



Cambodia Sanitation Marketing Scale-Up Program (SMSU)

Learnings from a decade of implementation



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INTRO TO SANITATION MARKETING SCALE-UP PROGRAM (2009-PRESENT)

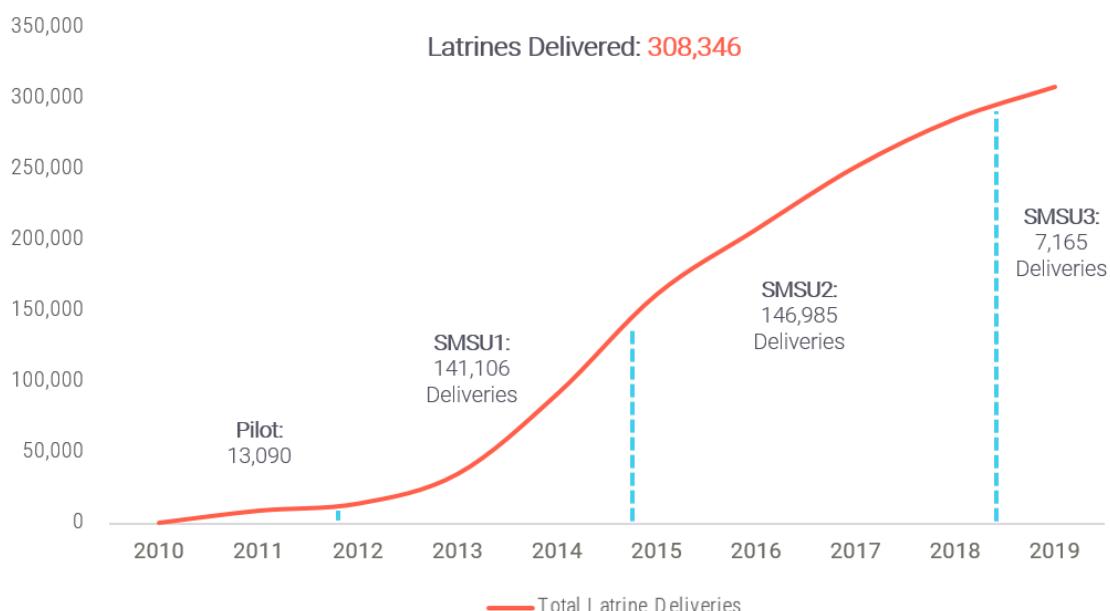
Program background and key impacts

iDE Cambodia's sanitation marketing program began with the 2008-2011 Sanitation Marketing Pilot Project, which was funded by the United States Agency for International Development (USAID) and the World Bank Water and Sanitation Programme (WSP). Building off of the success of the Pilot, the Sanitation Marketing Scale-Up I (SMSU1) project was implemented from 2011-2014, with funding from the Bill & Melinda Gates Foundation, the Stone Family Foundation, and WSP. In November 2014, iDE Cambodia launched Sanitation Marketing Scale-Up II (SMSU2), which ended June 30, 2018. SMSU2 was funded by the Australian Government's Department of Foreign Affairs and Trade (DFAT), the Stone Family Foundation, and the TripAdvisor Foundation. iDE Cambodia officially began Sanitation Marketing Scale-Up III (SMSU3) in July 2018, which will continue until December 2022. At the time of this writing, SMSU3 is being supported by DFAT and the Stone Family Foundation as efforts continue to secure additional funding for the program. In this report "SMSU" will be used to generally refer to the entire program, from the Pilot until the present.

SMSU aimed to scale Sanitation Marketing on a national level in Cambodia across seven provinces: Banteay Meanchey, Kampong Thom, Kandal, Oddar Meanchey, Prey Veng, Siem Reap, and Svay Rieng. While SMSU as a harmonized program refers to all seven provinces, in July 2018, due to funding constraints, SMSU3 stopped its operations in Banteay Meanchey and downsized activities in Oddar Meanchey. Operations will remain limited in Oddar Meanchey until additional funding can be secured to support expanding operations again in this province.

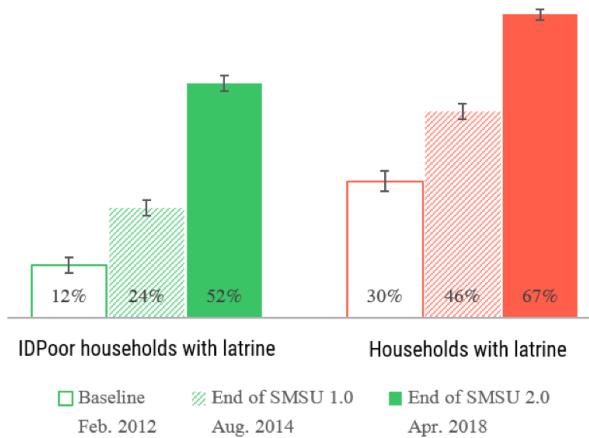
The vision of SMSU was to use the program's principles, methods, and tools to support the replication of Sanitation Marketing globally. Early in its history, SMSU demonstrated that developing markets for sanitation (a.k.a. Sanitation Marketing) is able to contribute to significant increases in latrine coverage. When the Pilot Project began in 2009, improved (pour flush latrine) sanitation coverage in iDE's operating provinces was estimated to be 22%. In February 2012, improved coverage within iDE's operating provinces (as measured by iDE Cambodia's Latrine Count Survey) had reached 29%. By 2014, the coverage rate had increased to 45%, representing a 16 percentage point jump in coverage in less than 2.5 years. In June 2018, latrine coverage in program areas had reached 67%. In total, 305,902 sanitary, pour-flush latrines have been delivered since the program began in 2009, impacting the lives of approximately 1.5 million individuals.

FIGURE 1: SMSU EASY LATRINE DELIVERIES AS OF DECEMBER 2018



[A study conducted by researchers at Georgetown University](#) in 2018 examined iDE's contribution to latrine coverage increases between 2010 and 2014 when we sold our first 140,000 latrines. The study found that iDE's first phase of its sanitation marketing program led to increases in latrine coverage by 19.9 percentage points as well as significant results that, after iDE's intervention, rural diarrhea prevalence in intervention areas decreased by 6.5 percentage points.

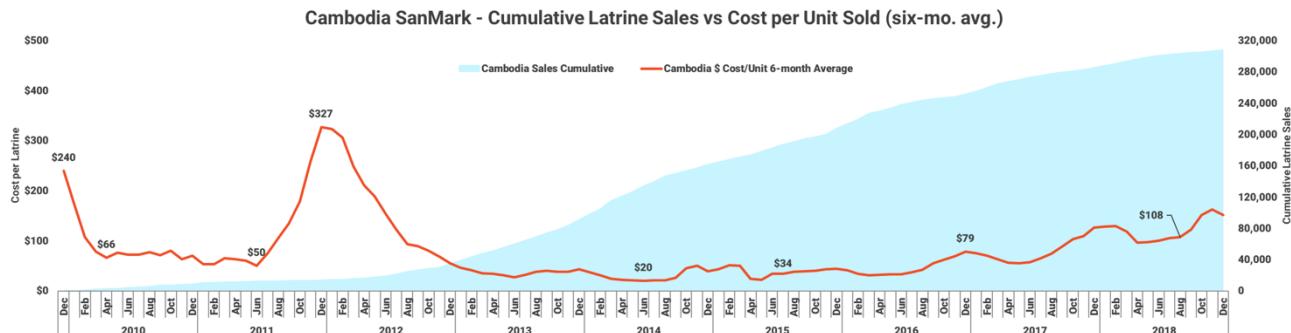
FIGURE 2: LATRINE COVERAGE INCREASE SINCE 2012



Latrine deliveries by the program reached a yearly peak of 70,355 in 2014 and have been declining since then. At 67% coverage in our target areas, the majority of households now have a toilet and the remaining market segment without sanitation is a fraction of what it was when the program began. In other words, the sanitation market has matured and is becoming increasingly saturated. SMSU2 had the original goal of selling 223,000 latrines, however in 2017, iDE revised its delivery target to a more appropriate goal of 175,000 as market saturation became more apparent and the program spent more time testing new ways to reach laggards and late adopters. By the end of SMSU2, the program had delivered 146,985 latrines and successfully piloted new ways to reach challenging market segments, such as financing and product adaptations for poor households and modified designs for people living with disabilities.

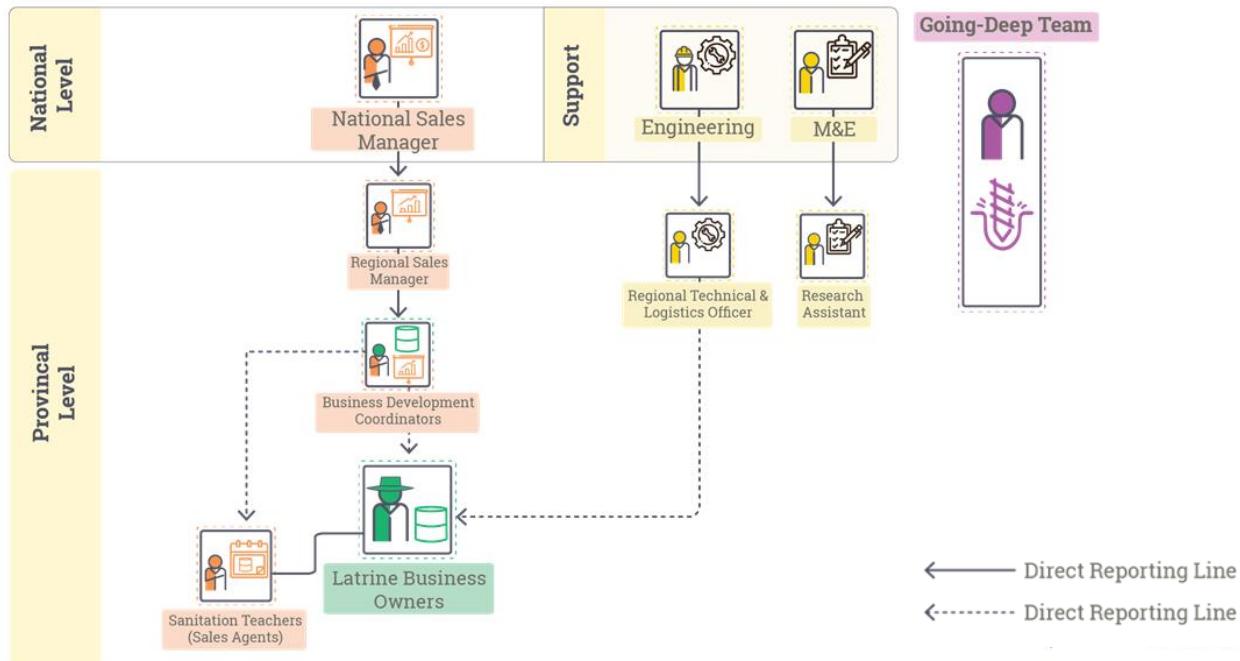
At the beginning of SMSU1 in 2011, the program made a major investment in professionalizing its sales force and building its operations monitoring capacity. The six-month average of the program's cost per latrine delivered reached a peak of \$326 per latrine. After a few months, the resulting increase in program efficiency and scale led to a large decrease in the program's cost per latrine, eventually reaching a low of about \$20 per latrine in 2014. However, in SMSU2, as noted above, the program began experiencing the effects of market saturation as sales became increasingly difficult to make. As a result, the program's cost to deliver each latrine has significantly increased to around \$150 at the end of 2018. In SMSU3, the program has further invested in new channels and mechanisms to reach the remaining market segment more efficiently, including with targeted subsidies and other financing methods (see Section 3.5 and 3.6). It is important to note that while it is not likely that cost-effectiveness for delivery of the Easy Latrine will return to 2014 levels, the program is introducing new products like latrine shelters and pit upgrades, for which the cost-effectiveness is expected to similarly benefit from scale and investments in program efficiency.

FIGURE 3: SMSU CUMULATIVE LATRINE SALES VS COST PER UNIT SOLD



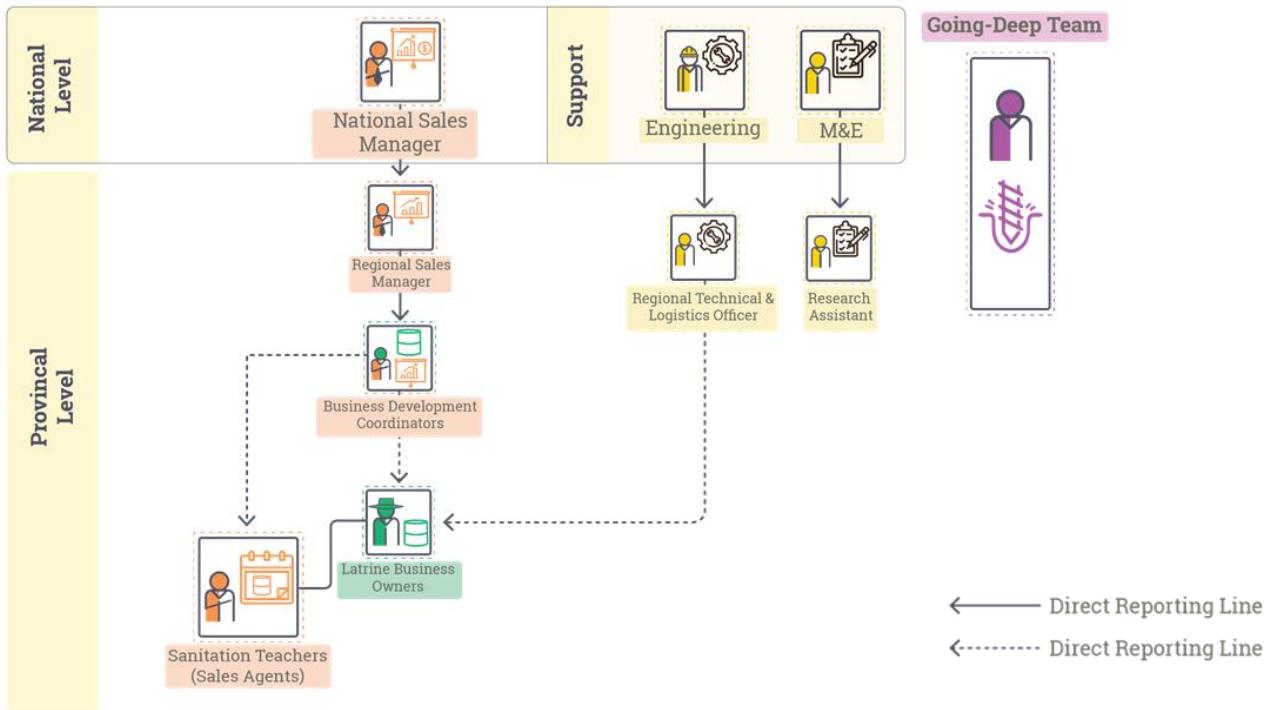
Evolution of program structure

SMSU1 – OPERATIONS REVOLVE AROUND THE LBO (FIGURE 4)



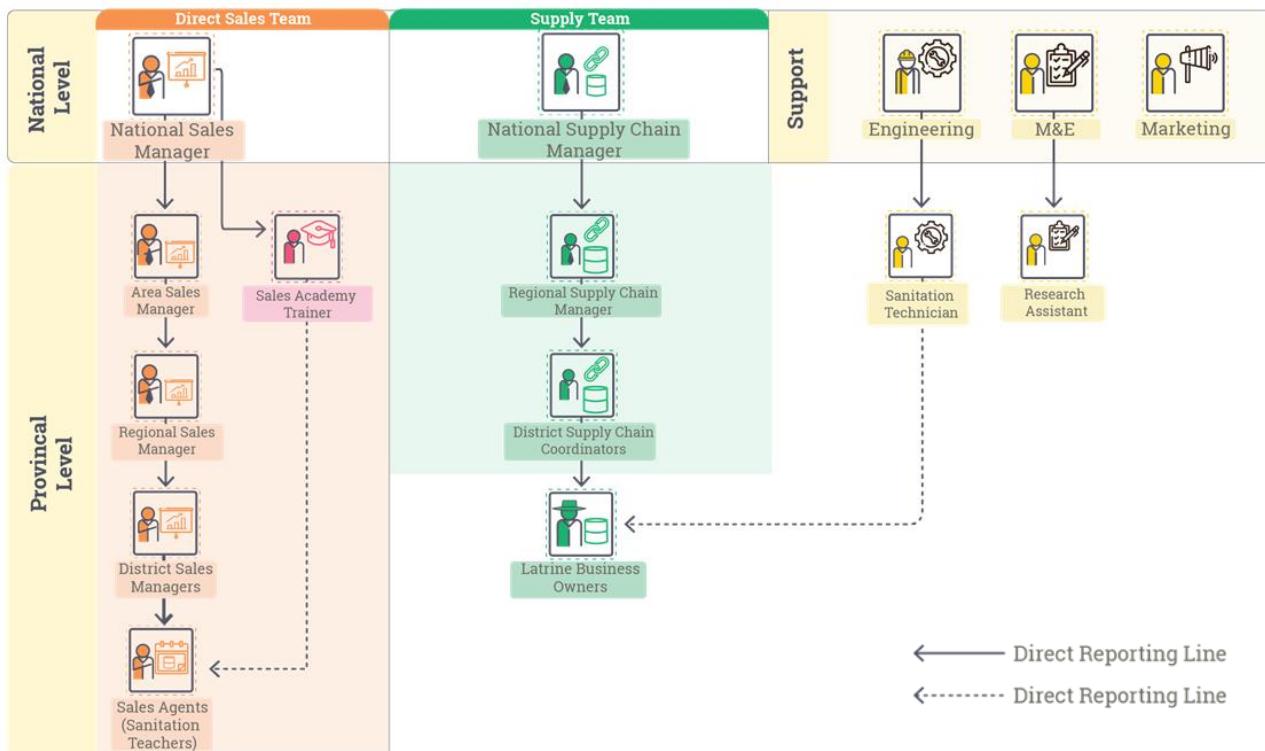
With “proof of concept” from the Pilot that sanitation demand could be leveraged to sell toilets, the program decided that focusing on supporting Latrine Business Owners would be the most cost-effective and sustainable means to reach scale. LBOs were coached to maintain their business and manage a sales force. The “Going Deep” team was a parallel component to the program, based in two of the seven operating provinces: Svay Rieng and Kandal. The objective of Going Deep was on furthering research, learning, and development of best practices for sanitation marketing. The learnings from Going Deep were integrated into the core program throughout the duration of SMSU1. Support functions like engineering and M&E enabled for delivery of technical acumen and impact assessment.

MID-SMSU1 – PROGRAM CHANGES DEMAND GENERATION FOCUS FROM LBO TO SALES AGENTS (FIGURE 5)



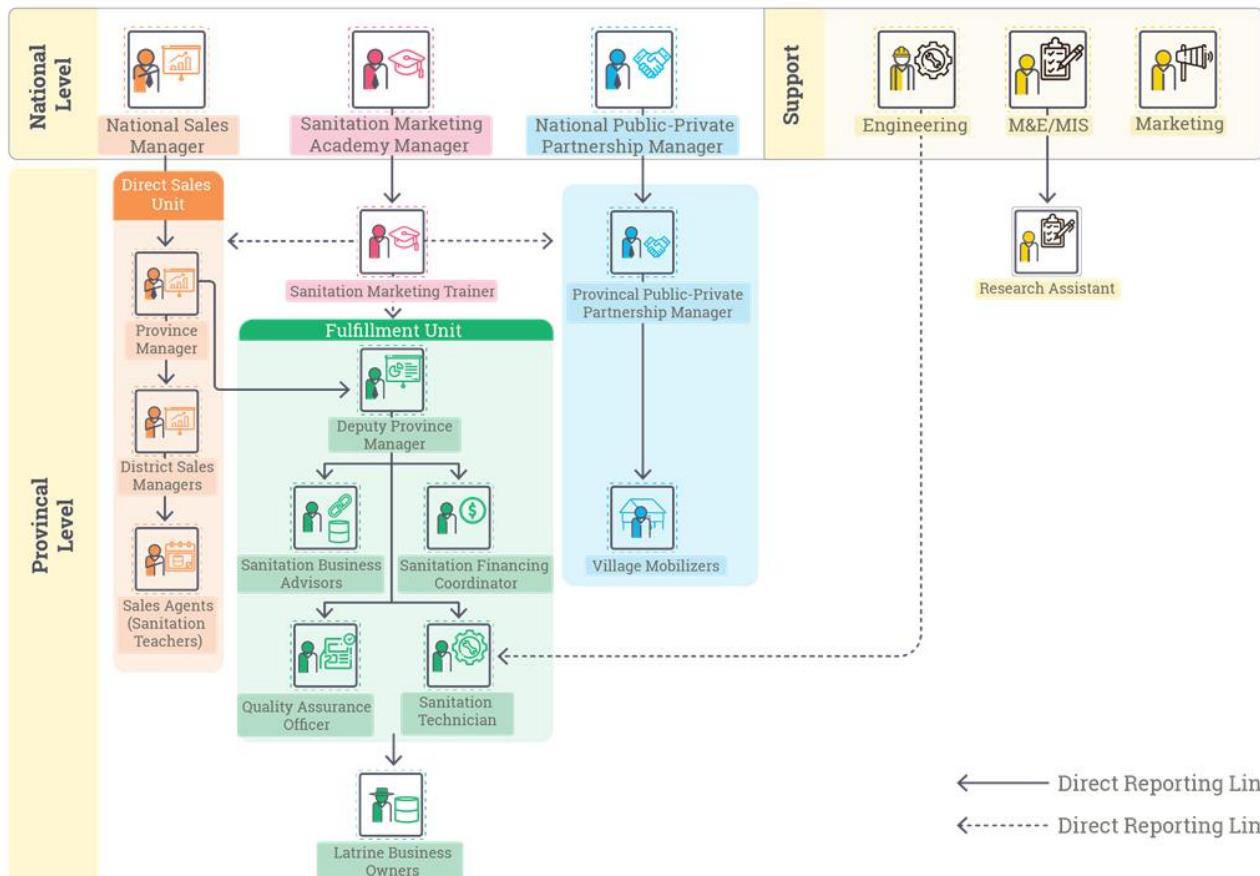
iDE observed that, for a variety of reasons, LBOs showed limited capacity and/or motivation to manage active sales and promotion of latrines (see Section 2.5). With this learning, the project's primary strategy for market facilitation moved towards a focus on directly recruiting and managing sales agents - who were linked to specific LBOs - to generate sales. The program continued to support LBOs, however staff responsible for working with them, Business Development Coordinators, switched the bulk of their effort to focus the majority of their time on generating sales.

SMSU2 – SALES & SUPPLY TEAMS SEPARATED (FIGURE 6)



Until SMSU2, one team managed both the supply chain and sales activities. District-level sales managers were responsible for supporting latrine businesses in addition to training, coaching, and managing sales agents. However, faced with rapidly increasing levels of customer demand, the program identified a critical need to sustainably improve the efficiency of the supply chain. In SMSU2, iDE created a separate Supply Team to better manage latrine production and delivery. Staffed by a National Supply Chain Manager, Regional Supply Chain Managers, and District-level Supply Chain Coordinators, the key objective of this team was to improve the speed and quality at which products were delivered by LBOs. Dedicating staff entirely to working with specified LBOs allowed sales managers to focus fully on building and leading their sales teams instead of splitting time and attention between sales and supply. See Section 2.1 for more details on the Supply Team.

SMSU3—PROVINCIALY DECENTRALIZED + PUBLIC-PRIVATE PARTNERSHIP DEPARTMENT (FIGURE 7)



As the sanitation market matures and Cambodia surpasses its current level of 67% sanitation coverage, the remaining areas with high coverage appear increasingly heterogeneous, each with their own unique set of challenges, constraints, and barriers. Cognizant of the need for more context-specific decision making, sales management has been decentralized in SMSU3 to the provincial level. As such, the multi-province Area Sales Manager position has been removed. Regional Sales Managers have become Province Managers who report up to a National Sales Manager and Deputy National Sales Manager.

In SMSU3, the program has also decentralized supply chain management and order fulfillment almost entirely to the provincial level. Deputy Province Managers are now charged with overseeing all fulfillment-related operations, including LBO coaching, training, new product introduction, and quality control. A national engineering team is still responsible for designing new products, developing manufacturing and installation training materials, and supporting provincial staff to use these materials. However, field-level technical support is now directly under the management of the Deputy Province Manager. While lines of support exist from provincial to central management, there is no longer a National Supply Chain Manager responsible for directing the supply chain at the sub-national level. When national-level supply chain management decisions need to be made, the National Sales Manager and Deputy National Sales Manager are responsible for devising solutions.

The program has recognized that the remaining market segment is more comprised of a significant amount of migrant laborers who are away from their homes. A more consistent, permanent promotion presence will be necessary to reach these potential clients, and a direct sales method that visits a village two to four times every year is unlikely to be adequate. This realization has compelled iDE to make a deliberate and concerted effort to engage local authorities and other influencers to refer households directly to LBOs to purchase latrines. Thus, the new Public-Private Partnership Department (see Section 4.1) was developed with the goal of supporting communities to reach ODF status through the development of local referral points and sanitation advocates.

Program achievements

Improved latrine coverage and health impacts.

- Delivered over 300,000 latrines
- Increased latrine coverage from 22-67% in program areas since 2009
- Quadrupled latrine coverage (from 12% in 2012 to 52% in 2018) among households identified as IDPoor¹, Government estimates of IDPoor population in the target areas is 16% of the total population. Given that roughly 20% of our customers are IDPoor, that means we are over-serving the poor market relative to size.
- Found statistically significant results that in our program areas, rural diarrhea prevalence decreased by 6.5 percentage points following SMSU1
- Increased percentage of Easy Latrine customers who install a latrine shelter within 11 months from 66% at the end of SMSU1 to 80% at the end of SMSU2

Development of new, affordable, aspirational sanitation products for rural customers.

- Low-cost Easy Latrine to provide households with a one-stop solution to toilet purchases
- Three latrine shelter models (Easy Shelter, Ring Shelter, Interlock Shelter) to accelerate latrine use and serve customers with different needs and price points
- Alternating Dual Pit upgrade product (ADP) for safe, onsite fecal sludge management

Establishment of a sustainable sanitation supply chain.

- Copycat LBOs reverse engineered iDE's products and began selling on their own, bringing additional service providers into the WASH marketplace.
- Major increase in the efficiency of the supply chain, evidenced by a more than 50% reduction in time from client order to delivery (excluding instances in which clients postponed their own orders) between 2017 (24.7 days) and 2018 (11.2 days)
- Significant reduction in client cancellation rate from an average of 34% in 2016 to approximately 22% in 2018.
- Development of a highly functional and sophisticated data management system using TaroWorks and Salesforce to enable for real-time, evidence-based program management

Remaining challenges

- Sales performance is declining in an increasingly saturated market with the remaining unserved market more composed of the poorest, hardest-to-reach households.
- While iDE clients are proportionally more poor than the general population (20% of clients served are poor, compared to 16% of the national population considered poor), this proportion is declining. Over the course of SMSU2, improved latrine sales to poor households decreased from 28% to 20% as a share of the customer population. The interesting trend to note is that the percentage of sales to IDPoor2 households (the relatively less poor) remained constant during SMSU2. It is only sales to the poorest of households that declined from 14% to 6%.
- Declining profitability of latrine businesses: LBOs on average made \$0.26 profit per dollar sold in SMSU1, in SMSU2 on average they profited \$0.14 per dollar sold. As profit margins decrease, it is possible that some LBOs will focus more on other income sources, such as construction, over continuing to sell toilets.
- Lack of available and affordable latrine options that are appropriate for challenging environments (flood prone, high ground water, hard ground rock, etc.) make it difficult to serve these segments of the market.
- Endemic household indebtedness in Cambodia and nearly-total withdrawal of the microfinance industry from financing sanitation-related products necessitates innovative ways to enable poor households to purchase latrines.
- Few households are aware of the safe fecal sludge management practices that will need to be applied as latrine pits fill.

¹The IDPoor System is an initiative administered by the Cambodian government that identifies poor households, assesses their level of poverty (IDPoor 2 is poor, IDPoor 1 is poorest), and distributes identification cards for these households.

ACRONYMS

ADP - Alternating Dual Pit upgrade
BCC -Behavior Change Communication
DFAT - Australian Government's Department of Foreign Affairs and Trade
EWB-A - Engineers without Borders Australia
FSM - Fecal Sludge Management
HCD - Human-Centered Design
IDPoor - Cambodian Government's system of identifying and classifying poor households
LBO - Latrine Business Owner
MCIC - Manitoba Council for International Cooperation
MIS - Management Information System
MoH- Cambodian Ministry of Health
MRD - Cambodian Ministry of Rural Development
M&E - Monitoring and Evaluation
NAP I/II - Cambodian Government's National Action Plan for water and sanitation development
ODF - Open Defecation Free
PDRD - Provincial Department of Rural Development
PIP - Payment Installment Plan
PPP - Public Private Partnership
PWD - People with Disabilities
SCE - Sanitation in Challenging Environments
SMSU - Sanitation Marketing Scale-Up Program (Comprised of Pilot Project, SMSU1, SMSU2, and SMSU3)
SFF - Stone Family Foundation
USAID - United States Agency for International Development
WASH - Water, Sanitation, and Hygiene
WRP - Whitten & Roy Partnership
WSP - World Bank Water and Sanitation Programme

CONTENTS

INTRO TO SANITATION MARKETING SCALE-UP PROGRAM (2009-PRESENT)	3
Program background and key impacts.....	3
Evolution of program structure.....	5
Program achievements	9
Remaining challenges	9
ACRONYMS.....	10
CONTENTS.....	10
FIGURES.....	12
LESSONS LEARNED	13
1 Management, training, and core program strategy	13
1.1 Ongoing coaching, not just one-off training is key to success in sales and general management	13
1.2 Tiered coaching is conducive to effective management.....	13
1.3 Effectively aligned incentives drive results	14
1.4 Reducing order cancellations requires a multi-faceted approach.....	14
1.5 The project approach should be adapted over time to find the most effective way to reach objectives based on project experience	16
1.6 Standardization and decentralization of management to the province-level is key for an adaptable, scaled program	17

1.7 Real-time data allows for adaptive program management	17
1.8 A mature market demands product diversity	17
2 Supply	19
2.1 A dedicated supply chain management team can vastly improve the efficiency of an operation	19
2.2 Measuring and tracking order backlogs can be a helpful assessment of supply chain health.....	19
2.3 Address volatility in the supply chain through integrated use of management information systems: the birth of Load Balancing.....	19
2.4 Delivering products before the scheduled delivery date is an effective means to reduce order cancellations	21
2.5 Small and Micro Enterprises (SMEs) show low interest in actively selling, although are more likely to engage in marketing for higher-value products like shelters.....	23
2.6 LBO engagement in sanitation depends on their perceived opportunity costs: low prices may not always be the best for the consumer as they can undermine the sustainability of enterprise motivation.....	24
2.7 Product price standardization helps ensure a sustainable margin for LBOs, reduces customer and sales staff confusion, and is critical for “Load Balancing” process	25
2.8 As the market matures, focus on LBO quality, not quantity	25
2.9 Leveraging existing supply chain actors is important for optimizing customer experience.....	26
2.10 Connecting businesses in a network can lead to rapid technology and skills transfer	26
2.11 Solutions to challenging environments require more than a modification or adaptation of the Easy Latrine design; otherwise heavy subsidy is required for uptake.....	28
2.12 Bundling latrine product with installation service can nudge households toward use	28
3 Sales	29
3.1 A professionalized sales force is key to effective demand generation at scale	29
3.2 Conceptualize a segmented market in order to efficiently direct sales strategies	30
3.3 Intensive “below-the-line” customer engagement is needed for effective promotions.....	31
3.4 Solution-centered sales approach: sell to the problem, not on price or product	31
3.5 While financing can facilitate faster sanitation uptake, other creative financing methods must be sought out, like supplier-led payment installment plans	33
3.6 Well-targeted subsidies can reach the poor in a cost-effective way without distorting the sanitation market	35
3.7 A bigger sales force is not the solution for today’s market.....	36
3.8 There is significant market potential for FSM products and services, but active promotion will be needed to stimulate demand.....	36
4 Government Engagement	38
4.1 Achieving Open Defecation Free status will require stronger local engagement.....	38
4.2 Proper training, ongoing coaching, and monitoring is important for successful local government engagement	39
4.3 Engagement process of other ministries not consistent across provinces	39

FIGURES

Figure 1: SMSU Easy Latrine Deliveries as of December 2018.....	3
Figure 2: Latrine coverage increase since 2012	4
Figure 3: SMSU Cumulative Latrine Sales vs Cost Per Unit Sold.....	5
Figure 4: SMSU1 – Operations revolve around the LBO.....	5
Figure 5: Mid-SMSU1 – Program changes demand generation focus from LBO to Sales Agents	6
Figure 6: SMSU2 – Sales & Supply Teams separated.....	7
Figure 7: SMSU3 –Provincially Decentralized + Public-Private Partnership Department	8
Figure 8: Reasons for household cancellation of Easy Latrine orders	15
Figure 9: Evolution of Program Cancellation Rate (six-month averages)	16
Figure 10: Average time from order to delivery in days (Easy latrine)	20
Figure 11: Order status of all pre-deliveries.....	22
Figure 12: All 2018 Orders, by order status	22
Figure 13: 2018 Orders by order status, excluding pre-deliveries.....	22
Figure 15: Percentage of deliveries attributed to LBO-led sales.....	24
Figure 14: Latrine Shelter Deliveries	24
Figure 16: Percentage of Easy Latrine customers who have installed a shelter within 11 months of latrine purchase	29
Figure 17: The “Three Sweeps” Model	30
Figure 18: Villages Reached by iDE Sales Agents between Jan. 2017 and Jan. 2018	32
Figure 19: Alternating Dual Pit with Pit Gauge 1.0	36
Figure 20: Monthly Average Depth of Liquid and Sludge from 100 Latrines in 5 Villages, Aug.2017 - Dec 2018.....	37
Figure 21: Pit Gauge 2.0.....	38

LESSONS LEARNED

SMSU has produced important lessons on how to further stimulate both demand and supply for sanitation and engage the enabling environment to support rural sanitation. In this section, key lessons are summarized in the hope that they will inform the design, implementation, and cost-effectiveness of future sanitation marketing projects.

1 Management, training, and core program strategy

1.1 ONGOING COACHING, NOT JUST ONE-OFF TRAINING IS KEY TO SUCCESS IN SALES AND GENERAL MANAGEMENT

Successful sales skills cannot be taught in a single training or even a series of trainings. Rather, selling is a skill that must be learned with ongoing monitoring and coaching. In the project, the professionalization of sales went hand in hand with a tiered structure of sales management, which provided the ongoing support necessary for continual sales growth that undergirded project projections and strategy.

Like any skill, sales skills need to be constantly reinforced. For the first several years of iDE's sanitation program, district-level sales managers were responsible for providing training and coaching for sales agents. However, when the sanitation market began to saturate, sales became more difficult. Many of the remaining households without latrines had seen the program's sales presentations before, or offered unique reasons for not purchasing a latrine immediately. In response, the program needed to increase the capacity of the sales agents so they could provide more tailored sales messages. Sales managers, who were tasked with recruitment, training, and management of day-to-day sales efforts, needed additional support to meet the advanced sales training needs of the program.

Enter the Sales Academy in early 2016. Essentially a small group of dedicated trainers, the Sales Academy was formed to improve the competency of sales agents while reducing the training burden on sales managers. The objective of the Sales Academy was to regularly train new and old sales agents on sales methods and strategies that were introduced to the program by Whitten & Roy Partnership (WRP).

The Sales Academy has continued to function as an effective capacity development mechanism for our team, expanding its curriculum with additional training material on topics beyond sales such as supply management, gender, and workplace sensitivity. The success of the Sales Academy has prompted an expansion of this department going forward into SMSU3. The newly branded "Sanitation Marketing Academy" has now more than doubled its team size and covers six knowledge areas: sales, technical training (i.e., on specific non-sales program activities), sanitation and hygiene principles, management & leadership, personal development, and gender equity/social inclusion. Having a dedicated team of trainers can support the delivery of regular, consistent standards of training while ensuring that program best practices are not lost over time with staff turnover or performance relapses.

1.2 TIERED COACHING IS CONDUCIVE TO EFFECTIVE MANAGEMENT

Skilled sales management is critical to providing ongoing and field-based leadership and coaching to sales agents. iDE's sales managers support their direct reports, down to the sales agent level, through coaching, motivation, strategy development, territory management, and customer engagement tactics, among other areas of support. Throughout the management structure, from the head office managers to the sales agents, coaching is done using WRP's RACE™ framework (Results = Attitude + Competency + Effort), which provides a systematic approach for discussing sometimes sensitive challenges facing each individual. In SMSU2, the program expanded the tiered coaching system to include the entire program team, not just sales staff. Field-level supply chain management staff were coached by regional supply chain managers, who themselves received support from a National Supply Chain Manager. Moving forward into SMSU3, coaching has been decentralized as Provincial Managers, Deputy Provincial Managers, and provincially-based Sanitation Marketing Academy Trainers have been charged with providing training and support to the members of their respective provincial office.

1.3 EFFECTIVELY ALIGNED INCENTIVES DRIVE RESULTS

Early in the program, the program management developed a results-based performance incentives model to motivate staff to focus on achieving results. Staff go through quarterly reviews and the incentive structure is modified from time to time to reflect the shifting priorities of the program. The incentive system is based on quantitative and qualitative performance assessments, with heavy weighting placed on measurable key progress indicators directly aligned with the overall program targets: WASH product sales and deliveries. If staff meet or surpass personal targets, they are entitled to a financial bonus commensurate with their rank and the weight of the respective target.

During SMSU2, amid rising sales agent turnover due to decreasing commission-based earnings as the market became more and more saturated, the program made significant changes to the pay structure of the sales team. From the beginning of the project until 2016, sales agents had been independent, non-program resources whose income depended solely on a commission effectively born by the product sales price. In 2016, allowances paid by the program were introduced to offset work-related expenses incurred while selling latrines, such as motorbike depreciation, fuel, and other costs. iDE also offered flexible hours and part-time allowance compensation to encourage more women to work as sales agents. This flexible structure enabled women to better balance paid employment with familial expectations that they continue their domestic responsibilities.

Yet with decreasing sales opportunity in a saturated market, sales agent commission-based income continued to dwindle, leading to unsustainable levels of sales force attrition and turnover. In 2017 the program made the decision to put the majority of sales agents on a guaranteed base salary. Agents were still receiving commissions, but the payment of commissions became conditional on effective latrine deliveries rather than latrine sales. This decision was made to correct what the program had identified as a misaligned incentive that was contributing to an increasing rate of order cancellations by customers. The incentivization of sales rather than deliveries was enabling sales agents to make sales without much consideration for if the client was likely to commit to their purchase rather than cancel their order before or at the time of delivery. By making the payment of the commission conditional on a delivery outcome, the program refocused desired sales agent behaviors to better-ensure customer commitment to their purchase decision. Through better management of client expectations and post-sales follow-ups until the delivery, sales agents are expected to work towards the actual program target: deliveries, not sales.

When the supply team was created in SMSU2, it was incentivized by deliveries (rather than sales). From the time that the supply team was established, the program made a deliberate effort to align incentives for deliveries to ensure that sales and supply team members coordinated their efforts. This alignment was initially a source of friction within the program. District-level sales and supply staff, who were being paid incentives based on a shared target, regularly blamed their counterparts for high cancel rates. To remedy this, the program instituted mandatory, weekly check-ins between district-level sales managers and supply chain coordinators. Communication between teams became a primary goal of the program. The relationship between the teams significantly improved over time, as managers were coached in conflict resolution and improved communication. Incentive alignment alone is not sufficient to promote a culture of collaboration; it must be complemented by clear and explicit inter-departmental communication processes at all levels to ensure that the desired staff behavior change is effectively achieved.

Throughout the development of SMSU, a results-based pay structure has proven to be an effective tool because

- 1) it keeps staff focused on achieving the defined immediate objectives
- 2) it provides clear metrics of success that staff are measured upon
- 3) it allows flexibility for updating objectives given changes in program focus

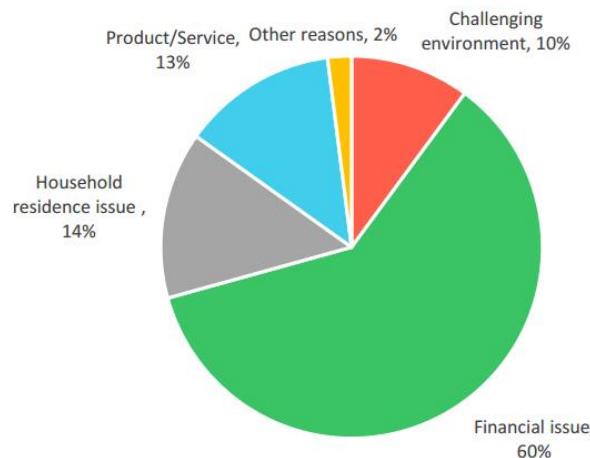
1.4 REDUCING ORDER CANCELLATIONS REQUIRES A MULTI-FACETED APPROACH

In SMSU2, the program became increasingly concerned with a steadily rising cancellation rate among customers who had purchased an Easy Latrine. Order cancellations are an issue because they obviously limit the amount of latrines delivered and reduce the cost-effectiveness of the program. Program resources dedicated to demand generation are essentially wasted when an order is cancelled. Thus, order cancellations are reducing the potential for the program's impact at scale. The other negative effect of order cancellations is, as noted above, that it is often the basis for tension and blame-passing between internal sales and supply teams. This internal friction can be a barrier to efficient collaboration and program effectiveness. Also important to note is that an order

cancellation means that the household forfeits its five USD deposit that is collected at the time of the sale. The deposit, which encourages household commitment to the purchase, has long been recognized by the program as an effective measure to prevent order cancellations. However, the financial loss incurred by a household that cancels an order is at odds with the fundamental objective of the program: support positive health and financial outcomes, not negative ones. Thus, there is a moral as well as programmatic imperative to minimize client order cancellations.

In October 2016, when cancellation reached a program-wide peak of 42%, the program created a call center to investigate why customers were cancelling their latrine orders. By February 2017, the WASH Call Center had successfully contacted 7,227 customers who were reported to have cancelled their orders. The primary reason for order cancellation was financial: 60% of households reported that they simply couldn't pay for it. Other main issues were household residence issues (i.e., the house was rented, the decision maker was seasonally migrating outside of Cambodia for work, or the house was under construction), the household was in a challenging environment in which a latrine couldn't be installed (such as flood-prone areas), or the client was displeased with the product or service (including long waits for delivery).

FIGURE 8: REASONS FOR HOUSEHOLD CANCELLATION OF EASY LATRINE ORDERS



With this knowledge, the program mounted an initiative to reduce the cancellation rate as quickly as possible. The program had already been working to reduce order delivery time, and at the start of SMSU2 developed a "load balancing" system (see Section 2.3) to more effectively balance orders across LBOs. In addition, the program began encouraging LBOs to "pre-deliver" orders (see Section 2.4) and created a dashboard to measure and improve the fulfillment time from order to delivery.

To reduce client cancellations, we focused on building LBO capacity to skillfully handle customer interactions and prevent them from needing to cancel. In order to support businesses to communicate the value of their products better when customers expressed willingness to cancel their orders, iDE staff trained business owners on selling techniques using similar frameworks taught to our sales agents. We also implemented a pilot to train LBOs to address financial-related customer cancellations by offering payment installment plan options (see Section 3.5). On the sales side of the operation, we realigned sales agent incentives to drive iDE staff toward achieving deliveries rather than just sales (see Section 1.3).

To evaluate the effectiveness of this multifaceted management intervention, we look at the overall cancellation rate for latrines, calculated as a six-month average. After adjusting our operational model as described above in mid-2016, the program reduced the six-month average cancellation rate to 36% in the last half of 2016, then to 26% in the last half of 2017, and finally down to approximately 19% in the last half of 2018. *Figure 9* below shows the monthly change in rate of cancellations for Easy Latrines from January 2016 to December 2018.

FIGURE 9: EVOLUTION OF PROGRAM CANCELLATION RATE (SIX-MONTH AVERAGES)



1.5 THE PROJECT APPROACH SHOULD BE ADAPTED OVER TIME TO FIND THE MOST EFFECTIVE WAY TO REACH OBJECTIVES BASED ON PROJECT EXPERIENCE

Sanitation Marketing in Cambodia has for the most part taken the form of market facilitation—development partners building up the capacity of private enterprises to stimulate demand and provide supply to satisfy that demand without becoming directly involved in the market transactions. However, iDE's experience in Cambodia shows that pure market facilitation is not necessarily the most realistic model for reaching the public health goal of rapid and widespread latrine uptake. Despite being independent, sustainable businesses in their own right, LBOs showed inconsistent capacity and enthusiasm for conducting their own active sales management. Early in SMSU1, iDE adjusted accordingly and began exploring alternative approaches of market engagement, including a dedicated sales force managed by the project. iDE found that this direct sales model does indeed stimulate high levels of demand. As such, the project shifted its primary focus from training and coaching the LBOs to training and coaching the sales agents directly (although LBOs still received support and coaching as needed). The project began building up a more full-time sales force to reduce turnover, and this shift saw positive results in terms of sales and a greater optimization of resource allocations. As sales rapidly increased, iDE recognized that demand was outpacing supply, and in SMSU2, dedicated significant efforts towards supporting the supply chain to a deeper extent (see Section 2.2).

For the majority of SMSU1 and the entirety of SMSU2, the program directed its core focus on demand generation through a program-managed, direct sales team. The sales strategy has been oriented around door-to-door sales presentations and to a lesser extent, group sales presentations. Yet as the first-latrine market continues to mature and saturate, the program has experienced diminishing returns of the direct sales model for selling the Easy Latrine, as measured by a steady decline in sales closing rates. The program has recognized that there are parts of the remaining population without latrines that have needs unlikely to be solved by purely market-driven approaches. The price point of the Easy Latrine is simply out of reach for some of the poorest households, and a system of targeted subsidy distribution (see Section 3.6) is one of few methods that appear viable for reaching this market segment. Additionally, in many of the remaining households without latrines, decision makers work outside of their village, making it difficult for iDE sales agents to engage them. A more consistent, permanent promotion presence will be necessary to reach these potential clients, and a direct sales method that visits a village two to four times every year is unlikely to be the solution. This realization has compelled iDE to make a deliberate and concerted effort to engage local authorities and other influencers to refer households directly to LBOs to purchase latrines. Thus, SMSU3 has a much greater share of resources than in SMSU2 dedicated towards working with government and other non-private sector stakeholders, primarily through the creation of the new Public-Private Partnership Department (see Section 4.1).

As the market has evolved, the program has adjusted strategy accordingly to continue delivering results at scale.

See Section 1.3 for more details about how the SMSU program structure has evolved since it began.

1.6 STANDARDIZATION AND DECENTRALIZATION OF MANAGEMENT TO THE PROVINCE-LEVEL IS KEY FOR AN ADAPTABLE, SCALED PROGRAM

SMSU has always been rooted in the principle of developing context-specific solutions. The program also centers around its dedication to making impact through scale. There is an inherent tension with context-specificity and efficiency of scale that the program has consistently needed to balance.

The program's approach for managing this tension is a mix of standardization and decentralization. In order to efficiently sell latrines across the country, sales approaches and methodologies have always been standardized throughout the program. For example, sales agents in Siem Reap province are trained in exactly the same way as their counterparts in Svay Rieng. However, the cost of doing business in different provinces varies. In order to ensure that sales agents can efficiently sell while not confusing customers or business owners, prices are standardized at the provincial level rather than national level (see Section 2.7 for more details about price standardization). Similarly, while the types of metrics being tracked for sales performance are the same nationally, the size of the targets are set at the provincial level depending on the market conditions of the respective area.

As the sanitation market matures, the remaining areas with high sanitation coverage appear increasingly heterogeneous, each with their own unique set of challenges, constraints, and barriers. For example, some areas have a lower population density, greater variety or concentration of challenging environments, or unique market-distortions created by extensive subsidy distribution programs. It is clear that maintaining the balance between innovative problem solving and scale will continue to become more complex for the first-latrine market. Cognizant of the need for more localized decision making, in SMSU3 sales management has been decentralized to the provincial level.

In SMSU3, the program has also decentralized supply chain management and order fulfillment almost entirely to the provincial level. Deputy Province Managers are charged with overseeing all LBO-related operations, including coaching, training, product adoption, and quality control. A national engineering team is still responsible for developing standard products, developing construction training materials, and supporting provincial staff to understand these materials. However, field-level technical support is now directly under the management of the Deputy Province Manager. Province Managers and Deputy Province Managers have lines of support from the national level, however the program has directed its focus towards empowering these sub-national managers to solve increasingly specific issues. Managing the tension between scale and context specificity is a key component of maintaining an adaptable program strategy.

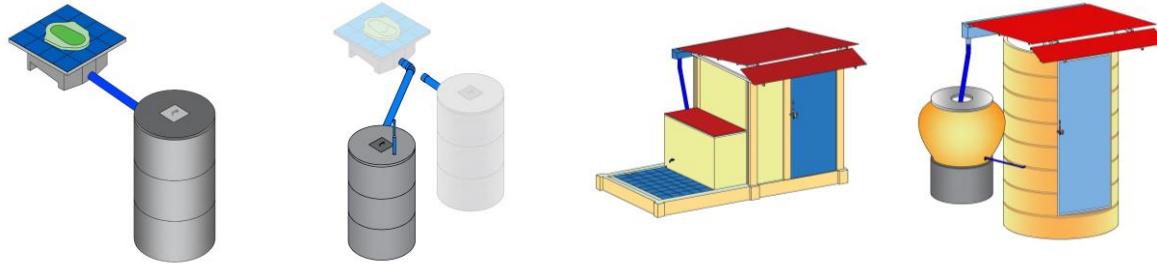
1.7 REAL-TIME DATA ALLOWS FOR ADAPTIVE PROGRAM MANAGEMENT

A cornerstone of SMSU is its management information system (MIS). Using an Android-based, mobile data entry platform called TaroWorks, iDE staff are able to record and transfer order and delivery information. This information is logged in a cloud-based Salesforce database, where sales management supply chain staff and managers are able to access it. This system has multiple operational functions. The first is logistical; orders are sent from the field to supply chain managers, who then distribute orders to latrine business owners after "load balancing" (see Section 2.3). The next key function of the MIS is operational management. Data like sales closing rates, delivery fulfillment time, order backlogs and other benchmarks for sales and supply chain performance are easily accessible to support managers in identifying areas for improvement in their teams. Lastly, the MIS serves as a historical database of program activities. This database can be easily queried to quantitatively assess the performance of the program as a whole. Having such a database only a few keystrokes away enables for both in-country and international staff to quickly retrieve key program data for funder reports, business development, and cross-country comparisons. Read more about our MIS [here](#).

1.8 A MATURE MARKET DEMANDS PRODUCT DIVERSITY

As the market continues to develop and mature, products besides the Easy Latrine are needed to sustain

sanitation demand and keep the supply chain active. In SMSU2, the program devoted significant resources to developing more products to meet the increasingly diverse needs of the market. These products included three shelter models and an alternating dual pit upgrade to enable households to safely manage their fecal sludge. The Easy Shelter and the Ring Shelter incorporate an integrated hand-washing device and an early priority for SMSU3 is to integrate a similar device into the Interlock Shelter.



EASY LATRINE

Average Retail Price:
\$61 USD

ALTERNATING DUAL
PIT UPGRADE

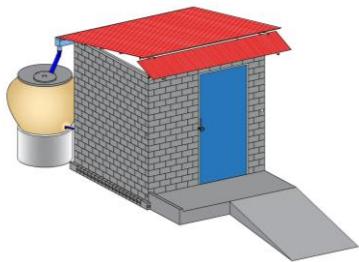
Average Retail Price:
\$48 USD

EASY SHELTER

Average Retail Price:
\$460 USD

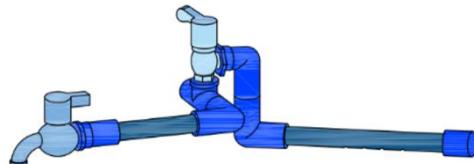
RING SHELTER

Average Retail Price:
\$205 USD



INTERLOCK SHELTER

Average Retail Price: \$365 USD



HAND-WASHING DEVICE

Currently integrated into Easy Shelter and Ring Shelter (with plans to integrate a similar device into Interlock Shelter in early SMSU3).

In SMSU3, the program is investing in deepening the training and professionalization of the sales force to consultatively sell these products depending on customers' needs (see Section 3.3). Top priorities for further product development in SMSU3 include aforementioned integration of a hand-washing device into the Interlock Shelter, a hyper-low cost shelter, and additional upgrades to latrine pits to increase functionality in challenging environments.

2 Supply

2.1 A DEDICATED SUPPLY CHAIN MANAGEMENT TEAM CAN VASTLY IMPROVE THE EFFICIENCY OF AN OPERATION

In the Pilot Project and SMSU1, one team managed both the supply chain and sales activities. District-level sales managers were responsible for supporting latrine businesses in addition to training, coaching, and managing their sales agents. However, faced with rapidly increasing level of customer demand, the program identified a critical need to sustainably improve the efficiency of the supply chain. In SMSU2, iDE created a separate Supply Team to better manage latrine production and delivery. Staffed by a National Supply Chain Manager, Regional Supply Chain Coordinators, and District-level Supply Chain Coordinators, the key objective of this team was to improve the speed and quality at which products were delivered by LBOs. Dedicating staff entirely to working with specified LBOs allowed sales managers to focus fully on building and leading their sales teams instead of splitting time and attention between sales and supply. The Supply Team made a major impact on the efficiency of the program and supported improvement in key operational metrics, including time from order to delivery and order cancellations.

In SMSU3, iDE has further adapted the concept and structure of the Supply Team. As could be intuited, LBOs face a range of different issues from province to province. Among other issues, product preferences among customers, geographical constraints, and levels of government support vary, and these issues demand context-specific solutions. With this in mind, iDE has decentralized supply chain management functions to the provincial level. Sanitation Business Advisors (formerly known as District Supply Chain Coordinators), field technicians, and quality assurance officers have been grouped into provincial “Fulfillment” teams, managed by the Deputy Province Manager. Lines of support have been established between provincial and national management to ensure the teams have the resources needed for success. It is the intention that as the market matures, an agile and localized fulfillment team will be best equipped to address increasingly context-specific issues for the remaining segment of the unserved market.

2.2 MEASURING AND TRACKING ORDER BACKLOGS CAN BE A HELPFUL ASSESSMENT OF SUPPLY CHAIN HEALTH

In SMSU2, iDE implemented a MIS to gauge the effectiveness and efficiency of our programs more rigorously. This integrated, cloud-based system provided the team with a powerful tool to capture data on orders and deliveries. Using a customized app developed with TaroWorks, iDE sales agents can enter orders into their smartphones in the field, then upload them to the cloud-based Salesforce database when they have internet access. Simultaneously, other iDE staff use TaroWorks to record regular check-ins with LBOs to review their current workloads (orders not yet delivered) against their production capacity and availability (e.g., some LBOs would shut their business down for weeks at a time during harvest seasons due to shortage of labor, or sometimes for personal reasons etc.). During these check-ins, iDE staff update the outstanding number of latrines ordered but not yet delivered by the LBO, also known as the backlog.

An LBO backlog with many outstanding orders with promised delivery dates in the future is generally a good thing, as it indicates healthy demand. Alternatively, a backlog with delivery dates that are months old signals supply chain issues and delays. The program has recognized that the longer a sales order stays in the backlog, the more likely it will eventually be cancelled. Thus, by directing management efforts towards maintaining healthy backlogs, the program can more effectively reduce order cancellations.

2.3 ADDRESS VOLATILITY IN THE SUPPLY CHAIN THROUGH INTEGRATED USE OF MANAGEMENT INFORMATION SYSTEMS: THE BIRTH OF LOAD BALANCING

During SMSU1, iDE learned three things that we now apply to supply chain management:

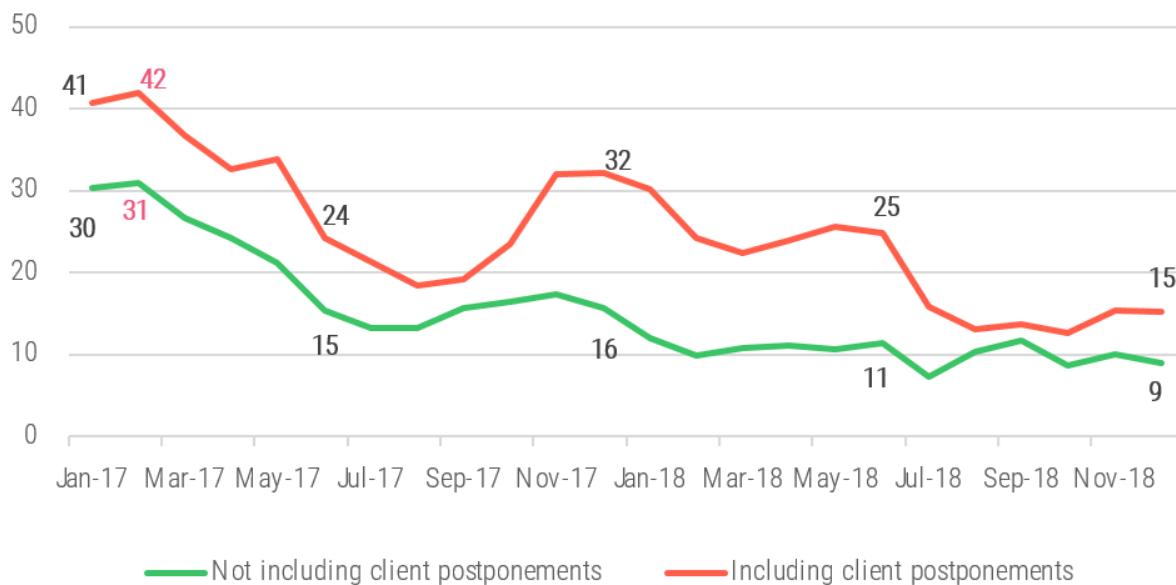
- Latrine businesses suffer from volatility of demand.
- Permanently assigning sales agents to specific LBOs creates systemic supply chain volatility
- While market seasonality of demand is unavoidable, systematic volatility in the supply chain can be greatly reduced by pooling and balancing demand, a technique developed in the industry known as “lean supply chain management” or queue management.

In the beginning of the program, the rate of orders LBOs received was highly irregular and inconsistent. Some LBOs were over-burdened and unable to manufacture quickly enough to keep up with sales while other LBOs had components in stock and were waiting for sales to happen. LBOs faced uncertainty and sporadic periods of being busy and idle. This was an issue for LBO retention in the sanitation market, as business owners will generally prefer to invest in a stable source of income. In order to stabilize LBO workloads and help mitigate some of this volatility in the supply chain, the program developed a supply chain management tool that would match demand (orders) with available supply (production, delivery, and installation).

The program built a system by which orders are pooled and assigned to LBOs based on an algorithm that takes into account distance (from client to LBO), historical production capacity (orders produced in previous month, quarter, or other set time period), and current backlog (immediate workload) of the LBO, in order to ensure the quickest possible fulfilment outcome. We call this process "Load Balancing." Essentially, when orders are logged in Salesforce, iDE staff group them into batches based on proximity to one another. Then, supply chain staff consider proximate LBOs' production capacity (calculated by the amount of deliveries on average they fulfill every month) in addition to their backlogs (described in Section 2.2 above), then decide upon which business was capable of delivering the product quickest.

As part of our effort to measure the performance of the supply chain, the program has added "Days from Order to Delivery" as a key indicator to track in the result framework. However, time from order to delivery is sometimes out of the control of the supply team, as households themselves will postpone their deliveries, often for financial reasons. In order to better distinguish supply chain performance from cases in which delivery was postponed at the request of the client, we have tracked independently the "Days of Order to Delivery" for orders that had not been subject to a client postponement.

FIGURE 10: AVERAGE TIME FROM ORDER TO DELIVERY IN DAYS (EASY LATRINE)



Note about the chart above: The fulfilment time, or delay from order to delivery, is one of the key metrics we use to monitor supply chain efficiency. However, this metric is influenced by the common occurrence of clients asking to postpone their toilet delivery (often motivated by financial reasons, as payment is required on delivery). Delays incurred at the request of the client are extraneous to the supply chain's capacity. For this reason, the program tracks average fulfilment time for all orders, and separately tracks orders which have not been subject to a client postponement request.

The general trend for both lines shows a significant improvement over the course of time from January 2017 through December 2018. A temporary reversion of this performance improvement is evidenced during the fourth quarter of 2017, corresponding to the seasonal flooding that hinders LBO delivery capacity, and also corresponds

to a seasonal low-point in household disposable income before the harvest of rice and cassava. However, the fact that "Days from Order to Delivery" decreased again following the 2017 flood season and remained relatively consistent in the second half of 2018 is a positive indication that the program's efforts to increase supply chain performance have been successful.

In *Figure 10* above, this seasonal reversion is more accentuated on the line representing average fulfillment time for all orders than on that which excludes client-postponed orders. This implies that the fluctuation of the fulfillment time has more to do with challenges on the customer's side, likely cash flow challenges, than from the suppliers' seasonal impairment due to issues like floods.

It is important to note that the reduction in time from order to delivery is not solely attributable to Load Balancing. Other interventions including "Pre-delivery" (described in Section 2.4) have combined with Load Balancing to produce the increase in supply chain efficiency described above. The fact that iDE's LBO network has decreased in size, with the highest-performing businesses representing a larger share of iDE-affiliated LBOs, has also likely contributed to the improvement in overall fulfillment efficiency (see Section 2.8). These factors together have significantly contributed to the program's reduction in order cancellation rate from a six-month average peak of 36% in 2016 to approximately 19% in 2018.

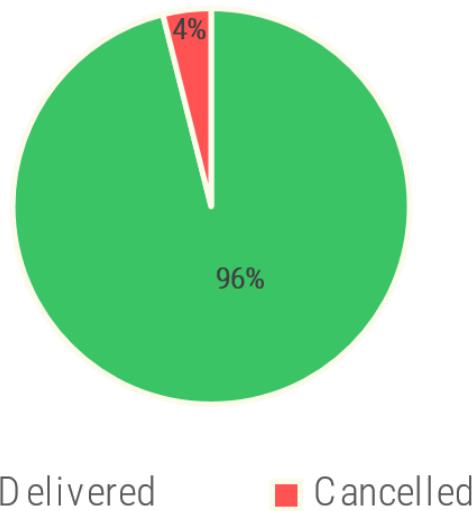
Load Balancing system is expected to continue to be a strong asset for management of delivery for newer products including shelters and ADPs. By ensuring that LBOs have a steady, predictable entry into the market, the program hopes to more effectively, equitably, and sustainably engage LBOs to adopt new iDE products.

2.4 DELIVERING PRODUCTS BEFORE THE SCHEDULED DELIVERY DATE IS AN EFFECTIVE MEANS TO REDUCE ORDER CANCELLATIONS

In SMSU2, the program recognized that LBOs were experiencing an increasing amount of cancellations during phone calls they made to confirm delivery times with customers, often just a few days before the intended delivery date. We hypothesized that, with the product in front of them, customers would be much less likely to cancel their orders. In 2017, following supply chain efficiency improvements due to Load Balancing, we introduced a new delivery protocol aimed at "pre-delivering" latrines. In this model, the program incentivizes the LBO to deliver the component parts of the latrine (e.g., rings and slab) to households before the promised date of delivery, deliberately not calling the household to confirm the delivery beforehand. To supplement training on this delivery approach, iDE coached LBOs to better handle customer phone calls in general, focusing on strategies for reversing customer cancellations. Additional training was provided for those LBOs who participated in Payment Installment Plan (PIP) training described in Section 3.5.

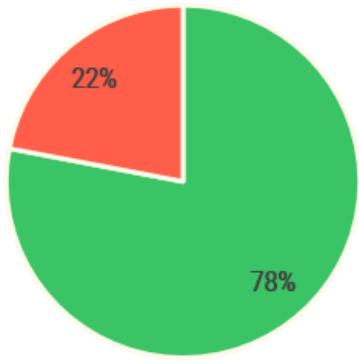
The key priority for pre-deliveries is to arrive before the household's expected date of delivery, which is noted on the household's order form at the time the sales agent closes a sale. If a household refuses to accept the LBO's pre-delivery of the latrine, the LBO can take back the uninstalled latrine components and iDE will pay the LBO \$4 USD to compensate for the transportation cost incurred in the failed delivery. In situations like these, the LBO can also negotiate a payment schedule with the household while leaving the component parts in the household's garden. Customers have expressed positive feedback with the fast delivery time, and no issues have been raised by customers that the delivery doesn't occur during the agreed-upon delivery date range.

FIGURE 11: ORDER STATUS OF ALL PRE-DELIVERIES



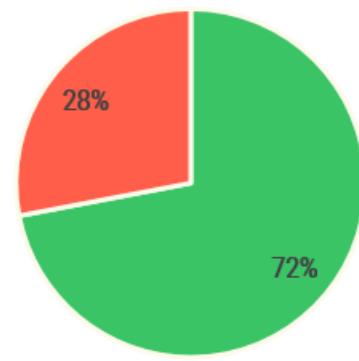
As the chart above shows, for the 8,354 orders that have been pre-delivered since April 2017, the cancel rate is extremely low at 4%. In 2018, pre-deliveries represented 20% of all deliveries, making a major impact on the program's overall yearly cancellation rate. If all orders that were pre-delivered in 2018 were to be removed from consideration, the program's cancel rate for the year would be 28%, in comparison with 22% if pre-deliveries are included.

FIGURE 12: ALL 2018 ORDERS, BY ORDER STATUS



■ Delivered ■ Cancelled

FIGURE 13: 2018 ORDERS BY ORDER STATUS, EXCLUDING PRE-DELIVERIES



■ Delivered ■ Cancelled

Pre-deliveries are not always feasible, in particular when the client preemptively calls to postpone their delivery. However, we believe that by continuing to reimburse transportation costs, communicating the value of pre-deliveries to decrease order cancellations, and building LBO capacity to fulfill orders quickly, a higher pre-delivery percentage can be achieved with an expected improvement of our overall cancel rate.

The cost of providing "delivery insurance" has proven to be insignificant to the program. Since this pre-delivery mechanism and its "delivery insurance" component have been introduced, LBOs have only filed claims for 6 cases of client cancellation on pre-delivery (compensated by our insurance scheme at 4 USD for each case of cancellation). In most pre-delivery cancellations, the LBO has been able to move the spare parts to another nearby customer without having to transport the unit back.

2.5 SMALL AND MICRO ENTERPRISES (SMES) SHOW LOW INTEREST IN ACTIVELY SELLING, ALTHOUGH ARE MORE LIKELY TO ENGAGE IN MARKETING FOR HIGHER-VALUE PRODUCTS LIKE SHELTERS

The Pilot Project demonstrated that local markets can be catalyzed to meet the sanitation needs and desires of rural households. Households are willing to buy and suppliers are willing to sell an aspirational, accessible, and affordable latrine. With facilitation support, enterprises learned the know-how to derive profit from selling improved latrines. The SMSU1 project continued where the Pilot Project left off—focusing on the LBO as the main actor driving latrines sales in order to reach more market segments in rural communities. The hypothesis was that the LBO, motivated by profit, would support active and direct sales. However, iDE observed in SMSU1 that, for a variety of reasons, the LBOs have limited capacity and/or motivation to manage active sales and promotions of latrines. In retrospect, the term “Latrine Business Owner” may have been a misnomer. Rather than an individual focused on latrines as a line of business, they are usually concrete producers who make concrete rings that happen to be used for the latrine product. Without a doubt, they are sustainable businesses in their own right—i.e., they will likely continue selling concrete products even if project activities were to end—but whether or not latrines will remain a significant line of business for them remains to be seen.

In response to this learning, the project’s primary strategy for market facilitation switched its focus to directly recruiting and managing sales agents and coordinating with the LBO to match supply with demand. This model of market facilitation challenges the project’s initial understanding of the role and meaning of sustainability—that the business will sustain a high level of demand creation efforts once project support is removed. Given that these enterprises show little inclination for active sales management, the level of latrine deliveries by LBOs would likely decrease if the project were to remove sales support immediately.

However, in SMSU2, the program increased its efforts to encourage and support LBOs to engage in marketing, rather than direct sales, activities. Most LBOs are familiar with the basic concept of marketing and developing a good reputation; most of the sales they make without iDE are due to word of mouth in their local areas. In SMSU2, the Supply Team increased efforts to coach LBOs to produce and distribute business cards, engage interested neighbors for sales during household installations, and communicate with customers to make sales and avoid order cancellations. For shelter products, iDE technicians supported LBOs to build demonstration models and signboards that could be clearly visible from the roads outside their shops, drawing customers in. In the last year of SMSU2, LBOs also received training on using Facebook to market their products.

While LBOs have been reluctant to engage in much marketing for the low-margin Easy Latrine, we witnessed a significant improvement in LBO-led sales for latrine shelters in 2018. The Ring Shelter, first sold in 2017, was designed to be an aspirational, low-cost shelter. Although being priced at ~\$200 USD (half of the price of the Easy Shelter and Interlock Shelter) preliminary low sales results indicated that this product was a commercial disappointment. However, in the last quarter of the program, after iDE made some modifications to the sales strategy and provided further support to encourage LBOs to market and sell this product themselves, sales of the Ring Shelter saw an extraordinary growth. In 2018, sales of Ring Shelters (171 sold) more than doubled the amount sold during the previous year (85 sold in 2017). Most notably, over 78% of these were sold directly by LBOs to households, without iDE sales agent intervention; in contrast, LBOs only sold 25% of all Ring Shelters in 2017. In 2018, iDE’s most expensive shelter model, the Easy Latrine, saw a similarly dramatic increase in LBO-led sales from 32 in all of 2017 to 96 in 2018. However, in 2018, LBOs were only responsible for selling 19% of the 513 Easy Shelters delivered, with the majority still attributed to iDE sales agents. Regardless, this significant increase in LBO-led shelter sales is a very encouraging trend. The program intends to increase sales and marketing training for LBOs and continue to develop products that diversify the revenue of its affiliated LBOs to support their continued engagement in the sanitation market. It is obvious that LBOs can and do sell their own products, but it seems apparent that higher-profit products like shelters incentivize them more to dedicate efforts to generating demand.

FIGURE 14: LATRINE SHELTER DELIVERIES

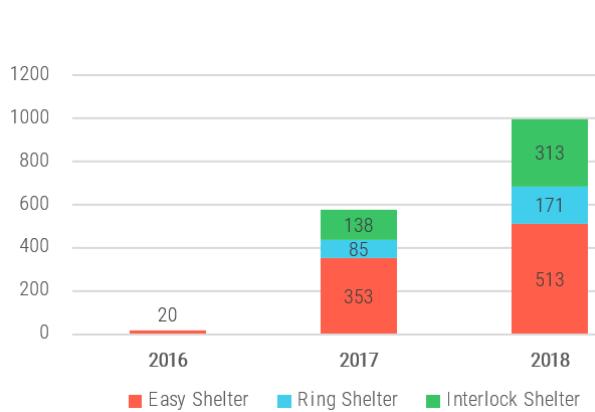
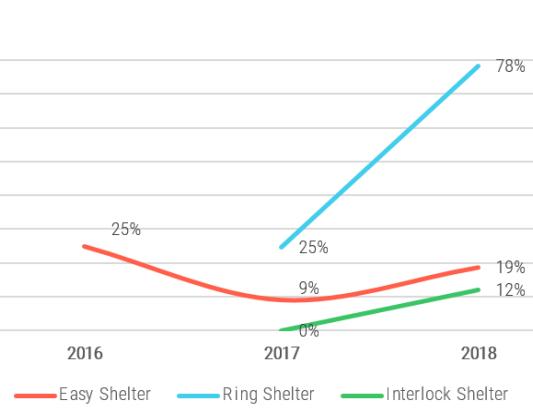


FIGURE 15: PERCENTAGE OF DELIVERIES ATTRIBUTED TO LBO-LED SALES



2.6 LBO ENGAGEMENT IN SANITATION DEPENDS ON THEIR PERCEIVED OPPORTUNITY COSTS: LOW PRICES MAY NOT ALWAYS BE THE BEST FOR THE CONSUMER AS THEY CAN UNDERMINE THE SUSTAINABILITY OF ENTERPRISE MOTIVATION

In the Pilot Project, iDE recommended a minimal profit margin for LBOs (~\$5/latrine) to increase affordability for rural households. It was believed that enterprises would be motivated to sell latrines on a low-margin, high-volume model given the large market of potential customers. Project experience showed that enterprise motivation to sell on low margins depends not only on profit margin, but also depends on the opportunity cost of other lines of business.

In SMSU1, the project found that a low profit margin—\$5/latrine for the LBO and \$2/sales agent—is not sufficient for maintaining sustained engagement. The LBO and sales agent will generally continue to sell if they are experiencing a period of high sales. However, any period of low sales can deter them from re-engaging due to the low profit. LBOs and sales agents, like most rural Cambodian households and small businesses, have multiple streams of income, which they consider when assessing opportunity costs. LBOs, despite the title of “latrine business owners,” are ultimately just concrete producers who happen to make concrete components of a latrine and deliver the parts as a package. They make other concrete products and may have institutional contracts that are more lucrative than latrines. Thus, too low of a margin will not be sufficient to maintain their engagement to actively produce stock and promote latrines.

Over time, iDE has observed that the most engaged LBOs are not necessarily the ones with the largest business. Rather, the highest selling LBOs are sometimes the smallest ones. For example, in the sanitation microfinance pilots in SMSU1, LBOs were originally selected based on their overall capacity, e.g., capital, stock, delivery capacity. However, the project found that LBO engagement in latrine sales had more to do with the proportion that latrine sales comprise of their overall business than the LBO’s actual delivery capacity. Essentially, an LBO with fewer other lines of business, or whose other lines of business were less profitable than latrines, was more likely to be focused on selling latrines. For small businesses with few income-generating alternatives, the opportunity cost of selling latrines was not considered high. This meant that, without excluding small businesses from the supply chain, iDE could encourage LBOs with higher production capacity to continue to engage in the sanitation market by decreasing the perceived opportunity cost of selling latrines. In response to this learning, in SMSU1 the project started advising LBOs to raise the price of latrines, which would also contribute to a higher commission to sales agents. Some LBOs were reluctant as they felt that consumers were already familiar with the market price and thus would not be willing to pay higher prices. However, field observations showed that the prices generally increased while demand remained consistent throughout SMSU1.

Midway through SMSU2, demand for the Easy Latrine eventually began to visibly decline as the market starting showing signs of saturation. In response to this trend, iDE recognized that other mechanisms of market support would be necessary for ensuring the sustained engagement of LBOs in the sanitation market. During SMSU2, the

program experimented with methods to make the Easy Latrine more affordable without decreasing the retail price of the product, including payment instalment plan provision and targeted subsidy distribution (See Sections 3.5 & 3.6). Meanwhile, the program has prioritized new product development to expand the sanitation offerings of LBOs (See Section 1.8).

2.7 PRODUCT PRICE STANDARDIZATION HELPS ENSURE A SUSTAINABLE MARGIN FOR LBOs, REDUCES CUSTOMER AND SALES STAFF CONFUSION, AND IS CRITICAL FOR “LOAD BALANCING” PROCESS

In SMSU1, iDE sales agents sold latrines at prices that varied depending on the LBO to which that sales agent was assigned. While this system was effective at generating sales, the program observed that latrine price inconsistency from one district to another led to customer confusion, resistance, and potential reputational damage for iDE sales teams. Some customers experienced inordinately long wait times to receive their latrine delivery because their LBO was either overwhelmed with orders and/or had a low capacity to fulfill orders.

In the beginning of SMSU2, in the interest of streamlining the supply chain and maximizing market transparency, the program standardized latrine prices at provincial levels and detached sales agents from specific businesses. This enabled iDE to sell and send orders to whichever LBO the program deemed to be able to deliver the order most efficiently (See Section 2.3 for more on the Load Balancing system). Beginning in SMSU2, a standard selling price was set in each province to approximate a gross margin of at least 15%, which for the Easy Latrine, was decided to be the minimum for a healthy, sustainable profit.

In SMSU1, the average selling price (between each of the seven program provinces) for an Easy Latrine unit was \$51, earning LBOs approximately \$14 in profit for each sale (\$0.26 per dollar sold). Gradually, the selling price of the Easy Latrine has increased to an average of \$61 in 2018. The price has increased because material and labor costs have risen, sales agent retention has necessitated higher commissions, customers in some provinces prefer a one-meter diameter concrete ring instead of the standard .8-meter ring, and LBOs have requested higher prices to continue to stay in the market. In addition, the Easy Latrine is now sold with installation included, which adds to the price. While the average selling price has increased by \$10 between SMSU1 and SMSU2, the increased costs required to produce, sell, deliver, and install a latrine have decreased the average profit per unit sold. Today, on average, LBOs can expect to profit around \$0.14 per dollar for an Easy Latrine, yielding between \$7 and \$9 profit per set delivered.

However, while the profitability of the Easy Latrine has declined, the program has developed additional products that can provide LBOs with additional sources of profit and an incentive to stay engaged in the sanitation market (see Section 1.8). iDE’s three latrine shelter models range in price from approximately \$200-\$460 USD, and the ADP upgrade product sells for just under \$50 USD. Shelters offer a high-margin, low-volume opportunity, yielding around \$35 profit for a Ring Shelter and \$70 for an Easy or Interlock Shelter. It is the hope that the relatively new market for ADPs will provide LBOs with the potential for high-volume sales at a profit of roughly \$8.50 per unit sold. Shelters and latrine pit upgrades are suitable for new and old latrine owners, and by supporting LBOs to produce a diverse range of products, iDE intends to facilitate the evolution of LBOs into long-term, sustainable roles as general sanitation suppliers.

As the sanitation market reaches saturation, and poor households make up a larger percentage of the remaining first latrine market, balancing product affordability and LBO profits will be critical to reaching full sanitation coverage. This is an inevitable challenge that iDE anticipates going forward.

2.8 AS THE MARKET MATURES, FOCUS ON LBO QUALITY, NOT QUANTITY

At the end of SMSU1 in November 2014, 138 LBOs were identified as “active,” which means they had fulfilled at least one delivery in last six months. By the end of SMSU2 in June 2018, 108 LBOs were active. Six months into SMSU3, at the time of this writing in December 2018, 69 LBOs are currently active. A key reason for the decline is related to a lack of need for a high volume of businesses as supply chain efficiency improves and demand decreases with market saturation. When latrine demand was at its peak, the program engaged as many LBOs as possible to fulfill orders. However, as market saturation deepens, the program has recognized that the current levels of demand can be met by fewer, high-performing LBOs rather than many variably-performing LBOs. As SMSU continues to broaden its product offerings, the need for flexible, entrepreneurial, and technically capable

LBOs is greater than ever. As such, SMSU has chosen to focus energy on supporting its highest performing LBOs and discontinue its relationship with businesses that show low commitment to producing sanitation products. The decrease in LBOs between SMSU2 and SMSU3 is also partly due to the program scaling back from Banteay Meanchay and Oddar Meanchey provinces.

As intended, the smaller amount of LBOs that are working with iDE are those with stronger business skills, which often translates to a greater capacity and willingness to expand the scope and scale of their operations. Generally, active LBOs in SMSU3 have already begun to diversify their sanitation product offerings, and many are now selling at least one shelter product in addition to the Easy Latrine. These LBOs appear likely to persist longer in the sanitation market, despite market saturation, as they continue to offer products that can serve users besides first-latrine buyers. At this stage in the program, in order to ensure the sustainability of the market, iDE is investing more resources into capacity building for program-affiliated LBOs. In SMSU2 the program trained LBOs on topics including financial management, offering/collecting payment installment plans, and marketing. These training curriculums, among others, will be scaled to iDE's entire LBO network in SMSU3. LBOs also have received installation training for new products like the ADP and our three shelter models.

As mass production capacity has become less of a critical priority now that latrine orders have begun to decline, iDE is increasingly prioritizing the quality over the quantity of businesses it supports.

2.9 LEVERAGING EXISTING SUPPLY CHAIN ACTORS IS IMPORTANT FOR OPTIMIZING CUSTOMER EXPERIENCE

In the Pilot Project, the invention of the concrete chamber box of the Easy Latrine removed the need for a household to hire a mason, since the mason's specialized skills were no longer needed to construct a chamber box of brick and mortar. This was thought to benefit the end-user by allowing them to install the underground and slab portion of the latrine themselves for less cost, and that masons would ultimately benefit through increased demand for brick shelters. However, it was found that many households still prefer to hire the mason for the installation of the whole latrine since installation of the underground component and slab is often done at the same time as installation of a brick shelter, which does still require a mason. Moreover, bypassing the masons in the supply chain also led to some misconceptions about the chamber box quality. As the masons were unfamiliar with the new product innovation, either they would install it incorrectly, or tell the households to return it in exchange for the traditional bricks. That is, because the masons were still involved in the user experience, it was important to engage them so that even if they are not installing the product, they still serve as advocates. The case study of the masons shows that it may not necessarily be in the customer's best interest to bypass seemingly "unnecessary" supply chain actors. Seeking to further strengthen and support rather than bypass supply chain actors, iDE has and will continue to increase product offerings and capacity building efforts for LBOs.

2.10 CONNECTING BUSINESSES IN A NETWORK CAN LEAD TO RAPID TECHNOLOGY AND SKILLS TRANSFER

In July 2016, with grant funding provided by the Manitoba Council for International Cooperation (MCIC), iDE finalized the design for a latrine shelter made from interlocking bricks that would be adapted for people with disabilities (PWD). In order to produce the bricks necessary to construct the shelters, iDE procured a set of brick-making machinery from Thailand and held a workshop for all interested LBOs in Siem Reap to exhibit how the machinery works. If LBOs were interested in producing bricks and shelters, they could apply to borrow it. The program made the decision to lend the machinery to a high-performing LBO in Siem Reap province, Mr. Chhin Bansieng, under the condition that he only sell the shelters to people with disabilities until our contractual commitment of 100 disability-accessible shelters was achieved.

The program began to sell these shelters, called Interlock Shelters, in February 2017. By September 2017 the program had delivered 108 Interlock Shelters through one LBO alone, Mr. Bansieng. Strong demand for Interlock Shelters and the bricks themselves, which could be used for any other construction project, was quickly evident. By mid-2018, less than two years after receiving the brick machinery, Mr. Bansieng had earned enough profit to purchase another set of machinery in cash for nearly \$7,000 USD. By that time, another iDE-affiliated LBO, Mr. Kim Nol, who had attended iDE's 2016 interlocking brick workshop, had already purchased machinery of his own. In September 2018, another iDE-affiliated LBO, Ms. Hat Tin, purchased an interlocking brick machine set with information she received from Mr. Bansieng. The investment of one interlocking brick press by iDE had

encouraged the purchase of three more in a very short period of time.

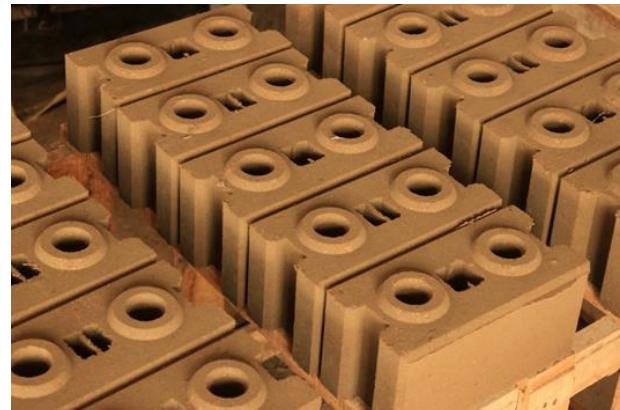
These three LBOs were not the only iDE-affiliated businesses to adopt this technology however. Both Mr. Bunseng and Mr. Nol have begun selling bricks to other LBOs and are providing their new business clients with technical support to construct Interlock Shelters. At the end of 2018, eight LBOs in Siem Reap were constructing Interlock Shelters, and several more LBOs had expressed their intentions to do so as well. After investigating how this technology spread so quickly, we learned a lesson about the importance of network connections between LBOs. After the LBOs first saw the interlocking brick machinery at iDE's 2016 workshop, Mr. Bunseng gave them progress updates at quarterly LBO meetings that iDE organizes. However, the technology also spread through another network outside of iDE: SNV's (through the NOURISH program) Business Service Center project. Mr. Kim Nol, who works with both iDE and SNV, is the leader of the Business Service Center network, which brings business owners together to share insights and participate in SNV's sanitation and business courses. We learned that Mr. Nol uses this meeting to advertise his interlocking bricks and has created an order pooling system in which members of the group divide shelter contracts amongst themselves.

The experience of the spread of interlocking bricks and Interlock Shelters is a reminder of the power of networks. LBOs in communication may find mutually beneficial incentives to work with one another, which can facilitate rapid technology adoption. iDE is continuing to connect its LBOs in quarterly meetings and intends to explore avenues for further network facilitation going forward into SMSU3.

LBO EMPLOYEES CONSTRUCTING INTERLOCKING BRICKS



FINISHED INTERLOCKING BRICKS



iDE CLIENT MR. CHE CHEMM WITH HIS INTERLOCK SHELTER, SIEM REAP PROVINCE



2.11 SOLUTIONS TO CHALLENGING ENVIRONMENTS REQUIRE MORE THAN A MODIFICATION OR ADAPTATION OF THE EASY LATRINE DESIGN; OTHERWISE HEAVY SUBSIDY IS REQUIRED FOR UPTAKE

Throughout the duration of SMSU, the effort to design a latrine suitable for challenging environments (i.e., areas with high ground water tables, frequent flooding, hard ground rock, etc.) has produced three challenging environment latrine pit prototypes: two using an infiltration method developed by iDE and one using a hybrid septic tank-infiltration design created by iDE partners, Engineers without Borders - Australia (EWB-A). However, the program did not introduce any of these prototypes to market. Research and experience has shown that infiltration-based pit latrines, which can themselves be infiltrated with water during periods of high rainfall, especially in high ground water areas, may stop functioning (flushing) as the pit fills entirely with water. The desire to continue to flush one's latrine has encouraged significant portions of the population to engage in a dangerous practice of opening or breaking their latrine pit to allow for excess wastewater to flow out.² There is an additional risk that seeping pit latrines may contribute to environmental and water source contamination in flooded and high ground water areas due to water contact with the untreated pit contents. However, due to the wide range of soil permeability in Cambodia, the extent of this risk is difficult to generalize. The program recognizes that infiltration pit latrines, due to their unreliable functionality and containment capability, are highly unlikely to present a complete solution to containing wastewater in challenging environments in the Cambodian context.

One of the learnings from iDE and EWB-A's experience was that a design adaptation of existing pit-latrines to operate more like septic tank systems is not viable, feasible, or desirable in our context. The complexity of construction and cost of these products, in addition to lack of user awareness or government regulation towards the risks of sanitation in challenging environments, pose a significant barrier to customer adoption.

However, the program recognizes current market potential in developing an upgrade rather than replacement technology that meets user needs while mitigating some of the risk of sanitation in challenging environments. As noted above, the practice of opening or breaking pits to allow for water overflow is a widely observed behavior in Cambodia. Research on the seasonal variation of latrine pit fill rates (see Section 3.8) suggests that rainfall and ground saturation significantly affect the internal volume of latrine pits. In areas that already have high ground water, it could be expected that there is greater likelihood for ground water levels to rise to the point of filling pits with water, inhibiting their ability to flush. In these situations, it is clear that flushing is recognized as the primary household concern over any perceived risk of environmental contamination. With an upgrade product that enables for safe surface or near-surface level discharge of pit wastewater, a household could potentially flush their toilet year-round without exposing their families and communities to fecal pathogens. In partnership with EWB-A, the program intends to explore market-viable technology options that allow infiltration-based latrines to safely flush, regardless of groundwater level or time of year. A technology such as this could support the program's goals of supporting safely managed sanitation through fecal sludge management and risk-reduction for sanitation in challenging environments.

2.12 BUNDLING LATRINE PRODUCT WITH INSTALLATION SERVICE CAN NUDGE HOUSEHOLDS TOWARD USE

While sales efforts have successfully gotten households to make the first step towards latrine usage (the acquisition of the basic substructure), the lack of a shelter prevents use of the latrine due to privacy concerns, weather, or other issues.

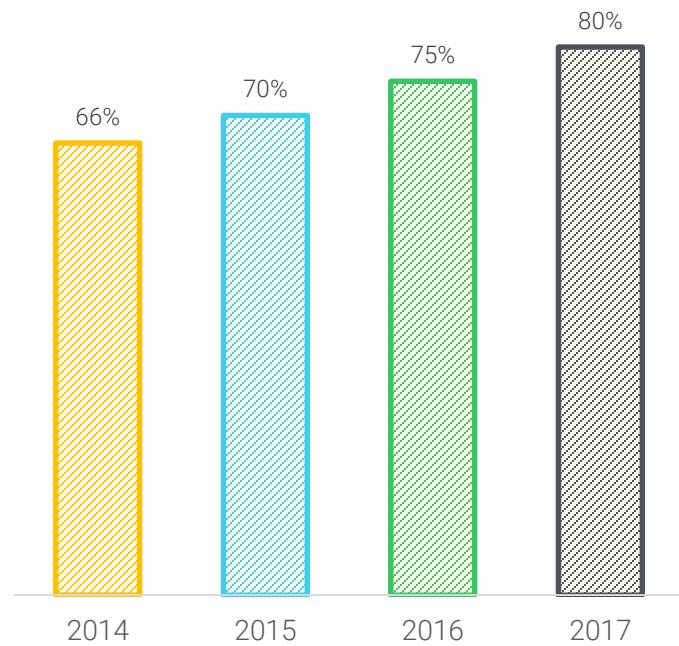
Noteworthy is the strong preference of Cambodian households to build a concrete or brick shelter, which can cost upwards of \$400 USD, compared to low-cost, temporary structures made of materials like bamboo. Due to the significant costs of these shelters, households often must save money for several months to be able to afford one. This delay undermines the health benefits of owning a latrine. While it is the underground components that are important for public health, from the household perspective it is the superstructure that meets their needs for social status, privacy, and convenience. Without a shelter, households generally will not use their latrine. However, although households may wait long periods of time before being able to invest in a shelter, research suggests that they rarely abandon a fully installed latrine in favor of open defecation. Data from the most recent SMSU household survey in 2018 showed that among over 210,000 households visited, only 0.2% had latrines that were

² In two surveys iDE deployed in Svay Rieng province (n=641 & 538) in 2018, the program found that 10-14% of respondents had pierced their latrine pit to allow for water to flow out on the surface.

clearly not being used and appeared to be abandoned.

In order to reduce the time households take to install a latrine shelter, in SMSU2, the program leveraged the capacity of LBOs by including installation in the price of the Easy Latrine. The program hypothesized that an installed latrine would be a constant, visual reminder for a household to devise some type of shelter solution and begin using their latrine. The experience of SMSU2 has led the program to assess that this hypothesis was true. In SMSU2, between 2014 and 2017 the percentage of households that had installed a shelter within 11 months after purchasing an Easy Latrine increased from 66% to 80% (See Figure 15). In SMSU3, the sample window for this data collection will be widened to understand household shelter purchasing behavior between 12 and 18 months post-Easy Latrine purchase.

FIGURE 16: PERCENTAGE OF EASY LATRINE CUSTOMERS WHO HAVE INSTALLED A SHELTER WITHIN 11 MONTHS OF LATRINE PURCHASE



Another, less deliberate benefit of including installation in the price of the purchase is that we believe the added profit opportunity of paid installation has cushioned some of the decline in total profit margin that iDE-affiliated LBOs have experienced in the past four years (see Section 2.7). Going forward into SMSU3, the program's strategy for further increasing latrine installation rate is the development of an aspirational, hyper-low cost shelter that can be included in the purchase of the Easy Latrine. In addition, iDE is building the capacity of LBOs to provide payment installment plans for their products, including latrine shelters. The program will continue to conduct research and develop innovations that have the potential to reduce the shelter installation lag.

3 Sales

3.1 A PROFESSIONALIZED SALES FORCE IS KEY TO EFFECTIVE DEMAND GENERATION AT SCALE

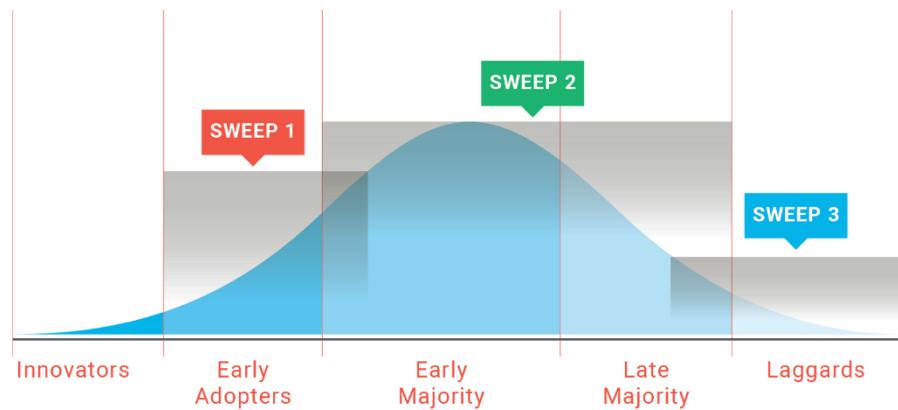
As has been discussed above, when iDE Cambodia initially began its sanitation marketing work, it envisioned LBOs as the primary demand generation agents. Experience indicated that a more direct approach would be required to sell latrines at scale (see Section 2.5). A key component of SMSU's success has been to allocate significant resources and attention to building the skills and management capacity of a dedicated, professionalized sales force. Hiring and retaining management professionals, providing advanced and continuous training for sales staff, developing sales material and performance tracking infrastructure, in addition to investing in external support from sales consultancy firms like Whitten and Roy Partnership (WRP) have proved to be key factors behind the effectiveness of the program's sales efforts.

3.2 CONCEPTUALIZE A SEGMENTED MARKET IN ORDER TO EFFICIENTLY DIRECT SALES STRATEGIES

iDE conceives of its sanitation marketing implementation strategy as three "sweeps." The aim is to achieve maximum efficiency of resource allocation by first targeting those who are most willing and able to purchase a toilet, and then ensuring that financial resources such as financing and subsidies go to the people who really need them—the poorest of the poor. The following is an overview of the "Three Sweeps" model:

1. In the first sweep, sales agents target those who are willing and able to pay on cash—early adopters and some of the early majority market segment. This primarily includes households that have enough available cash and are willing to invest in a relatively new and unfamiliar product.
2. The second sweep focuses on reaching the early and late majority households, including poorer households, through targeted marketing, professionalized sales, product innovations, and the use of sanitation financing. This wave of purchasers includes households that have less cash on hand and/or a greater need to see their neighbors using a product before they are willing to invest themselves.
3. Sweep three targets the remaining "late majority" and "laggard" households without latrines (presumed to include the poorest households) through targeted subsidies and low-burden financing mechanisms like interest-free payment installment plans. Subsidies are "targeted" when they minimize negative distortions in the market that would result from an artificial price decrease of a product. By effectively targeting households that are poor and living in areas of high market saturation, subsidies can equitably improve standards of living for the poorest without damaging the sustainability of the market.

FIGURE 17: THE "THREE SWEEPS" MODEL



The Three Sweeps model is not indicative of the amount of times that a sales agent will visit a village. Sales agents will revisit a village approximately every three to six months, following up with prospective clients in the intermediate time. The Three Sweeps model is essentially a conceptualization of market segments with different needs and characteristics. The market doesn't always develop homogeneously, and some areas within our operating territory with high sanitation coverage would necessitate Sweep 3 strategies, while at the same time a low coverage area in a different province might necessitate Sweep 1 or 2 strategies. The Three Sweeps model does not prescribe discrete, clearly defined thresholds for strategy, but rather serves as an approximation tool to guide our strategies towards meeting the primary needs of the current stage of the market. It is important to note that these sweeps are not exclusive rules for who to engage, but guidelines for how iDE structures, equips, and trains its sales team. As such, low-income households are also reached in the first sweep, and likewise, middle-high income households may be reached in the third sweep.

In the first years of iDE's sanitation program in Cambodia, when sanitation coverage was around 22% in our operating areas, the market for selling latrines was wide open. The market was at the "Sweep 1" stage. Group sales presentations provided an efficient means for promoting a latrine product to the large amount of people who had not yet considered investing in one. Afterwards, iDE sales agents would comb the village with door-to-door sales presentations to follow up with those who didn't purchase at the group sales presentation and to

engage those who did not attend. Both methods had their advantages, but as the market matured, the effectiveness of group sales presentations decreased. As more and more people became toilet owners, the size of the group that a sales agent could gather for a presentation became smaller and smaller. The meetings were consistently attended by the same individuals who participated last time, often the elderly parents of homeowners who work outside of the village.

When the majority of the market reached the “Sweep 2” phase, towards the end of SMSU1, direct door-to-door presentations were the exclusive means by which iDE sales agents were selling toilets. A core priority of SMSU2 was thus deeper training and professionalization of sales staff to conduct consultative door-to-door sales presentations. Additionally, sales agents were equipped with referral information to give households looking for financing for their purchases.

As the market matures and moves into “Sweep 3,” in SMSU3 iDE continues to make strategic changes to meet the needs of a generally poorer, reluctant market. We have developed new products to supplement the Easy Latrine, including three shelter models and a latrine pit upgrade product for fecal sludge management. In order to sell these products, we’ve invested in further training and professionalizing our sales agents to conduct presentations in a way that identifies and addresses the increasingly specific needs of a mature market. We’ve piloted and initiated a scale-up process to sell toilets to poor households with targeted subsidies in addition to supporting businesses to offer low-cost payment installment plans for sanitation products.

3.3 INTENSIVE “BELOW-THE-LINE” CUSTOMER ENGAGEMENT IS NEEDED FOR EFFECTIVE PROMOTIONS

In SMSU’s experience, promotional efforts that lead to significant impact on latrine sales need to involve direct, concentrated engagement with potential customers, such as a group sales event or door-to-door sales. Light-touch promotion initiatives that have been tested, such as health center and religious leader engagement, can add points of exposure, but unless invested in with intensive training and coaching, such channels do not directly target non-owners and address their individual needs and desires.

This is in line with the learning that other Base of the Pyramid (BoP) actors are observing on how “below the line” marketing, usually defined as direct, in-person customer engagement, is necessary for impact in rural village contexts. “Above the line” marketing, which involves using mass media like radio, newspapers, and TV to reach customers, is difficult to measure, often expensive, and is further removed from the end user. However, as smartphone ownership, internet access, and Facebook popularity increase in Cambodia, the program has recognized a new opportunity to increase the strategic marketing reach of LBOs. By building the capacity of LBOs to use Facebook as a platform for product promotion, there is a potential to increase the reach and awareness of new sanitation products and the business itself. The program intends to conduct Facebook-marketing trainings for interested businesses, while potentially using paid Facebook advertisements to strategically increase awareness and familiarity of products sold by iDE sales agents. More discussion on this topic can be found in the report produced by Hystra, in which Hydrologic, a subsidiary of iDE, was one of 15 social enterprises featured. Please see the full report [here](#).

3.4 SOLUTION-CENTERED SALES APPROACH: SELL TO THE PROBLEM, NOT ON PRICE OR PRODUCT

In an effort to improve upon the sales efforts of the Pilot Project, the program uses the Solution-Centered Sales™ approach developed by Whitten & Roy Partnership (WRP). The Solution-Centered Sales approach helps sales agents focus on selling to a customer’s problem, rather than selling on product features or price. Through a personalized conversation with the customer, the sales agent helps the customer identify all the problems he or she is encountering as a result of not having a latrine. A key asset the sales agent uses to guide the customer through this conversation is the “sight seller,” a flip-book style sales presentation tool that highlights the common drivers of latrine uptake. Early in SMSU1, as part of the effort to professionalize sales, the project engaged 17Triggers, a social marketing agency, to work collaboratively with WRP to develop the original sight seller. The messaging in the sight seller incorporated many elements from the National Stop the Diarrhea campaign, maintaining the same tone and style in an effort to maintain consistency with nationwide behavior change efforts.³ Equipped with this tool, the sales agent is able to nudge the customer towards awareness of

³ The National Stop the Diarrhea campaign is an open-source social marketing campaign that was developed under the guidance of the

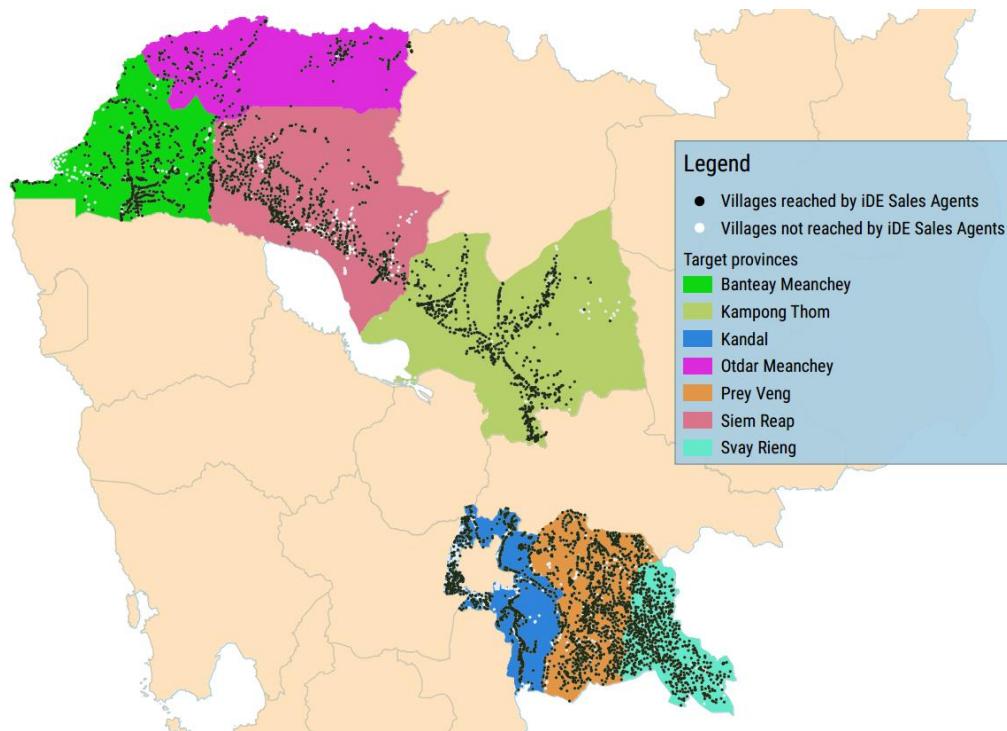
the problems of not owning a latrine. The goal is to intensify the urgency and importance of resolving these problems, and in the process, help the customer to recognize that a latrine is a viable way to improve their quality of life.

The Solution-Centered Sales approach increases the chances that the customer "buys in" to the latrine as a solution to their problems, rather making an impulse purchase due to fear mongering ("Your daughter will get raped if you don't have a latrine") or deception ("This is the last latrine available!"). If a customer has bought into the latrine as a solution, then they are likely to be more satisfied with the product and use the product properly and consistently. A positive customer experience can also result in a client recommending their friends and family to buy, sustainably increasing local demand for sanitation.

As the program has developed, so too has its sales strategy. In SMSU2, the sales approach was modified to make the problems that a household faces tangible through a cost-benefit analysis. Essentially, the sales agent would support the potential client to calculate the real monetary cost, derived from productive time lost and medical expenditures due to sanitation-related illness, that the household is paying due to not having a toilet. This approach, combined with the logical yet emotional appeal and conversational style of the initial Human Centered Sales technique, proved to be effective in motivating households to purchase a latrine.

In SMSU2, iDE recognized that many of the households that sales agents were visiting had already been exposed to a presentation by iDE or other groups promoting sanitation. iDE canvases the vast majority of its operating areas with its sales efforts, often revisiting villages two to three times per year. For example, between January 2017 and January 2018, iDE sales agents visited 4,798 villages, equating to 92% of all villages in the program's operating provinces. Over time, we have increasingly found that rural Cambodians understand that sanitation is important for health and recognize that non-latrine use is a problem. To adapt to increased public awareness around sanitation and saturation of iDE's sales messaging, the program revised its sales technique to make a case that could be more compelling.

FIGURE 18: VILLAGES REACHED BY IDE SALES AGENTS BETWEEN JAN. 2017 AND JAN. 2018



In 2016, with the support of WRP, iDE trained its sales staff on the "Direct to Close" strategy. This approach involved beginning a conversation with the household and probing about whether or not the household had seen this presentation before. The sales agent would ask the potential customer, "Can you tell me the benefits of owning a toilet?" After hearing a few reasons from the household, the sales agent would agree and provide additional reasons that weren't mentioned. This would be followed by asking, "So you seem to be aware of the many benefits of owning a toilet, so why don't you own one?"

Household responses to this question gave the sales agent an understanding of the client's barriers to purchasing and an opportunity to present the product alongside solutions (like financing), clarify misconceptions (regarding price, quality, etc.), and explain why benefits of purchasing could outweigh these barriers (emphasize cost-benefit analysis). The "Direct to Close" approach increased sales effectiveness in situations in which households had been visited previously.

However, as the market has saturated and matured, sales agents became increasingly unable to offer solutions to households' barriers to purchasing. For example, an increasing proportion of unserved households are simply too poor to afford a toilet. Other households purchased a toilet long ago and now have a need for toilet and shelter upgrades.

In order to effectively sell latrines at this stage of the market, sales agents need to be equipped with more solutions for customers. In SMSU3, the program has shifted its strategy to address this reality. To sell to the poorest households, the program is scaling up its capacity to sell latrines to IDPoor 1 and 2 customers at a discounted price with a targeted subsidy. We are also expanding and deepening training for LBOs to offer and collect payment installment plans to our entire operating area. To enable sales agents to adapt to the changing market, the program moved from utilizing single-product sales agents (either selling latrines or shelters, not both), to multi-product sales agents (selling latrines, shelters, and the alternating dual pit upgrade) who can adjust their sales pitch and product offering for households that have already invested in their first latrine. In SMSU3, iDE is also dedicating more attention to developing new products like lower-cost shelters and pits/upgrades that are appropriate for challenging environments.

Equipping sales agents with more solutions to customers' diverse problems is one piece of the strategy to make sales in the current sanitation market. The other critical priority is increased sales staff professionalization. The program has invested in expanding its in-house training department, called the Sanitation Market Academy, to provide more in-depth and regular training to sales staff on how to engage customers with increasingly specific needs (see Section 1.1). The future of Human Centered Sales in Cambodia is a highly consultative approach, supported by deeply-trained sales agents equipped with a range of products and solutions to meet increasingly specific customer needs.

3.5 WHILE FINANCING CAN FACILITATE FASTER SANITATION UPTAKE, OTHER CREATIVE FINANCING METHODS MUST BE SOUGHT OUT, LIKE SUPPLIER-LED PAYMENT INSTALLMENT PLANS

The 2013 randomized control trial research conducted by IDinsight on willingness-to-pay with financing showed that under certain operating conditions, financing has the potential to increase latrine uptake fourfold at a \$50 market price and decrease operating costs by 70%. The research demonstrated that sanitation financing is a promising approach for increasing latrine uptake cost-effectively. Building on this research, iDE encouraged financing for Easy Latrine sales, although it was confronted by challenges to scale, primarily related to coordination with microfinance institutions. Generally, loans take far longer to approve than the time for an order to be fulfilled, which is one reason why households often rely on quicker, informal lending from friends, family, or local moneylenders for latrine purchases. 53,348 latrines were sold with financing in SMSU1 (37.8% of all sales), and 32,337 (23% of all sales) were sold with financing in SMSU2. In total, over 28% of all SMSU latrines have been purchased with formal or informal borrowing. It is undeniable that financing has had a major impact on the scale of iDE's sanitation marketing program.

However, in March 2017, in response to increasingly endemic over-indebtedness of the Cambodian population, the Cambodian Government instituted an interest rate cap of 18% per year on all microfinance loans offered in the country. With this regulation, it became virtually impossible to receive a loan for a small, non-income-generating purchase like an Easy Latrine. Immediately, financing from formal lending institutions ceased to be

an option for increasing latrine uptake for low-income Cambodians. Likewise, with the knowledge that the population has become unsustainably over-indebted, the program recognized the moral imperative to seek out other options to increase latrine affordability without relying on interest-bearing financing.

iDE has begun to explore other models that are more appropriate for providing financing to rural households. In 2017 the program began a pilot to support LBOs to offer payment installment plans. iDE conducted a supply network survey that revealed that women were frequently managing the financial and transactional aspects of latrine businesses, and that supporting skills development in this area could help improve the decision-making power of women in our LBO network. With this insight, the program developed a training pilot for latrine business owners with a special emphasis on women that focused on

- how to offer a non-interest bearing payment installment plan (PIP) to spread latrine payments over several months
- how to evaluate client credit worthiness (i.e., likelihood that the client could and would repay)
- how to document client repayments and make collections
- advanced budgeting and financial management

The response to this training pilot was positive: 41 latrine businesses attended the trainings, with 58 total participants. While men still comprised the majority of those participants, a third of the participants were women, representing half of the businesses.

Training, however, doesn't necessarily imply empowerment, and we are cognizant of the risk of incidentally increasing the unpaid burden of work on women without improving their decision-making power or influence. With this in mind, no goals were set on the number or percent of women involved in the training, although iDE made a deliberate effort to engage as many female business partners as possible as part of our gender equity strategy. Survey-based feedback of participant enthusiasm and requests for additional advanced training indicates that the potential pitfalls of gender-based training programs were likely avoided.

In order to encourage businesses to provide PIPs to the customers who need them most, iDE offered latrine business owners an insurance guarantee for defaults by poor customers (as identified by the Cambodian government's IDPoor system). Essentially, iDE would reimburse a percentage of the LBO's loss due to a default by an IDPoor1 customer, with a lesser amount reimbursed for a default by a relatively less-poor IDPoor 2 customer.

Following the training, these latrine businesses started to offer PIPs to clients who wanted to cancel their latrine order, often due to lack of total funds when the latrine was ready to be installed. At the end of the pilot, 80 PIPs had been offered by the businesses. 96% of PIP recipients repaid in full, with only one client officially defaulting on repayment and two remaining outstanding. To date, no businesses have applied to receive any reimbursement on defaults per iDE's insurance guarantee. One reason is likely the low default rate experienced in the pilot. Additional anecdotal feedback suggests that LBOs understood the risk they were taking when offering PIPs and didn't feel it was just to ask iDE for reimbursement. Any encouraging effects of the insurance on LBOs offering payment plans are still unclear.

As part of the training, iDE initially suggested that, rather than charge interest, businesses assign an administrative fee on top of the latrine cost to recoup expenses associated with their handling of the installment plan (i.e., having to make several trips for collection, etc.). However, businesses had a very difficult time getting customers to agree to the administrative fee, so iDE adapted the training to suggest that the latrine cost be increased by \$5, then to offer a \$5 discount to those customers who could pay the full amount in cash on delivery.

Interestingly, an alternative to the PIP for which many customers showed interest was a delayed payment in full, otherwise known as a "balloon payment." iDE plans to investigate this kind of payment method and potentially include this model in future trainings.

An unintended consequence of the PIP pilot involved the ways in which latrine businesses consistently applied what they learned from the training to other aspects of their business. A common instance was of businesses using payment tracking tools and collections methods to recover funds when clients were unable to pay after latrines had been delivered. At the end of the pilot, latrine businesses had reported using iDE's training to support repayment on at least 176 such cases.

In SMSU3, iDE has equipped the Sanitation Marketing Academy with a PIP curriculum that has been revised and

improved based on pilot learnings (see Section 1.1). These trainers have been tasked with supporting supply chain management staff to deliver these trainings and provide consistent coaching throughout iDE's LBO network.

3.6 WELL-TARGETED SUBSIDIES CAN REACH THE POOR IN A COST-EFFECTIVE WAY WITHOUT DISTORTING THE SANITATION MARKET

By the end of 2018, latrine businesses trained and supported by iDE had successfully sold more than 300,000 latrines at market price. For the duration of SMSU, iDE Cambodia has facilitated the sale of unsubsidized latrines, avoiding many of the market-distorting effects associated with subsidy programs while selling 20% of all latrines delivered by the program to the poorest Cambodians. In order to explore the feasibility of deploying subsidies without distorting the sanitation market, in November 2015, iDE launched a Targeted Subsidy Pilot in three districts in Kandal province. In collaboration with Amplify Markets and Causal Design, the program looked at an innovative delivery mechanism for targeted subsidies through a micro-credit scheme. IDPoor households were targeted through regular sales events and were able to purchase latrines at a discounted price. Additional options for financing were also made available pending credit approval.

The Targeted Subsidy Pilot leveraged the existing iDE sales agents, supply chain, and micro-financing partner from an earlier financing pilot. Through this pilot, iDE hoped to build on best practices and develop a scalable strategy to serve the rural poor with targeted subsidies and loans while ensuring long-term engagement of the private sector. The study found uptake rates among poor households that were offered subsidies increased by 14 to 16 percentage points compared to the control group, while there was no significant effect on non-poor households. Additional analyses show that lower baseline coverage rates may be associated with lower non-poor latrine sales, suggesting that implementers should delay the introduction of subsidies until markets have matured in order to minimize distortions. Interestingly, cost effectiveness of the program (measured in cost to program per latrine sold) was actually higher because more latrine sales (with subsidies) occurred in the target areas.

Well-targeted latrine subsidies have the potential to increase sanitation coverage more efficiently than unsubsidized efforts and may do so without adversely affecting sales to non-poor customers. But care should be exercised when making policy and implementing subsidies. Some key learnings in our experience are

- Timing is key: While subsidies proved to have a clearly positive impact on sanitation uptake by the poor, the analysis also showed that lower baseline coverage rates are weakly associated with lower uptake by non-poor households. This finding suggests that implementers should avoid introducing subsidies into a market too early to avoid unintended market distortions. When setting national policy, governments and regulatory agencies should also consider at what point local markets are best able to handle targeted subsidies.
- Familiarity with the local market matters: iDE conducted this study in a geographic area where we have maintained a sanitation marketing presence over several years. Our network of experienced local sales agents and management team were invaluable to ensuring we understood the local market and were able to address operational challenges associated with administering subsidies.
- Subsidies must be well-targeted, but targeting can be a challenge: The IDPoor system in Cambodia represents an almost ideal system for deploying targeted subsidies. While iDE recognizes that the IDPoor system isn't perfect and registration of households is sometimes outdated, the general population trusts it and iDE staff and sales agents were able to use it to quickly confirm household eligibility for targeted subsidies. Such systems are not common in the developing world, so others attempting to replicate this approach will need to proceed cautiously when designing their subsidy verification and study protocols.
- Subsidies offer operational efficiencies when compared to financing: Much of the sector's energy has been focused on strategies for unlocking capital to provide financing to consumers of WASH products such as latrines. During this pilot and in iDE's experience more generally, slow loan processing times and high rejection rates have made it difficult to operationalize sanitation financing at scale. In contrast, well-targeted subsidies can be simple and inexpensive to administer, making them an attractive alternative to financing as a means of reaching the poorest and most vulnerable.

More information about the targeted study design and findings can be found in iDE's 2017 policy brief,

"Leveraging Targeted Subsidies to Increase Sanitation Coverage."

In SMSU3, the program is scaling targeted subsidy delivery to each operating province. Our distribution model is based on the findings of the Targeted Subsidy Pilot, and we do not plan to introduce subsidies to households without evidence of IDPoor status, at an amount that reduces the latrine price below \$30 USD, or in areas with sanitation coverage below 60%. This is aligned with policy put forth in the Ministry of Rural Development-endorsed Hardware Subsidy Guidelines that iDE helped craft in 2017.

3.7 A BIGGER SALES FORCE IS NOT THE SOLUTION FOR TODAY'S MARKET

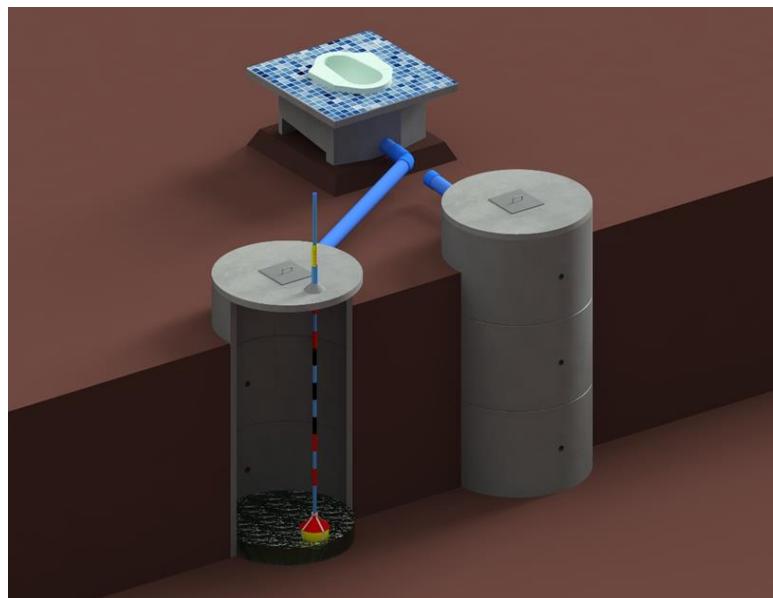
Since SMSU1, the driving sales strategy was that more sales agents would equal more sales. This was a highly effective guiding principle when the market was full of buyers, many who had similar needs for their first latrine and were willing to pay full retail price for one. Now, there are fewer first-time latrine buyers and they each have unique needs in terms of product features and financing options. Employing a "swarm" approach, with a large sales force offering only one product, appears to no longer be the answer. As iDE Cambodia expands its product diversity, the sales force must be capable of effectively selling multiple products. Similar to the SMSU3 priority on a high-capacity rather than high volume network of LBOs (see Section 2.8), a smaller, higher-skilled sales force, better equipped to speak to customers' diverse situations, will be key going forward. This is also a key reason for the expansion of the Sanitation Marketing Academy discussed in Section 1.1.

3.8 THERE IS SIGNIFICANT MARKET POTENTIAL FOR FSM PRODUCTS AND SERVICES, BUT ACTIVE PROMOTION WILL BE NEEDED TO STIMULATE DEMAND

As latrine coverage increases, fecal sludge management in Cambodia is becoming an ever more pressing issue. In order to learn more about this issue and develop potential solutions, from 2017-2018 the program implemented a multi-faceted fecal sludge management (FSM) pilot. The goal of this pilot was to learn more about FSM behaviors, attitudes, and practices as well as test the viability of a FSM product, the Alternating Dual Pit (ADP) upgrade. The pilot had three main objectives:

- Assess the market viability of the ADP product through sales tests
- Test the impact of the "Pit Gauge" pit content measurement product (pictured below) to trigger household demand for FSM
- Conduct research related to FSM through surveys and pit fill rate measurement

FIGURE 19: ALTERNATING DUAL PIT WITH PIT GAUGE 1.0

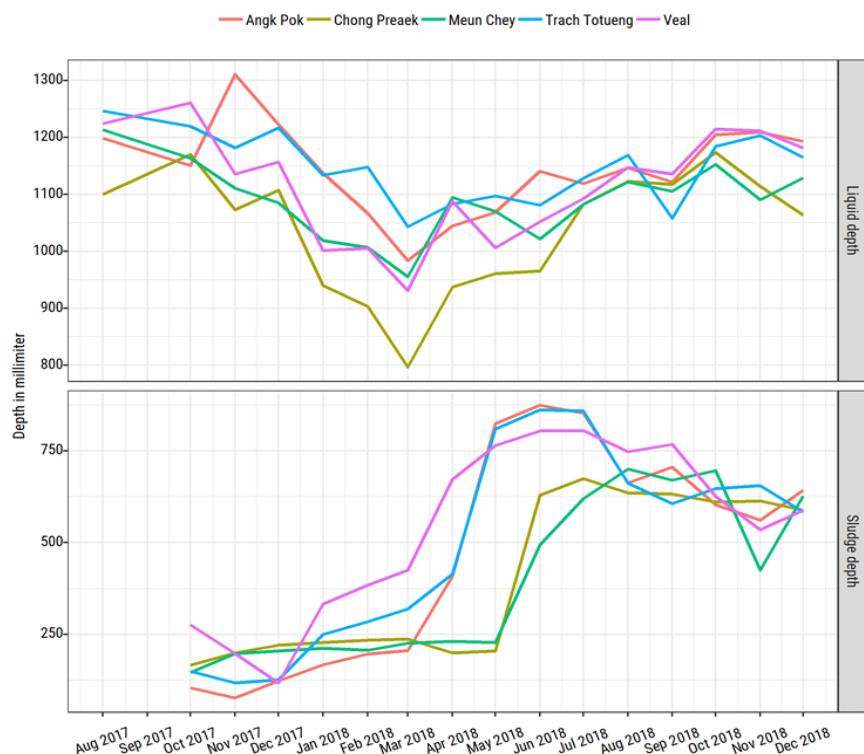


The three components of the pilot listed above were implemented simultaneously. Sales tests involved iDE sales agents using the direct sales method (the same approach as for the Easy Latrine) to sell the ADP to households. Sales operations were conducted in three, four-week waves. iDE implemented this “three-wave” approach in order to learn from each wave and refine our approach each time. The spacing of the waves was also designed to widen the time-span of data gathering in order to better take note of seasonal variations that affect sales due to weather and customer cash flow. Household-level survey data collection was being conducted throughout the duration of the pilot.

Sales closing rates for the ADP were promising at 13.6%, although cancellation rate was approximately 27%. 158 ADPs were ultimately delivered during the pilot, however the impact of the Pit Gauge on demand is unclear at this point. The pilot initially didn't consider that households that received Pit Gauges experienced a higher degree of FSM promotion and influence from program-connected actors. Households with Pit Gauges came into contact far more with Village Chiefs, who had been compensated by iDE to help identify and select homes with latrines in use for over a year. These households also interacted more with iDE staff, including engineers who installed the Pit Gauge, and research assistants who visited each household every month to measure the pit fill level. So while households with Pit Gauges had a much higher sales closing rate (27% of all sales presentations given, compared with 12% for non-Pit Gauge households) and the percentage of cancellations was much lower for Pit Gauge households (8% of orders were cancelled compared with 34% for non-Pit Gauge households), the effect of the Pit Gauge product itself, versus engagement with the program, is difficult to assess from these results. However, regardless of the Pit Gauge, it is clear that there is significant demand for the ADP product in high sanitation coverage areas like Svay Rieng province.

The results of the Pit Gauge monitoring study in Svay Rieng clearly show the seasonal variation in pit fill level attributable to variable levels of rainfall. While the Pit Gauge was initially designed to allow a researcher to discern the different levels of sludge and fluid inside a pit, the broad spectrum of density of sludge between pits made distinction between liquid and solid fill levels difficult to accurately assess. Liquid measurements are much more consistent and provide a more reliable indication of the situation inside pit latrines during the course of a year. These trends in Figure 20 below will be considered while planning for ADP sales strategies.

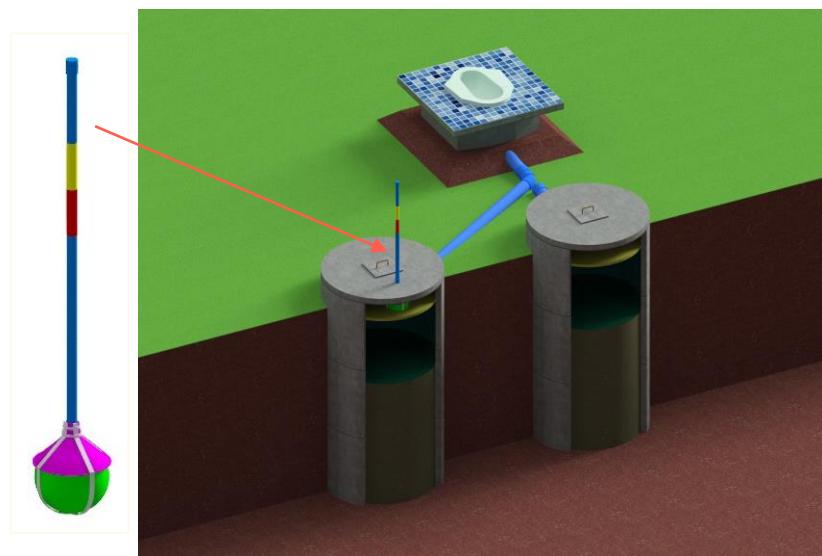
FIGURE 20: MONTHLY AVERAGE DEPTH OF LIQUID AND SLUDGE FROM 100 LATRINES IN 5 VILLAGES
AUG. 2017 - DEC 2018



The program conducted two surveys in the pilot area to assess the FSM situation and behaviors. 88% of survey respondents reported having only one latrine pit (n=538), which is an encouraging finding, indicative of significant market opportunity for the ADP. In addition, only 16-18% of respondents claimed to have ever emptied their pit before (n=639 & 538), which indicates that people have purchased latrines relatively recently. This may be an opportunity for positive behavior change related to pit emptying, as there doesn't yet appear to be an entrenched behavior protocol for doing this. However, between 10-14% of respondents had pierced their latrine pit (n=641 & 538) by the time of the survey, presumably to let overflow water drain out and restore functionality to the toilet. This behavior is a serious and significant sanitation health hazard that iDE will dedicate attention to addressing in SMSU3.

In SMSU3 the program has begun scaling the ADP product to each of its operating provinces. The program improved the installation process to make it easier and cleaner due to learnings that the potentially dirty nature of the work was increasing laborer turnover for LBOs. The Pit Gauge product will be sold with the ADP and has been re-designed to serve as more of an alarm than a measuring tool. Now, rather than requiring manual interaction with the Pit Gauge to calculate the pit content level, a colored indicator will rise from the pit when the fluid inside reaches the top ring. It is the intention that this visual cue will serve as flag for households and sanitation suppliers that the pit is nearly full, stimulating demand and sales opportunities for products like the ADP or pit emptying services. The program is currently selling the ADP through both group sales presentations as well as direct, door-to door sales to assess the effectiveness of these different promotion channels. A revised sight seller and sales script has been developed to make a compelling case for purchasing this product.

FIGURE 21: PIT GAUGE 2.0



4 Government Engagement

4.1 ACHIEVING OPEN DEFECATION FREE STATUS WILL REQUIRE STRONGER LOCAL ENGAGEMENT

Early in the program, iDE dedicated significant efforts to engaging and developing capacity of the Cambodian government. However, recognizing that government capacity building would not be the key factor behind catalyzing a sanitation market, the program focused on supporting the private sector with limited involvement from the public sector. In SMSU2, the program's interaction with the government was mostly limited to national-level WASH sector meetings and maintaining officially documented support and good rapport. Official approval and good relationships with provincial-level government, primarily the Provincial Departments of Rural Development, has always proven to be valuable for securing support from commune and village-based authorities during sales activities.

The Cambodian government has set the goal to reach nationwide Open Defecation Free (ODF) status by 2025. This is ambitious, but iDE is dedicated to supporting efforts to reach this target. However, with fewer potential first latrine customers, some of whom are working outside of their home provinces and only return sporadically, our sales agents never have the chance to engage them. Our sales agents visit villages every three to six months, but with fewer prospects available each day in a village, a different local engagement strategy is required that allows for more accessible, constant points of sanitation promotion in the village.

Reliable, local referral points would be valuable assets for the program to reach clients with specific needs who aren't always in the village. In SMSU3, we developed the Public-Private-Partnership department, which seeks to address this core issue. The goal of this department at the sub-national level is to conduct "Village Activations," in which program staff recruit "Sanitation Champions" to be local sanitation focal points. These Sanitation Champions, comprised of influential community members like Village Chiefs, Commune Committee for Women and Children members, and other authorities, are recruited and incentivized with commissions for successful referrals for latrine purchases to local LBOs. iDE staff and the sanitation champions then conduct a village mapping exercise to identify non-latrine owners and their reasons for not purchasing a latrine yet. It is the hope that the market intelligence and constant presence of village-level referral points will support local authorities and iDE to identify and meet the specific needs of remaining non-latrine owners. iDE intends to explore other methods for supporting communities to reach ODF, including building local technical monitoring capacity and establishing additional referral points to latrine businesses. Other referral points could include religious institutions and local fast-moving consumer goods retailers who may be leveraged to encourage community members to invest in improved sanitation.

4.2 PROPER TRAINING, ONGOING COACHING, AND MONITORING IS IMPORTANT FOR SUCCESSFUL LOCAL GOVERNMENT ENGAGEMENT

As noted above, early in SMSU1, the program dedicated efforts towards government capacity building. A key learning throughout this process was that government engagement, like private sector engagement, needs to be supported with a holistic approach of ongoing training, coaching, monitoring, and relevant tools. In SMSU1, a yearlong Behaviour Change Communications (BCC) campaign was conducted in 20 communes in Kandal and Svay Rieng provinces, leveraging existing national Stop the Diarrhea Campaign materials. The purpose of the BCC campaign was two-fold – first, to learn whether the additional intervention of a BCC campaign will increase latrine uptake, second, to learn whether the Commune Committees for Women and Children (CCWCs) would be the recommended government partner body for implementing such an intervention.

Instrumental to the effectiveness of the SMSU1 Behavior Change Communications (BCC) campaign was a holistic but practical system of coaching and monitoring, in conjunction with relevant and easy-to-use tools. Despite the many development issues the Commune Committee for Women and Children (CCWC) cover in educational village meetings, many CCWC facilitators cited the BCC campaign as the first time they have ever received coaching and tools on speaking about sanitation, or any topic for that matter. Notably, it was not just a one-time training but rather training supported with ongoing check-ins and feedback that helped the CCWC improve and gain confidence in engaging villagers. The ongoing training and feedback is important for helping the CCWCs learn by doing, and making improvements immediately upon receiving real-time feedback, as opposed to waiting until the end of a project after the evaluation. This lesson is important, especially when considering conducting capacity building for the government at scale. Moreover, local government officials often show enthusiasm for sanitation efforts. However, they only have limited resources and know-how. Further engagement and resourcing of government at all levels and across various ministries is necessary to further empower local government to actively support sanitation.

4.3 ENGAGEMENT PROCESS OF OTHER MINISTRIES NOT CONSISTENT ACROSS PROVINCES

As part of the effort to establish multiple touch points with households and catch them when they are most intensely experiencing the negative effects of not having a toilet (diarrhea), in SMSU1 the project sought to partner with local health centers to do light-touch marketing, e.g., handing out fliers for latrines during consultations. However, the project discovered that without formal inter-ministerial agreements for collaboration at the national level, field level inter-institutional collaboration is difficult. The nature of governance culture is very hierarchical –

lower levels of staff are generally hesitant to pursue any activities that are not officially sanctioned by their superiors. These challenges were apparent in the project's effort to engage health centers, which are under the Ministry of Health. The MoH, given its role in setting health protocols, naturally has strict procedures of engagement. The project's efforts in engaging health centers yielded inconsistent results, with some health center staff being more open to informal relationships testing new promotional ideas than others. Without higher-level permissions, engagement of other ministerial institutions will be inconsistent across provinces and thus more difficult to scale in a standardized manner. Success in doing so will depend on the individual province's level of government support and engagement.

For more on iDE's work in WASH, visit our website at

<https://washmarkets.ideglobal.org>

