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**iDE** Powering  
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to end poverty.



Indira is a latrine producer from Isapur Bazaar, Khaliajuri Upazila. Her monthly sales increased from 12,000 BDT/ USD 124 to an average of 50,000 BDT/USD 500 after training and on-the-job coaching supported by SHOUHARDO III.

Photo credit: iDE

## LEARNING BRIEF:

# Leveraging human-centered design and market approaches for Sanitation in Complex Operational Environments (SCORE)

SEPTEMBER 2022

This learning brief was developed as part of an applied research project initiated by the USAID Bureau for Humanitarian Assistance (BHA)-funded Practices, Research and Operations in Water, Sanitation and Hygiene (PRO-WASH) Activity, based on iDE's research. This project aimed to support SHOUHARDO III to identify low-cost, locally available sanitation solutions to meet the needs of populations in the Haor and Char areas of Bangladesh, using principles of human-centered design. SHOUHARDO III is a BHA-funded Resilience Food Security Activity (RFSa) that is now in its seventh year of implementation. More information and additional learning briefs are available [here](#).

## INTRODUCTION & RESEARCH OBJECTIVES

In rural Bangladesh, through the support of favorable government policies, access to sanitation has significantly improved over the last 20 years and the practice of open defecation has drastically decreased. However, the quality of the drinking water supply remains an issue, and 15.4% of the population still does not have access to improved sanitation.<sup>1</sup> In the hard-to-reach Haor and Char areas, the sanitation market system is fragmented, with weak linkages between retailers and sanitation entrepreneurs and limited infrastructure development. Entrepreneurs

<sup>1</sup> According to the Bangladesh MICS 2019 report

have limited incentives to produce quality products or deliver them to hard-to-reach areas. With this in mind, PRO-WASH and SHOUHARDO III, a multi-sectoral food security activity, designed the Sanitation in Complex Operational Environments (SCORE) research activity.

SCORE, as carried out by iDE, aimed to identify low-cost, locally available sanitation solutions that met established quality and safety indicators (Table 1) for populations living in the Haor and Char areas of Bangladesh. This research activity was meant to address sanitation challenges related to seasonal flooding, minimal land availability for household latrines, and the poor and ultra- poor’s inability to afford the existing flood resistant latrine models. SCORE provided actionable recommendations that were taken forward by SHOUHARDO III. As a result, SHOUHARDO III trained 74 latrine producers, developed a network of 74 sales agents (half of whom are women), and improved latrines in over 11,900 households.

TABLE 1: Criteria for Sanitation Solutions

Meet the WHO UNICEF Joint Monitoring Program (JMP) and USAID criteria for ‘limited’ sanitation services	Able to withstand seasonal flooding and inundation and remain effective during both the dry and monsoon seasons	Affordable, costing between 5,000 and 12,000 BT (USD \$60 - \$150)
Include behavioral change solutions that consider appropriateness for context and social norms	Account for safe fecal sludge management during all stages of collection, storage, and final disposal	May include non-technological solutions

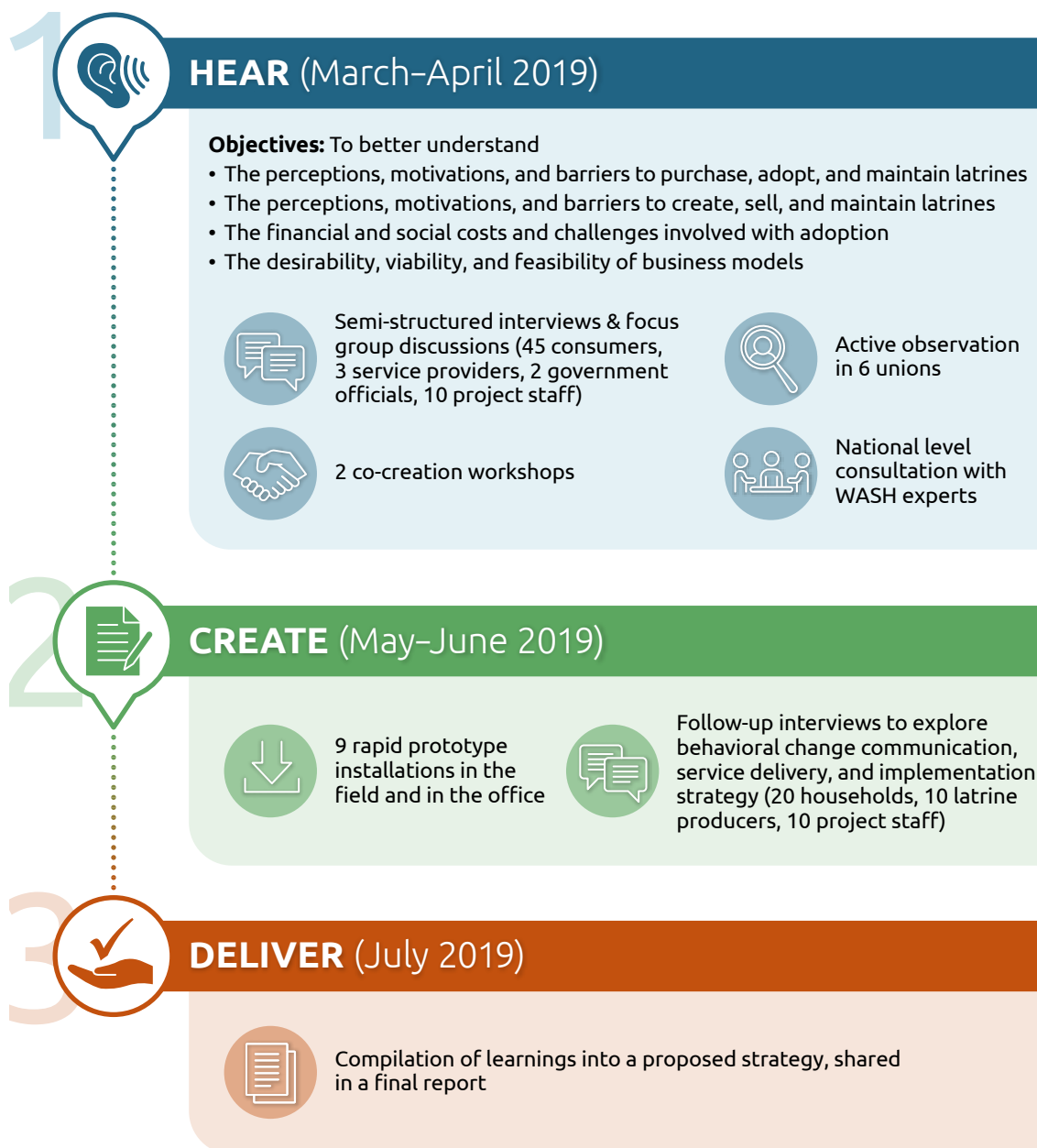
METHODOLOGY

The research was carried out by iDE between March and July 2019. Their approach combined human-centered design and market systems strengthening approaches.

**Human-centered design** (HCD) uses an ethnography-like approach to understand user and stakeholder needs, coupled with methods from product/business design and marketing strategies, to find solutions that are desirable, feasible, and viable. Rapid prototyping or “co-creation” supports the participatory engagement of a variety of stakeholders and design solutions.

**Market systems strengthening** is rooted in the assumption that the development of market systems is the best way to bring about sustainable and scalable change to benefit low-income communities. This seeks to make markets more accessible to poor households, while addressing weaknesses in the market system.

The study was completed over three phases—HEAR, CREATE and DELIVER<sup>2</sup>.



**RECOMMENDATIONS:** To refine this process for future learning efforts and to accelerate the process, the SHOUHARDO III team recommends carrying out a situational analysis and remote interviews based on HCD principles prior to formative field research. This approach would help mitigate the challenges faced by populations unable to prioritize providing extensive feedback during the research process due to more urgent needs. For programs like SHOUHARDO III that are targeting poor and ultra- poor households as well as women and girls, they also recommend carefully monitoring the effects on these specific target populations and further incorporating the desired impact on these sub-sets during the iterative design process.

<sup>2</sup> To learn more about the HCD process, visit <https://hcdforwash.org/>

## KEY FINDINGS

### GEOGRAPHIC AND MARKET CONTEXT

The WASH initiative where SHOUHARDO III is situated is difficult to administer due to the distinct geophysical, socio-cultural, and economic barriers in Chars and Haors that require contextualized solutions. Due to geography, erosion, and increasing population density, it is difficult to maintain sanitation infrastructure. Flooding during the monsoon season can cause pit latrines to overflow. While many sanitation solutions have been identified through previous efforts, they have not been implemented due to issues such as a lack of viable business models, engagement with supply chains and sanitation entrepreneurs, and a mismatch between products and consumer demand. Also, low-income households do not prioritize latrines due to affordability issues. On the supply side, there are only a few service providers, their knowledge of demand is limited, and they do not consider these hard-to-reach areas to be profitable.

### PEOPLE & BEHAVIORAL CHANGE

During the 'hear' phase, six key findings were identified regarding consumer and actor insights, which should inform sanitation solutions:

- 1. Food Security Levels:** The target population should be considered in key segments based on food security levels, each of which will require different sanitation solutions. Households that are performing better may be appropriate for the direct sale of latrines, while subsidies, savings, and loans will be required for households that are performing poorly.
- 2. Seasonality:** The purchase and installation of latrines is seasonal in both the Haor and Char areas, with most purchases occurring just after the harvest in the Chars and during the early monsoon in Haor.
- 3. Awareness and Messaging:** Given the prevalence of open defecation year-round in the Haor and Char areas, a key aspect of any solution must include awareness-building.
- 4. Engaging Users:** Intensive consistent contact with users will be critical for achieving the adoption of improved sanitation behaviors such as improved toilets.
- 5. Preferences:** Households have stated that they want toilets they can use year-round that are flood-resilient. Solutions should build off existing sanitation methods while integrating improvements that are appropriate and feasible.
- 6. Understanding:** Definitions of "improved" latrines are hazy and inconsistent across all levels, including households, project staff, service providers, and the government. Notably absent is the concept of sustained improvement, proper installation, and maintenance.

Follow-up interviews during the 'create' phase explored three specific aspects of behavioral change—messages, mediums, and visual language—to identify the target audience, develop messages, and test outreach and placement strategies. In each region, two messages were tested that were crafted based on evidence from the HEAR phase from the specific area. Char compared messages concerned with practical and health concerns, with aspirational messages focused on wealth. Haor compared encouraging messages with more cautionary ones. In each region, various visual approaches were also tested including photos of people, line drawing, and simple graphics. Overall, safety was found to be the most salient message for changing behavior around purchasing and correctly installing improved latrines. Photographs or videos of aspirational figures were found to be best suited for above-the-line (mass communications) marketing, while simple line drawings depicting common scenes were best suited for below-the-line (interpersonal) marketing.



## PRODUCTS

During the 'create' phase, researchers identified design factors for improved latrines related to the location, superstructure, mid-structure, and substructure for improved latrines.

LOCATION	SUPERSTRUCTURE (SHELTERS)
<ul style="list-style-type: none"><li>• Key barriers to safe mound installation are smell and the availability of space. Prototypes drastically reduced the smell through an improved latrine pan.</li><li>• Raised latrines, which help prevent flooding, took more work than expected. Households were able to provide much of the labor, but if this labor were outsourced, the total cost of installation would increase by a third.</li></ul>	<ul style="list-style-type: none"><li>• All the consumers preferred to have taller shelters. Shorter shelters were tested to use less tin (and hence less costly), however consumers preferred taller shelters.</li><li>• Concrete pillars offer higher resilience; however, they cost three times as much.</li><li>• The inclusion of a transparent roof panel supports women and girls by allowing for better cleaning and use practices, especially menstrual hygiene management.</li></ul>
MID-STRUCTURE (SLABS)	SUBSTRUCTURE (PITS)
<ul style="list-style-type: none"><li>• Cut-out corner designs improved space efficiency for the comfort of women and girls.</li><li>• The complexity of latrine designs should be balanced with cost considerations.</li><li>• Simple, inexpensive steps can protect mounds from erosion, such as covering the mound in rice bags and grass.</li></ul>	<ul style="list-style-type: none"><li>• There is a strong perception that deeper pits are better, despite best practices. Low prices can help motivate fewer rings and an existing interest in the FilTo system can be leveraged to incorporate shallower, wider pits.</li><li>• Creative layouts (e.g. bending pipes) can be used to reduce footprints and to respond to user preferences and behaviors.</li></ul>

## SERVICE DELIVERY MODEL

The 'create' phase further identified key considerations for the service delivery model.

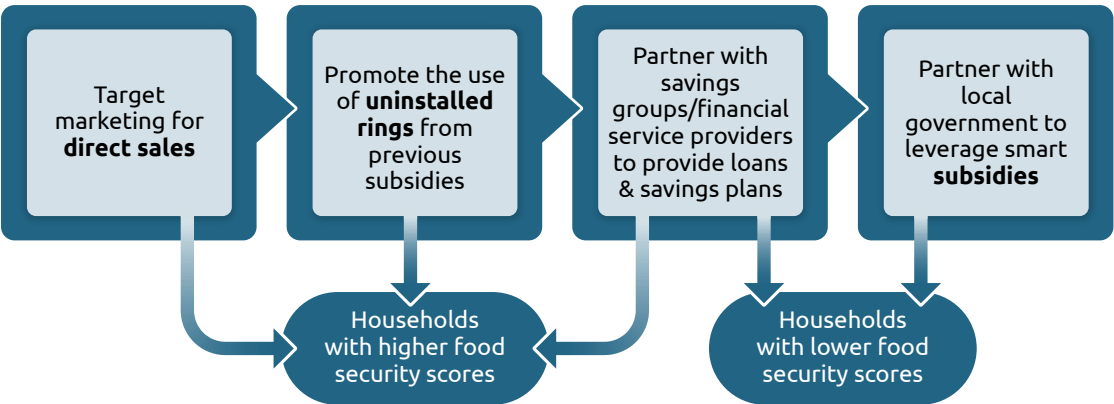
- To ensure sufficient focus on installation, an **agent** is needed to connect households, local service providers (LSPs), and local governments.
- **Latrine producers** can become broader service providers, as some are already interested in expanding their business into installation, sweeper referrals, and repairs.
- Service providers do not inherently possess the required **connections** for sweepers, carpenters, and local governments, nor the microfinancing required to expand their businesses, so support to develop these connections will be critical.
- Households often have valuable **uninstalled components**, such as latrine rings. These rings were distributed as part of previous subsidies and can be leveraged to reduce the price of a latrine by up to a third.

# RECOMMENDATIONS/PROPOSED STRATEGY

Based on the findings, the researchers proposed an implementation strategy, which aims to help all SHOUHARDO III households adopt one of the proposed product solutions. The strategy is based on three pillars:



To achieve this goal, the strategy proposes four approaches targeting specific household, based on their performance against key food security indicators:



## SANITATION PRODUCT & SERVICE SOLUTIONS

**Latrines:** Sanitation solutions will address four levels: 1) technology; 2) components; 3) installation; and 4) maintenance. The solutions incorporate hardware designed to meet the needs of flood-prone areas, with software elements incorporated into strategic behavioral change and a comprehensive business model. iDE recommends a suite of four unique latrine designs. All designs include the SaTo pan, which features a tamper-proof water-seal that reduces smell, one of the key barriers. iDE recommends using the brand name “Nirapod,” which combines the Bangla word for safe, “nirapad,” and the English word “pod,” which means a streamlined enclosure, housing, or detachable container.

BASIC	BASIC+
This latrine is a simple low-cost pit latrine, where the squatting slab sits directly on top of the pit. The pit is lined with three concrete rings. The squatting slab has a trap door latrine pan that keeps away flies and blocks smell. This latrine includes a corrugated iron (tin) shelter with bamboo pillars, which is wider than traditional designs.	This design includes three upgrades to the Basic design: (1) concrete pillars are used in the shelter instead of bamboo, with a transparent roof panel for light; (2) the squatting slab is square, which allows for more space; (3) the pit includes FilTo, a low-cost onsite Fecal Sludge Management system, which increases leaching, decreases the volume of sludge in the tank, performs primary treatment of the sludge, and promotes safer emptying.
OFFSET	OFFSET+
The Offset design moves the pit from directly underneath the squatting slab, offsetting it by 2-3 feet. The pit remains the same as the Basic+ latrine. Shelter is the same as the basic design.	The Offset+ design includes the same squatting slab and pit as the Offset design. However, the shelter can also be attached to the home. The shelter is the same as the Basic+ design.

TABLE 2: Pricing breakdown of selected sanitation solutions

CHAR	LAND PREPARATION	SLAB	PIT	SHELTER	INSTALLATION AND TRANSPORT	TOTAL	TOTAL USD
1 Basic	HH Labor (not included in costing)	650 - 1000	500 - 600	2700 - 3200	1400 - 2500	5250 - 7300	66 - 91
2 Basic +		1200 - 1400	1200 - 1300	3700 - 4700	Often HH labor to decrease costs	7500 - 9900	94 - 124
3 Offset		2300 - 2600	1500 - 1600	2700 - 3200		7900 - 9900	98 - 124
4 Offset+		2300 - 2600	1500 - 1600	3700 - 4700		8900 - 11400	111 - 140

HAOR	SLAB	PIT	SHELTER	INSTALLATION AND TRANSPORT	TOTAL	TOTAL USD
1 Basic	900 - 1000	800 - 900	2700 - 3200	1800 - 3000	6200 - 8100	76 - 101
2 Basic +	1000 - 1200	2000 - 2200	3700 - 4700		8500 - 11100	106 - 139
3 Offset	2200 - 2500	2200 - 2500	2700 - 3200		8900 - 11200	111 - 140
4 Offset+	2200 - 2500	2200 - 2500	3700 - 4700		9900 - 12700	124 - 159

**Sweeping Services:** For sweeping services, iDE recommends the FilTo FSM solution<sup>3</sup>, which aids in keeping sludge in shallower pits and helps to drain liquid, making it safer to move. Prior to sweeping, households should use ash or sawdust to reduce smell and soak up the remaining liquid in the pit. Pits should be swept before the monsoon each year. Since this will require a difficult behavioral change in the Haor, including education to increase the fertility of poor-quality soil.

**Cost:** The proposed solutions meet the affordability criteria (between 5,000 and 12,000 BDT/USD \$60 – \$150) and are commercially viable. Households that are willing to contribute existing rings/equipment or labor towards installation could further reduce costs. While households will likely select the basic option, offering all levels increases the likelihood that households will upgrade when resources become available.

## DEMAND GENERATION & BEHAVIORAL CHANGE STRATEGY

The proposed behavioral change strategy seeks to communicate four clear messages through both project staff and the private sector, which focus on the key theme of safety and highlight the full-service delivery modality, rather than just certain components.

### Recommended Messaging:



iDE recommends two types of behavioral change interventions: “below-the-line” marketing (behavioral messaging) and “above-the-line” marketing (demand creation).

**“Below-the-Line” Marketing:** Cartoons or simple graphic line drawings that clearly show the target audience understandable concepts of safety along with individuals who live in similar circumstances. These messages are recommended for flipcharts and other “below-the-line” marketing techniques. Such messaging should be done at the household and community levels by NGO actors who are trusted by the consumers and should include mixed male/female groups of all ages. Such messaging may target influential stakeholders or potential customers.

<sup>3</sup> A low-cost onsite Fecal Sludge Management system, which increases leaching, decreases the volume of sludge in the tank, performs primary treatment of the sludge in the tank, and promotes safer emptying.

**“Above-the-Line” Marketing:** Photographs/videos of trusted individuals such as NGO workers and health workers are recommended for billboards, TV, radio, melas (county fairs), and other “above-the-line” marketing techniques. Television is the most trusted of all media forms, but the costs are high. Billboards and melas are also trusted. Preferred visual language includes aspirational images from urban dwellers, doctors, and NGO workers.

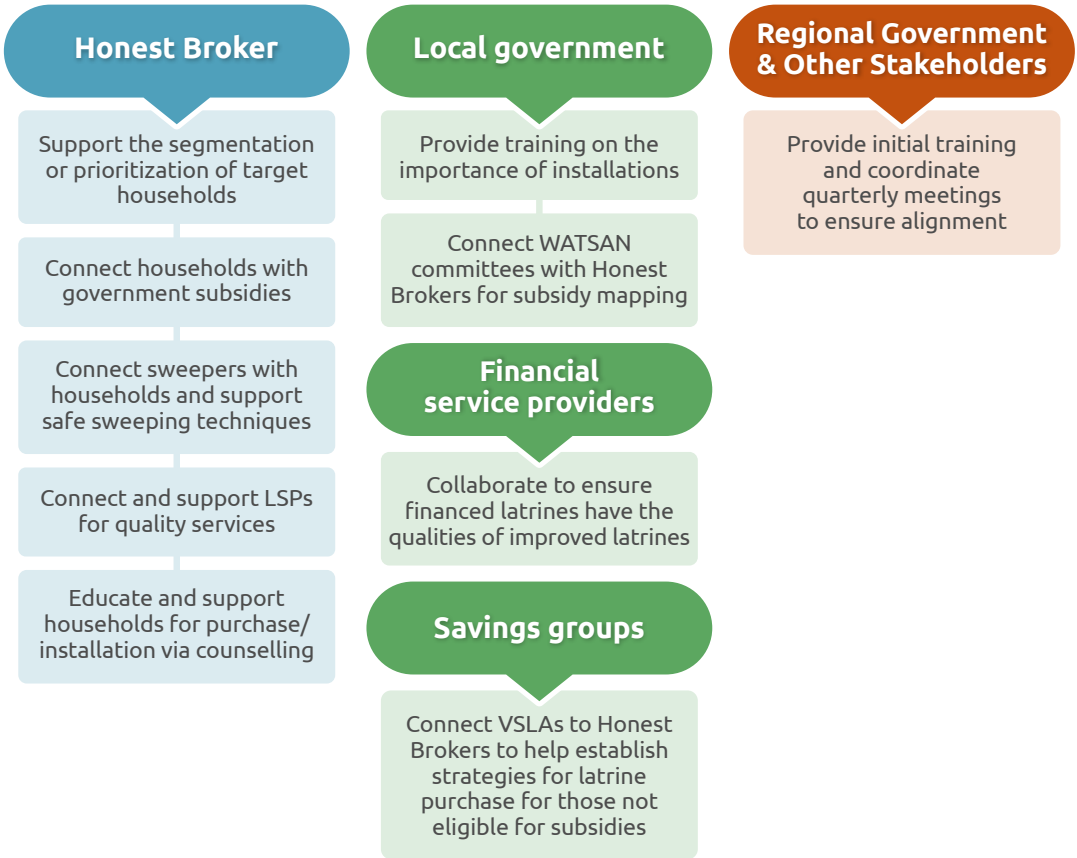
**SUPPLY & SERVICE DELIVERY MODEL**

The biggest missing link in the latrine supply chain in the Haor and Char environments is installation. To ensure proper installation, the Nirapod brand will be sold through trained LSPs and supported by “Honest Brokers,” who are project staff hired by the NGO. These actors will also be linked to latrine sweepers to support the proper maintenance of the latrines, as well as to local governments to facilitate subsidy provision.

To ensure an effective business model and quality service, iDE recommends engaging with three levels of actors: (1) LSPs; (2) regional service providers; and (3) sweepers. LSPs should be provided with training and mentorship to introduce new concepts and encourage quality service provision. Regional service providers should engage in quarterly networking workshops and receive training on the fundamentals of latrine best practices to reduce incorrect advice and effectively support LSPs. Sweepers should receive training on technologies, safety, and linkages as well as dignity-supporting approaches to sweeping. The approach should focus on onsite treatment systems for Haor and Char, which are more cost-effective and require less training and maintenance. Sweepers should also be linked to LSPs to coordinate mass sweepings prior to monsoons.

**MARKET SUPPORT**

In addition to supporting the supply and demand, iDE recommends engaging with three key groups to support broader market development: (1) the Honest Broker, who aims to create a more fair environment and support latrine consumers; (2) the local government, who has a mandate to support water and sanitation at the Union Parishad level, financial service providers, and savings groups; and (3) the regional government and other key stakeholders. The research findings recommended that the following roles and activities be carried out:





## APPLICATION OF FINDINGS

Following the PRO-WASH applied research activity, SHOUHARDO III carried out activities under the Scaling-Up WASH Innovations in Remote Locations (SWIRL) project to strengthen the demand and supply of improved sanitation solutions, which enables the environment by building off the research and adapting to the realities on the ground.

**Demand Creation:** SHOUHARDO III adopted the recommended demand-strengthening strategies, such as carrying out over 184 group sales meetings as well as mass media awareness-raising campaigns and product and service demonstrations, adapting to accommodate COVID-19 restrictions around in-person engagement. Implementation of these approaches revealed that ‘nudges,’ environmental triggers to promote desired behaviors, helped drive users purchase and adopt improved toilets. To support access to finance, latrine producers offered instalment plans. The project also subsidized existing financing options and emphasized tangible and immediate health benefits to households to increase their willingness to pay.



*Rings are important to line the pit. Photo credit iDE*

**Products:** Through implementation, the team discovered that advanced technology is not necessarily the best solution. Rather, the low-cost pan with a water seal was most appropriate. They also continued refining the products, modifying the slab color for easier visibility at night and adding ridges to the footrest to encourage users to wear slippers. This demonstrates the importance of taking an iterative approach during implementation.

**Supply & Service Delivery:** The project also strengthened the service delivery model by training and coaching 75 latrine producers on manufacturing and business practices, incubating and supporting five dealership networks, developing over 50 partnerships with commercial dealers and retailers, and training 75 latrine sales agents, half of whom were women. Having such salespeople visit homes was one of the most effective means to build demand. These actors also had a strong understanding of the local population, adapting their marketing techniques and pinpointing peak times when households could afford latrines. Religious leaders and local elites were also key to influencing behaviors.

**Environmental Considerations:** LSPs and their agents act as an important channel to disseminate information on latrine installation to latrine and land owners to reduce the risk of water contamination. The market actors share such information as part of their sales to gain trust and to provide after-sales support. To avoid contamination of groundwater, recommendations are given around latrine siting (for example, the distance from water sources and location to reduce the risks during floods) and latrine depth. LSPs are trained to suggest not to clean latrine pits during the monsoon season. While SHOUHARDO III has organized capacity development events, these considerations are the responsibility and decision of the households depending on the land size and availability.

**Enabling Environment:** Recognizing the enabling environment was a critical factor for success, as SHOUHARDO III established coordination meetings with development agencies and a public-private dialogue platform to endorse improved sanitation products and train producers. While initially preferring private sector partners for sustainability, the team found that the private sector was limited in the hard-to-reach target areas. On the other hand, engaging local governments proved to be especially fruitful, as they have an allocated budget and mandate to expand sanitation coverage. Such engagement led to increased knowledge on sanitation planning, promotion, implementation and monitoring amongst the public sector actors, and marginalized communities adopting improved toilets. For example, the Union Parishads (sub-district level administrations) play a key role in applying criteria to select households for subsidies and the Department of Public Health and Engineering provide quality

product/equipment guidance as well as installation strategies. The Water and Sanitation Committees have a mandate and budget from the government for providing subsidies to ultra-poor households. By engaging them with the project latrine producers, the public sector actors are aware and informed about hygienic latrines and various technologies, and often through these linkages, they have started procuring latrines from these producers.

## IMPACT

Through the SWIRL initiative, over 2,200 participants were reached via sales meetings. Following these and other sales efforts, 11,900 households benefited from improved latrines, affecting over 47,000 individuals. As a result, these households as well as others in the area are now experiencing improved health outcomes. One participant from Sunamganj district explained, “The elders and children in our family are using the latrines up to now, that make our lives much easier and free from common diseases. During the floods, we even accommodated about six families from our neighbors as they lost access to latrines that time.”



*Latrine producer sales event in a community. Photo credit iDE*

Households that have accessed improved latrines are gaining influence and motivating others to purchase their own, expanding the demand. A participant from Kurigram district shared, “By owning this latrine, the neighbors come to me for consulting on how they can acquire the same, by negotiating with the Union Parishad or another NGO.” There have also been collaboration with various other NGOs working in similar project locations that have purchased latrines through the project-trained latrine producers.

An indirect effect of SWIRL’s sanitation work has been empowering women. Nearly 80% of the participants reached through sales meetings were

women who took part in the decision-making to buy an improved latrine. The program has also empowered women entrepreneurs. Two of the latrine producers and nearly 70% of the sales agents were female which helped them be seen as change-makers in the community.

## UPGRADING TECHNOLOGIES

Households are interested in upgrading their latrines due to sales campaigns, government policies, the influence of LSPs on customers, increases in household sizes, and increased incomes due to growing economic activities. During new home construction, households learn about new types of latrines through various awareness campaigns and courtyard sessions.

Current monitoring data indicates the following upgrades have taken place:

1. Unimproved to basic direct pit latrine: 21,241 Latrines
2. Basic direct pit latrine to offset signal pit latrine: 1,998 Latrines
3. Offset signal pit latrine to offset double pit latrine: 163 Latrines

There are also improvement options such as upgrading to double pits, installing an advanced technology plan, or adding promotional nudges such as colored and non-slip foot rests to improve visibility and safety, or spiked footrests to remind individuals to wear sandals/slippers.

## OUTSTANDING CHALLENGES & WAY FORWARD

While the iterative design and implementation process had led to tangible changes in the target communities, the realities of intervention zones and target groups pose ongoing challenges to sustainable improved sanitation outcomes.

- **Financial Barriers:** Poor and ultra- poor households struggle to pay for even basic sanitation solutions. While latrine producers have offered instalment plans to increase access, the provided loans often become overdue, increasing the financial risk to these suppliers. A more inclusive approach with additional financing solutions is necessary to make improved sanitation products viable to the poor and ultra- poor.
- **Demand-Creation & Market Support:** Amongst poor and ultra- poor households, the willingness to dedicate limited resources to these products is limited when the government is mandated to provide free services. Close coordination between the project team and private sector was necessary to drive the demand and sales of latrines thus far. Identifying appropriate latrine producers proved to be a challenge, and these producers required support from SHOUHARDO III to launch their businesses and adapt to the needs of their clients. Last mile actors also hesitated to engage when they did not perceive financial benefits, so this role was largely driven by program staff. It will be important to further explore options to ensure the continuity of supply and demand after SHOUHARDO III closes out.
- **Natural Disasters:** Despite the improved models, infrastructure damage from flooding is a consistent challenge in the target zones. Poor and ultra- poor households find themselves unable to prioritize resources for repairs or reinstallations after natural disasters.

**Way Forward:** Despite these challenges, the opportunity to handover the sanitation activities to the government following the close-out of SHOUHARDO III is a promising outlook. Given their mandate to scale-up sanitation services, the local government is well-placed to integrate activities carried out under the SWIRL project into their WASH interventions. The SHOUHARDO III team has been actively coordinating with the appropriate contacts and building their capacity to make this transition successful.

## ADDITIONAL RESOURCES

### SCORE Research Outputs and Reports

#### ABOUT PRO-WASH

Practices, Research and Operations in Water, Sanitation and Hygiene is an initiative funded by USAID's Bureau for Humanitarian Assistance (BHA) and is led by Save the Children. PRO-WASH aims to provide support to implementing partners to strengthen the quality of WASH interventions through capacity-strengthening, knowledge-sharing, and applied WASH research opportunities.

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#### ABOUT SHOUHARDO III

SHOUHARDO III is a Resilience Food Security Activity (RFSA) that began in 2015 and is in its seventh year of implementation. This RFSA is led by CARE and is implemented in partnership with six national NGOs and the Government of Bangladesh that seeks to improve gender equitable food and nutrition security and the resilience of vulnerable people in their target regions.

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#### ABOUT IDE

International Development Enterprises (iDE) is a global leader in applying HCD and market-based solutions to tough challenges in global development.

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