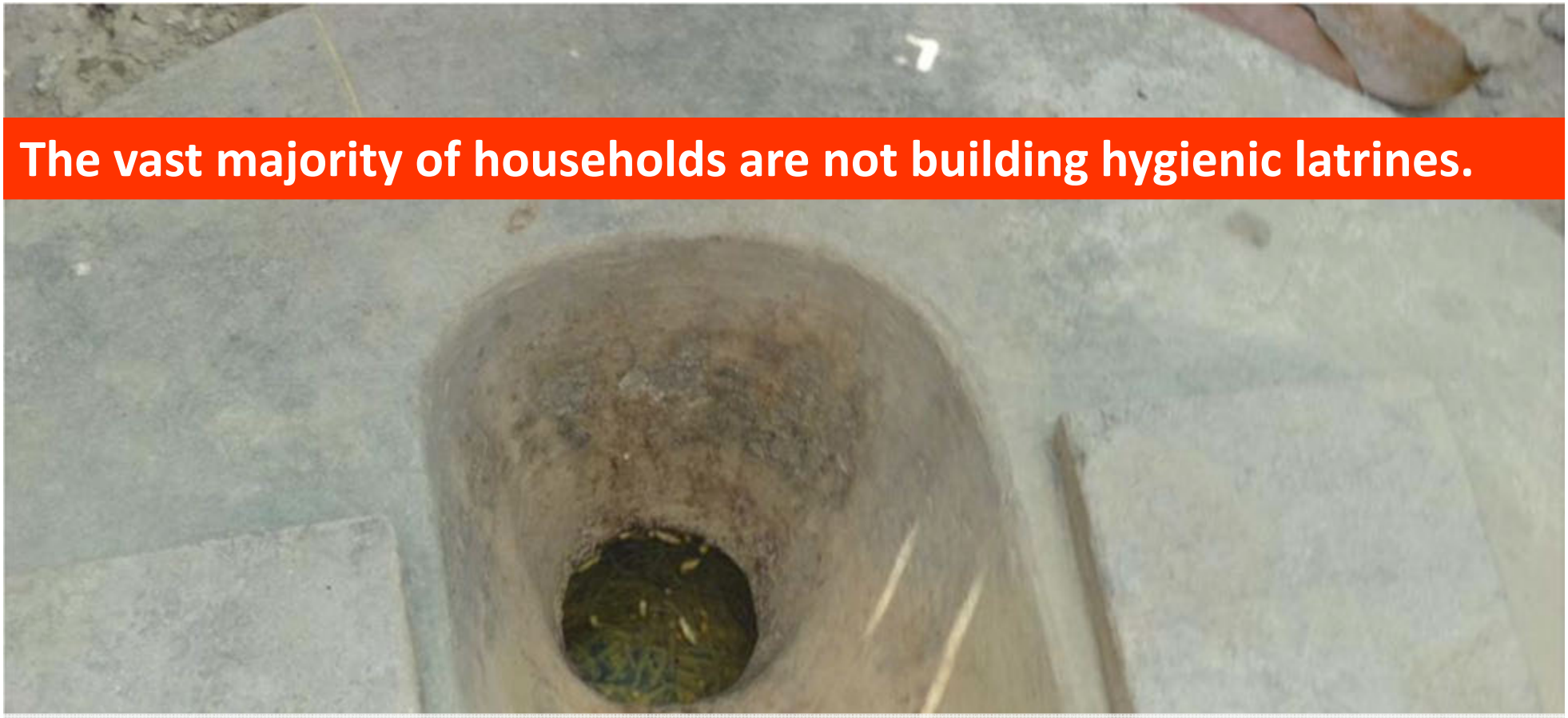
# Initial Observations.

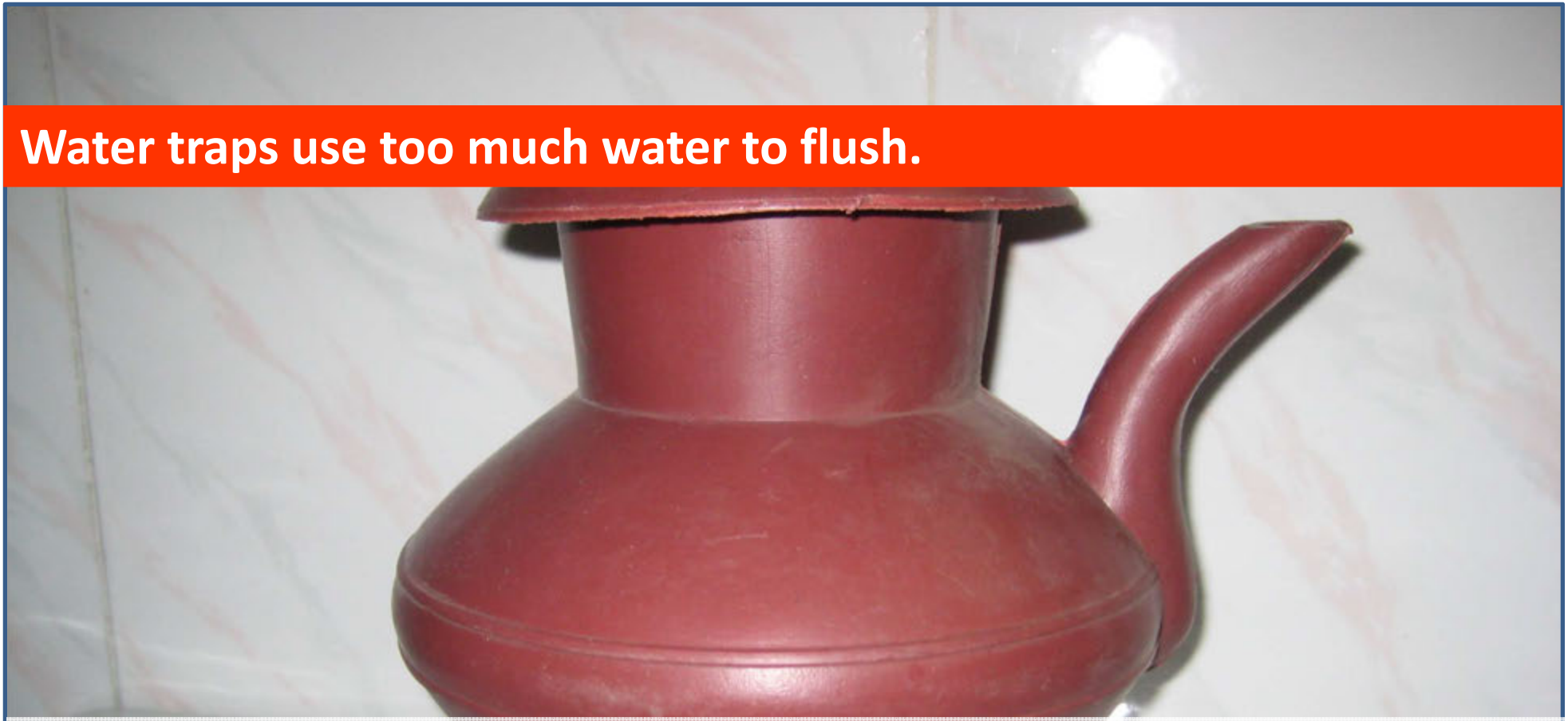
# Water Traps.

# The vast majority of households are not building hygienic latrines.



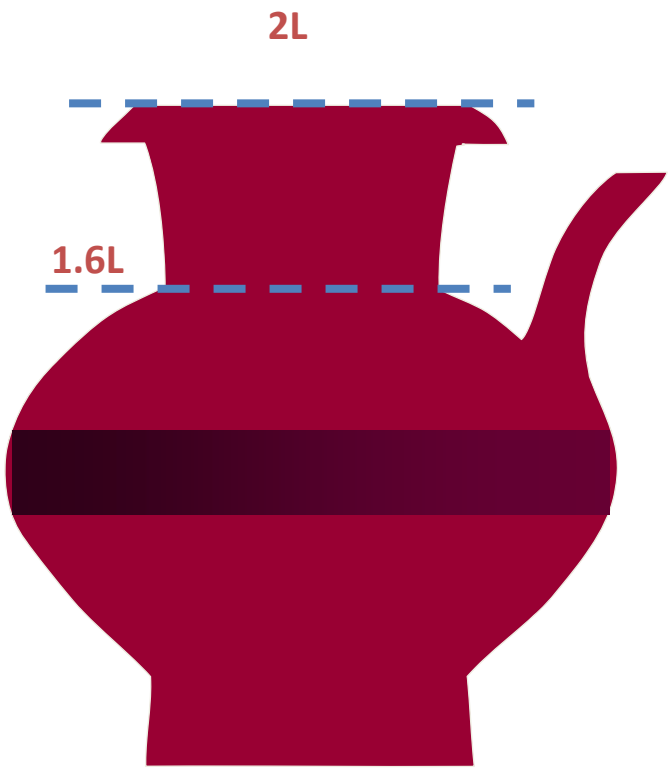
Latrine coverage in the area is very high and the vast majority of households have low-cost unhygienic latrines built with small natural or low cost material shelters, 3-5 rings, a concrete slab with a plastic pan, that either they did not connect to a water trap or broke off the trap shortly after installation, making the latrine unhygienic as the contents of the pit are exposed. There are also households with off-set latrines with plastic or ceramic pans that use an elbow or U-bend pipe instead of a water trap which is also unhygienic, but satisfies their need for the waste to be 'out of sight'.

# Water traps use too much water to flush.



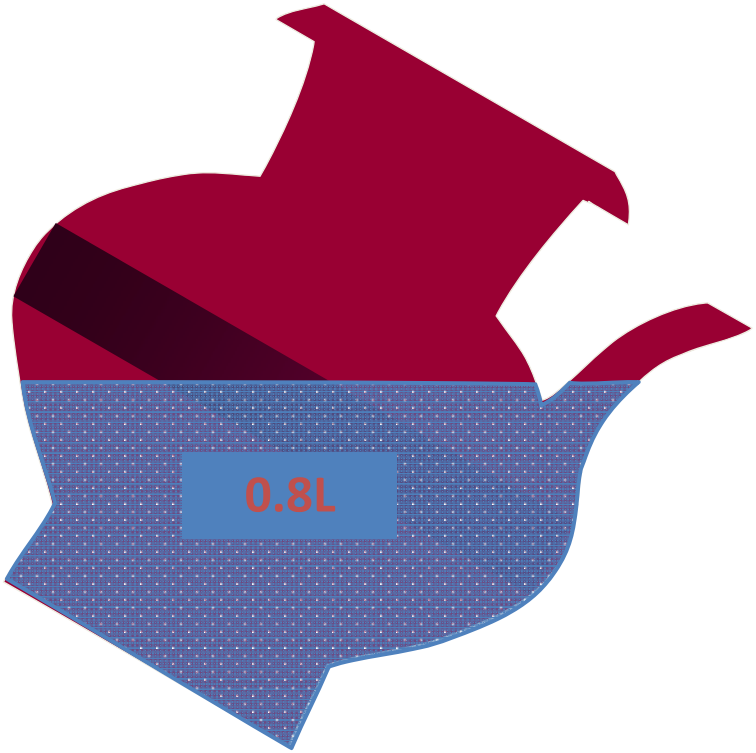
One of the main reasons why households are choosing to install latrines without a hygienic water trap is because the water traps require too much water. The issue is not water scarcity during the dry season, which households are managing, but the fact that households do not store water in the latrines, often due to lack of space. As a result people fill 1 'bodna', about 1.6 liters, before going to the latrine and use this for both cleaning and flushing. After cleaning this leaves about 0.8 liters for flushing which is not enough water for the current trap designs.

# Water traps use too much water to flush.




A bodna holds 2 liters of water when filled to the top but according to interviews people typically fill a bodna to about the 1.6 liter line with water to clean themselves and to flush waste.

# Water traps use too much water to flush.



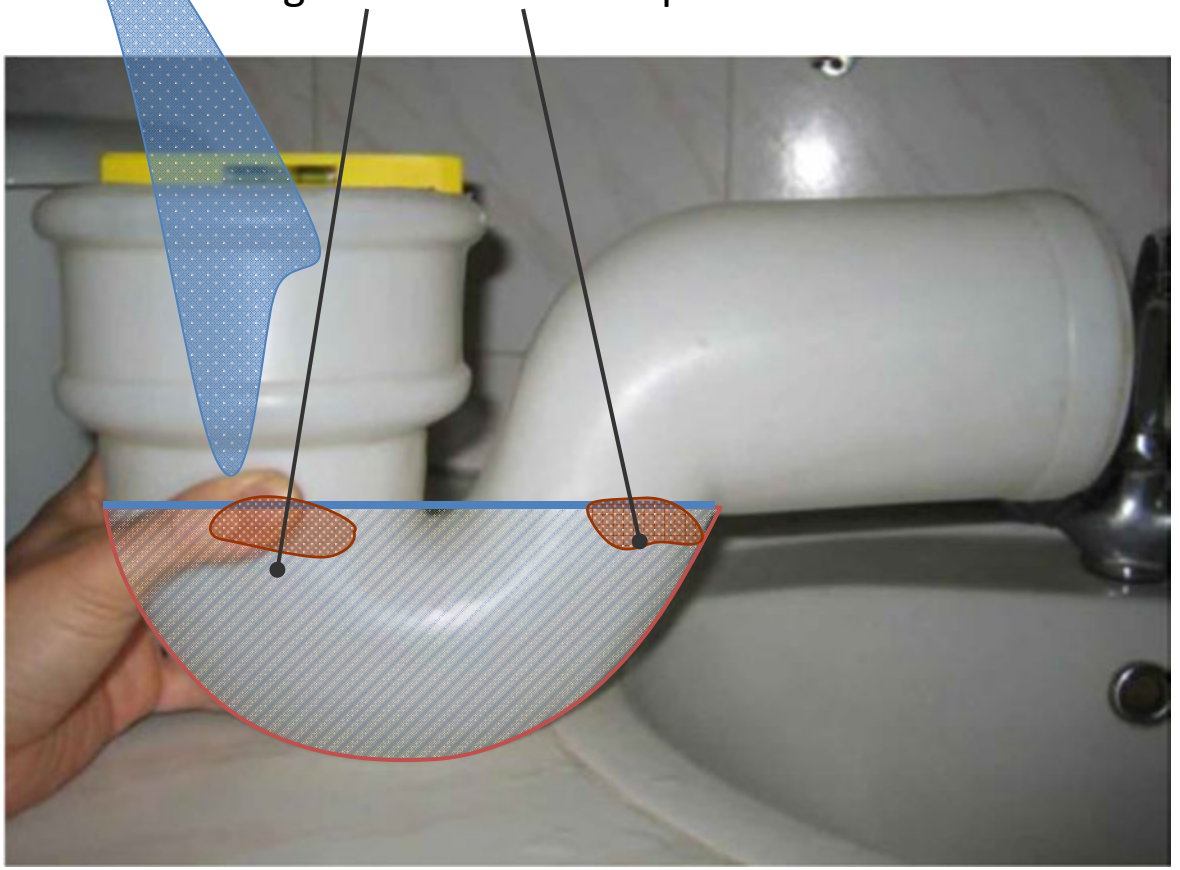

Assuming people use about half the bodna to clean themselves, estimated water volume used for flushing is 0.8 liters.

**Waste**

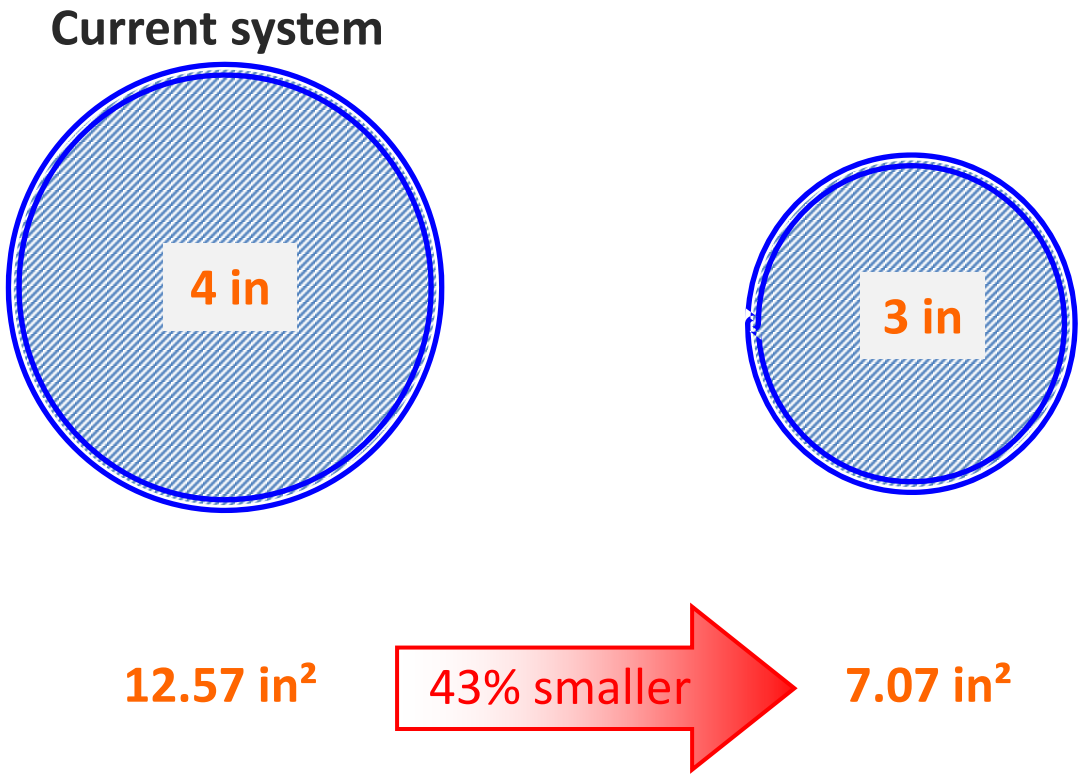
# Water traps use too much water to flush.

0.8L of water from a bodna is just not enough to generate a high enough flow rate through the trap to flush all the waste out leading to actions like:

- Having to flush multiple times
- Getting frustrated and breaking the trap
- Choosing not to install a trap

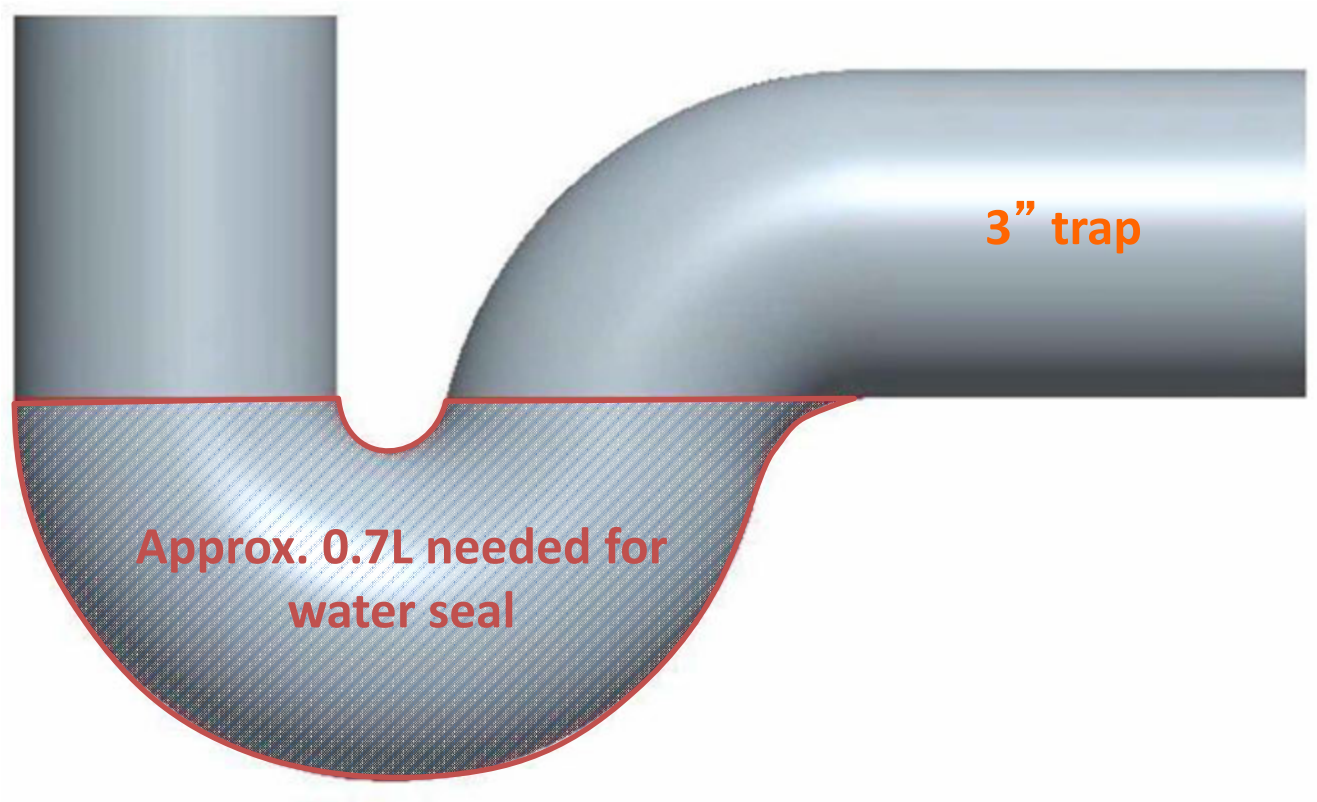


# Volume of syphon traps is too large.




The main cause of the problem seems to be the size of current pans and traps that are based on a 4 inch diameter pipe system. For the amount of water people are willing to use for flushing waste (0.8L), a 3 inch system (or even smaller) might work better.

# Volume of syphon traps is too large.

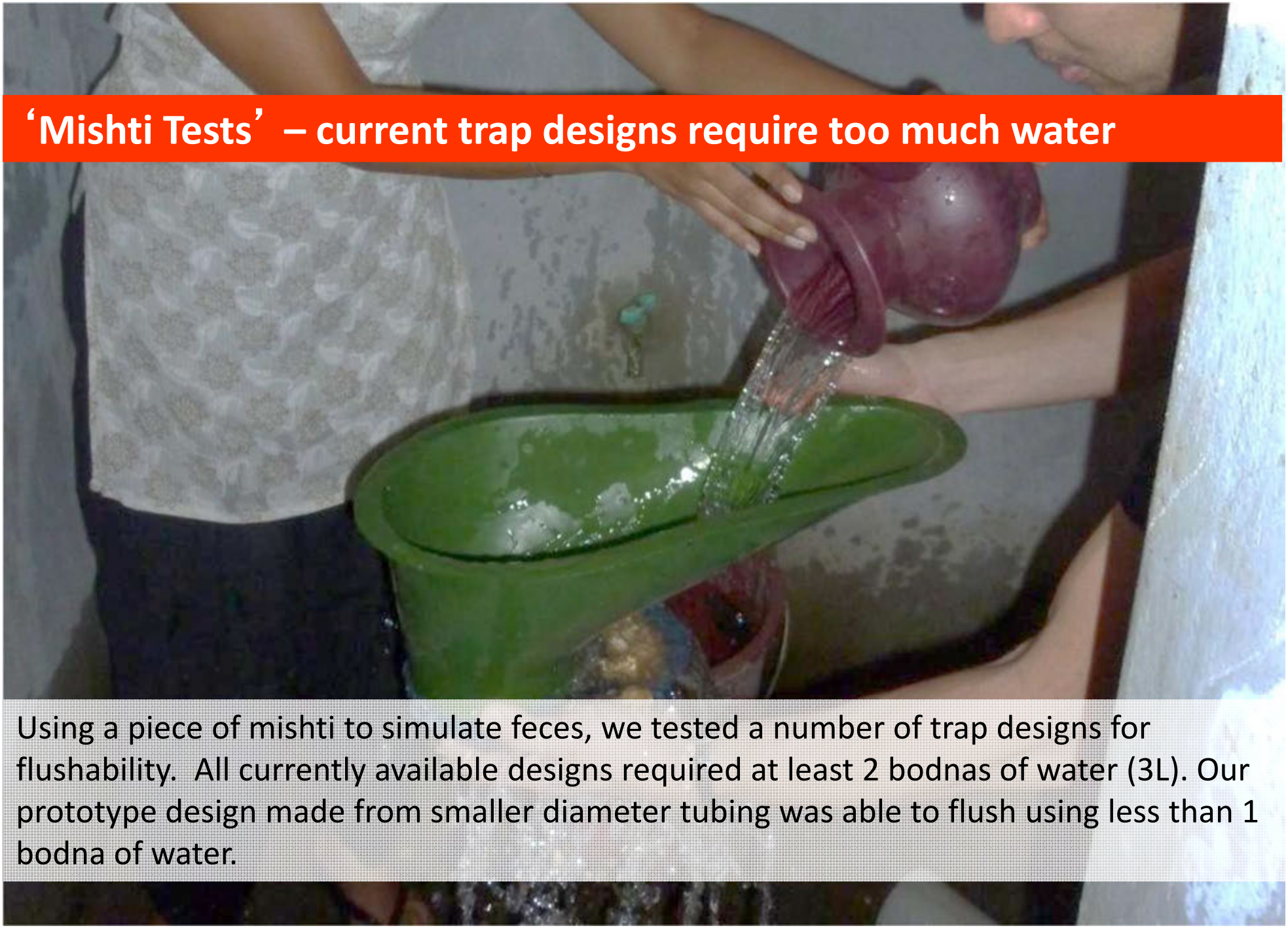



A smaller pipe system may work better because it requires less water to create water seal so more water can be used to remove waste, smaller pipe section helps to streamline water flow to generate more forceful flow to push out waste. In prototype testing a 2.5” trap prototype yielded best flush test results. A 3” diameter should be large enough to be clog proof.

# Range of water traps available.

There are two types of water traps available in the market - a ‘syphon’ trap which is traditionally used for off-set latrines and a ‘cup’ trap which is designed for direct latrines. Within these two types of traps there is a range of quality and price available in the marketplace. Syphons cost 70-80Tk and some come with a 5 year warranty from the manufacturer and cup traps costs 15 – 20Tk. There is no mid-range trap available in the market. Water traps are sold at hardware stores though a some latrine businesses will stock them. Elbow or U-bend pipes are also sold as ‘traps’ as they take the waste out of sight, but do not create a water seal.

# ‘Mishti Tests’ – current trap designs require too much water



Using a piece of mishti to simulate feces, we tested a number of trap designs for flushability. All currently available designs required at least 2 bodnas of water (3L). Our prototype design made from smaller diameter tubing was able to flush using less than 1 bodna of water.

# Syphon traps do not fit in direct pit latrines.

The syphon traps available in the market are too long to fit into a direct pit latrine, which the majority of households have. Households with direct latrines only have the option of a cup trap or no trap.

# Cup traps are poor quality.

Cup traps available in the marketplace are of exceptionally poor quality. The plastic manufacturing leaves ridges that make it harder to flush waste and does not create a water seal. There is only one trap that is ‘ok’ (purple two horse brand) which when correctly installed can create a water seal and requires 1-2 bodnas to flush.

# Difficult to connect water traps to pans.

Water traps are not integrated into the pan designs. Traps are attached to plastic pans after slab casting using hot metal to make holes and then screws attach the parts together. For ceramic pans, the trap must be attached with concrete during installation, making it difficult to set the pan and slab correctly. Furthermore, concrete does not bind well to ceramic or plastic, putting the connection of the trap at risk of breakage.

# Water traps are not promoted.


Latrine businesses and hardware retailers are passive about promoting traps to households, masons believe traps are only for off-set latrines, and local government is not promoting or providing latrines that use water traps. Amongst these actors there is inconsistent and incorrect knowledge about the use and benefits of traps. At the national level WSP and Department of Public Health Engineering (DPHE) have latrine designs that promote the use of traps but this information has not filtered down to local government.

# There is a disconnect between open defecation and open pits.

Using a latrine and not open defecating are behaviors that have been deeply ingrained among households, local government, and supply chain actors but they have not made the connection between the health dangers of open defecation and trap-less latrines. They do not view trap-less latrines as a transmission route for fecal-oral contamination.

# Latrine Quality.

# Households bare the burden of low quality.

Low cost latrines available in the market are poor quality and break after a few years of use. Households are spending money every few years to rebuild or repair their latrines and because of this experience expect poor quality. Some households we spoke to were on their third latrine since they stopped open defecation. Additionally if rings break in transportation the cost of replacement is borne by the household, not the latrine business.

# Falling into the pit is a big fear.

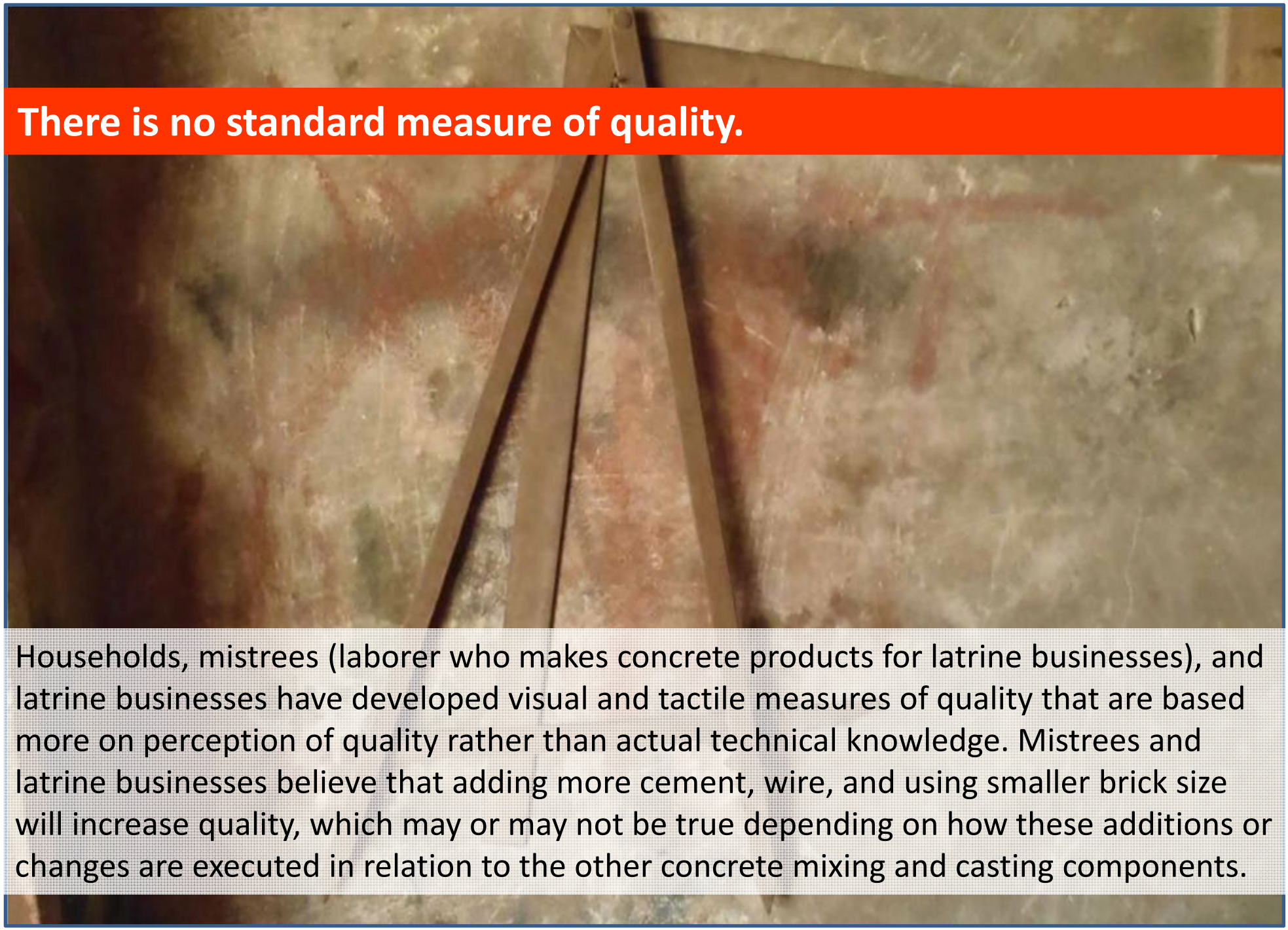
Slabs in the market are poor quality and often break after a few years of use. A number of households have either had someone or know someone who has fallen into their latrine pit.

# Low cost latrines are poor quality.

In the pursuit of lowest possible cost for greater affordability, latrine businesses have engineered out quality, knowingly making rings and slabs that will break and need to be replaced in 2-3 years. Higher quality latrine components are not typically stocked and are only available by custom order. The quality of concrete components varies from latrine business to latrine business.

# There is little incentive to produce quality products.

There is little product differentiation between latrine businesses. The lack of differentiation, sales skills, and the desire from customers for low cost products has commoditized latrines – they are sold based on lowest price, with quality being a secondary consideration. This creates a disincentive for latrine businesses to increase product quality for fear of increasing the price. Additionally, where laborers are paid per piece they are incentivized to produce as much product as fast as possible which can sacrifice quality.



# There is no standard measure of quality.

Households, mistrees (laborer who makes concrete products for latrine businesses), and latrine businesses have developed visual and tactile measures of quality that are based more on perception of quality rather than actual technical knowledge. Mistrees and latrine businesses believe that adding more cement, wire, and using smaller brick size will increase quality, which may or may not be true depending on how these additions or changes are executed in relation to the other concrete mixing and casting components.

# Standardized concrete production processes are not followed.

Mistrees and latrine businesses are able to tell us their concrete mix ratio, compacting practices, time before removing molds, curing time, etc. However, when observed they do not actually accurately measure inputs or wait times. Rough estimates and judging by look and feel is common practice and varies from business to business.

# Quality is impacted by inconsistent concrete mixing.

The concrete mix ratio used affects strength. For example, using too much water or concrete decreases strength. There is no standardized concrete mixture ratio followed, it varies by mistree. The measurement of the inputs (sand, brick, cement, water) are not accurately measured often done roughly by bucket or shovel resulting in inconsistent mixture ratios.

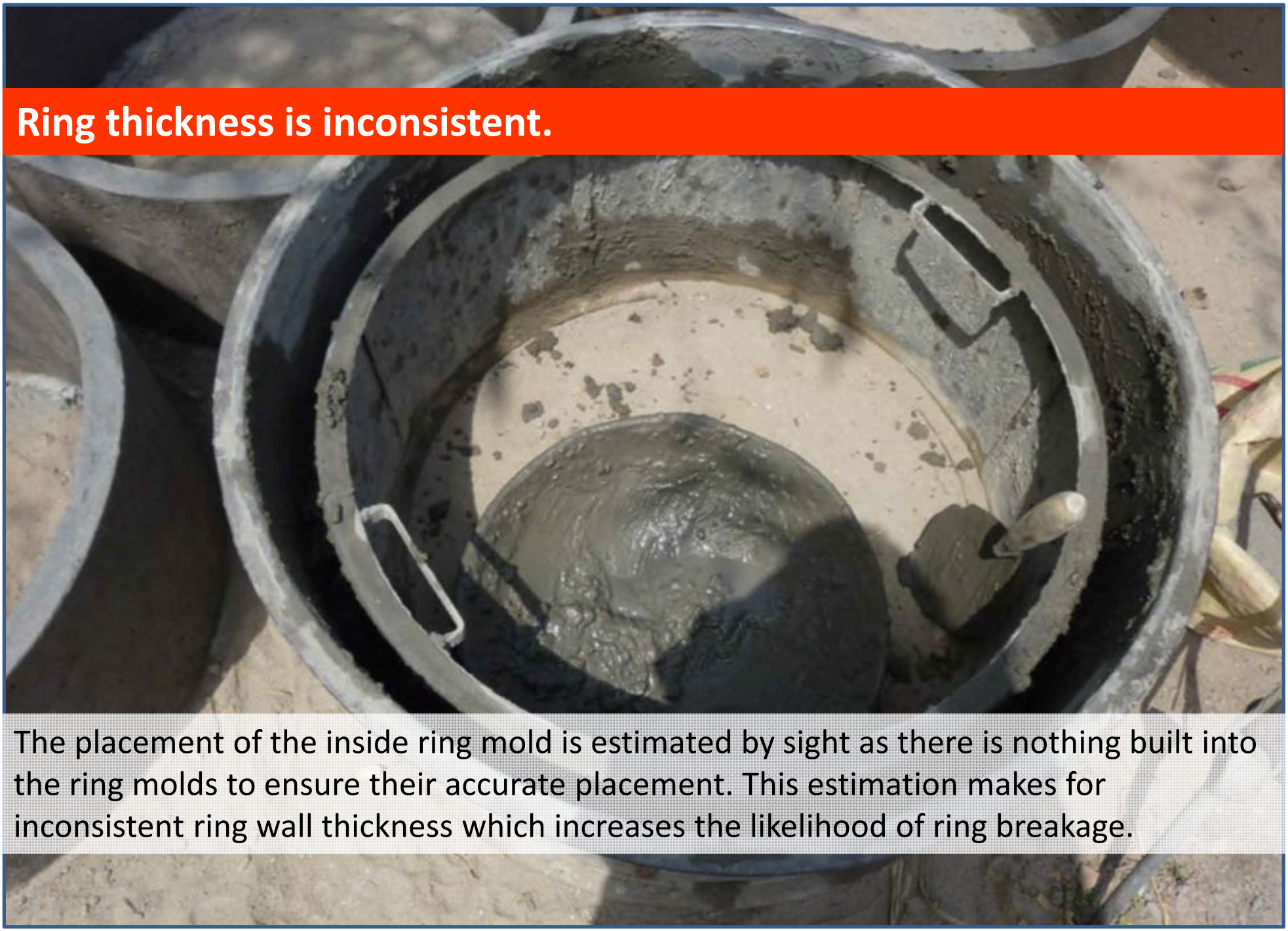
# Aggregate use is inconsistent.

Broken bricks are used as aggregate for ring and slab production but the size of the brick pieces used in a cement mixture vary from large pieces to sand-like powder. The size of the aggregate used impacts the strength of concrete and ideally the size range of aggregate should be controlled and standardized. Though untested, there is also a perception that using a high quality of brick will increase the quality of the concrete. This needs to be investigated further.

# Curing practices reduce concrete strength.

Concrete gains strength over time and hardens through a hydration process requiring a moist controlled environment, ideally over a 28 day period. The first 3-5 days are most critical. If concrete dries too quickly concrete becomes more brittle and prone to cracking. Currently concrete rings and slabs are cured in 4-7 days out in the sun before selling which creates low quality breakable concrete.

## Ring thickness is inconsistent.



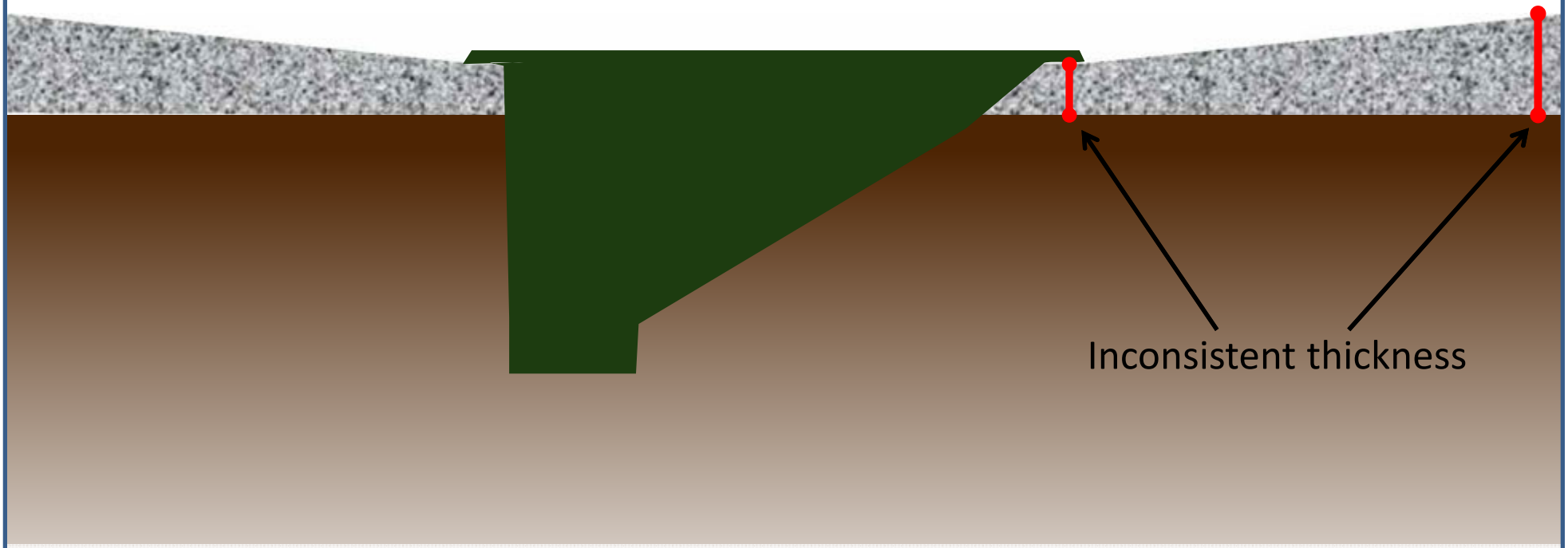
The placement of the inside ring mold is estimated by sight as there is nothing built into the ring molds to ensure their accurate placement. This estimation makes for inconsistent ring wall thickness which increases the likelihood of ring breakage.

# Ring dimensions chosen without technical reasoning.

"Ring molds are 12" high because latrine businesses don't use wire so higher rings will be easily broken." – Mold Maker

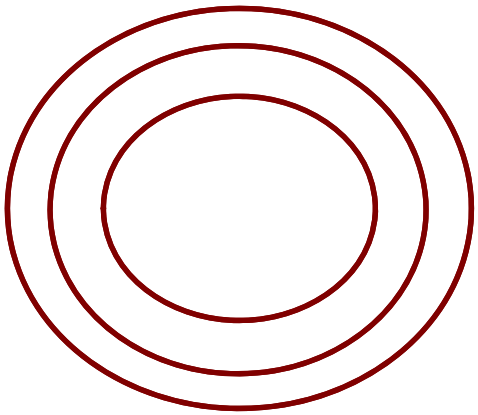
The thickness, diameter, and height of a ring or slab affects the strength of the concrete components. Rather than based on technical calculations, mold makers currently determine the thickness and height of the ring molds based on their perception that latrine businesses do not use wire to reinforce rings.

# Slab thickness is inconsistent.




To cast a slab with a pan, a hole is dug in which to rest the base of the pan and the height of the pan is estimated by eye. This typically creates  a slab where the top of the pan is lower than the height of the outside edges of the slab mold. When concrete is poured the slab ends up thicker on the outside and thinner in the middle where it needs the most strength to bare the weight of a person.

# Use of reinforcement wire is not optimized.



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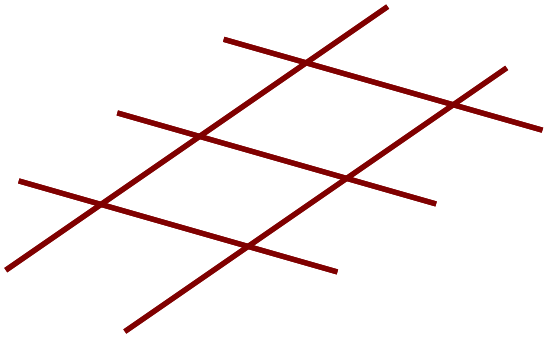


Reinforcement wire increases concrete strength by absorbing tensile stress when the correct thickness, amount, and placement of the wire is used. Currently there is a range of wire gauge and amount of wire used varies. In the pursuit of lowest possible cost, rings and slabs are usually made with the thinnest and least amount of wire possible which may not be ideal for strength. Additionally, for slabs in particular, the wire pattern used follows a concentric circle placement but for optimal strength wire placement should be in a crisscross pattern.

# Plastic pans do not bond with cement.

In general, plastic does not bond well with cement. Plastic components that are used with cement require design elements that enable the plastic to 'grip' the cement so that the plastic component does not easily separate from the concrete. All of the plastic pans currently available in the market do not have design elements that allow 'gripping' to the cement, resulting in plastic pans separating from the slabs after a short period of use. This compromises the overall strength of the slab increasing the risk of breakage.

# Lowest cost plastic pans in the market are poor quality.

Plastic pans are pre-cast into the slabs with latrine businesses typically choosing the lowest cost plastic pans available. The lowest cost plastic pans are usually poor quality and break easily.

# Vent pipes are larger than necessary.

4” diameter vent pipes are typically used which is larger than necessary to fulfill their function of aerating the pit. This excess size increases the cost of the latrine. The choice of a 4” diameter vent pipe may be due to the fact that the entire latrine pipe system is built around a 4” diameter. Vent pipe covers are used to prevent rain from entering the pit rather than blocking flies to prevent fecal-oral transmission route contamination.

# Pit Emptying.

# Pit emptying service is well established.

There are a number of individuals ( ‘sweepers’ ) that offer a pit emptying service to rural households. This service is easy for households to access, as sweepers will visit the village looking for customers and can be found in local market areas. It is not usually the same sweepers used every time. Both men and women work as sweepers and they usually work in teams of two. It is also common for sweepers to be ethnic minorities and illiterate. Sweeper communities come together to agree on price charged which is based on number of rings, ranging from 200-600Tk, though the price is negotiable.

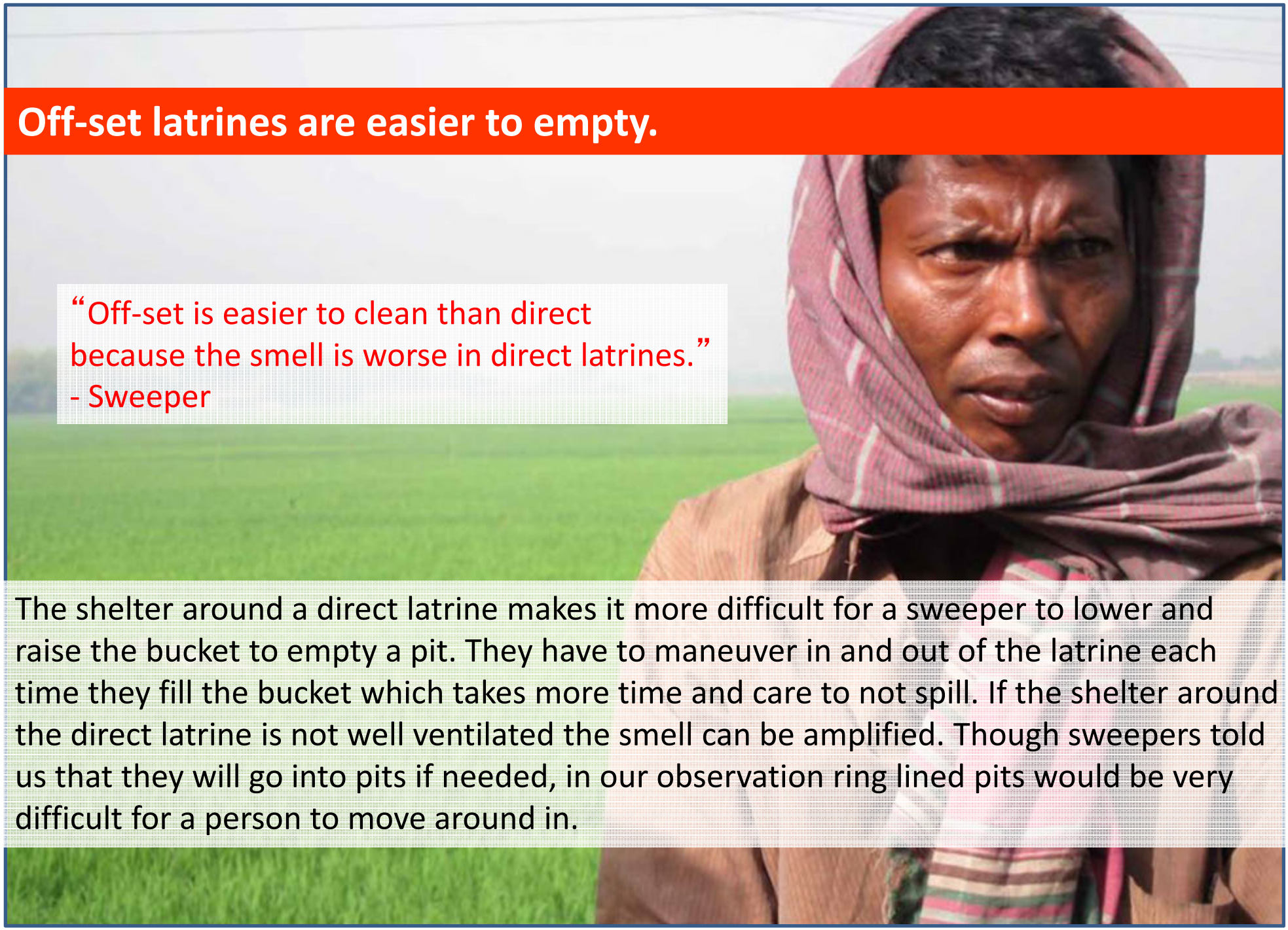
# Pit emptying process is both hygienic and not.

The common practice of burying the waste, rather than dumping into a field or ditch, when emptying a pit is technically hygienic waste disposal but the way in which pits are emptied is unhygienic as sweepers use buckets on a rope to remove waste which causes them to come into contact with the waste. The process for pit emptying involves digging a hole near the latrine, opening the pit, using a bucket on a rope to lift waste out and dump into the hole. When finished the slab/cover is resealed with cement and the hole is covered with dirt. It takes 2-3 hours to empty a pit, depending on the size.

# Additional costs to households for pit emptying.

The cost of pit emptying is not only the sweeper fee but materials as well. The household must provide about a ½ liter of kerosene (used to mask the pit smell), soap, and cement and sand for mortar to reseal the slab/cover.

# Off-set latrines are easier to empty.



"Off-set is easier to clean than direct because the smell is worse in direct latrines."
- Sweeper

The shelter around a direct latrine makes it more difficult for a sweeper to lower and raise the bucket to empty a pit. They have to maneuver in and out of the latrine each time they fill the bucket which takes more time and care to not spill. If the shelter around the direct latrine is not well ventilated the smell can be amplified. Though sweepers told us that they will go into pits if needed, in our observation ring lined pits would be very difficult for a person to move around in.

# Saving money on latrine parts means more money on emptying.

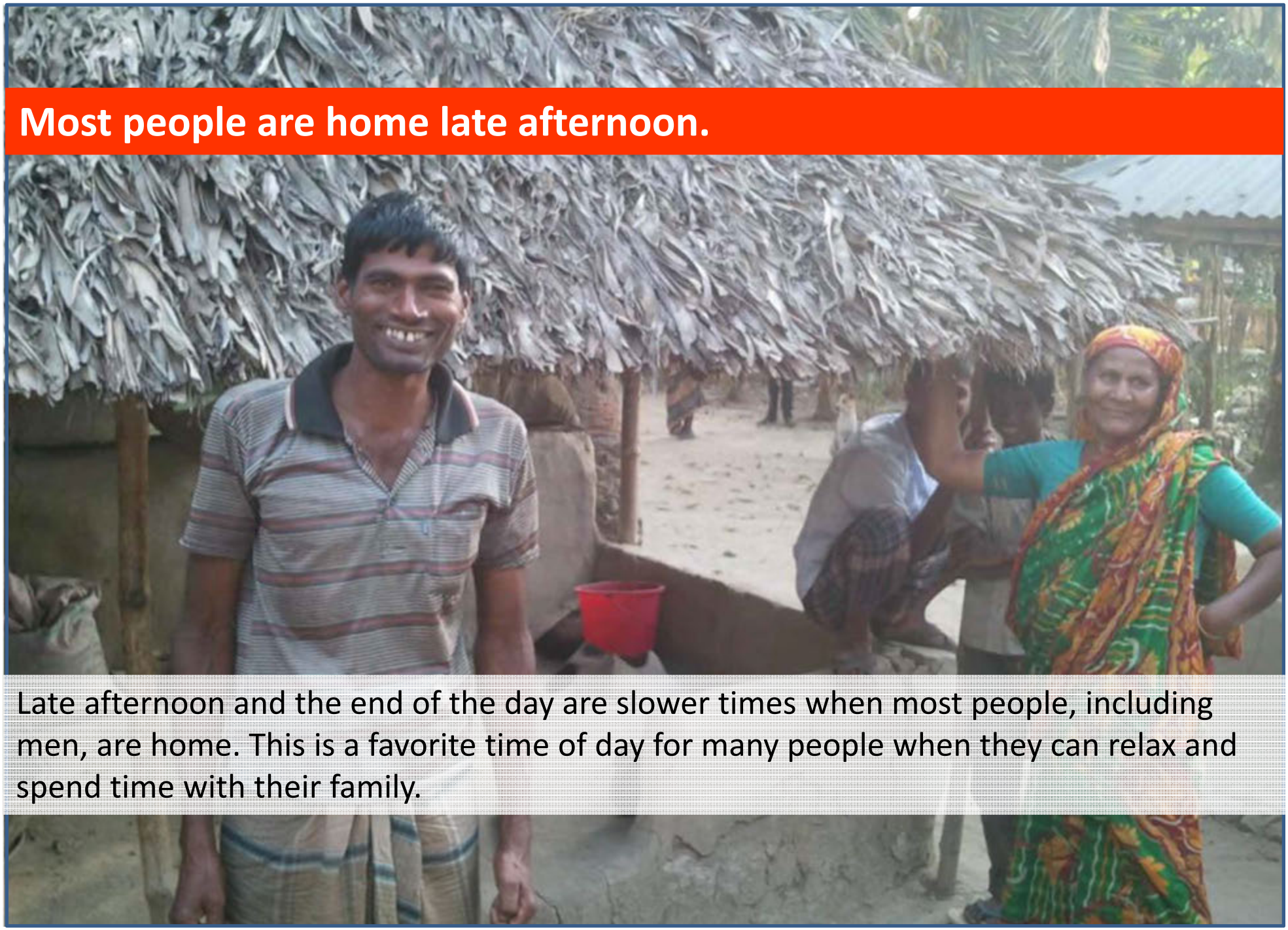
Low-cost direct latrines are typically built with 3-5 rings. To save money households will buy fewer rings which results in the pit filling quickly and needing to be emptied more frequently. The short term savings on the rings results in a greater cost paid over time. Direct pits are typically emptied every 6 months to 2 years. The soil in the area is clay based which reduces the infiltration of the pit and contributes to pits filling faster. The exception to this is the lowest cost latrines where are built without rings. They are not emptied but are filled in and a new latrine hole dug each time.

# General Household Insights.

# People trust TV, neighbors, and family.

Television, neighbors, and family are the most trusted source of new information for rural households, which are sources typically found within the village. These information sources have influence on the purchase decisions and actions of a family. Illiteracy is very high so it makes sense that information is most commonly transmitted through audio/visual means.

# Most people are home late afternoon.



Late afternoon and the end of the day are slower times when most people, including men, are home. This is a favorite time of day for many people when they can relax and spend time with their family.

# Markets are easily accessible.

Most villages are 5-10km away from markets and inexpensive means of transport is available to bring them there.

# Household Income, Purchasing, and use of Finance.

# Households income is seasonal.

Agriculture income, which is seasonal in nature, is the primary income source for most households. Common agriculture crops are paddy rice, *boro* rice, mango, lychee, paan leaf, and potatoes. Income for households is highest January – March and May. To smooth income over the year households supplement their agricultural income with livestock, handicrafts, and wage labor.

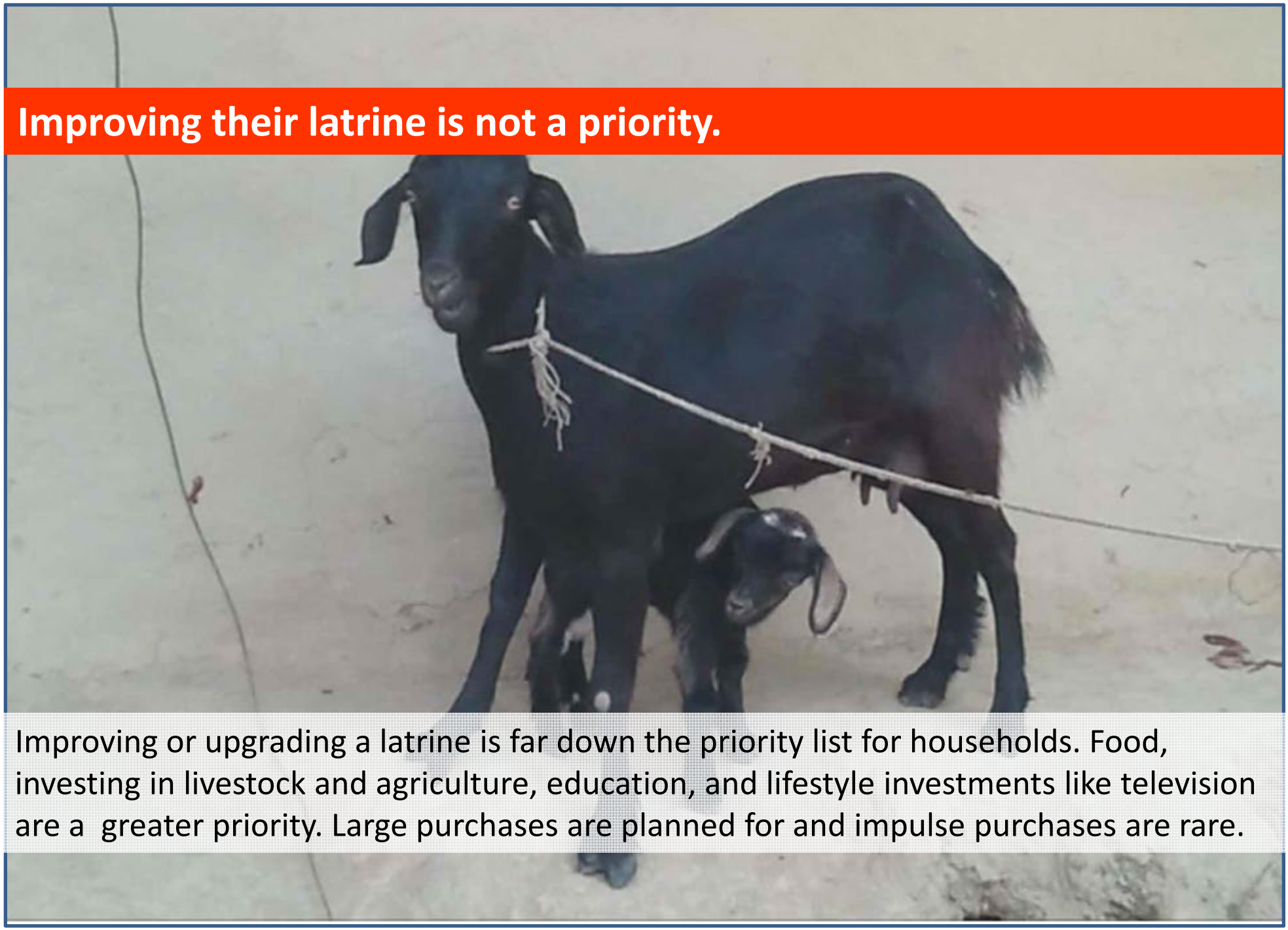
# Households use debt.

Households commonly take loans for working assets such as vehicles, livestock, farm inputs, etc and for home improvements or building new homes. Grameenbank is the most common financial institution people use in addition to MFIs like Asa and BRAC. Risk averse households rarely diversify their loan sources and will take one loan at a time.

# Households have savings.

Many households have savings with financial institutions, Grameenbank in particular, as well as with MFIs or informally. People are typically saving for home improvements, farm inputs, livestock purchases, and for livelihood emergencies. In addition to cash savings, households store wealth in various assets like cows and goats which they will exchange for cash to make larger purchases.

# Improving their latrine is not a priority.



Improving or upgrading a latrine is far down the priority list for households. Food, investing in livestock and agriculture, education, and lifestyle investments like television are a  greater priority. Large purchases are planned for and impulse purchases are rare.

# Men have the final say.

Large purchases are discussed as a family, however men have the final say. While females in the household may be consulted or initiate the conversation, the ultimate decisions for household purchases and investments rests with the males in the family, the head of the household in particular. As women tend to not leave the village, men are not only the decision makers but are also responsible for making purchases, including latrine components.

# Latrines: Perception and Reality.

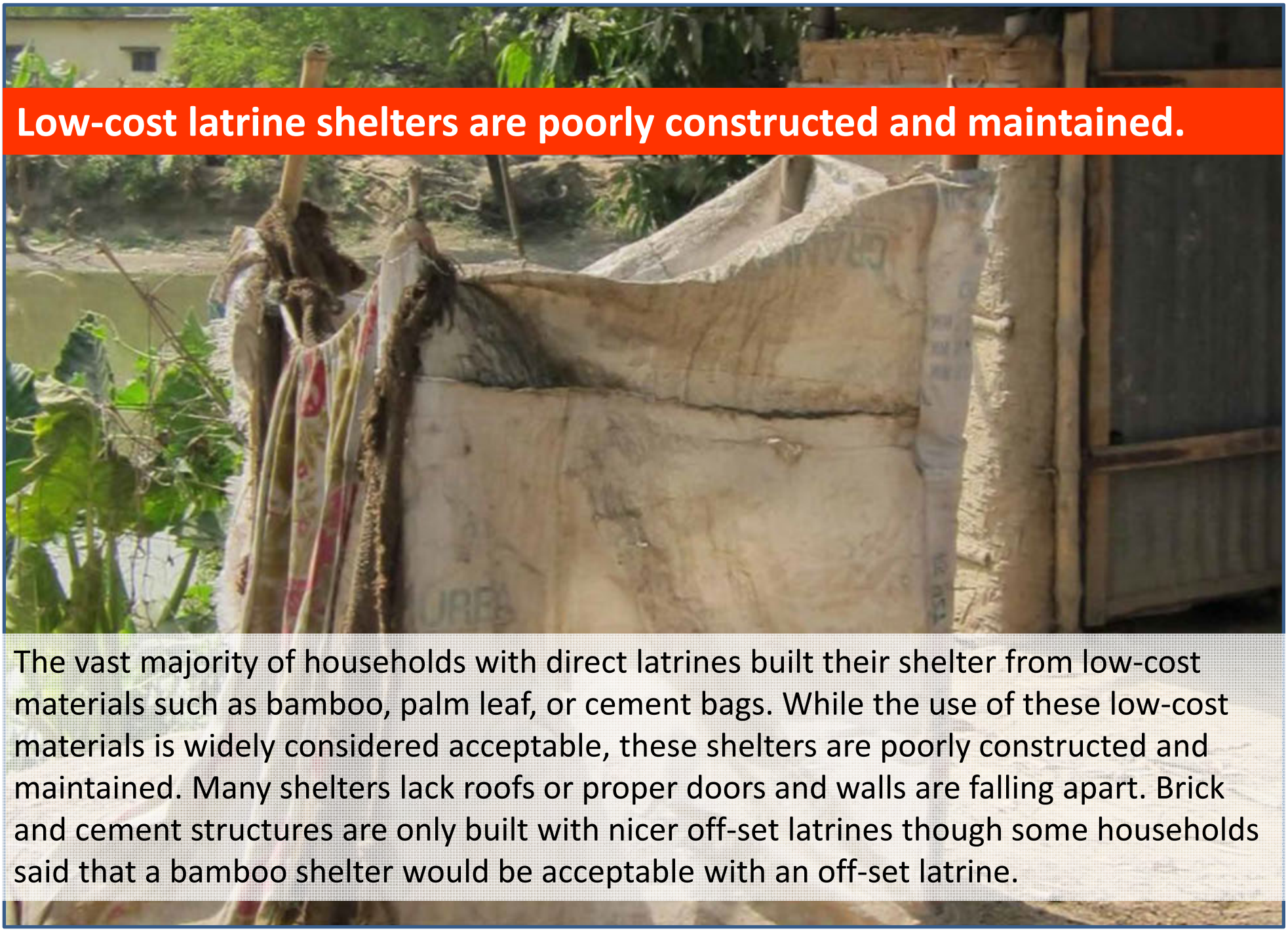
# Sharing within the extended family is acceptable.

It is acceptable for households without their own latrine to share the latrine of a neighboring extended family member. There is little feeling of shame associated with this. There are also no issues with men and women sharing a latrine.

# Households copy the latrine their neighbors have.

People look to their neighbors to learn how to build their latrines by talking to their neighbors. This has resulted in common designs for both the super and sub-structures at the village level.

# Low-cost latrine shelters are poorly constructed and maintained.



The vast majority of households with direct latrines built their shelter from low-cost materials such as bamboo, palm leaf, or cement bags. While the use of these low-cost materials is widely considered acceptable, these shelters are poorly constructed and maintained. Many shelters lack roofs or proper doors and walls are falling apart. Brick and cement structures are only built with nicer off-set latrines though some households said that a bamboo shelter would be acceptable with an off-set latrine.

# Latrines with plastic pans are poorly maintained.

Latrines with plastic pans are poorly maintained – feces, maggots, and insects can be see in and around the plastic pans. From observation it appears that the slabs are being cleaned but the plastic pans are not. We heard that some people do not clean their plastic pans due to fear of pan breakage.

# Households believe their latrines are unhygienic for the ‘wrong’ reasons.

The majority of households with direct latrines do not believe their latrines are hygienic because of aesthetic reasons rather than correct technical reasons (such as lack of water trap). Common reasons given include bad smell, flies and mosquitoes, no concrete shelter, difficulty cleaning, and insecure components (fear of breaking). According to households a hygienic latrine  has a brick/concrete shelter, strong slab/floor, is easy to clean, Harpic (brand of toilet bowl cleaner), soap and case, a light, a door that can lock, and is close to home.

# Harpic, Harpic, Harpic.


Every household we spoke to used Harpic to clean their latrine. Having and using Harpic is seen as integral to a clean, sanitary latrine.

# Latrines are being replaced and repaired.

Because of poor quality components, households with low-cost direct latrines have to repair or replace their latrine every few years. Instead of improving on or upgrading at the time of repair/replacement, households choose to stick with the same low-cost latrine design they have used in the past.

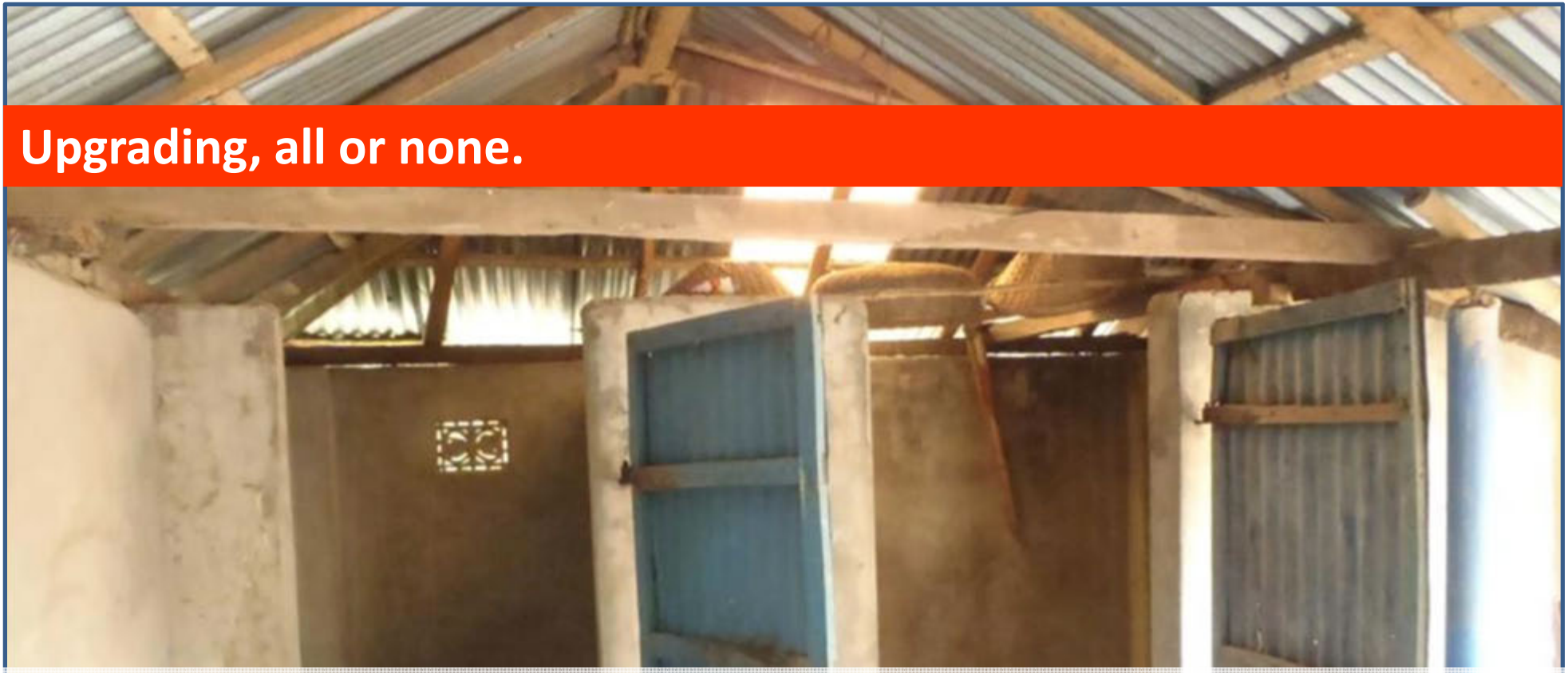
# The ideal latrine is considered unattainable for most households.

People's ideal latrine consists of:

- Off-set design so that the waste is out of sight and if the slab breaks they won't fall into the pit
- Deep pit so that it lasts longer before having to empty
- Concrete shelter for status, strength, and protection
- Proper door and a roof for privacy
- Water tap, a light for night time, soap, Harpic, and a brush for cleaning
- Built close to home for safety and access at night.

People estimate their ideal latrine would cost 10,000+Tk and is considered financially unachievable for many households or requiring saving over an extended period of time.

# Upgrading, all or none.

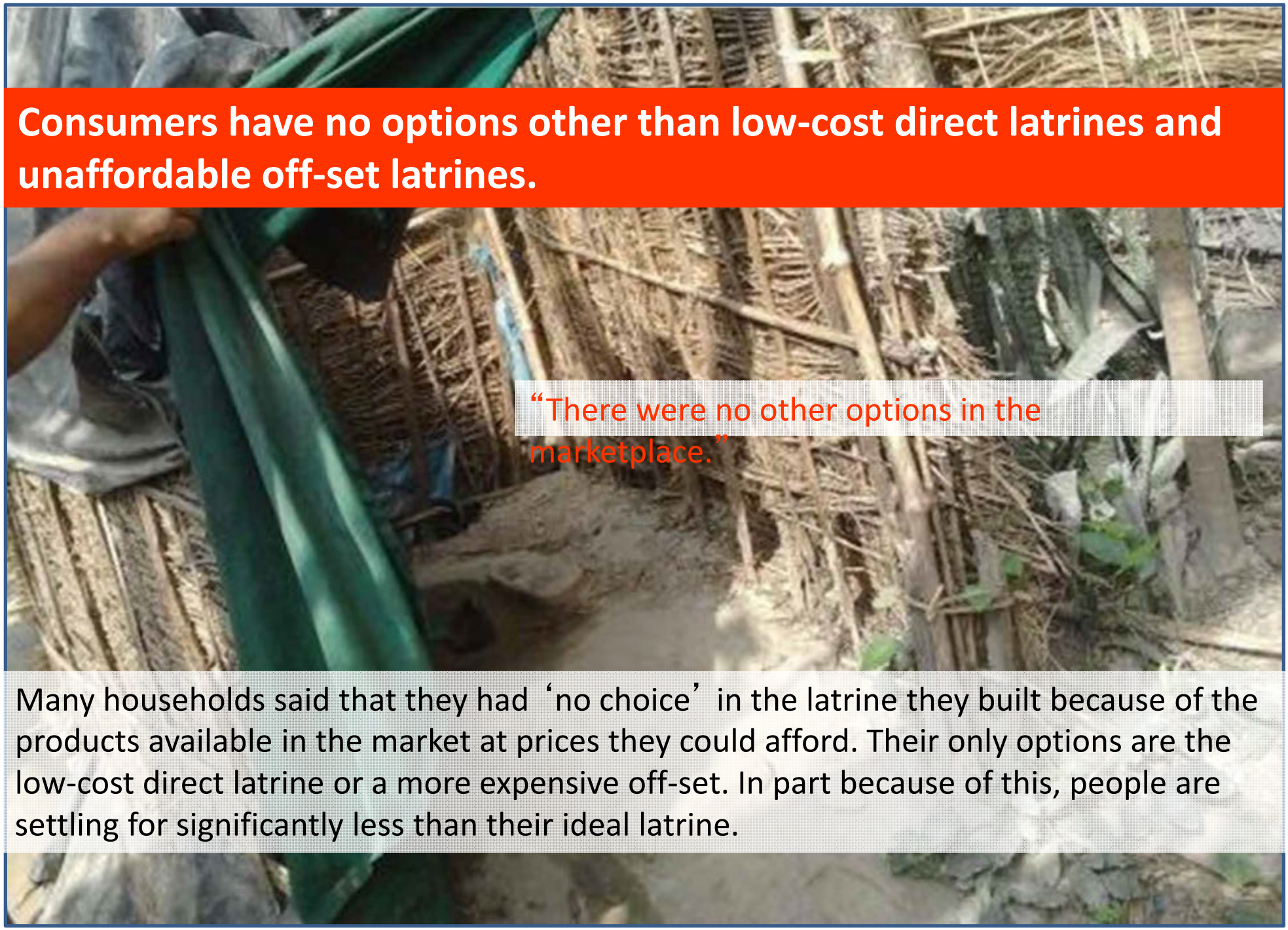


Households conceptualize upgrading to their ideal latrine in one big leap rather than in incremental improvements over time. This upgrade is considered financially unachievable for many households, requiring saving over an extended period of time. This thinking extends to accessories as well which are highly affordable, accessible, and desired but are not purchased because they are perceived to be associated with the ideal latrine and not for a low-cost latrine. The motivation to upgrade their low-cost latrine appears to be low because owners are broadly complacent with their current latrine even when they recognize it is less than their ideal.

# A new house before a new latrine.

When building a new house or making home improvements, an upgraded or improved latrine is not often considered in the plans. In people's minds the house comes before the latrine.

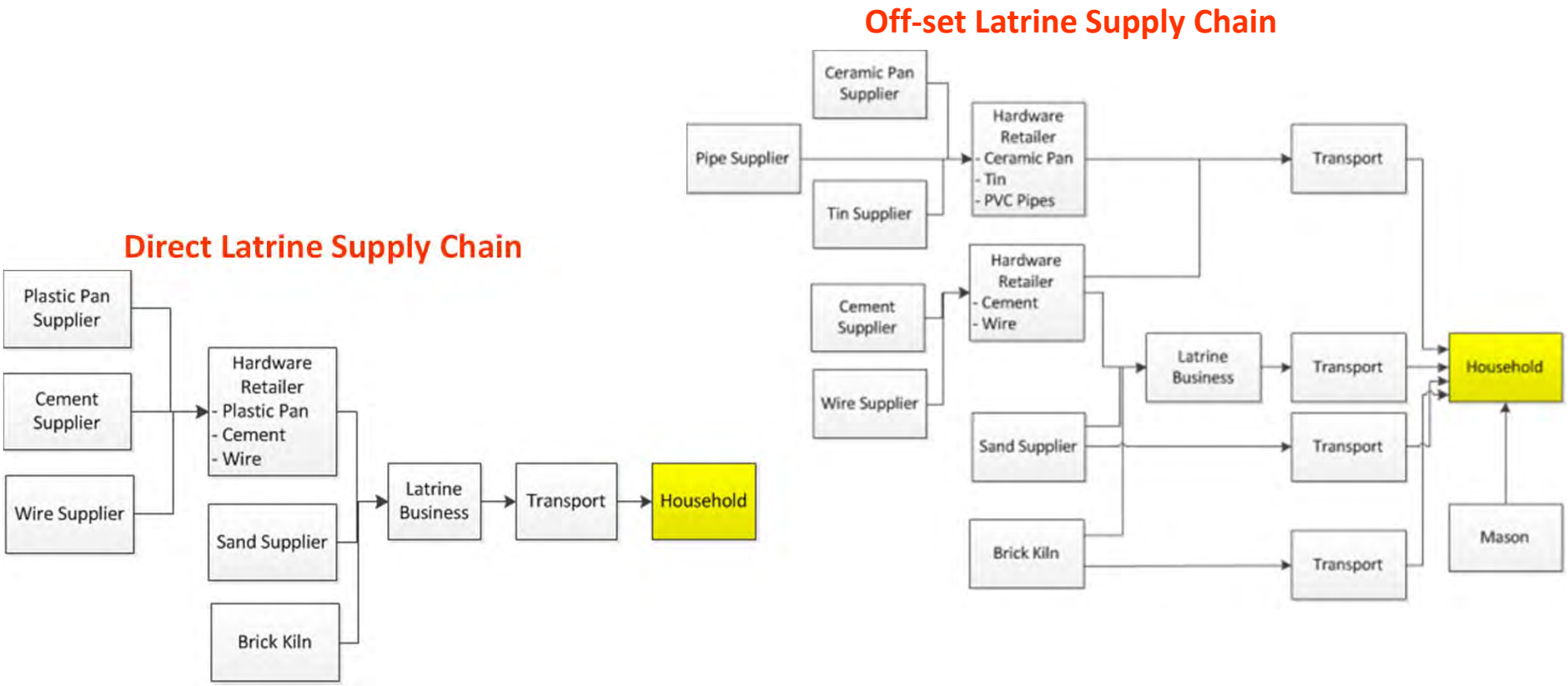
# Consumers have no options other than low-cost direct latrines and unaffordable off-set latrines.



"There were no other options in the marketplace."

Many households said that they had 'no choice' in the latrine they built because of the products available in the market at prices they could afford. Their only options are the low-cost direct latrine or a more expensive off-set. In part because of this, people are settling for significantly less than their ideal latrine.

# Off-set latrines are more complicated to purchase.




All the components needed for a low-cost direct latrine are available pre-cast for easy installation from a single source – a latrine business. Off-set latrines require more people and parts.

## Off-set latrines are more expensive and complicated to install.

Low-cost direct latrines are cheap and easy for a household to install themselves without needing to hire a mason. Common off-set latrine designs are more expensive and require the skill of a mason for proper installation. In addition to this extra cost, connecting the water trap, drain pipe, and vent pipe for an off-set latrine is difficult to set-up correctly, which is part of the reason a mason is needed.

# General Supply Chain Insights.

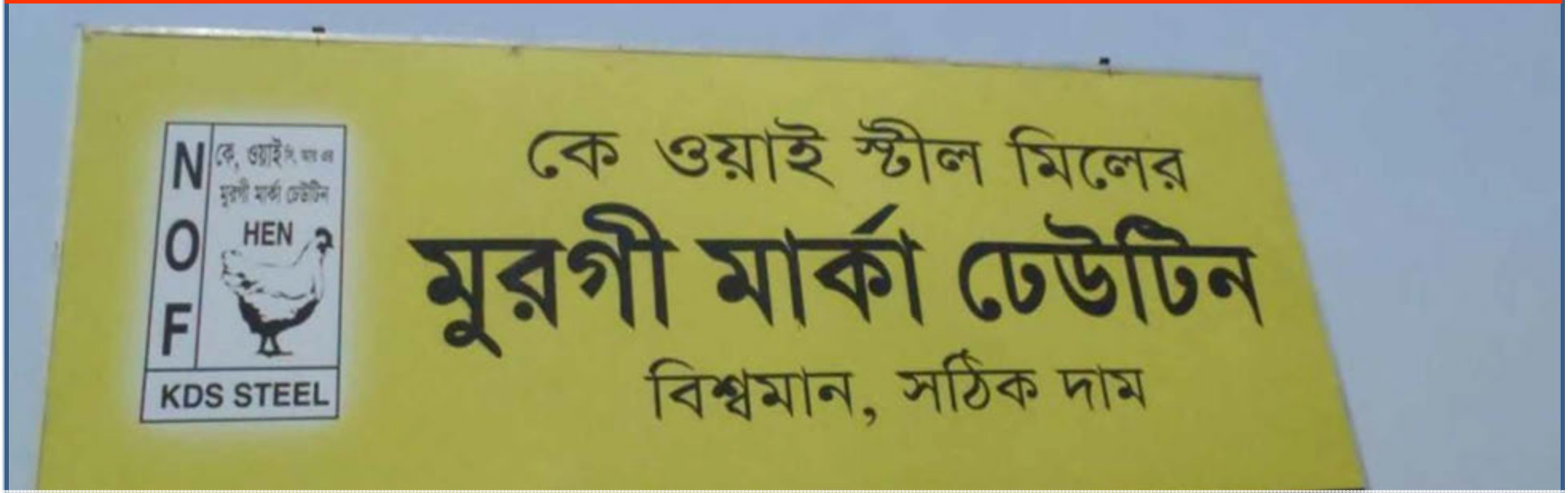
# The sanitation market for low-cost latrines is well established.

There are many latrine businesses in the region that focus on selling low-cost direct latrine components and they are easy to find. Villagers usually have to travel no more than 5-10km to purchase a latrine, usually situated close local markets. Additionally, hardware retailers, where households can purchase simple shelter materials, are located in local markets.

# Latrine sales have seasonal peaks.

Latrine sales are highest in January to March and May which coincides with the increase in income of households from harvests.

# Demand creation is passive.




'Sit and wait for customers to come to you' is the main approach to sales for latrine businesses, masons, and hardware retailers. With little differentiation in product offering, businesses see their price, reputation, people's awareness of them, and their quality (or lack of) as the main reasons customers purchase from them. Promotion is done by keeping products visible. Hardware retailers have shown the most 'active' demand creation with signs provided by companies such as Moroz (tin sheet brand) and one hardware retailer interviewed runs a lottery for customers to encourage them to spend over 2,000Tk.

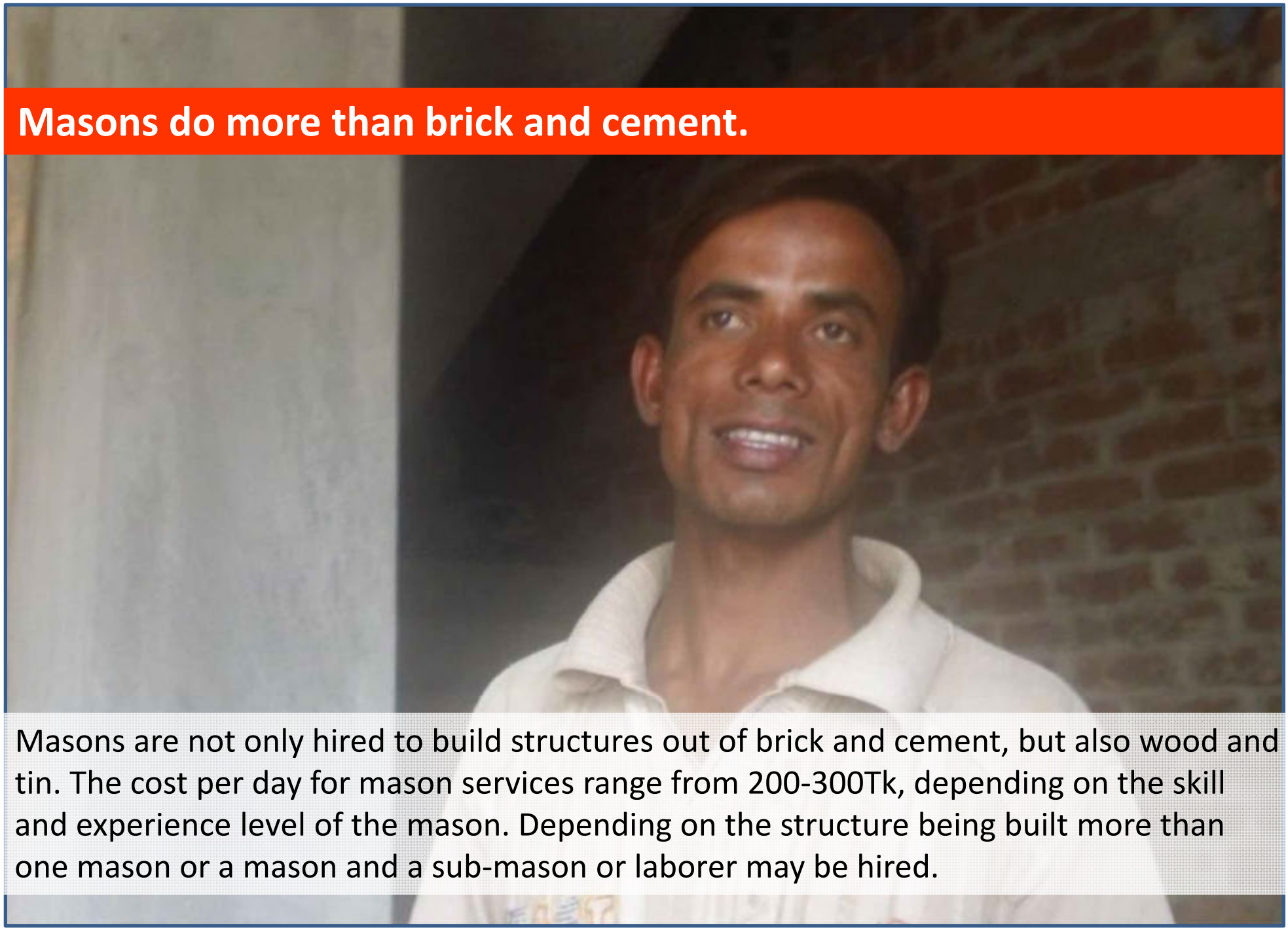
# Informal relationships between supply chain actors.

Latrine businesses and hardware stores have informal relationships with masons who will recommend them to customers. Masons are not paid any commission for these referrals. For hardware retailers, latrine related sales are a very small part of their business, making them less incentivized to further develop relationships with local masons and latrine businesses.

# Masons are the main provider of latrine building information.

Masons are considered to be the key source of latrine building advice by both households and supply chain actors. Hardware retailers do not provide advice to customers on how to build a latrine. Only latrine businesses that have worked as a mason provide advice. In addition to latrine building advice, masons occasionally go with households when they are purchasing materials to assess quality and tell them what they need to buy. Alternatively they provide a list of materials required.

# Masons do more than brick and cement.



Masons are not only hired to build structures out of brick and cement, but also wood and tin. The cost per day for mason services range from 200-300Tk, depending on the skill and experience level of the mason. Depending on the structure being built more than one mason or a mason and a sub-mason or laborer may be hired.

# Little change or innovation in practices.

Skills and know-how of masons, mistrees, latrine businesses, and mold makers are handed down from trainer to trainee through informal, on the job training resulting in few changes or innovation in practices.

# There is a wide range in the size, scale, and diversification of latrine businesses.

Latrine businesses range from small in size with few products sold to highly diversified in both product offerings (ventilation, rings, piles, cow feeders, etc.) and businesses in which they invest (hardware, retail, paan leaf, fish farming, etc.). Those with diversified types of businesses are more dependent on mistrees to do production and sales and manage the location. Additionally there is a range of skill and concrete know-how among latrine businesses. Smaller latrine businesses will not hire mistress and will do the labor themselves. Some latrine business owners do not have the skills or knowledge on how to make concrete and are totally dependent on mistrees.

# Variation in product dimension across latrine businesses.

25”, 26”, 28”, 30”, 33”, and 36” ring diameters were found in the market, with the most common likely being 26”, 30”, and 36”. The ring diameters are not exact due to inaccuracies in the mold making and casting process. Ring prices ranged from 80-250Tk depending on the size and the latrine business. There are different diameter slab sizes available to match with the ring diameters. Slabs ranged in price from 120-270Tk.

# Latrine businesses and hardware retailers leverage debt.

Latrine businesses and hardware retailers will use loans to start or grow their business, though credit from input suppliers in not commonly used. Latrine businesses and hardware retailers will extend credit, with or without interest, to customers that they know. This extension of credit often puts cash flow constraints on businesses due to delayed payments and increased risk of default. For religious reasons there are business owners that choose to not take or offer credit or loans that have interest.

# Latrine business production capacity is limited by cash flow.

The amount of stock that a latrine business can produce is limited by the cash they have available to invest in raw materials. Latrine businesses that are constrained by cash flow typically hire ‘revolving’ mistrees. These mistrees work a number of days in a row based on the amount of raw materials available (if the latrine business does not do labor themselves).

# Product sales representatives reach rural markets.

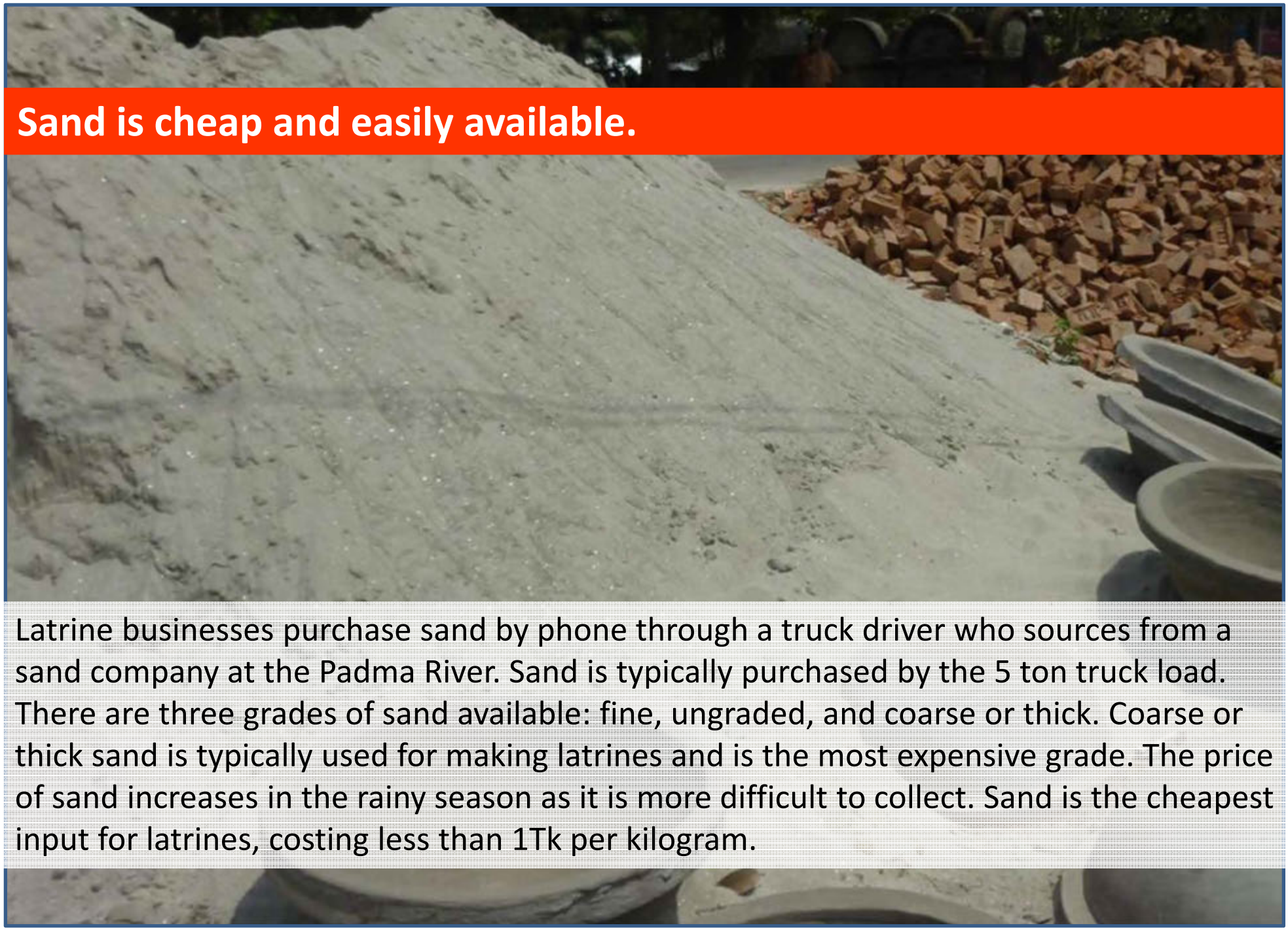

Hardware retail store owners in rural markets are visited by product sales representatives who show them new products and take orders. Some of the different product representatives we heard of represent dish soap brands, ceramic pans, and plastic traps. Latrine businesses are not currently approached by product sales representatives.

# Inexpensive transportation is widely available.

There is a range of transportation options readily available in the local markets. As customers are responsible for arranging their own transportation of latrine components, vans (flatbed rickshaws) are the chosen means of transport because they are cheap and can transport up to 5 rings per trip. In addition to the low cost and ample supply of vans, they are also chosen because they go slow and their lightness and small size reduces the risk of breakage during transport on bumpy rural roads. Trolleys are not chosen because of their high cost and larger volume capacity (more than required to transport a single latrine).

# Latrine Inputs Costs and Sourcing.

# Sand is cheap and easily available.



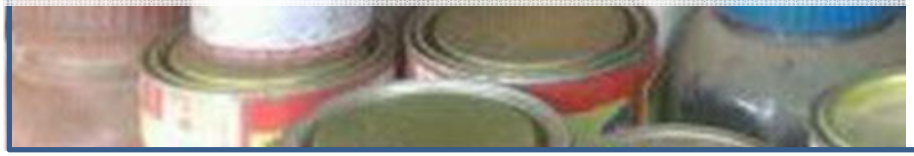
Latrine businesses purchase sand by phone through a truck driver who sources from a sand company at the Padma River. Sand is typically purchased by the 5 ton truck load. There are three grades of sand available: fine, ungraded, and coarse or thick. Coarse or thick sand is typically used for making latrines and is the most expensive grade. The price of sand increases in the rainy season as it is more difficult to collect. Sand is the cheapest input for latrines, costing less than 1Tk per kilogram.

# Bricks are the cheapest form of aggregate available.

Gravel is not widely available in Bangladesh therefore broken bricks are used as aggregate in concrete. In Rajshahi there are many brick kilns, and bricks come in a range of quality. Latrine businesses purchase them whole or broken and it is believed that a higher quality brick will make for better quality concrete. The price per kilogram of bricks ranges from 1.5 – 3Tk. There is about a 2,500Tk/1000 bricks price difference between the highest and lowest quality brick.

# Significant cost difference between plastic and ceramic pans.

Plastic pans available in the market place range in price from 15 – 100Tk whereas ceramic pans range from 500 – 1,500Tk, the lowest cost option made in Bangladesh. There is no ‘mid-range’ quality pan available in the marketplace.



# There is no one preferred brand of cement for latrine businesses.


There are a large number of cement brands available in Bangladesh and there is not one main brand that the majority of latrine businesses buy. There is high awareness of the different brands, and Holcim and Elephant brands in particular are perceived to be a higher quality cement, but not always the chosen brand. The average price of a 50kg bag of cement is 460Tk or 9.20Tk/kg. The price difference between the most expensive and cheapest brand of cement is 70Tk/50kg bag or 1.40Tk/kg. Supply of cement is readily available.

# The price of steel wire fluctuates.

The price of steel wire for reinforcement fluctuates and there is a range of gauge available in the marketplace. On average 1 kilogram of 16 gauge wire costs 90Tk or 9Tk for 100g, a common weight used for ring reinforcement.

# Molds have a short payback period.

Ring molds are available in Rajshahi town and are ordered by latrine businesses by telephone or in person. Latrine business request the ring mold by specifying the diameter while the mold maker decides the height and width. Latrine ring molds are a small part of a mold maker's business, whereas tube well ring molds are their main business. Molds are made with repurposed iron sheets and new iron rods. Ring molds cost 3,000 – 3,500Tk. Molds are made to order as mold makers do not keep stock of finished molds. It can take a few days to make a mold. The payback period for a ring mold is quite short at an estimated 70 rings.

# Mistree skill and availability vary by area.

There are two types of mistrees – a ‘revolving’ mistree who works for a 2+ latrine businesses and a ‘set’ mistree who works for only one latrine business. Mistree availability varies from area to area, with some latrine businesses using revolving mistrees finding it difficult to find labor. In general, it is more difficult to find skilled/experienced mistrees than unskilled labor. Retention of mistrees also varies, though there are mistrees who have been working for the same business for 3-7 years. Mistrees may be paid per piece (8-30Tk per) or paid per day (200-300Tk), and the type of pay is not correlated to the type of mistree. If required, mistrees handle sales in addition to producing concrete products.

# Enabling Environment Insights.

# Sanitation is not the top priority.

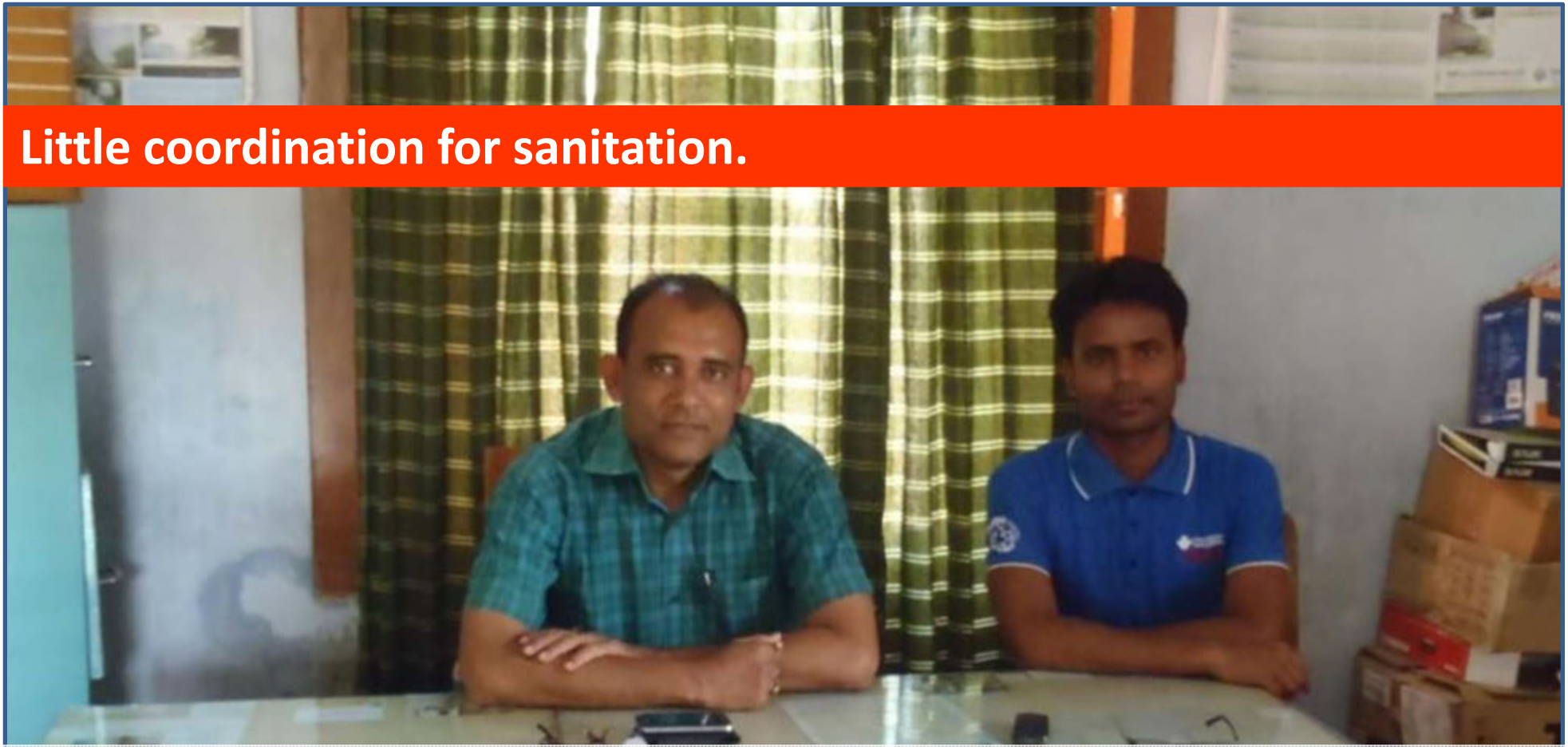
The main focus of local government is infrastructure building and sanitation is a relatively low priority. This is evidenced in the  local government budget allocation with the main budgets for sanitation coming from the Annual Development Programme (ADP). Sanitation accounts for 15-20% of their total budget.

# Focus on maintaining ODF status.

"If you fail to install a latrine, come to the Union Parisha and we will arrange for you." – Union Chairman

Maintaining ODF status is the sanitation focus of local government, using subsidy and rallies as the main activities for achieving high coverage. However, there is little or infrequent village level interaction related to sanitation. Hygienic latrines are not explicitly promoted by local government. Subsidy latrines provided by the government are not hygienic (e.g.: direct latrine without a water trap). Rallies are infrequent and focus is on latrine use and hand washing. Promotional materials and messages used are provided by national level government and NGOs and the focus is on latrine use but not on creating awareness around what is a hygienic latrine. Unions hold monthly meetings with villagers but sanitation does not appear to be a focus.

# Little coordination for sanitation.



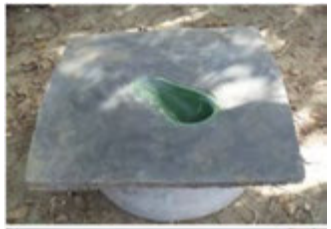
When it comes to sanitation there is little coordination and communication between Upazillas and Unions despite the fact that there are general monthly Upazilla meetings. DPHE works with both levels of local government, possibly closer with Unions, and has influence on their sanitation related activities. There is no single person responsible for sanitation at the local levels of government. Additionally there is little coordination between local levels of government and NGOs working in the sector.

# Current subsidies are not distorting the market.

Though unions and upazillas are providing latrine subsidies the relative volume is small and is not distorting the market. This may be due to the fact that most households already have a latrine and only the low-cost direct latrine is being provided. Currently, the subsidies provided are not detracting latrine businesses from selling to households and households are not delaying purchasing latrines in the hopes of receiving a subsidy.

# Prototype User Feedback.

# Prototypes Tested



**Square slab with diagonal pan**. Used for space conceptualization and understanding space, location, and configuration needs.

**Tin slab cover.** Used for understanding material perceptions and cleaning needs.

**Wall with water bucket.** Used to discuss water storage and use, and space constraints and needs within the latrine.

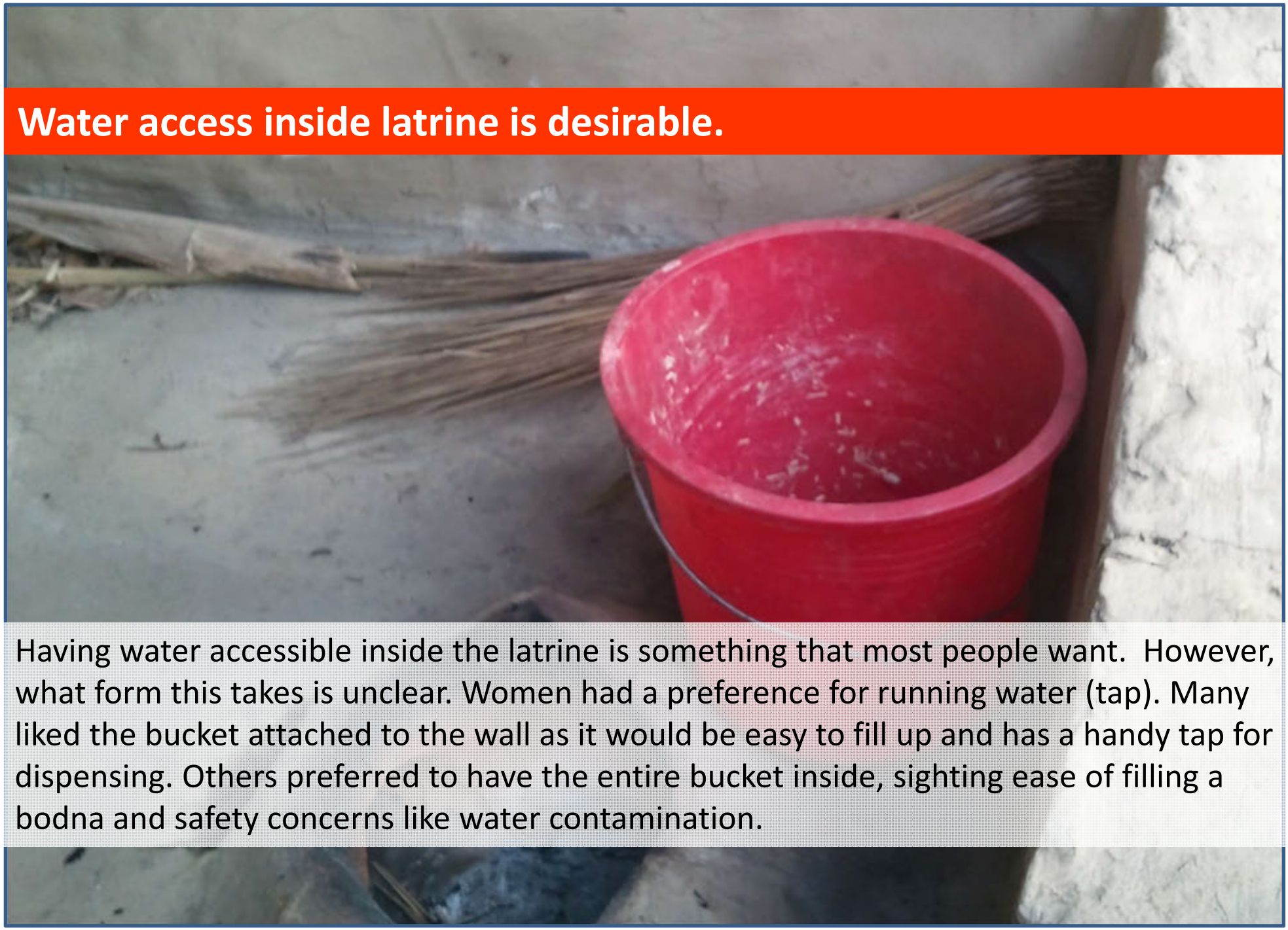
**Colored paper.** Used to better understand aesthetic desires and perceptions.

**Trap designs.** Used to assess villagers' knowledge and perceptions of water traps and their purpose.

## Shelter superstructure is considered before latrine substructure.

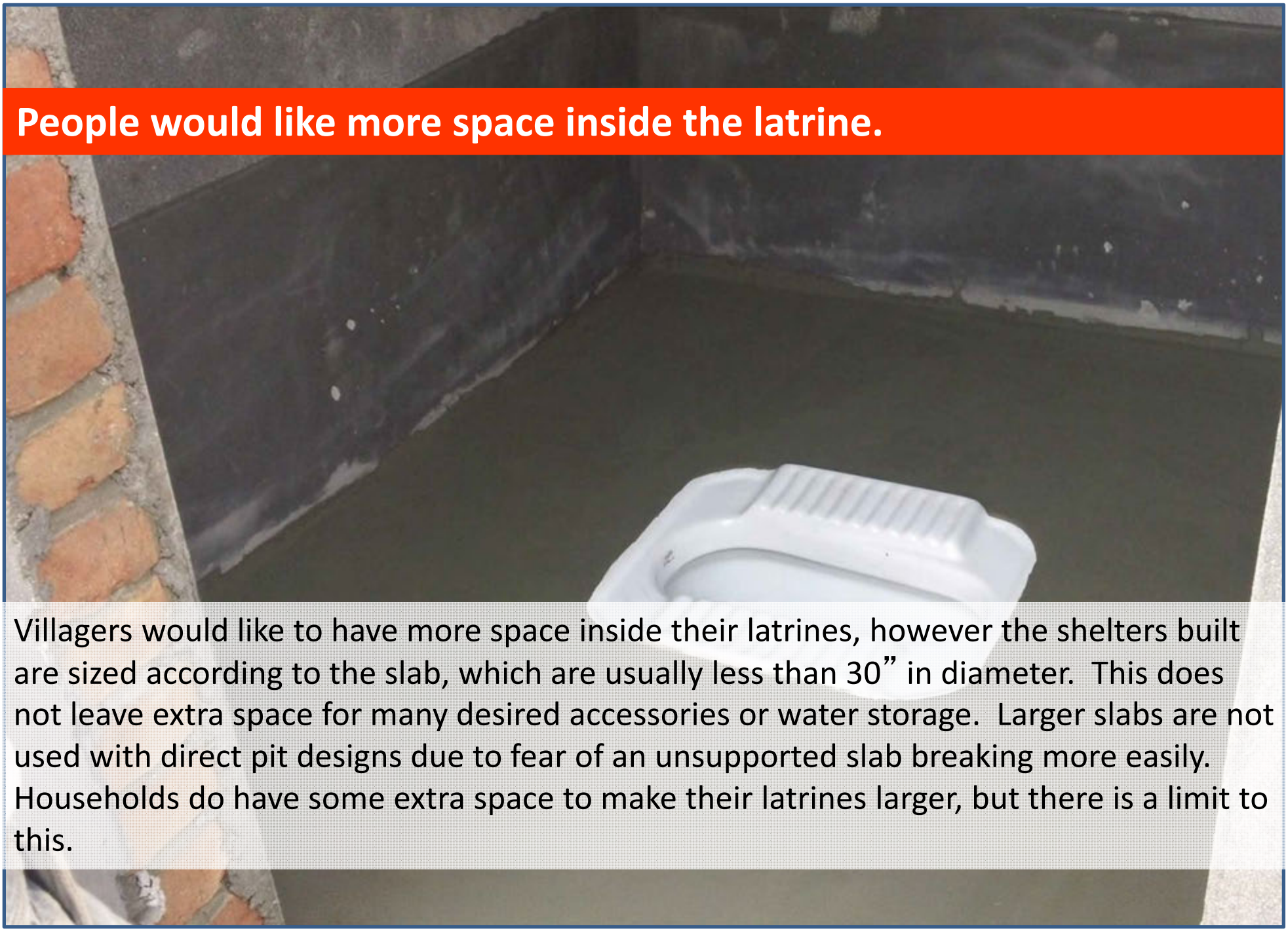
When talking about latrines, villagers almost always discuss the superstructure first. The latrine substructure seems to be a secondary consideration.

# Water access inside latrine is desirable.



Having water accessible inside the latrine is something that most people want. However, what form this takes is unclear. Women had a preference for running water (tap). Many liked the bucket attached to the wall as it would be easy to fill up and has a handy tap for dispensing. Others preferred to have the entire bucket inside, sighting ease of filling a bodna and safety concerns like water contamination.

# People would like more space inside the latrine.



Villagers would like to have more space inside their latrines, however the shelters built are sized according to the slab, which are usually less than 30” in diameter. This does not leave extra space for many desired accessories or water storage. Larger slabs are not used with direct pit designs due to fear of an unsupported slab breaking more easily. Households do have some extra space to make their latrines larger, but there is a limit to this.

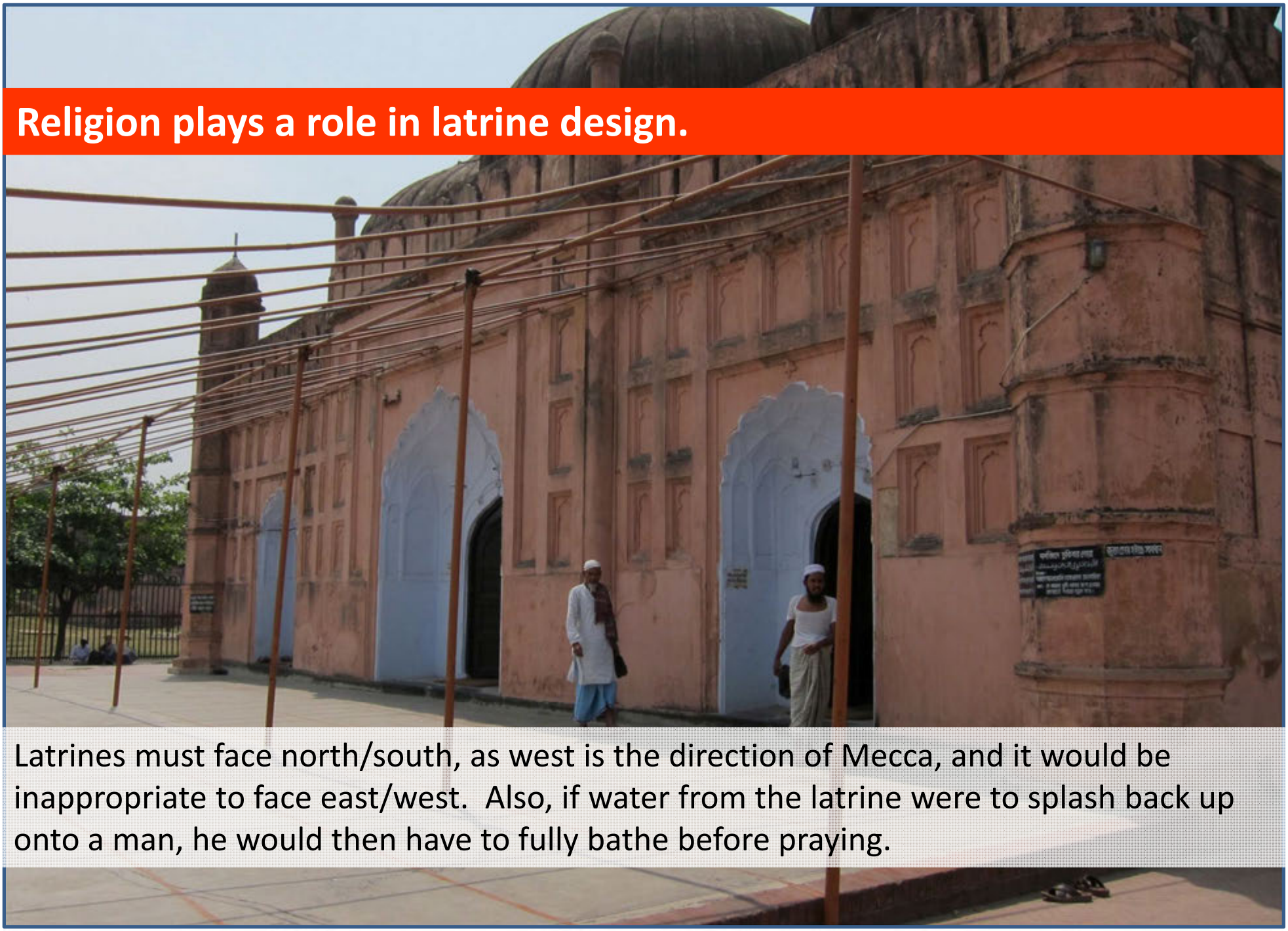
# Ceramic is preferred over plastic.

Ceramic pans are seen as easier to clean than plastic pans due to their shiny surface finish. Plastic products are known to use low quality mixes, so there is a general understanding that plastic will break sooner. However, due to the significantly higher cost of ceramic, plastic pans dominate the market.

# Dark colors hide dirt, light colors show dirt.

When asked about preferred colors for pans, the elders chose darker colors so that the dirtiness would not be seen. The younger members of the village chose lighter colors in order to more easily see dirt for cleaning. In general cream or yellow color was preferred over pure white. Also, darker colors are thought to make it harder to see inside the latrine where there is often no light.

# Religion plays a role in latrine design.



Latrines must face north/south, as west is the direction of Mecca, and it would be inappropriate to face east/west. Also, if water from the latrine were to splash back up onto a man, he would then have to fully bathe before praying.

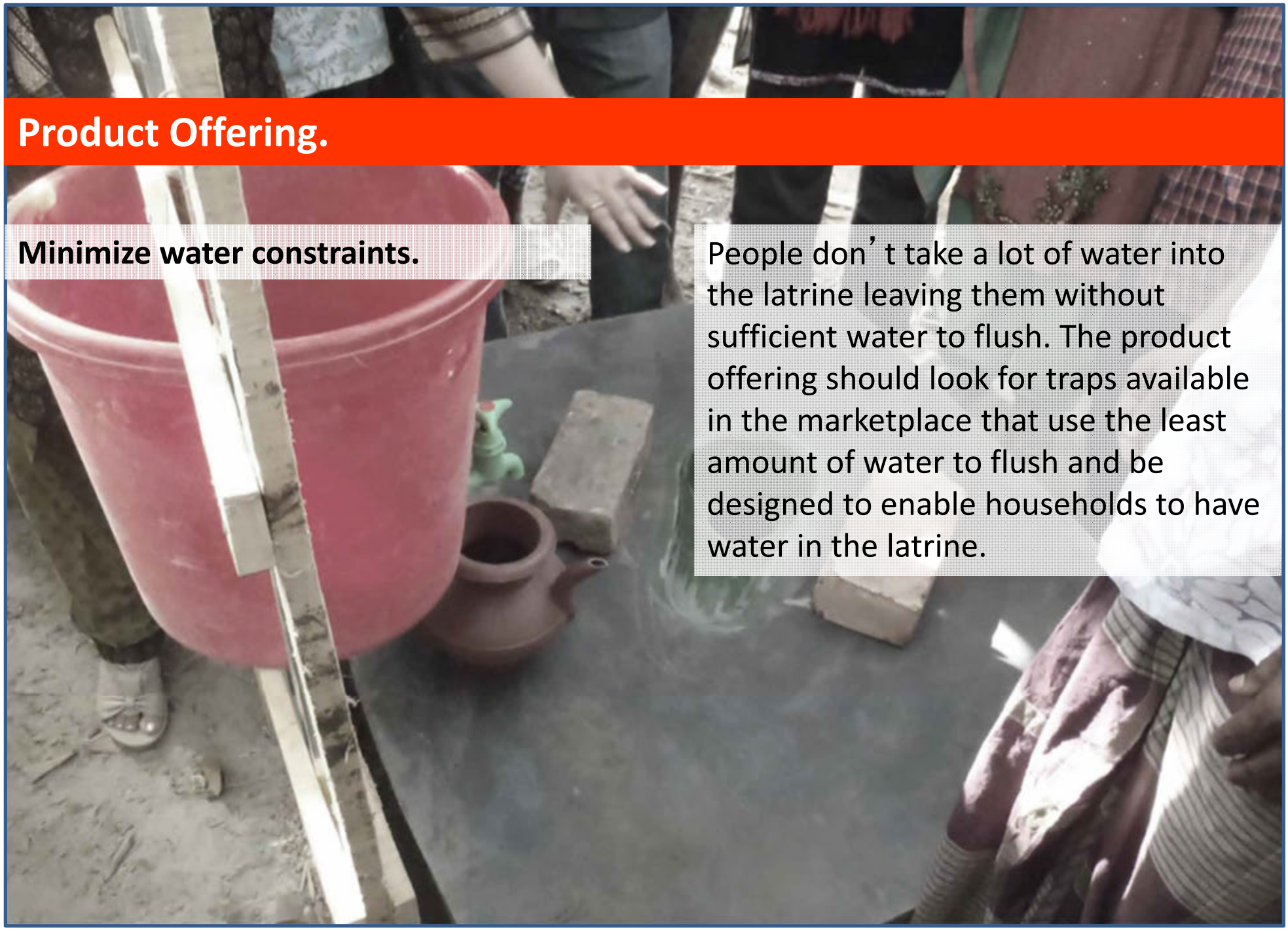
# Flushing and blockage are more of a concern than hygiene.

Three different trap prototypes were presented to villagers: S-Trap, ‘duck’-trap, and purple cup trap. General perceptions were that the small diameter S-trap would use too much water to flush and a larger pipe is needed. People were concerned that the traps would use too much water and suggested solutions like cutting the trap pipe. Ease of flushing and blockage of the trap were of more concern than hygiene.

# Initial Recommendations and Design Principles: Sanitation Marketing Applied to Bangladesh's Rajshahi District

# Product Offering.

# Product Offering.



**Minimize water constraints.**

People don't take a lot of water into the latrine leaving them without sufficient water to flush. The product offering should look for traps available in the marketplace that use the least amount of water to flush and be designed to enable households to have water in the latrine.

# Product Offering.

**Be affordable but stay aspirational.**

Low income rural households are the target market. Product options must be affordable but must also meet their tastes and desires. The product offering must be aspirational and aesthetically pleasing to trigger purchases and satisfy consumer desires.

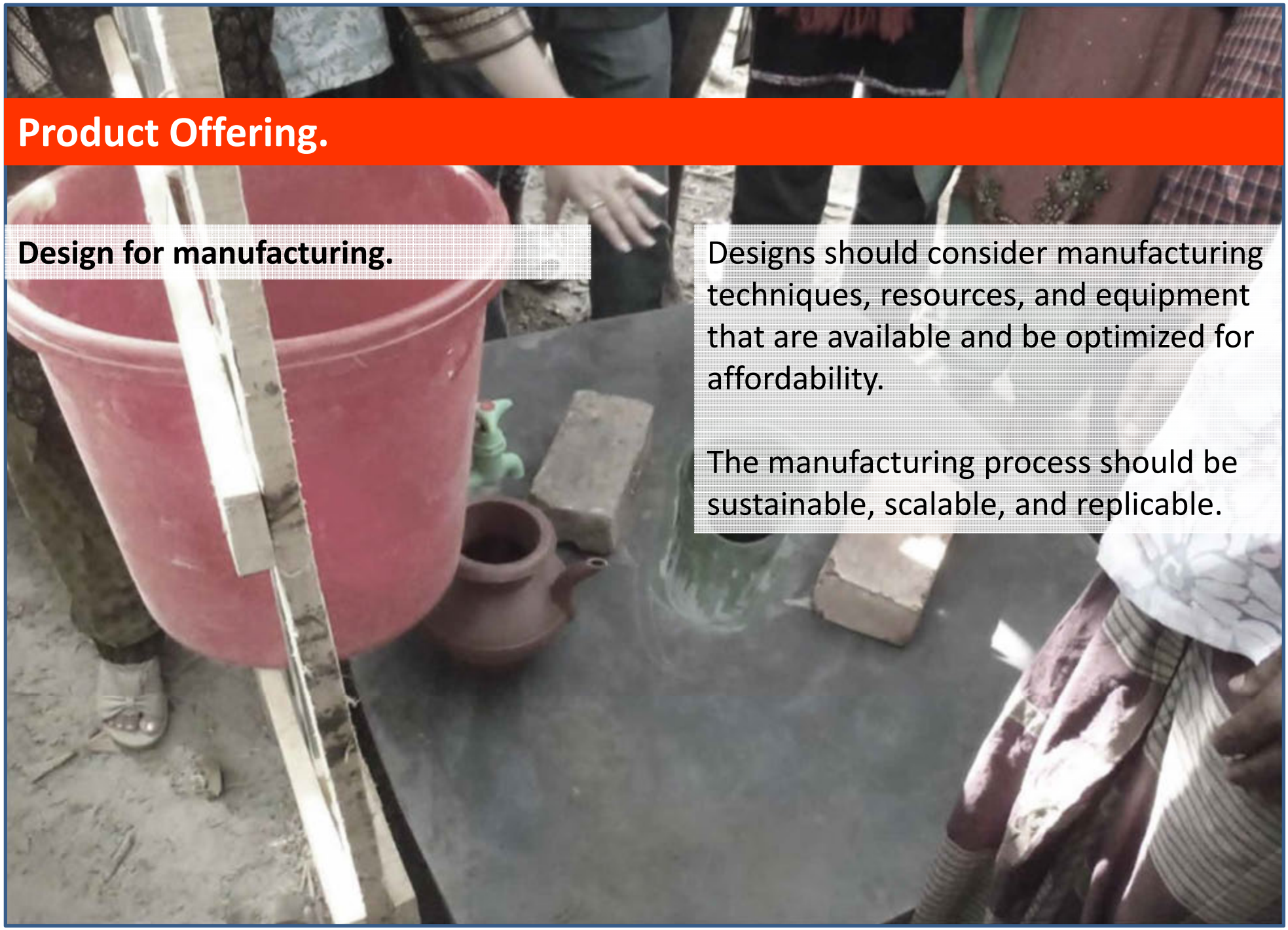
Design for affordability needs to be balanced against product desirability.

# Product Offering.

**Differentiate from what people currently have.**

Only low-cost or high-cost options are available in the market and people are not choosing to upgrade their current latrines. To motivate people to upgrade to a hygienic latrine, design(s) need to offer more than what they currently have and more than what is currently available.

# Product Offering.



## Design for manufacturing.

Designs should consider manufacturing techniques, resources, and equipment that are available and be optimized for affordability.

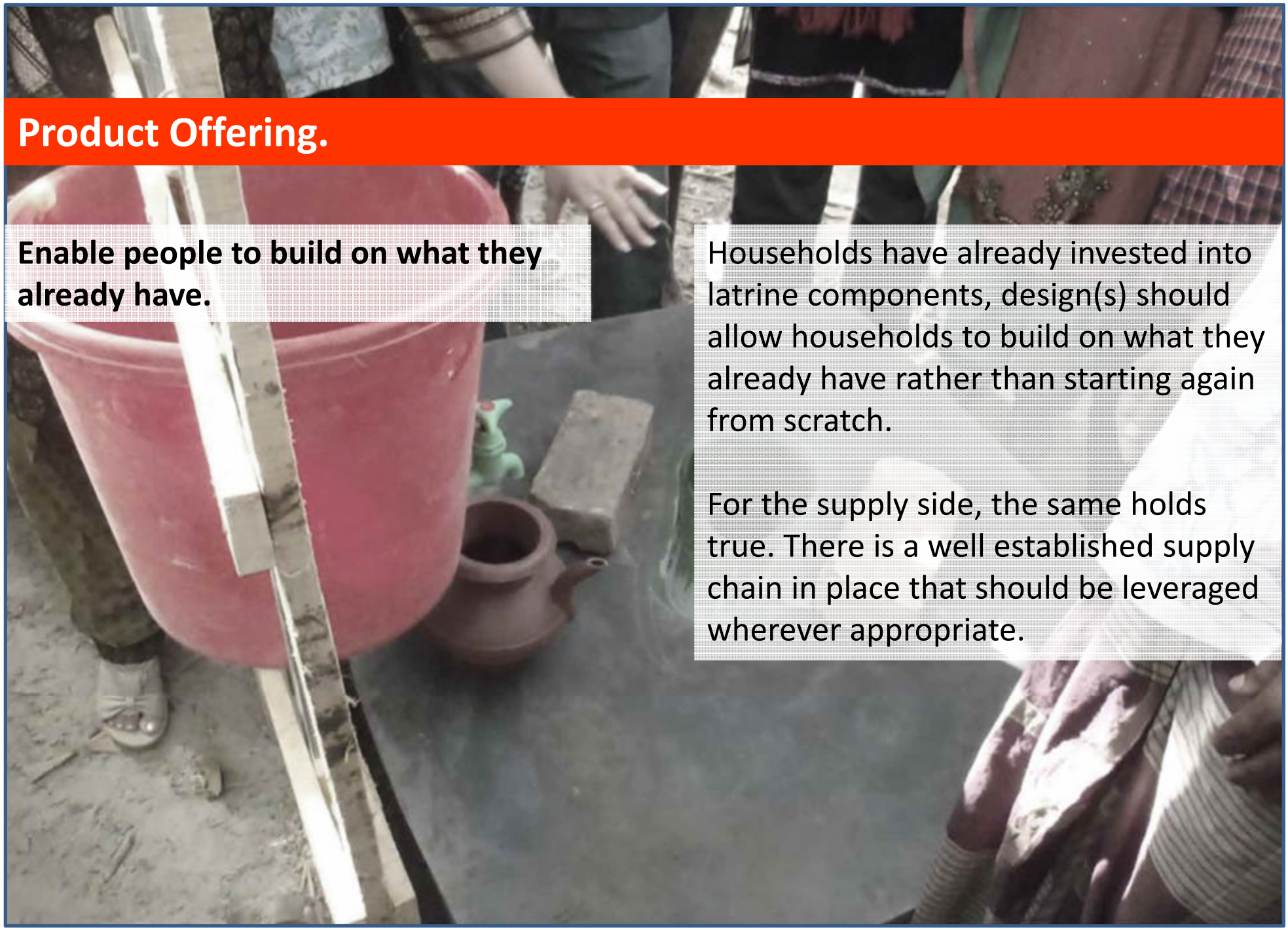
The manufacturing process should be sustainable, scalable, and replicable.

# Product Offering.

**Design for easy transportation.**

Designs should consider size, weight, and packing for the most efficient transport of one or many latrines and minimize breakage.

# Product Offering.

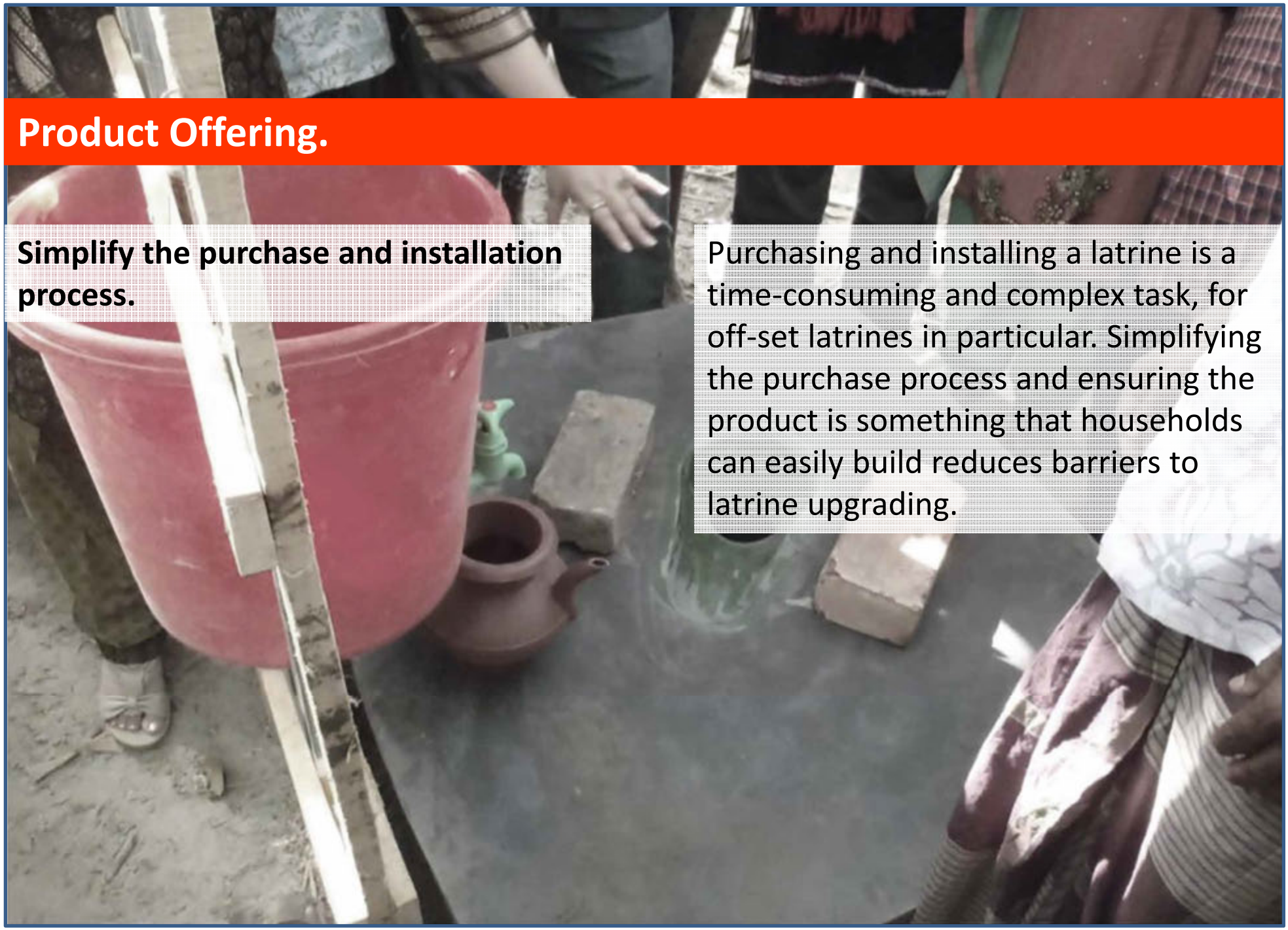


**Enable people to build on what they already have.**

Households have already invested into latrine components, design(s) should allow households to build on what they already have rather than starting again from scratch.

For the supply side, the same holds true. There is a well established supply chain in place that should be leveraged wherever appropriate.

# Product Offering.



**Simplify the purchase and installation process.**

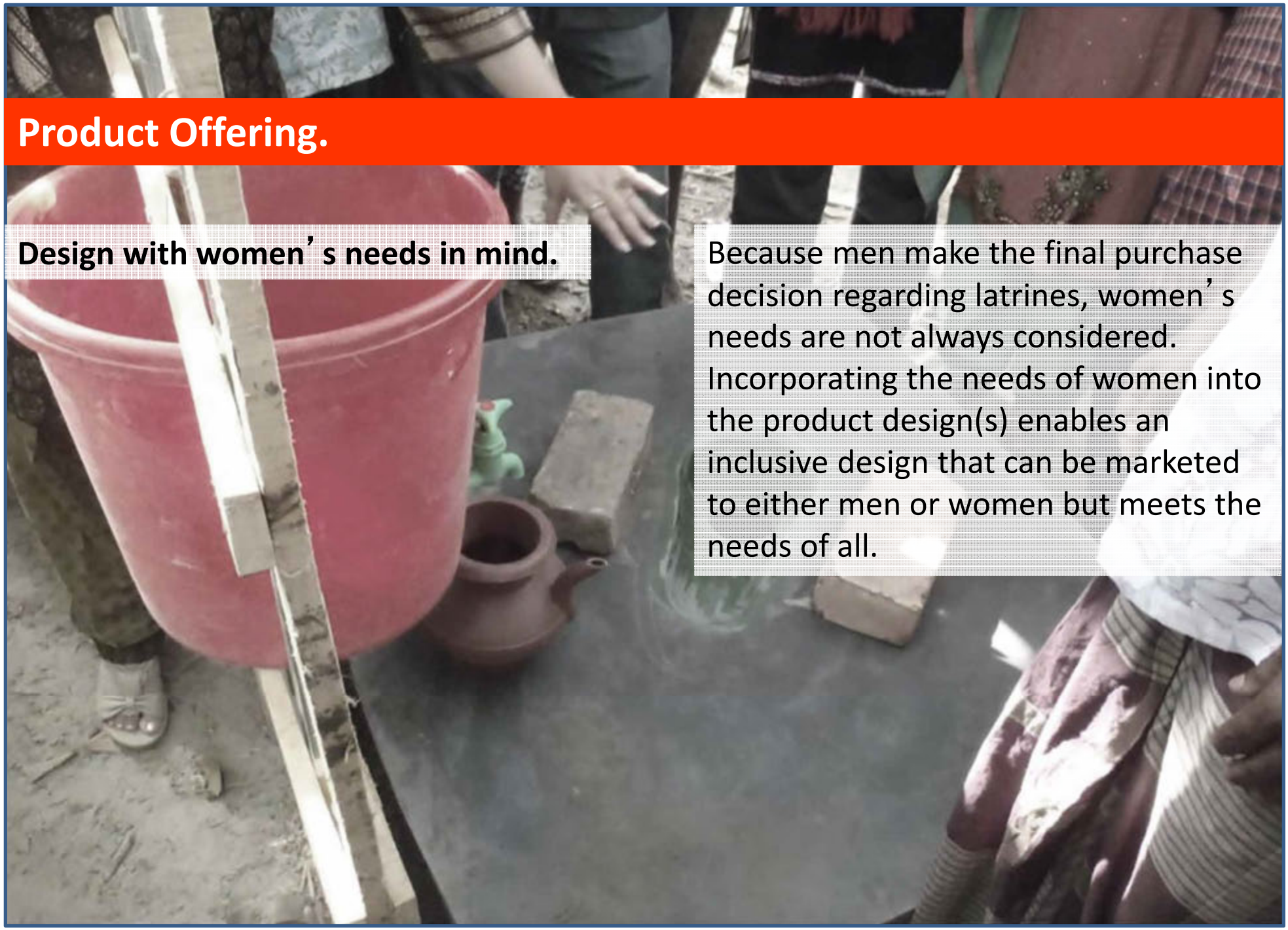
Purchasing and installing a latrine is a time-consuming and complex task, for off-set latrines in particular. Simplifying the purchase process and ensuring the product is something that households can easily build reduces barriers to latrine upgrading.

# Product Offering.

**Design for quality thus longevity.**

Current latrines are replaced as often as every 2-3 years. Offering a quality product that lasts longer will reduce the maintenance costs for a household.

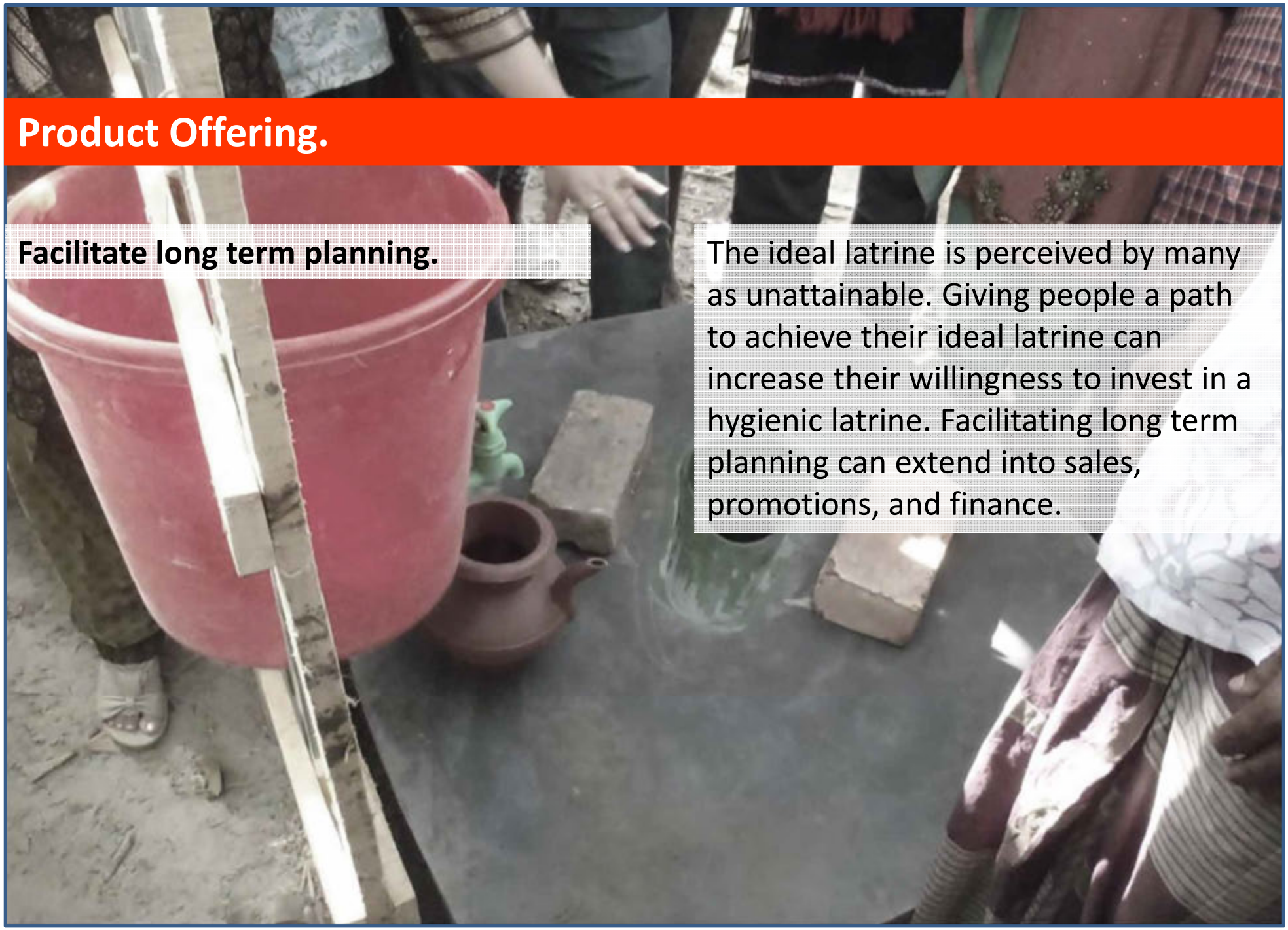
# Product Offering.



**Design with women's needs in mind.**

Because men make the final purchase decision regarding latrines, women's needs are not always considered. Incorporating the needs of women into the product design(s) enables an inclusive design that can be marketed to either men or women but meets the needs of all.

# Product Offering.



**Facilitate long term planning.**

The ideal latrine is perceived by many as unattainable. Giving people a path to achieve their ideal latrine can increase their willingness to invest in a hygienic latrine. Facilitating long term planning can extend into sales, promotions, and finance.

# Sales and Promotion.

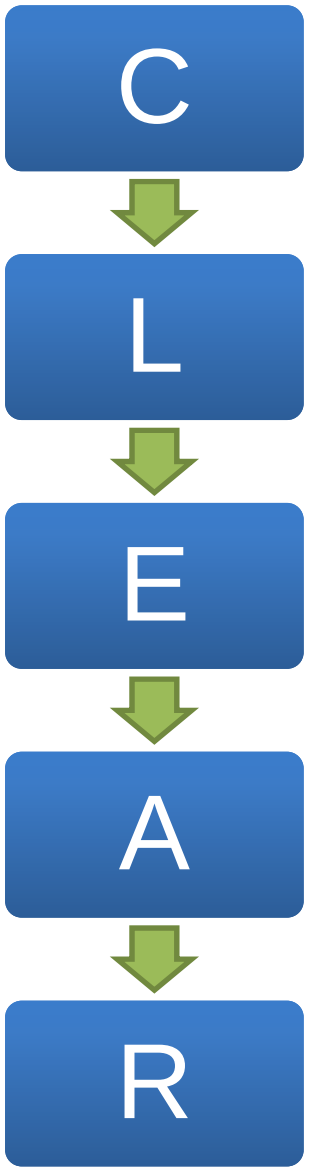
# Sales and Promotion.

**Sell to needs and not to price.**

By selling to customers needs and messaging around attributes that people care about, latrine businesses will be better positioned to expand their product offering and motivate households to upgrade to a hygienic latrine.

# CLEAR™ Selling : Selling to Needs

## Sales and Promotion.




**CONNECT personally**

- Introduce yourself and establish rapport
- Explain why you are there

**LEARN about the situation using the FSB**

- Ask key questions
- Understand their situation

**EDUCATE appropriately**

- Respond to the needs you found in Learn
- Describe the features and benefits
- Customize it to the family you're with

**ASK for action**

- Ask questions to check their interest
- Ask the closing question

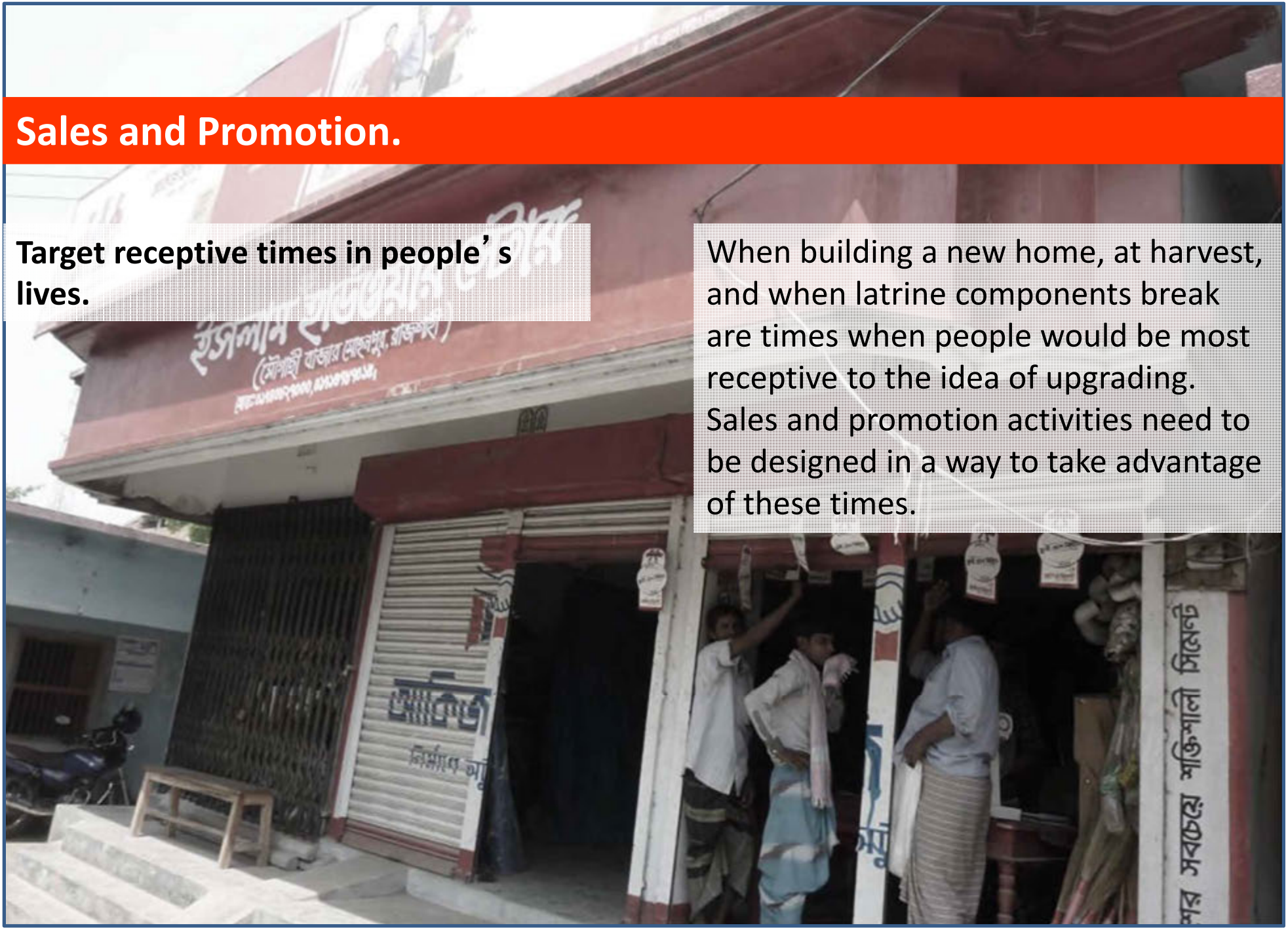
**RESOLVE any blocks or concerns**

- S/A™, replay the buying problem and ask for others
- Use Precision Listening™ to fully understand
- Resolve the real concern with 4-R

# Sales and Promotion.

**Target receptive times in people's lives.**

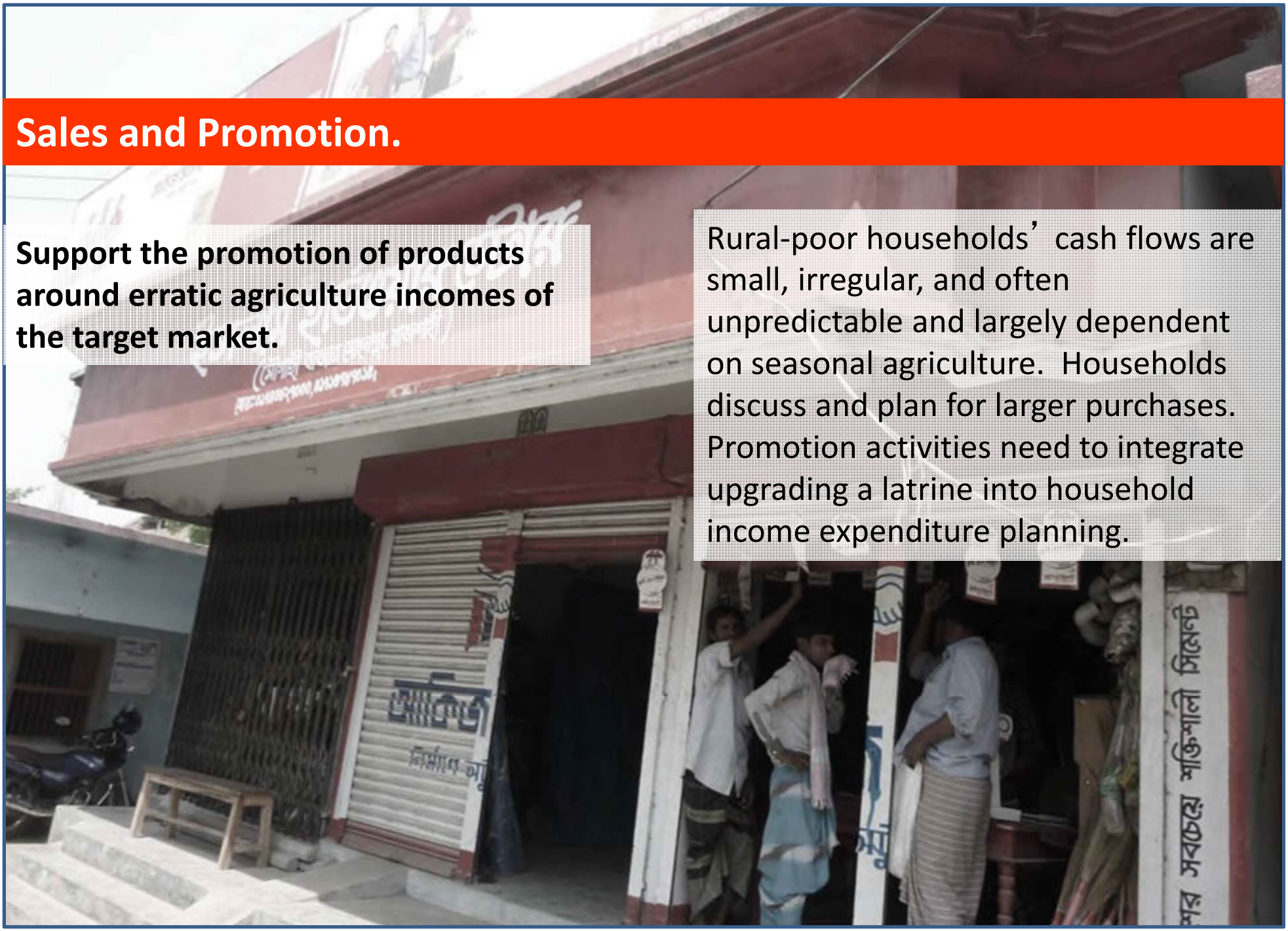
When building a new home, at harvest, and when latrine components break are times when people would be most receptive to the idea of upgrading. Sales and promotion activities need to be designed in a way to take advantage of these times.



# Sales and Promotion.

**Support the promotion of products around erratic agriculture incomes of the target market.**

Rural-poor households' cash flows are small, irregular, and often unpredictable and largely dependent on seasonal agriculture. Households discuss and plan for larger purchases. Promotion activities need to integrate upgrading a latrine into household income expenditure planning.



# Sales and Promotion.

**Go where people are. Don't make them come to you.**

People do not frequently leave the village therefore businesses need to bring products and services to the people, meeting them in their villages. By bringing solutions to where villagers live and where they spend the majority of their time, businesses can overcome key purchase barriers of time and complexity of the purchase process.

# Branding.

# Branding.

**Leverage branding opportunities to promote hygienic latrines.**

There are many known and trusted brands within the latrine supply chain. There is high brand awareness for in particular cleaning products (Harpic) and cement. There may be a number of ways to successfully leverage existing brands to increase the adoption of hygienic latrines.

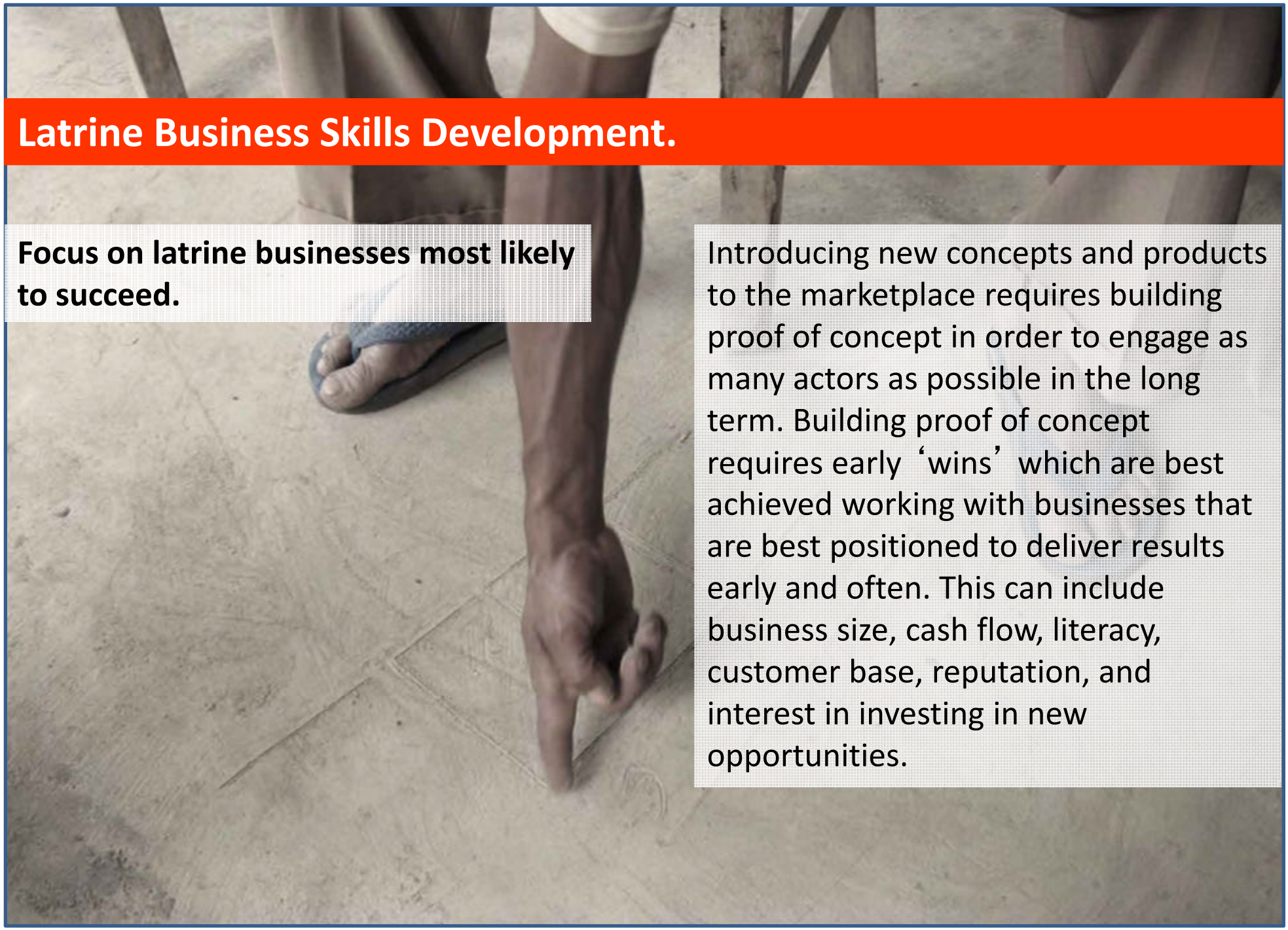
# Finance.

# Finance.

**Leverage existing financial institutions.**

Several financial institutions have a large client base at the rural village level. Financing options for sanitation should look to leverage these existing larger client bases. Building on existing client bases and institutional infrastructure is more cost effective for all stakeholders.

# Latrine Business Skills Development.



# Latrine Business Skills Development.

**Focus on latrine businesses most likely to succeed.**

Introducing new concepts and products to the marketplace requires building proof of concept in order to engage as many actors as possible in the long term. Building proof of concept requires early ‘wins’ which are best achieved working with businesses that are best positioned to deliver results early and often. This can include business size, cash flow, literacy, customer base, reputation, and interest in investing in new opportunities.

# Latrine Business Skills Development.

**Teach latrine businesses to sell to need rather than price.**

Latrine businesses are not currently selling beyond price. Businesses need to learn how to sell beyond price in order to motivate households to upgrade to hygienic latrines that meet their aspirations.

# Latrine Business Skills Development.

**Fill specific knowledge gaps that will enable businesses to be more financially sustainable.**

Latrine businesses lack knowledge critical to their long-term financial sustainability. Specific knowledge gaps to fill include:

- Quality concrete production
- Understanding of sanitation, what is a hygienic latrine, and how they can capitalize on the opportunity.
- Cost and profit structure of products and services they provide.

# Public Private Partnership Platform.

# Public Private Partnership Platform.

**Develop social marketing messages and tools that the private sector and government can use to promote hygienic latrines.**

Developing harmonized social marketing tools that businesses, government, and NGOs can use to promote hygienic latrines, creating a single voice in consumers' minds. This is more effective at fostering sustainable behavior change and generating demand.

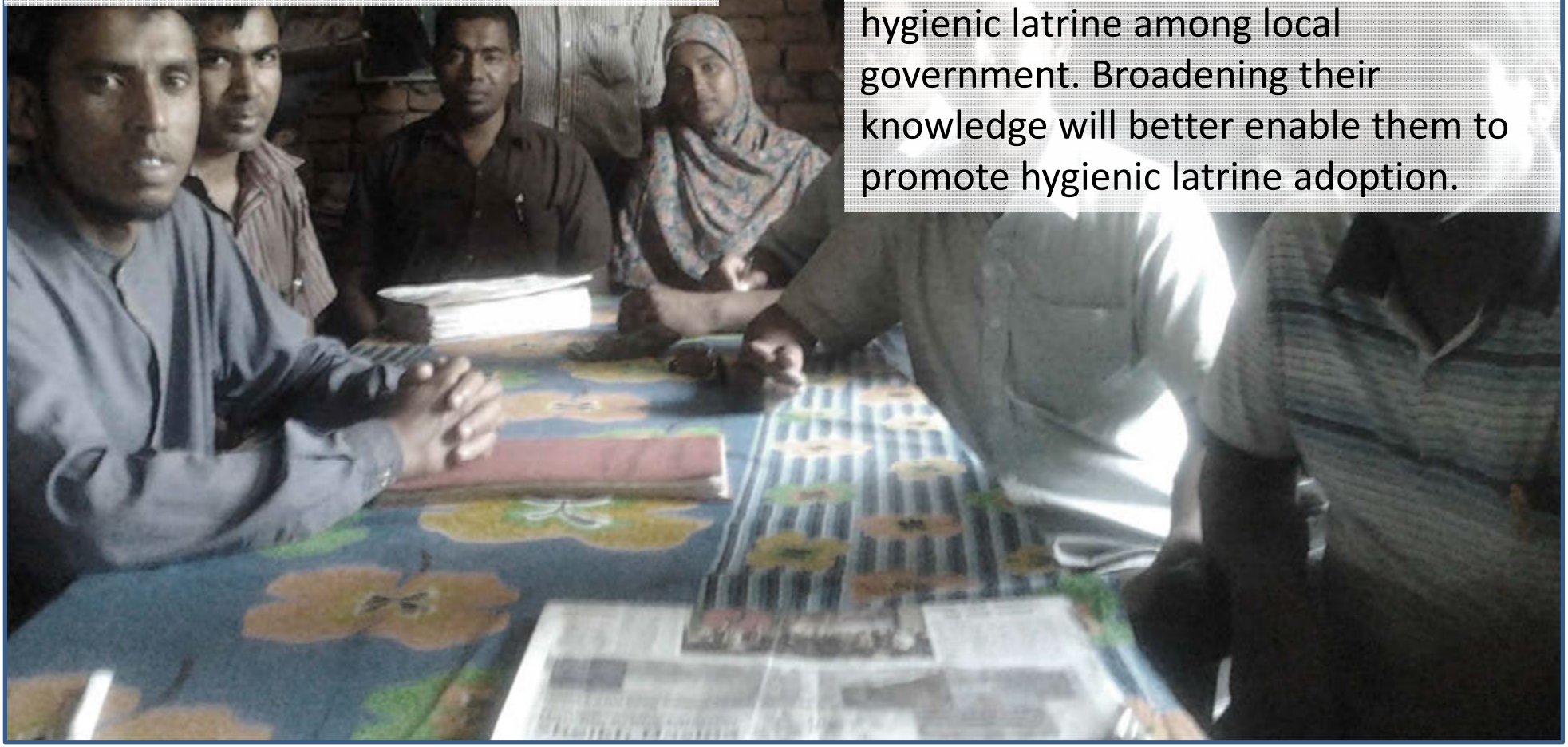
# Public Private Partnership Platform.

**Leverage existing meetings and committees to connect latrine businesses with local government.**

There are a number of existing meetings and committees already established at local levels. Leveraging these to establish connections between government and latrine businesses can create more stakeholder buy in and instills legitimacy which creates a more sustainable platform.

# Public Private Partnership Platform.

**Broaden local government knowledge on hygienic latrines.**



There is an inconsistent level of knowledge around what constitutes a hygienic latrine among local government. Broadening their knowledge will better enable them to promote hygienic latrine adoption.

# Public Private Partnership Platform.

**Leverage existing sanitation awareness initiatives.**

VERC, local government, and other NGOs are undertaking various sanitation awareness activities that can be leveraged to promote the adoption of hygienic latrines.

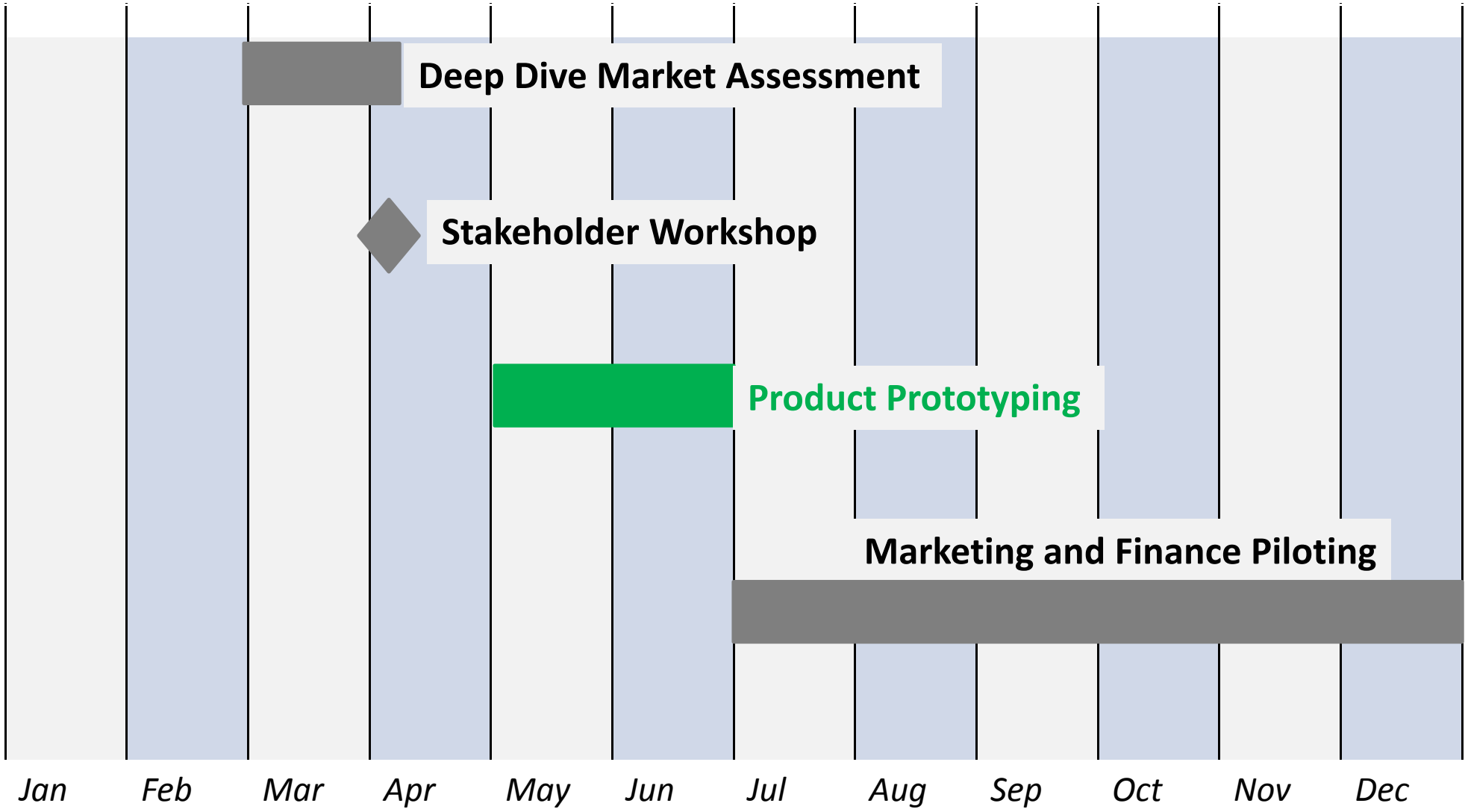
# Public Private Partnership Platform.

**Focus on government that has the greatest potential for impact.**

There are levels of and actors within government that are in a greater potential for impact due to their authority, incentives, and the reach they have in relation to villagers and local markets. Identifying and focusing on those with the greatest potential will result in a more effective and sustainable platform model.

# Next Steps.

# Where we are going.



# Thank you!

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