Rural Consumer Sanitation Adoption Study

An analysis of rural consumers in the emerging sanitation market in Cambodia

October 2014

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Acknowledgements

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Executive Summary

The Rural Consumer Sanitation Adoption Study was conducted to review the Water, Sanitation and Hygiene Enterprise Development (WaterSHED) *Hands-Off* Sanitation Marketing program. The program was designed to catalyze the market for improved sanitation in rural Cambodia by stimulating household demand and improving the supply of affordable sanitation options for rural households. A key underlying principle was to consider households as consumers rather than as beneficiaries of charity. The theory of change was that **affordable, desirable latrines** profitably sold by local enterprises, alongside **effective promotions and behavior change efforts,** led and supported by **civic champions** within local government, could effectively stimulate rural household consumers to invest their own resources in durable, improved household latrines.

In two and a half years (30 months) from June 2010 to November 2012, enterprises working with the program **sold over 42,000 on-site Latrine Core packages** to rural household consumers. During this time, the program expanded from a pilot project targeting 537 villages in four districts of one province, to a full-scale program operating across six of Cambodia's twenty-three provinces. As of November 2012, there were approximately **160 enterprises trained and supported by WaterSHED** to deliver the new Latrine Core package to households **in over 5,000 villages** within the *Hands-Off* program area. This area comprises over 36% of all rural villages in Cambodia. About **620 local sanitation promoters** (sales agents) have been trained and equipped to deliver key sanitation messages and sell the low-cost latrines. The 'Stop the Diarrhea' behavior change campaign (BCC) developed and piloted by WaterSHED in partnership with the Ministry of Rural Development has been adopted by other NGOs and development partners both in Cambodia and internationally and has laid the foundations for a **Cambodian national BCC campaign**.

The Rural Consumer Sanitation Adoption Study (RCSAS) was designed to assess the results of the WaterSHED *Hands-Off Sanitation* Marketing program in terms of its influence on rural consumer demand for and uptake of improved household latrines. The specific objectives of the study were:

1. To compare current household sanitation preferences and practices, levels of improved sanitation coverage, and barriers to adoption with the 2009 baseline household survey in the original project pilot area in Kampong Speu Province after 2 years of program activity;
2. To evaluate current household sanitation preferences and practices, levels of coverage and barriers to adoption in one program expansion area (Kampong Cham Province) after 18 months of activity, including tracking uptake of the new latrine technology introduced by the program; and

To analyze customer satisfaction and explore the impact of program strategies and activities on households' sanitation attitudes and investment behavior, as well as the effects of non-project external factors (e.g., hardware subsidies, CLTS triggering, village typology) on uptake and purchase behavior.

The RCSAS involved a village-level investigation of sanitation conditions and coverage, and a household-level investigation of sanitation demand behavior, preferences, practices, uptake and exposure to the *Hands-off* SanMark intervention. In order to achieve the different study objectives, two distinct sampling strategies were used to select villages in Kampong Speu and Kampong Cham. In Kampong Speu, the study returned to 36 randomly selected villages from the 2009 baseline survey to measure changes at village and household level (Objectives 1 and 3). In Kampong Cham, 33 sample villages were randomly selected from a stratified pool of 'high, medium, and low' performing villages that had recorded ten or more latrine sales by WaterSHED-supported enterprises (Objectives 2 and 3).

In each of the 64 study villages, a household-level analysis was conducted on a choice-stratified random sample of latrine 'adopter' and 'non-adopter' households. The RCSAS defined latrine 'adopter' as a household that had purchased the new Latrine Core 'chamber box' product technology introduced and promoted in the study areas through the WaterSHED *Hands-Off* program. 'Non-adopters' were defined as those with no household latrine. A total of 695 household surveys were conducted, including 342 (49.2%) adopters and 353 (50.8%) non-adopters.

Village-level Results

Improved sanitation coverage nearly doubled in original pilot area, growing by 18 percentage points in three years. From a baseline of 21%, improved sanitation increased to 38.9% across the original Kampong Speu pilot area. Growth in improved sanitation coverage is fully attributable to an increase of pour-flush latrines in the target area: Dry pit latrines saw a net decrease of 2 percentage points, while coverage of pour-flush latrines doubled, growing by 18.5 percentage points.

WaterSHED activities accelerated improved sanitation coverage by 4.7 to 7.0 percentage points per year - 4 to 5 times the expected annual background rate. Using the average annual background rate of 1.3 percentage points, the RCSAS calculated the rate of increase over and above this natural rate; that is, the increase that could be attributed to WaterSHED sanitation marketing interventions. Since there was a delay between the baseline survey in June 2009 and actual marketing efforts, which began in June 2010, it was not possible to calculate the exact rate of accelerated increase over the 2 years of actual marketing efforts. From baseline to RCSAS, the actual increase in improved latrine coverage above the expected background rate was 14 percentage points. This is equivalent to an average annual rate of increase of between 4.7 and 7 percentage points, or roughly 4 to 5 times the expected annual rate.

In the pilot area, sales from WaterSHED-supported enterprises accounted for 41.7% of all new pour-flush latrines, suggesting positive 'ripple effects' for other enterprises in the emerging market. Among villages in the original pilot area, sales recorded by WaterSHED-supported enterprises accounted for 41.7% of all new pour-flush latrines. On average, 19 new pour-flush latrines per village were purchased during the intervention period, including an average of 8 latrines per village sold by WaterSHED-supported enterprises. The data would indicate that marketing activities are able to stimulate consumer demand, creating positive 'ripple effects' for all enterprises (not just those working directly with the program). At the same time, the entry of the new lower-cost Latrine Core package may help to increase competition among existing enterprises, with other enterprises lowering prices of conventional latrine components to compete with the new technology.

Defecation practice and latrine usage

Households with installed Latrine Core use it. For those without an installed latrine, open defecation remains the norm. Installed adopters report that nearly all adults and children usually use their household latrine for defecation, although children are slightly more likely to continue the practice of open defecation. Among adult adopters with installed latrines, reported latrine usage is consistently high in both the wet and dry seasons in both Kampong Speu and Kampong Cham. Children in installed adopter households are reported to have less consistent latrine usage behavior in the wet and dry seasons, and are more likely than adults to defecate in the open despite having access to a latrine.

There is some progress on changing practices around disposal of baby feces, but more attention is needed. Findings related to disposal of baby feces for Kampong Speu are mixed, indicating a slight improvement in good practice for baby feces disposal among installed Latrine Core adopters compared to the general population of latrine owners at baseline, but an increase in unsafe disposal among those without an installed latrine. Similarly, in Kampong Cham the picture is mixed, with a variety of unsafe disposal methods currently being practiced.

Latrine installation rates

Over half of those purchasing a Latrine Core in the last 6 months had installed it. Nearly all adopters installed the latrine after 18 months or more. Conversion from purchase to installation was faster in Kampong Cham. Among adopters who have purchased a Latrine Core within the last six months, 55% had an installed latrine at the time of the RCSAS study. These rates continue to increase over time, with 57% of adopters having installed within 7-12 months of purchase, 66% having installed at 13-18 months, and 90% having installed after more than 18 months. The study thus indicates that nearly all the adopters will have an installed latrine within 18 months of purchase. A sizable proportion of adopters are installing in a relatively short timeframe, and others may delay. Kampong Cham adopters demonstrate a faster conversion from Latrine Core purchase to installation, possibly due to improved SanMark strategies: by the time the program expanded into Kampong Cham, it had refined training, sales models and marketing messages.

Desire for a high-end 'ideal' shelter results in installation delays. The additional cost and effort associated with higher-end shelter construction is the main cause of delayed installation. Among those who have purchased but not yet installed their latrine, the most common reasons for delaying were that they were saving money for the shelter, saving money to hire labor, did not have enough money, and were waiting for free time to build (in that order). Uninstalled adopters have invested in an improved latrine, plan to construct it, and are in the advanced stages of the process. However, while they delay installation, most of these households will continue to defecate in the open. It is clear that more emphasis is needed on faster conversion from Latrine Core purchased to installed, functioning latrines in use.

Equity and access

Latrine adopters are generally 'better-off' than non-adopters. However, there is evidence of registered 'poor' households investing in the new Latrine Core. In both provinces, latrine adopters have more diversified income sources and more permanent housing materials. Demographic characteristics confirm that non-adopters are generally not as 'well-off' in terms of household head education and employment. Non-adopters are also younger, have more under-five dependents, and are more likely to engage in day labor. In Kampong Speu, about 5% of adopters were registered IDPoor households, compared to over 26% of non-adopter households. In Kampong Cham, about 17% of Latrine Core adopters were registered IDPoor households, compared to almost 29% of non-adopter households. While non-adopters are more likely to be classified as IDPoor, the findings indicate that some registered IDPoor households were part of the 'early adopters' investing in the new Latrine Core within the first two years of marketing efforts. Despite their poverty classification, these IDPoor households were willing to prioritize latrine purchase as early adopters.

SanMark activities are shifting the demographic profile of the latrine owner, encouraging latrine uptake among more female-headed, less educated, and more vulnerable households. Compared to latrine owners at baseline in Kampong Speu, new Latrine Core adopters tend to have less education (14% of adopters have had no formal education, compared to 7.4% of baseline latrine owners), are more likely to be female-headed households (24% of adopters, compared to 18.8% of baseline latrine owners), and are more likely to depend on agricultural incomes (91.4% of all adopters, compared to 67.8% of baseline latrine owners). The differences in the demographic profile of new Latrine Core adopters compared to baseline latrine owners indicate that SanMark program activities have resulted in latrine uptake among less 'better off' rural households.

Latrine product knowledge and preferences

When prompted with an image of the Latrine Core, over three-quarters of all households confirmed they had seen or heard of it before, nearly one-third knew an enterprise that sold it, and most knew how much it cost. Even without prompting, when asked what technologies they had heard of or seen before, about one-quarter of all non-adopters specifically mentioned the pour-flush latrine with the new Latrine Core, and more than 20% stated the Latrine Core was their most preferred technology type.

Awareness and perceptions of new latrine products

Non-adopters are hearing about the new products from neighbors and family members. Among those who were aware of the new Latrine Core, the majority of non-adopters (nearly 67% in Kampong Speu and 76% in Kampong Cham) reported hearing about or seeing the new product from a friend or family member. In both provinces latrine adopters are also hearing about the new product through other direct communication channels such as village events and sales agents.

Enterprises selling the Latrine Core are generally considered reliable, trustworthy, and offering good quality products. Among households who were aware of an enterprise selling the Latrine Core, respondents were asked to give their opinions about the enterprise. Nearly 92% of all respondents stated that the enterprise was reliable or very reliable; 73% stated it had good or very good product quality, and 69% said it ranked good or very good in terms of providing credit.

Decisions and drivers of latrine purchase

Product exposure and peer pressure have the greatest influence on purchase decisions. When latrine adopters were asked why they purchased their latrine when they did, the most common responses were: attended a village meeting about sanitation (20%), my neighbor got one (20%), children became physically mature (18%), sick/old relative (17%), sales agent visited my home/village (13%), price was acceptable (7%), and social pressure (7%). The findings suggest that although motivations for latrine construction might include benefits such as convenience, comfort or health, the triggers for actual purchase relate to more immediate concerns, in particular exposure to the new product (seeing and learning about it at a village meeting) and peer pressure or influence (wanting the latrine that your neighbor has).

Home delivery, affordable prices, and new promotional models are what motivate households to buy from WaterSHED-supported enterprises. When asked what made them decide on the particular enterprise, the most common responses from adopters were: the enterprise was offering home delivery (21%), the price was reasonable (21%), I met his/her sales agent at a village sales event (16%), my neighbor/family member recommended it (16%), the enterprise had a good reputation (13%), and I met him/her at a village sales event (12%). The findings confirm that the distribution, promotion, and sales strategies introduced by the WaterSHED *Hands-Off* program are increasing consumer preference for and selection of enterprises selling the Latrine Core. Home delivery and reasonable prices are the top reasons why consumers are choosing these enterprises; and exposure to sales agents, enterprises and village sales events are providing them with the information and assurance they need to place an order.

Latrine purchase experience and process

Nearly three-quarters of all adopters purchased the Latrine Core through a sales agent. Over 71% of all adopters report purchasing their Latrine Core through a sales agent. Kampong Cham adopters were much more likely to report a sales agent purchase, with 85.4% reporting sales agent purchase compared to just 53.3% in Kampong Speu.

Government officials play key roles in connecting consumers with sales agents. The majority of adopters who purchased through a sales agent learned about the agent through the village chief or a commune official. Nearly 60% of all adopters who purchased through a sales agent reported knowing the agent prior to buying a latrine through them. Across both provinces, over 29% of those purchasing through a sales agent identified the agent as their village chief, and 18% identified the agent as a commune official. Kampong Cham adopters were more likely to know and identify these other roles of the sales agent. The findings seem to confirm the role that trust, relationships, and familiarity can play in helping consumers to make purchase decisions.

Sales agents promoting the Latrine Core are generally considered reliable, helpful, and good sources of information and advice. Among adopters who had purchased through a sales agent, 93% stated that the sales agent was reliable or very reliable; over 82% stated they were helpful or very helpful; and 84.5% said they were a good or very good source of information/advice.

Only 36% of adopters recalled receiving installation and correct usage instructions. Those who received instructions used them. Among installed adopters who recalled receiving the instructions, 65.5% reported using them during installation. Almost 95% of these adopters reported satisfaction with the instruction sheet, stating they were good or very good in terms of helpfulness during installation.

Latrine types, satisfaction and usage

Households do not need to climb a 'sanitation ladder' to reach improved coverage: Over 90% of new adopters have never owned a latrine before. For nearly 91% of all installed adopters, the Latrine Core is their first household latrine (Table 43). In the Kampong Speu pilot area, where CLTS activities have been more intensive, 8.1% of installed adopters 'upgraded' from a dry pit latrine. This compares to about 5% dry pit upgrades in Kampong Cham. The finding confirms that many households can and will 'jump' from open defecation directly to an improved latrine when conditions are right. When they are motivated to change their sanitation situation, households do not necessarily need to climb a 'sanitation ladder' to reach improved coverage.

Latrine adopters are installing more than the basic Latrine Core and are building high-end shelters. Preferences for the 'ideal' latrine persist. Installed adopters have made substantial investments in additional underground materials and 'higher-end' shelter constructions. Although the basic Latrine Core includes three concrete rings for the pit lining, 42.6% of installers purchased five or more concrete rings. Thus far, marketing activities do not seem to have changed consumer desires for a 'high-end' latrine shelter. Most installed adopters have invested in latrine shelters with concrete/brick walls (79%) and a galvanized iron roof (over 86%). Median investment is 150 to 200 USD. There is some evidence of 'lower-end' shelter constructions in Kampong Cham, with 20% of all installed adopters building shelter walls and roof of lower-cost materials (compared to 5-10% in Kampong Speu).

Nearly half of all installed adopters saved or borrowed cash for their latrine. Over 6% took an MFI loan and 7% paid the enterprise in installments. Among adopters with installed latrines, 55% indicated they paid for their latrine with money they had on hand. Other households needed to explicitly save or borrow the cash to make their latrine investment. About 27% of all installed adopters saved their own money, nearly 10% borrowed from family or friends, and just over 6% borrowed from an MFI or bank in order to get the cash needed for their latrine purchase.

The vast majority of installed adopters report high levels of satisfaction with their new latrine. Three-quarters have recommended the product to their family and friends. Nearly all (97%) of installed adopters were satisfied or very satisfied with their new latrine and the services they received from the enterprise. About three-quarters of all installed adopters recommended the latrine product to friends, neighbors, or family members. About half of all installed adopters have bought or would consider buying other materials or services from the enterprise.

Knowledge and practice around safe pit emptying must be addressed. When asked what their household planned to do when the latrine pit becomes full, about 40% of installed adopters indicated they would have someone in their family manually empty the pit, 29% indicated they planned to hire someone to empty the pit with a mechanical pump, and 22% stated they would hire someone to empty it manually. Most installed adopters plan to spread the pit contents directly on their field as fertilizer.

Non-adopter satisfaction, intention and barriers

Non-adopters are not satisfied with their current defecation practice. Nearly 70% of non-adopters stated they were unsatisfied or very unsatisfied with their current defecation practice. When asked why they were unsatisfied, the most common reasons were that the place is too far, not safe, dirty, not convenient, and smelly (in that order).

Compared to the baseline, more non-adopters have discussed a latrine purchase, and have done so more recently. The percentage of non-adopters who have talked about latrine building increased from a baseline of 85.5% to 89.9%. Non-adopters have also discussed latrine building more recently, indicating that latrine ownership is growing as an immediate concern for the family.

Non-adopters indicate an awareness of and intention to use WaterSHED-introduced latrine purchase mechanisms. About 69% of non-adopters said they would purchase their latrine through a sales agent. About 40% of all non-adopters could state the name of the local sales agent selling latrines.

Compared to the baseline, more non-adopters have identified a site and the construction labor for a latrine. The percentage of non-adopters who have chosen a site for their latrine increased from 67.9% of non-adopters at baseline to 80.4% of non-adopters in the RCSAS. Those who have selected a mason increased from 33.6% to 41.3% of non-adopters. At the same time, a greater proportion of non-adopters indicate they will construct their latrine by themselves.

Fewer non-adopters are saving towards a latrine, but more would now consider taking a loan for construction. Compared to the baseline, RCSAS findings indicate a decrease in non-adopters saving towards a latrine purchase, from a baseline of 8% in 2009 to 5% of non-adopters in 2012. While there are fewer non-adopters saving for a latrine, there is a greater willingness among non-adopters to consider taking on debt for their latrine purchase: The percentage of non-adopters stating they would consider taking a microfinance loan for a latrine increased from 4.8% to 8.9%.

Over 70% of non-adopters indicated some likelihood of construction in the next year. Compared to the baseline, likelihood of construction has decreased. Likelihood of construction has generally decreased among non-adopters, from a baseline of 84% to 72.6% of non-adopters expressing some likelihood, and from 16% to over 27% stating there was no chance of latrine construction in the next year. The findings may reflect a problem of early adopter 'saturation': as current marketing efforts encourage those 'better off' early adopters in the community to purchase and install their latrines, the rates of new households who are willing and able purchase may decrease. Given the relatively short timeframe of marketing activities thus far, it is also possible that early and late majority households may move towards investment as social norms shift and more households invest.

Affordability remains a critical purchase barrier for many. Over 90% of non-adopters stated the reason they had not yet purchased a latrine was that they did not have enough money/could not afford. This points to real or perceived financial constraints as the most significant barrier to purchase. When asked how an enterprise could make it easier for them to be able to purchase a latrine, the two most common responses were to offer home delivery and to offer installment payment plans.

Sources of information & awareness of behaviour change messages

Exposure to product sales opportunities and product information is essential. Compared to non-adopters, new latrine adopters are more likely to have attended a village sales event and to have received a home visit from a sales agent or government official specifically to discuss buying a latrine Adopters were also more likely than non-adopters to recall specific WaterSHED-introduced behavior change communication messages from the Stop the Diarrhea campaign.

Conclusion and Recommendations

The RCSAS confirms that the WaterSHED program has resulted in a substantial acceleration in improved latrine coverage and usage in the study areas. Household consumers are now able to access an improved latrine more easily and more cheaply than before. New distribution and sales mechanisms are increasing household awareness of and exposure to more affordable latrine products and increasing motivation to invest in an improved latrine. Enterprises are demonstrating that they serve at least some segments of the previously un-served rural market. Nonetheless, significant challenges still remain. The RCSAS reveals a number of opportunities to break down remaining barriers to uptake of improved latrines and to further evolve WaterSHED's market-based approach:

Barrier 1: Overcoming affordability and other barriers for the poor and poorest

Explore and expand consumer financing for those with some ability to pay:

The RCSAS confirms a growing demand for microfinance and installment payment plans among non-adopters. WaterSHED should continue to work with microfinance partners and enterprises to refine these types of flexible consumer financing options. This may including offering supply-side finance to enable more enterprises to offer consumer installment payment options.

Management response[1]

WaterSHED management agrees and has made significant progress in this area following the recommendation. Recognizing that microfinance institutions (MFIs) serve clients with wide-ranging needs (not only for toilets), WaterSHED tries to follow the Hands-Off principles by aligning its engagement of MFIs with their existing lending operations. If substantial modification of existing processes is required for MFIs to offer specialized loan products for toilets, we have found less appetite among MFIs to engage. Instead of creating NGO-MFI partnerships that place new burdens on the MFI, WaterSHED's emphasis is on facilitating relationships directly between MFIs and local enterprises. Not only does this put the right entities into direct contact, it also enables the MFIs to charge origination fees (or interchange fees) from enterprises - rather than collecting subsidies from NGOs. Such fees are similar to the interchange fees paid by merchants around the world who accept payment cards such as VISA or Mastercard, and is typically around 2 percent of the purchase price. These relationships have resulted in over 6,000 new consumer loans (at time of writing) in less than 2 years and WaterSHED now facilitates with MFIs in all target provinces. Supply-side financing for consumer on-lending appears to be a more complex issue. Anecdotally, suppliers are reluctant to offer financing or installment payment options. Tracking and collecting payments are not their core competencies, and many suppliers consider customer default to be an unacceptable risk.

Consider alternative financing options for the poorest:

A number of opportunities, including conditional cash transfer (CCT), voucher, or output-based aid (OBA) options may enable the poorest to access improved sanitation if effectively targeted. The national IDPoor scheme in Cambodia offers a simple means of poverty targeting. The RCSAS finds that households with two or more children under 5 years old are much more represented among non-adopters, offering another potential inclusion criteria for such schemes. IDPoor households are more highly represented among uninstalled adopters, pointing to the potential that cash rebates may play in incentivizing these households to move from purchase to full installation.

1 This and the following management responses are provided by the WaterSHED management team, not the study authors. They were written in response to the first draft of the study and in many cases reflect new activities or changes that have been informed by - or implemented as a result of - the findings of the study.

Management response

Several organizations are testing alternative subsidy mechanisms in Cambodia, including OBA and CCT options. The WaterSHED team is eager to learn the results of these efforts and to understand if they can be efficient for reaching the poorest. While we believe that subsidies may be appropriate to incentivize poorer households, strict discipline is necessary to ensure that recent advances in the development of the sanitation supply chain are not i) compromised with an erosion of the perceived value of toilets due to artificially lower prices; nor ii) exploited by subsidy programs simply to expand conventional (poorly targeted) hardware subsidies. In cooperating with other organizations, donors, and the government, WaterSHED is advocating that poverty-targeted subsidies have transparent and clear eligibility criteria for poor households, and are preferably implemented in areas where remaining non-adopters are predominantly the poorest. If eligibility criteria are unclear and the overwhelming majority of households are eligible for subsidies - as is presently the case for several programs in Cambodia - we fear a return to the conventional hardware-subsidy approaches of the past, which failed to lead to widespread adoption of toilets.

Develop more explicit mechanisms for measuring equity:

WaterSHED should develop specific indicators and targets to measure progress in reaching the poor and poorest. Indicators might include the percentage of IDPoor households installing an improved latrine.

Management response

Achieving total rural sanitation is a major objective of WaterSHED, but we recognize that it cannot be achieved with sanitation marketing alone. WaterSHED sees the sanitation marketing approach as an exciting new tool to significantly accelerate access to sanitation in rural areas, where non-adoption is not confined to the poorest segment and the majority of households do not have a latrine (in Cambodia). However, it is important to note that open defecators in rural Cambodia are still more represented among the poorest 40 percent than latrine adopters, which is partly why sanitation marketing must be implemented within a context that promotes equity across several dimensions. Complementary policies and programs are necessary to support local government engagement, changes in behaviour norms around sanitation, community ownership, gender equity, access for children, the elderly, and people with disabilities, access to consumer financing, strictly targeted subsidies for the poorest, etc. WaterSHED is investing significant resources to improve the broader programmatic context along these lines - both directly (e.g. the Civic Champions project) and indirectly through effective collaboration with government and development partners.

With respect to measuring equity, WaterSHED carries out periodic surveys (e.g. as done for this Rural Consumer Sanitation Adoption Study) as well as qualitative studies to better understand the changes in the profile of adopters across a range of equity dimensions. The RCSAS study did measure the percentage of IDPoor households installing an improved latrine. To develop a richer picture of the changes in equity, we promote open data initiatives and data-sharing between sector actors in the belief that new mechanisms for measuring equity should be harmonized.

Barrier 2: Expanding and improving the reach of the program

Continue to strengthen IPC channels and mechanisms:

The RCSAS confirms that interpersonal communications (IPC) are highly effective in encouraging and enabling latrine purchase, since most households learn about and decide to install a latrine by interacting with trusted sources of information such as friends and respected leaders. The study recommends further strengthening these models and tactics, including the door-to-door sales and one-on-one sales opportunities already in use, as well as improved tactics and techniques during sales events.

Management response

WaterSHED is committed to supporting the private sector to further professionalize sales and marketing mechanisms. In line with the recommendation from this study, we have placed greater emphasis on tracking and developing IPC channels. Enterprises record sales events and door-to-door sales activities daily, and there have been improvements in both the content and format of promotional materials. WaterSHED staff now place greater emphasis on working with the most active sales agents and suppliers in a consulting role. We also continue to develop our staff capacity to respond to the needs of the private sector, and conduct intensive supplier workshops to bolster the quality of their consumer engagement tactics.

Specifically target those who purchase latrines to help convert purchase into installation:

Local government officials should be supported to follow-up with new purchasers to discuss when and how they plan to install their latrine, and talk through what to do if they are having problems or delays. WaterSHED can use its recently announced WASH Civic Champions program as an opportunity to explore how best to engage local officials in this type of activity, as well as other ways to encourage faster installation after purchase uptake.

The issues associated with open defecation will not be resolved until everyone in every family is consistently using an improved latrine. Purchase of a latrine core is an important step on the change pathway. Following the recommendation above, WaterSHED has enhanced its strategy in the following areas to improve installation rates:

1. **Installment services:** WaterSHED is encouraging more enterprises to offer installment services. Over 40 percent of supported businesses now provide this service and, where available, roughly 30% of adopters are purchasing the service.
2. **Civic Leadership**: In June 2013, WaterSHED began a program to support the development of civic leadership amongst commune councilors in rural Cambodia. While aiming to develop leadership more broadly, this program also engages and challenges civic leaders to work with their communities to tackle open defecation. Rejection of open defecation and a 'one-house one-toilet' policy are examples of key reforms to be promoted together with creating a greater sense of urgency, using motivational triggers highlighted in the RCSAS. This approach incorporates a mechanism for follow-up by village chiefs to encourage all adopters to install and use their latrines. Critical to widespread adoption is the change in the social norm from acceptance of open defecation to rejection of it.
3. **Alternative low cost latrine shelters:** WaterSHED has implemented a research and development initiative to design lower-cost shelter options for latrines and to identify ways to bring new shelter product options to market (see below).

Use communications and sales tools to promote an 'upgrade pathway' for the latrine shelter:

The RCSAS indicates that much more emphasis is needed on the latrine shelter. Communication messages and images should discuss and show cheaper (natural) shelter options and how to build them. Sales and promotional tactics should include persuasive arguments about why it is better to install the new Latrine Core with a natural shelter straight away than to delay purchase or installation while waiting for the 'ideal' shelter.

Management response

We agree that the promotion of rapid installation of latrine shelters is critical. WaterSHED has significantly ramped up its support of local authorities to develop their role in inspiring and influencing community-wide behavior change, with a focus on early installation and use of both Latrine Core and shelter (including promotion of the upgrade pathway from low-cost shelters). In parallel, recognizing that low-cost alternatives to natural shelters are needed to meet consumer aspirations, WaterSHED is undertaking user-centered design research to develop and market such options (see below).

Design and promote low-cost shelter options:

WaterSHED should continue to pursue the development of affordable, desirable latrine shelters that can be bundled with the Latrine Core.

Management response

WaterSHED recently received the Reed Elsevier Environmental Challenge 2013 award. This award has enabled WaterSHED to take up the challenge of designing lower-cost shelter options for latrines. A design team is engaged full time to develop viable, low-cost shelter options that can be locally produced / assembled, promoted and distributed, providing aspirational, affordable, and permanent latrine shelter solutions.

Ensure a good understanding of baseline coverage prior to the launch of marketing activities:

Although it may slow down expansion into new sales areas, taking the time to understand baseline coverage (e.g. through baseline surveys or using reliable secondary data) before marketing efforts begin is a critical step that helps the program to meaningfully track and measure progress in terms of growth in community coverage, not just in terms of new sales.

Management response

We agree with the importance of measuring progress and are helping to improve the reliability of secondary (government) data. In lieu of adding to the litany of NGO-led, ad hoc data collection efforts, WaterSHED is working to build the capacity of the Commune Councils and the Provincial Departments of Planning to strengthen the national Commune Database (CDB). In line with the Royal Government of Cambodia, WaterSHED now uses the CDB data in each target area to provide a coverage baseline and to track annual changes in coverage, which enables better measurement of progress towards total sanitation for all. At the same time, WaterSHED continues to collect data on the change of other sanitation access characteristics across target provinces. Such ad hoc surveys provide a cross check to the CDB.

Barrier 3: Ending open defecation and ensuring that latrine purchase results in sustained, safe improved sanitation behavior.

Expand behavior change communications campaign messages to include disposal of baby feces:

The Stop the Diarrhea campaign can be expanded to include key messages about simple ways to safely dispose of infant feces and latrine use among children. RCSAS findings indicate that this practice needs greater attention, including consumer research to understand motivations and barriers to safe disposal.

Management response

WaterSHED appreciates that the improper disposal of infant's feces is a major health concern in rural Cambodia. Recognizing that proper disposal is more challenging if the family does not have adequate sanitation and hygiene facilities, WaterSHED has begun tackling this issue through research to understand the enabling factors for desired practices. In partnership with the London School of Hygiene and Tropical Medicine (LSHTM) WaterSHED is undertaking formative research in rural Cambodia to identify current practices in managing infant and young children's feces, to determine barriers and motivators for hygienic feces management, and to investigate the acceptability and appeal of relevant enabling products.

Strengthen focus on proper packaging for correct usage:

Enterprises should be encouraged to include installation instructions as an integral part of the product package. More research may be needed to understand whether enterprises are including instructions and, if not, the reasons why. Changes may be needed to make it easier for enterprises to offer correct usage instructions.

Management response

WaterSHED continues to support local businesses to provide a brochure with installation instructions with each Latrine Core sold. Brochures are also distributed by sales agents and suppliers at sales events and through door-to-door sales activities. WaterSHED's consultative support to businesses has resulted in more than 40 percent of businesses offering latrine installation service. Approximately 30 percent of consumers are choosing to opt for the installation service, where available.

WaterSHED is undertaking the shelter design project (see above) and proposes to link both Latrine Core and shelter purchase more closely, including installation and financing options.

Develop specific messages and user education on safe handling and re-use of human excreta.

The Stop the Diarrhea campaign and/or product marketing materials can be expanded to include key messages about what to do (and what not to do) when latrine pits fills up.

Management response

We agree that simple messages about what to do when the latrine pit has filled should be included in promotional materials and are working with government and enterprises to better inform consumers. At the same time, WaterSHED recognizes that the options currently available in rural Cambodia for safe pit waste management are very limited (see below).

Design and test business models to address other areas of the sanitation value chain.

Service models for collection, treatment, and reuse should be piloted in the short to medium term, so that workable models are in place as the first wave of new adopter pits begin to fill.

Management response

Consistent, safe practice for collection, treatment, and reuse of pit waste requires the availability of convenient and affordable options. Previous research into business models for emptying and centrally treating rural pit latrine waste revealed tenuous viability -- transport costs due to low population/toilet density and high water levels in waste represented one major constraint. Related to this issue, WaterSHED is investigating options to extend the life of the pit latrine system. These include the promotion of a second pit during the initial purchase, and encouraging enterprises to target existing consumers with the offer of a second pit approximately two years after the sale of a latrine. We are also considering onsite disposal options that could be appropriate for the rural setting, such as a modified Arborloo pit waste management system. In cooperation with local authorities, these options could be promoted with critical safe-handling instructions. WaterSHED has also partnered with researchers investigating innovative waste digestion options, including the use of Black Soldier Fly larvae. Business models for innovative digestion options will be tested when technical feasibility can be established.

1. Background

1. Background

1.1 Cambodia Context

Rural Consumer Sanitation Adoption Study was conducted to review the results of the Water, Sanitation and Hygiene Enterprise Development (WaterSHED) *Hands-Off* Sanitation Marketing program. The program was designed to catalyze the market for improved sanitation in rural Cambodia by stimulating household demand and improving the supply of affordable sanitation options for rural households.

When the WaterSHED *Hands-Off* program began in 2009, Cambodia was posting the lowest sanitation coverage rates in the region, with over 75% of the rural population practicing open defecation. Rural improved sanitation coverage had increased at a rate of just one percent per annum over the previous decade (WHO/UNICEF 2012). In this context of very low sanitation coverage and years of only marginal improvements, Cambodia's Ministry of Rural Development and sanitation sector partners were ready to explore alternatives to conventional sanitation programming.

In 2006 and 2007, market assessments commissioned by the World Bank Water and Sanitation Program (WSP) indicated that demand and supply side conditions in Cambodia might be favorable to a market-based sanitation approach (Salter 2008). These early national assessments confirmed that there was a strong latent demand for improved latrines in rural Cambodia, and sufficient numbers of existing local enterprises already providing latrine products and services to the rural market.

1.2 Hands-Off Sanitation Marketing

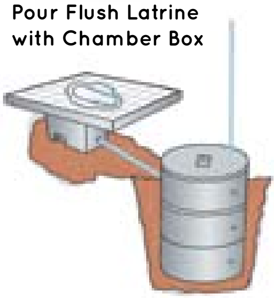
The WaterSHED pilot project[1] was one of the early initiatives exploring the potential of the Sanitation Marketing (SanMark) approach in Cambodia. With expertise from the design firm IDEO, a multi-stakeholder team of Cambodians, that included WaterSHED staff, successfully designed an affordable Latrine Core package (Fig 1).[2] The project then designed a set of market facilitation strategies to address demand - and supply-side barriers to latrine uptake (Table 1). A key underlying principle was to consider households as consumers rather than as beneficiaries of charity. The theory of change was that **affordable, desirable latrines** profitably sold by local enterprises, alongside **effective promotions** and **behavior change** efforts, led and supported by **civic champions** within local government, could effectively stimulate rural household consumers to invest their own resources in durable, improved household latrines.

The early stages of the program moved through key steps of the SanMark program cycle including: 1) market research and product design, 2) design and testing supply- and demand-side strategies, 3) launch of a full package of SanMark activities to achieve 'proof of concept' in a pilot area, and 4) program scale up and expansion (Fig. 2).

In two and a half years (30 months) from June 2010 to November 2012, enterprises working with the program sold over **42,000 on-site toilet packages** to rural household consumers (Table 2, Fig. 3). During this time, the program expanded from a pilot project targeting 537 villages in four districts of one province, to a full-scale program operating across six of Cambodia's twenty-three provinces. As of November 2012, there were approximately **160 enterprises trained and supported by WaterSHED** to deliver the new Latrine Core package to households **in over 5,000 villages** within the *Hands-Off* program area. This area comprises **over 36% of all rural villages in Cambodia**[3]. About **620 local sanitation promoters** (sales agents) have been trained and equipped to deliver key sanitation messages and sell the low-cost latrines. The 'Stop the Diarrhea' behavior change campaign (BCC) developed and piloted by WaterSHED in partnership with the Ministry of Rural Development has been adopted by other NGOs and development partners and has laid the foundations for a **Cambodian national BCC campaign**.

Figure 1: The Latrine Core package

Pour Flush Latrine with Chamber Box



Latrine Core package includes:
- Ceramic pan cast into 100cm concrete slab (typically tiled)
- Re-designed concrete Chamber Box waste collection unit with PVC pipe connection*
- 3 pre-cast concrete rings of 100cm diameter and 5cm thickness
- Pre-cast concrete lid with access hole and cover
- Home delivery

** The chamber box is the unique latrine component that differentiates the Latrine Core package from other available latrines on the market. See Pedi et al. 2012 for further discussion of key features of the new design.*

1 The initial pilot project (entitled the 'WASH Marketing Project') included WaterSHED consortium partners Lien Aid and World Toilet Organization in implementing and technical support roles. As the program went to scale, WaterSHED evolved into a social enterprise and registered as a local Cambodian NGO, taking on full management of the program.

2 The product design process was facilitated and led by the Sanitation Marketing Pilot Project implemented by iDE with support from WSP and USAID.

3 The 2008 General Population Census records 14,073 villages in 159 districts. However, it notes that the total number of villages according to the Ministry of Interior is 13,852.

Table 1: Market Barriers and Hands-Off Marketing Strategy Responses

	Market Barrier	WaterSHED strategy response
Demand-side - Consumers	Desire for high-end (but unaffordable) pour-flush toilet and unwillingness to invest in a 'lower level' product	Development of very low cost base 'Latrine Core' model with the same core attributes as the high-end latrine while allowing for incremental shelter upgrades
	Health not a key motivator for toilet purchase; 'It can wait' attitude of low priority given to investing in a toilet	Promotion of status, pride, convenience and cost-saving benefits of toilet ownership; use of peer pressure; toilet as a status symbol
	Difficult and complex purchasing process	Direct marketing by sales agents; product available as a complete set in a DIY kit form with home delivery included in purchase price
	Inherent lack of trust in price and quality of products offered	'Touch and feel' village product displays; local government provides persuasive and trusted sales advice
Supply-side - Enterprises	Reluctance to get actively involved in sale of slow-moving product with low demand	'Seeing is believing' enterprise engagement approach to demonstrate the market opportunity to 'first mover' enterprises
	Toilet products are a small component of concrete producer's overall enterprise	Enterprises made aware of opportunity to expand their offerings and thus reach a much larger rural market with all products
	"Wait for them to come to us" passive sales approach; reluctance to invest in marketing and advertising	Design of very low cost generic marketing materials; Enterprises slowly convinced of power of marketing as latrine sales grow
	Poor understanding among enterprises on pricing, stock management and other issues	Business mentoring helped enterprises improve production efficiencies, stocking; lower gross margins were offset by higher volume resulting in greater net profit

Source: Adapted from Pedi et al., 2011

Figure 2: Hands-Off Program Timeline, January 2009 to Present

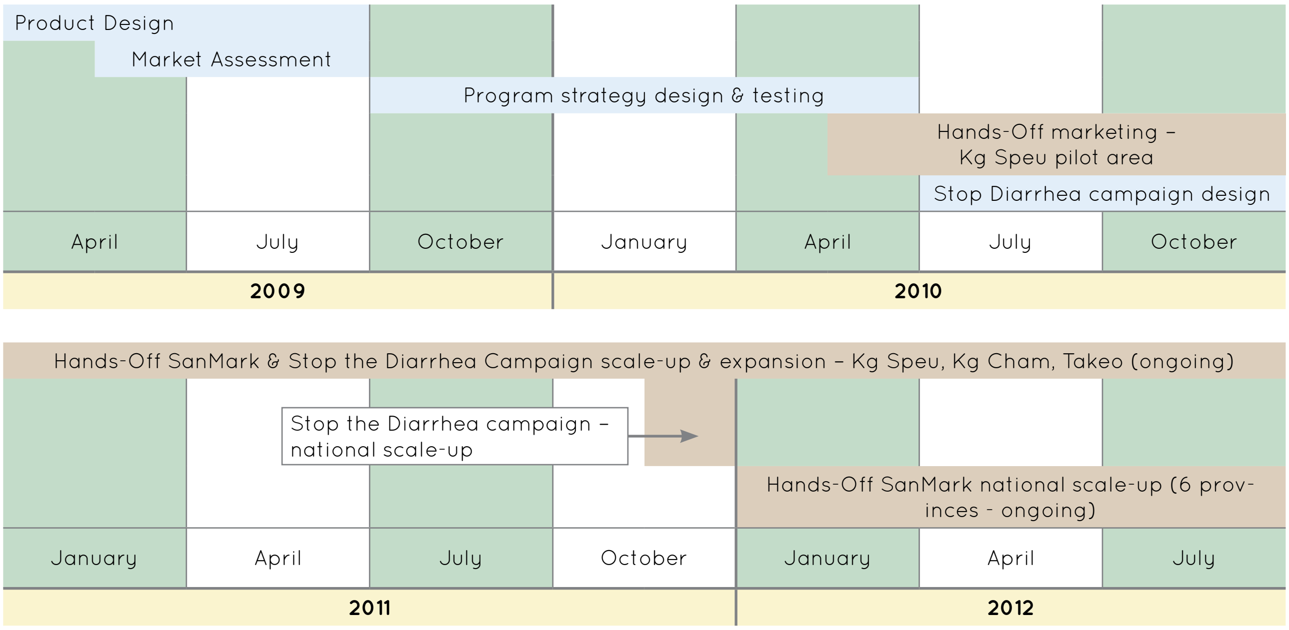


Table 2: WaterSHED Hands-Off Program Overview

Program Parameter	Key Metric
Launch of marketing activities	June 2010
Original pilot target area	Provinces: 1 (Kg Speu) Districts: 4, Villages: 537 Population (est.): 295,000
Scale-up program area (as of Nov 2012)	Provinces: 6 (Kg Speu, Kg Cham, Battambang, Takeo, Pursat, Pailin) Districts: 53, Villages: 5000 Population (est.): 4,467,949
Cumulative toilet sales (Jun 2010 – Nov 2012)	41,908
WaterSHED-supported enterprises	160
WaterSHED-trained promoters (sales agents)	620

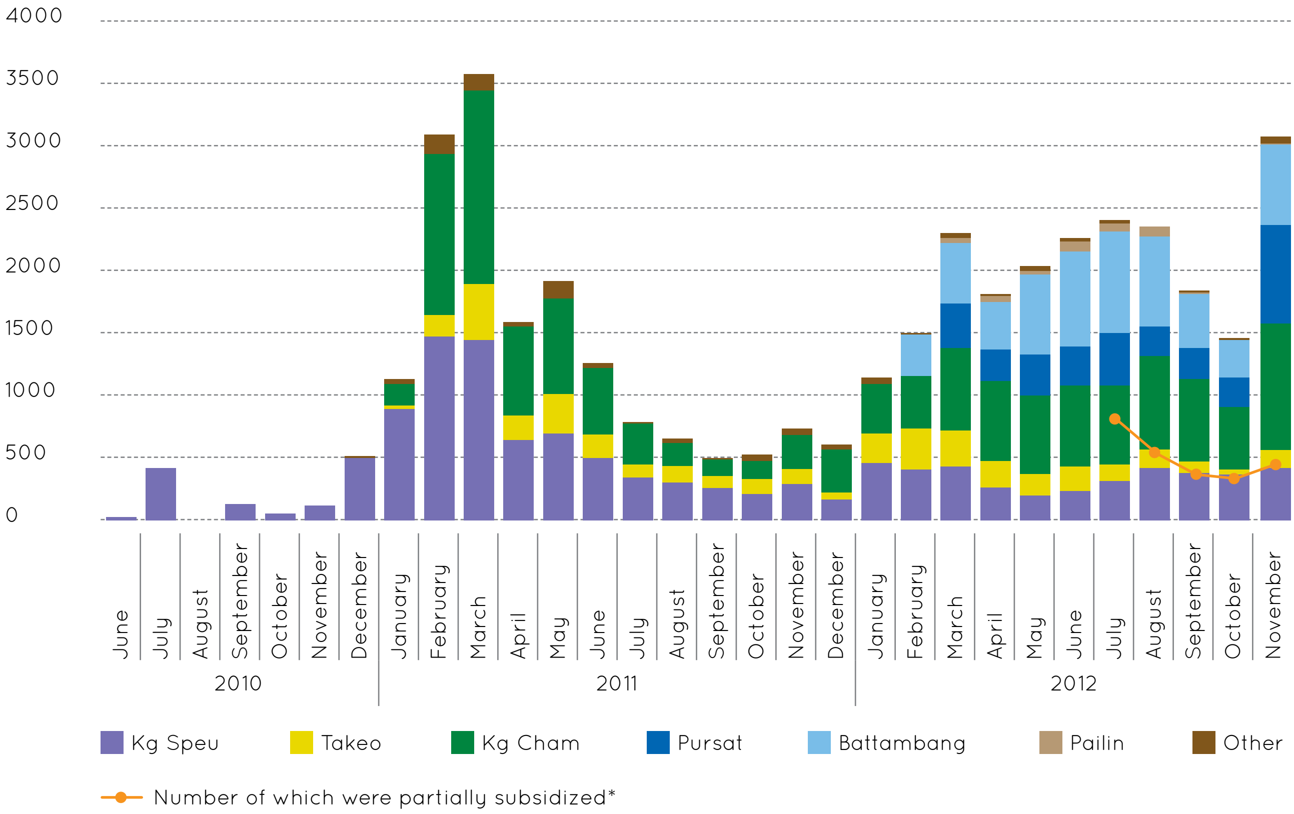
1. Background

In addition to on-ground SanMark strategies (Table 1), the WaterSHED program has evolved a set of guiding principles and a sanitation market facilitation model, which it refers to as the ***'Hands-Off'* Sanitation Marketing approach**. The *Hands-Off* approach focuses on three core programmatic goals:

1. **Program effectiveness and cost efficiency:** Aiming to minimize interventions and programmatic costs of external market facilitators (in this case, the WaterSHED program team);
2. **Business sustainability:** Focusing on skills development and independence of existing local enterprises, and requiring adequate commercial risk and investment; and
3. **Scalability:** Aiming to keep barriers to market entry low for new enterprises, and supporting local government to be actively involved in sanitation promotion, monitoring and replication.

While WaterSHED *Hands-Off* program monitoring mechanisms have captured some of the progress and key challenges thus far, a systematic review of program results was necessary to better understand how households and communities are accessing the new market and responding to program interventions.

Figure 3: Hands-Off Program Monthly Sales, June 2010 to November 2012



** Latrines sold by WaterSHED-supported enterprises to NGO or agency programs offering partial subsidy.*
Note: Cumulative toilet sales, Jun 2010 - Nov 2012 = 41,908. See www.watershedasia.org/sanitationmarketing for up-to-date sales data.

2. Rural Consumer Sanitation Adoption Study

2. Rural Consumer Sanitation Adoption Study

2.1 RCSAS Objectives

Rural Consumer Sanitation Adoption Study (RCSAS) was designed to assess the results of the WaterSHED *Hands-Off* Sanitation Marketing program in terms of its influence on rural consumer demand for and uptake of improved household latrines in the program target areas. The specific objectives of the study were:

1. To compare current household sanitation preferences and practices, levels of improved sanitation coverage, and barriers to adoption with the 2009 baseline household survey in the original project pilot area in Kampong Speu Province after 25 months of program activity;
2. To evaluate current household sanitation preferences and practices, levels of coverage and barriers to adoption in one program expansion area (Kampong Cham Province) after about 18 months of activity, including tracking uptake of the new latrine technology introduced by the program; and
3. To analyze customer satisfaction and explore the impact of program strategies and activities on households' sanitation attitudes and investment behavior, as well as the effects of non-project external factors (e.g., hardware subsidies, CLTS triggering, village typology) on uptake and purchase behavior.

The results from Kampong Speu were used to evaluate overall performance of the program against key baseline indicators within the program's Results Framework. The results from both provinces are expected to inform improvements to WaterSHED program strategies as well as to provide evidence for wider policy and programmatic dialogue within the Cambodian sanitation sector.

2.2 Study Area

The RCSAS was conducted in two provinces (Fig. 4) where the WaterSHED *Hands-Off* program is active:

- **Kampong Speu:** The RCSAS focused on the original WaterSHED pilot area, which comprised 537 villages in four districts within 20 kilometers of National Road #4. The original target area was selected due to its proximity to natural supply chain routes and provincial markets. A baseline household survey (Pedi and Touch 2009) was undertaken in the original pilot area in July 2009, and full-scale marketing activities were launched in June 2010. In Kampong Speu, the RCSAS focused analysis on Objective 1 and 3 above.
- **Kampong Cham:** The RCSAS focused on program expansion in 984 villages in 9 districts within Kampong Cham Province. Marketing activities in the expansion districts began in January 2011. No baseline survey was conducted prior to the launch of marketing activities. However, a WaterSHED-supported latrine coverage survey was undertaken in October 2011, enabling some measurement of changes in latrine coverage over a smaller window of time. In Kampong Cham, the RCSAS focused analysis on Objective 2 and 3 above.

In terms of key demographic characteristics (Table 5), Kampong Cham has a much higher population and population density compared to Kampong Speu, although the population in Kampong Speu is growing much more rapidly than Kampong Cham. Both provinces are rural provinces, and marketing activities targeted rural households and villages.

Figure 4: Map of Cambodia and study area provinces

Table 3: Demographic characteristics of study provinces (2008)

	Kampong Speu	Kampong Cham
Population	716,944	1,679,992
Number of Households	149,270	368,114
Average Household Size	4.8 persons/HH	4.6 persons/HH
Population Density	102 persons/sq. km	171 persons/sq. km
Annual population growth rate	1.79%	0.43%
Percentage urban	7.1%	6.9%
Percentage sanitation coverage	17.5%	25.6%

Source: 2008 General Population Census of Cambodia

3. Methodology

3. Methodology

3.1 Field Data Collection

The RCSAS involved a village-level investigation of sanitation conditions and coverage, and a household-level investigation of sanitation demand behavior, preferences, practices, uptake and exposure to the *Hands-off* SanMark intervention. Two tools were developed for field data collection:

1. Village-level sanitation inventory

The village-level analysis used a village sanitation inventory sheet designed to capture sanitation coverage data across the 537 villages in the original 4 pilot districts of Kampong Speu and the 984 villages in 9 expansion districts of Kampong Cham. Random samples of 36 villages in Kampong Speu and 33 villages in Kampong Cham (for a total of 69 villages) were selected using two different sampling methods to achieve the different study objectives. Village-level data was collected on:

- Latrine coverage rates;
- Latrine types (dry pit and pour-flush);
- Functioning, uninstalled and broken latrines;
- Exposure to CLTS;
- Exposure to village sales events;
- Whether villages had a resident sales agents and sales commissioned village chiefs;
- Stable or increasing latrine prices;
- Level of poverty in the village (proportion of IDPoor households); and
- ODF status.

2. Household survey

The household-level analysis used a household survey questionnaire designed to gather information about household demand behavior for a stratified random sample of 'latrine adopters' and 'non-adopters' within 64 of the 69 study villages. Household-level data was collected on:

- Household demographic and socio-economic situation;
- Current defecation practice and latrine usage, including disposal of infant feces;
- Awareness, perceptions and preference for sanitation products;
- Current latrine types in use, including technology types and costs;
- Purchase drivers and customer experience with WaterSHED-introduced sanitation products;
- Customer satisfaction with WaterSHED-introduced sanitation products and services;
- Upgrading and maintenance of new latrines, including fecal sludge management;
- Latrine purchase intention and barriers to adoption among non-adopters;
- Perceptions, plans and barriers to installation; and
- Household awareness and recall of program promotional messages.

The household survey questionnaire is included in Annex 2 of this report.

3.2 Village Sample Selection

In order to achieve the different study objectives, two distinct sampling strategies were used to select villages in Kampong Speu and Kampong Cham. It is important to note that the use of different sampling strategies means that results (particularly related to socio-economic and demographic variables) are not always directly comparable across provinces. In this report, data are presented together primarily for questions related to household exposure to the intervention. In most other cases, data are analyzed and presented separately.

The following steps were undertaken in each province to select the study villages:

Kampong Speu

- All 36 villages in the 2009 baseline survey were included in the RCSAS village sanitation inventory and village-level analysis. At baseline, these villages had been selected from the target population of 537 villages in the original Kampong Speu pilot area using a probability proportional to size (PPS) random sampling technique. [1]
- WaterSHED staff undertook the village sanitation inventory in each of the 36 study villages using the village sanitation inventory sheet.
- Sales records from WaterSHED-supported enterprises in the program sales monitoring database were consulted to determine which villages had any sales activities between June 2010 and June 2012. Of the original 36 study villages, a total of 31 villages had recorded a sale of one or more latrines from a WaterSHED-supported enterprise. These 31 villages were included in the household survey and household-level analysis.[2]

Kampong Cham

- A list was compiled of all 984 villages in the 9 districts of Kampong Cham where the WaterSHED program

1 Communes and villages were selected using the formula [n = NZ2 x p (1-p) / Nd2 + Z2 x p (1-p)]. Level of confidence is 80% (standard error between - 0.10 of a two-tailed normal distribution curve. See Pedi and Touch 2009.

2 Only 31 villages with sales activity were selected primarily for convenience, to enable enumerators to interview both latrine adopter and non-adopters within a single village.

has been undertaking marketing activities since January 2011.

- Sales records from WaterSHED-supported enterprises in the program sales monitoring database were consulted to determine which villages had any sales activities during the study period. From the full list of 984 villages, a total of 331 villages that had recorded 10 or more sales from January 2011 to May 2012 were included in the sample universe. In Kampong Cham, villages with 10 or more sales were used as the sampling universe. The study objectives in this province were to understand household consumer preferences and barriers after exposure to the intervention, and in particular, the Latrine Core customer experience. [3]
- The 331 villages were ranked according to latrine coverage using coverage data from the October 2011 WaterSHED Kampong Cham coverage survey, and then stratified into three equal groups:
  - High coverage: Villages with 34.4% - 83.5% latrine ownership
  - Medium coverage: Villages with 16.3%- 33.9% latrine ownership
  - Low coverage: Villages with 7.0% - 13.5% latrine ownership
- From each group, a total of 11 villages were randomly selected on an equal probability basis to reach a total of 33 sample villages.
- The village sanitation inventory was undertaken by WaterSHED staff in each of the 33 study villages using the village sanitation inventory sheet.

3.3 Household Sample Selection

In each of the 64 study villages, a uniform sampling strategy was used to select households for the household survey. The following steps were undertaken in both provinces:

- For the purpose of this study, the RCSAS team defined a latrine 'adopter' as a **household that had purchased a latrine with the new WaterSHED-introduced Latrine Core product package**, which included the precast Chamber Box technology (see Fig. 1). The Chamber Box is a unique latrine component introduced by the program, and was not available in program areas before the intervention. The Chamber Box is the only component that differentiates the Latrine Core package offered by WaterSHED-supported enterprises (or those 'copying' from these enterprises) from other latrines on the market. Adopter households with other types of (non-Chamber Box pour-flush or dry pit) latrines were not included in the household survey. However, all latrine-owning households (with any latrine type) were included in the village-level sanitation inventory. A 'non-adopter' is defined as a household that does not own a latrine of any type.
- The village-level sanitation inventory was used to compile comprehensive lists of 'adopters' and 'non-adopters' in each of the study villages.
- From these lists, six adopters and five non-adopters were randomly selected.
- Due to some difficulties with household recall (see Annex 1), in 9 villages in Kampong Speu the village chief was also consulted to identify and/or verify Chamber Box owners.
- An additional 52 households were randomly selected for surveying in some study villages to compensate for lack of latrine adopters in order to reach the desired sample size of 700 households.

3.4 Data Collection, Cleaning and Analysis

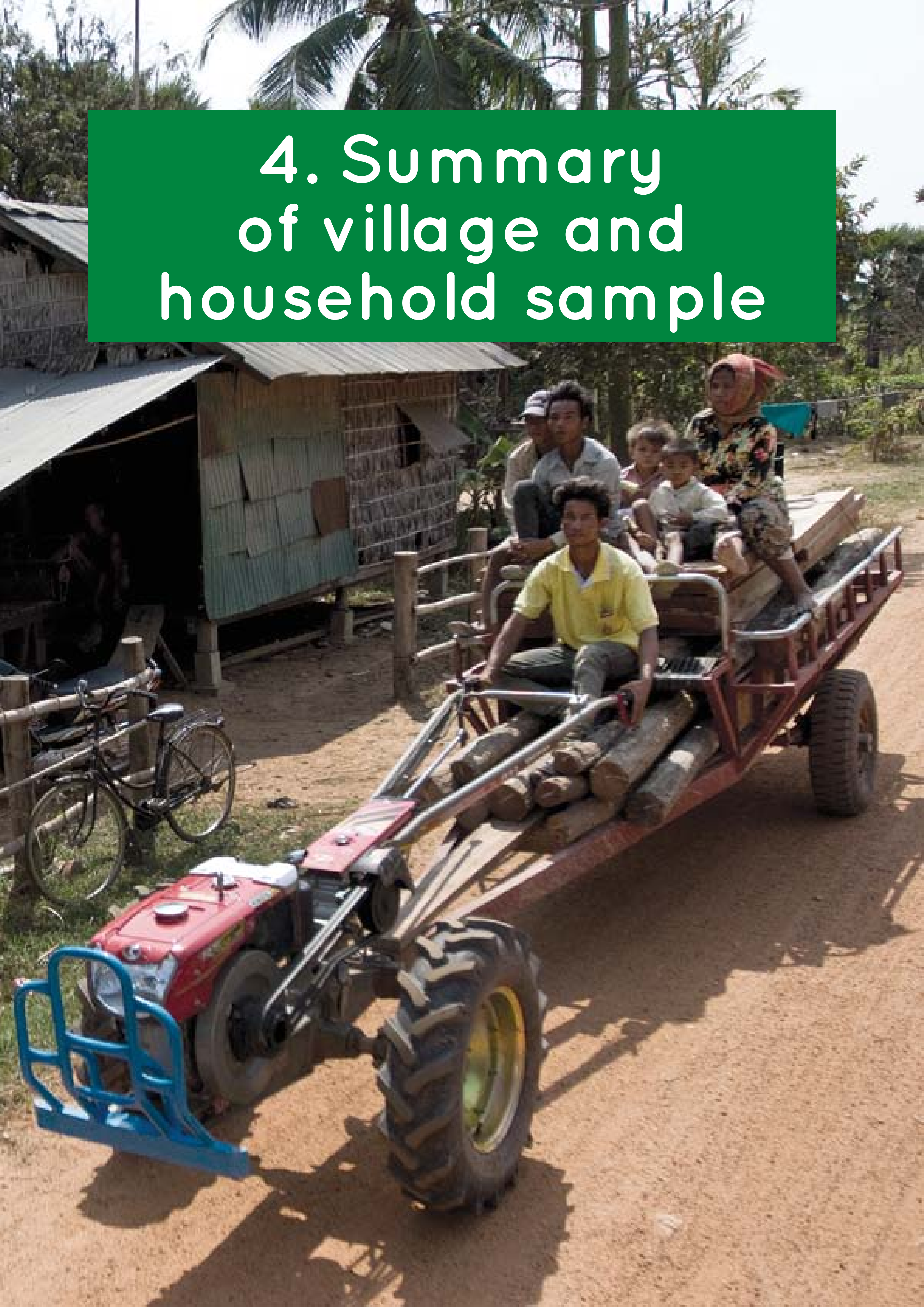
To collect village-level data and compile adopter and non-adopter household lists, WaterSHED field staff conducted the village-level inventory from July to August 2012. A survey team comprised of eleven enumerators, four data entry personnel and four field supervisors from the Royal University of Phnom Penh conducted the household survey. A list of survey team members is included in Annex 4.

The survey questionnaires were pre-tested in the field and revised by the survey team during a three-day enumerator training in mid-July. Field data collection was conducted over 14 days from 20 July 2012 to 3 August 2012. In this first period of fieldwork, 648 household surveys were completed. The team returned to the field from 11-13 September 2012 to conduct additional surveys to reach the desired target of 700 households.

Data from completed surveys were double-entered into a Statistical Package for Social Sciences (SPSS) database template by four RUPP data entry personnel. Raw data were cleaned, verified and corrected by the RUPP Data Entry Supervisor. After data cleaning, 695 household surveys were submitted for further analysis. The following analysis of the data is presented mainly as percentages and simple averages. This report presents a preliminary descriptive analysis; statistical significance was not calculated. As discussed below, more in-depth analysis of the data is currently underway.

3 Before-after analysis was not possible in Kampong Cham. The analysis focuses on characteristics of households in villages with exposure to the intervention.

4. Summary of village and household sample



4. Summary of village and household sample

4.1 Village sample

The village sample included 61,073 people in 11,975 households in 69 villages across the two target provinces (Table 4). As described in Section 3, the original random sample of 36 villages from the 2009 baseline survey was included for Kampong Speu. In Kampong Cham, the 33 study villages were selected from a sub-set of villages in the program area with ten or more latrine sales.

In village selection, no distinction was made between villages that had a previous CLTS intervention (CLTS villages) and those that had not (non-CLTS villages). A total of 26 of the 69 of the sample villages (38%) had exposure to a CLTS intervention. In Kampong Speu, 12 villages were exposed to CLTS at baseline in 2009, and an additional 9 villages were exposed to CLTS between the baseline and RCSAS surveys. Thus, there were a total of 21 CLTS villages (58% of the sample) in Kampong Speu. In Kampong Cham, only 5 sample villages (15%) had exposure to a CLTS intervention.[1]

Table 4: Sample village data by province

	Kg Speu	Kg Cham	Total
Villages	36	33	69
Households	3,476	8,499	11,975
People*	16,695	38,789	55,483

*Based on 2008 Census data (Table 3): 4.8 persons/ HH in Kampong Speu, 4.6 persons/ HH Kampong Cham

4.2 Household sample

The household survey was conducted in 31 of the 36 randomly selected baseline sample villages in Kampong Speu, and in the 33 sample villages in Kampong Cham. Within the sample villages, a household-level analysis was conducted among a stratified random sample of latrine 'adopter' and 'non-adopter' households. As described in Section 3, the RCSAS defined latrine 'adopter' as a household that had purchased the new Latrine Core product package with Chamber Box that was introduced

Table 5: Household respondents by latrine adoption and province

			Kg Speu (31 villages)	Kg Cham (33 villages)	Total (64 villages)
Latrine Core Adopters	Total - Adopters	N	150	192	342
		% Sample	45.6%	52.5%	49.2%
	Installed/functioning latrine (installed)	N	111	131	242
		% Adopters	74.0%	68.2%	70.8%
	Latrine purchased but not yet installed (uninstalled)	N	39	61	100
		% Adopters	26.0%	31.8%	29.2%
Non-Adopters	Total - No Latrine	N	179	174	353
		% Sample	54.4%	47.5%	50.8%
Total Sample		N	329	366	695
		%	100%	100%	100%

Table 6: Household respondent details

		Kg Speu		Kg Cham	
		Adopter N=150	Non-Adopter N=179	Adopter N=192	Non-Adopter N=174
Respondent Gender	Male	47.3%	34.1%	42.7%	26.4%
	Female	52.7%	65.9%	57.3%	73.6%
Respondent relationship to household head	Self	57.3%	54.2%	60.4%	46.6%
	Spouse	26.0%	36.9%	32.8%	44.3%
	Son/ Daughter	10.7%	5.0%	5.7%	8.0%
	Parents/ In-law	2.7%	2.8%	0.5%	0.0%
	Brother/ Sister/ relative	3.3%	1.1%	0.5%	1.1%
Respondent Age	Average age, years	45	43	48	43

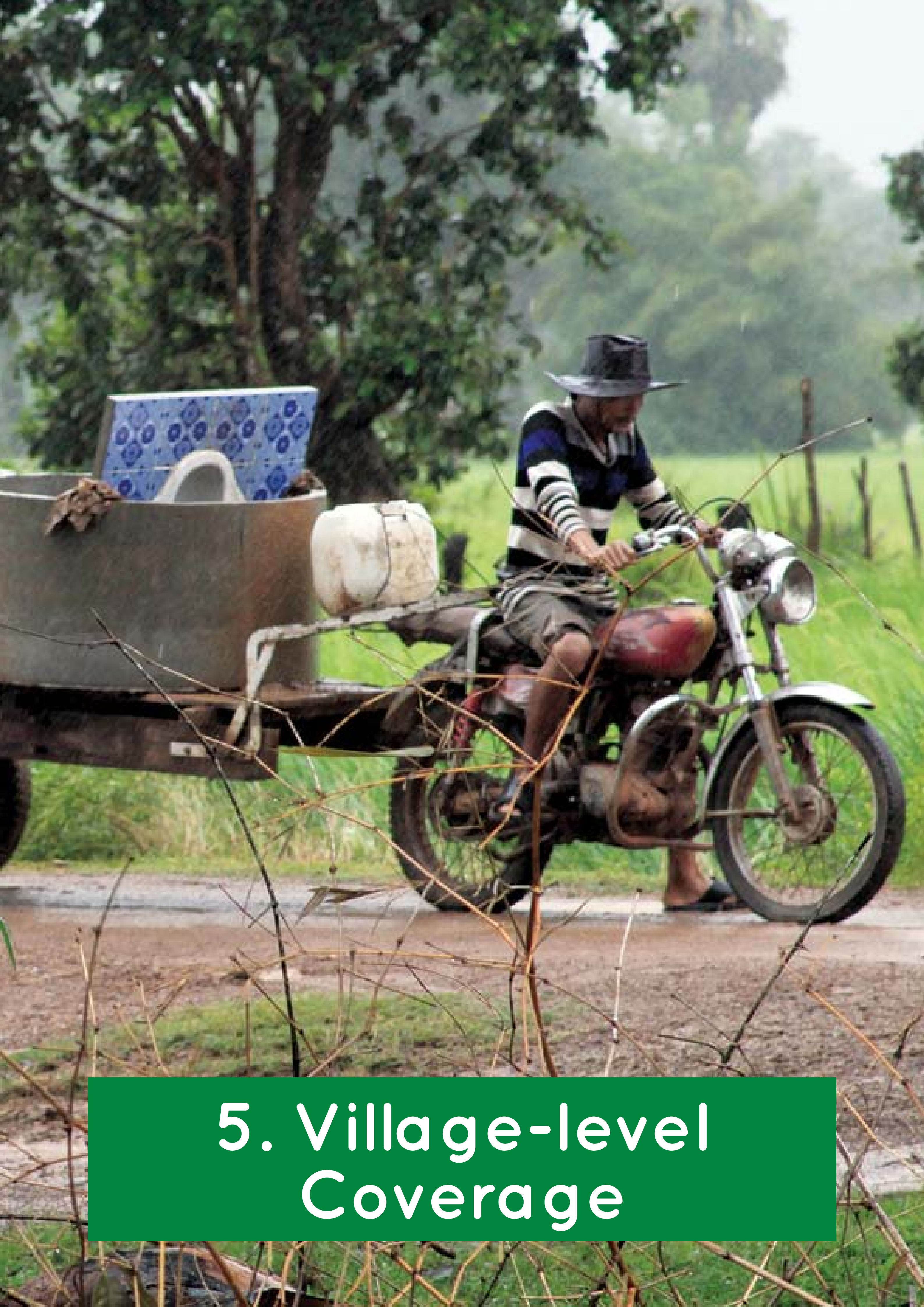
1 Pouv et al. presents a preliminary investigation of village-level RCSAS data by CLTS exposure. An in-depth analysis of household-level RCSAS data and CLTS-SanMark linkages is presented in a separate report.

and promoted by the WaterSHED *Hands-Off* program. A total of 695 household surveys were analyzed in the RCSAS, including 342 (49.2%) adopters and 353 (50.8%) non-adopters (Table 5).

Among latrine adopters, the RCSAS included households that had an installed and functioning latrine with the new Latrine Core, as well as those who had purchased the Latrine Core but had not yet fully installed. Across the sample, a total of 29% of all latrine adopters (14.4% of all households) were 'uninstalled' adopters, i.e. they had purchased but not yet installed their latrine.[2] Nearly 32% of Kampong Cham adopters and 26% of Kampong Speu adopters were 'uninstalled' adopters. Section 7 analyses installation rates based on the number of months between purchase and installation. Households purchased their latrines at different times over the intervention period. In general, about half of those who purchased their latrine in six months or less had an installed latrine at the time of the survey, and nearly all adopters had had an installed latrine after 18 months.

A greater proportion of respondents were female in both Kampong Speu and Kampong Cham. The majority of respondents in both provinces were the head of their household or the household head's spouse (Table 6).

2 It should be noted that the term 'uninstalled adopters' refers to the state of installation at the time of the RCSAS survey visit, and does not imply that these adopters will never install. RCSAS data indicates that adopters will install and use the latrine within at least 18 months of purchase.



5. Village-level Coverage

5. Village-level Coverage

5.1 Accelerated uptake of improved latrines

Improved sanitation coverage nearly doubled in original pilot area, growing by 18 percentage points in three years.

From a baseline of 21%, improved sanitation access increased to 38.9% across the original Kampong Speu pilot area (Fig. 5, Table 5)[1]. This 18-percentage point increase in improved latrine coverage from July 2009 to July 2012 would yield an annual average growth rate of 6% per year. However, this is likely a conservative estimate, since the program's on-ground marketing efforts did not begin until June 2010. Given that 41.7% of all new installed pour-flush latrines are directly attributable to latrine sales by WaterSHED-supported enterprises (Table 9), and the probable knock-on effects of the program on both consumers and suppliers, it is likely that most of the accelerated growth in coverage occurred in the two years of program implementation between June 2010 and July 2012.

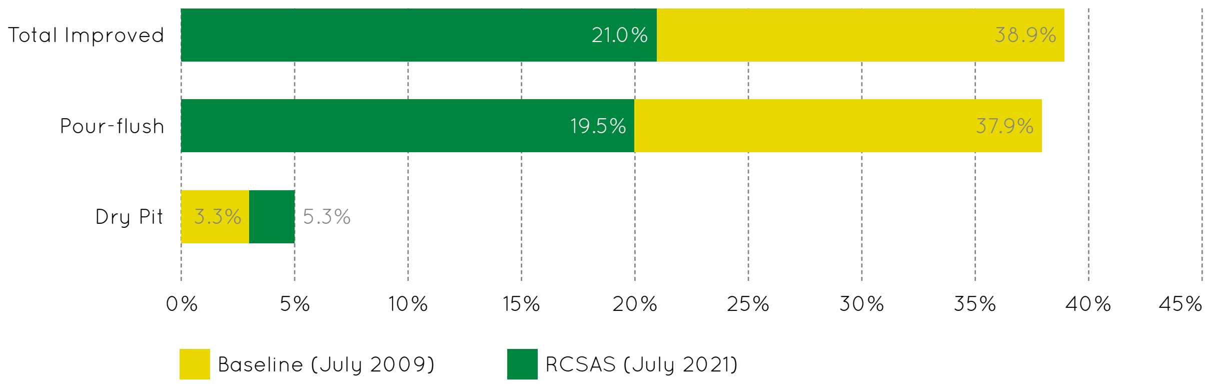
Growth in improved sanitation coverage is fully attributable to an increase of pour-flush latrines in the target area: Dry pit latrines saw a net decrease of 2 percentage points, while coverage of pour-flush latrines doubled, growing by 18.5 percentage points over the program period.

It is not possible to generalize from the sample of 33 Kampong Cham villages to the broader population, since these villages were selected from a sub-set of 331 villages (comprising 34% of the 984 villages in the intervention districts) that had posted sales of ten or more latrines. However, it is possible to calculate coverage changes in these villages using data from WaterSHED's Kampong Cham October 2011 coverage survey. In the Kampong Cham sample villages, improved sanitation coverage increased from 27.2% in October 2011 to 31.9% in July 2012. This increase of 4.7 percentage points in nine months would yield an annualized rate of growth of about 6.3% per year.

The WaterSHED program collects coverage data for all villages within the program target area on a periodic basis. Alongside monthly sales data from enterprises, this data should enable a more robust analysis of improved coverage changes across a wider sub-set of villages in all six provinces as the program expands further.

At baseline, a rough estimate of average annual increase in sanitation coverage in Kampong Speu from 1998 to 2008 was calculated using available census data. This 'background rate' is the estimated rate of increase that was already occurring prior to the intervention.

Figure 5: Percentage of IDPoor households by latrine ownership, Kampong Speu



** Based on village-level survey in random sample of 36 villages from a total 537 pilot villages. Level of confidence is 80% (standard error between ± 0.10 of a two-tailed normal distribution curve). All dry pit latrines included in 'dry pit' calculations, but only 29% of dry pit latrines are counted as 'improved' sanitation facilities (following JMP analysis of CSES).*

Table 7: Percent change in latrine coverage in Kampong Speu pilot area, 2009 to 2012*

	Baseline (Jul 09)	RCSAS (Jul 2012)	Percentage Point Increase	% Change in Coverage
Total Improved Coverage	21.0%	38.9%	17.9%	85.2%
Pour-flush	19.5%	37.9%	18.5%	94.9%
Dry Pit	5.3%	3.3%	-2.0%	-37.2%

** Based on village-level survey in random sample of 36 villages from a total 537 pilot villages. Level of confidence is 80% (standard error between ± 0.10 of a two-tailed normal distribution curve). All dry pit latrines included in 'dry pit' calculations, but only 29% of dry pit latrines are counted as 'improved' sanitation facilities (following JMP analysis of CSES).*

1 Following JMP analysis of the Cambodia Socio-Economic Survey 2007, 29% of dry pit latrines are counted as 'improved' sanitation facilities. All dry pit latrines are included in the 'dry pit' calculations, but only 29% of these have been used to calculate 'total improved' coverage. Coverage data is based on village-level surveys in 2009 and 2012 in a sample of 36 randomly selected study villages within the original pilot area.

WaterSHED activities accelerated improved sanitation coverage by 4.7 to 7.0 percentage points per year - 4 to 5 times the expected annual background rate.

Based on the 2008 Census, provincial sanitation coverage in Kampong Speu had increased from 3.9% in 1998 to 17.5% in 2008 (NIS 2009). This would yield an average annual increase of 1.36 percentage points. Available provincial data from the 2004 Cambodia Intersensal Population Survey showed some acceleration of coverage in recent years, however further review of this provincial-level data revealed some data quality issues. [2]

A more reliable calculation of annual background rates of improved sanitation was undertaken by another sanitation marketing pilot project, which used village-level survey data to calculate background sanitation coverage rates over a period of three years in a sub-set of non-intervention villages in two provinces. This project found a background rate of 1.9 percentage points in Kandal Province, a densely populated wealthier province with rapid population growth and large peri-urban populations, and a background rate of 0.6 percentage points in Svay Rieng, a predominantly rural, sparsely populated poorer province with low population growth, far from the capital city. The average rate of increase across the two provinces was calculated at 1.3 percentage points (Pedi et al. 2012). Given the demographic characteristics of Kampong Speu Province, it is likely that the background sanitation growth rate would be somewhere between the rates for Kandal and Svay Rieng, e.g. close to the average of 1.3 percentage points per year.

Using the average annual background rate of 1.3 percentage points, the RCSAS calculated the rate of increase over and above this natural rate; that is, the increase that could be attributed to WaterSHED sanitation marketing interventions (Table 8). Since there was a delay between the baseline survey in June 2009 and actual marketing efforts, which began in June 2010, it was not possible to calculate the exact rate of accelerated increase over the 2 years of actual marketing efforts. From baseline to RCSAS, the actual increase in improved latrine coverage above the expected background rate was 14 percentage points. This would yield an average annual rate of increase of between 4.7 and 7 percentage points, or roughly

Table 8: Accelerated rate of improved latrine coverage, Kampong Speu pilot area

	Percentage Point Increase
Estimated annual background rate of increase in latrine coverage for 2009-2012*	1.3%
Estimated background rate of increase in latrine coverage over three years	3.9%
Actual increase in improved latrine coverage in three years from July 2009 baseline to July 2012 RCSAS	17.9%
Increase in improved latrine coverage above expected background rate in three years from 2009 to 2012	14.0%
Conservative estimate of annual increase in improved latrine coverage due to Hands-Off SanMark intervention (above expected background rate)#	4.7%
Liberal estimate of annual increase in improved latrine coverage due to Hands-Off SanMark Intervention (above expected background rates)##	7.0%

Note: Estimates do not account for other factors that may have also contributed to accelerated increase.
** Average rate calculated form actual household surveys in the iDE Sanitation Marketing Pilot Project, supported by WSP and USAID. See Pedi et al. 2012 for further discussion.*
 # Assumes steady rate of increase over three years, irrespective of marketing efforts.
Assumes background rate of 1.3% from June 2009 to May 2010 (period between baseline survey and launch of marketing intervention), with accelerated growth occurring from June 2010 to June 2012, during the period of marketing intervention

Table 9: Village-level variations in latrine coverage increase, Kampong Speu pilot area, 2009-2012

Percentage point increase in improved coverage	Number (Percentage) of sample villages	Average baseline coverage	Average RCSAS coverage	Average percentage point increase
31% or more	7 (19%)	14.2%	52.4%	38.2%
21% to 30%	10 (28%)	30.6%	57.0%	26.4%
11% to 20%	10 (28%)	22.5%	38.2%	15.6%
10% or less	9 (25%)	10.4%	13.7%	3.3%

2 Initial calculations were based on available data from Kampong Speu from three data sets: 1998 National Population Census, 2004 Cambodia Intercensal Population Survey, and 2008 Population Census. These figures indicate an increase in sanitation coverage of 4.4% from 1998 to 2004 (average annual increase of 0.7%), and an increase of 9.2% from 2004 to 2008 (average annual increase of 2.3%). The background rate of 2.3 percentage points is over two times the national average of 1 percentage point per annum. The data also does not distinguish between improved and unimproved coverage. While it is possible that rates of increase were already accelerating in Kampong Speu prior to marketing interventions (especially given CLTS activities), a review of commune and provincial level data sets indicated significant discrepancies, missing data and other data quality issues related to inter-censal data reporting. See Pedi and Touch 2009 for further discussion.

In the pilot area, sales from WaterSHED-supported enterprises accounted for 41.7% of all new pour-flush latrines, suggesting positive 'ripple effects' for other enterprises in the emerging market.

4 to 5 times the expected annual rate. It should be noted that these estimates do not account for other factors that may have contributed to this accelerated increase.

While the average increase in improved sanitation coverage across the sample was 18 percentage points, there were differences between villages in terms of growth in improved latrine coverage (Table 9). A total of 47% of sample villages (17 of 36 villages) were able to achieve coverage increases of 21% or more, including one-fifth of the sample (7 villages) with increases of over 31%. Increases in coverage do not appear to be linked to higher rates of baseline coverage: the best-performing group of 7 villages started from an average of just 14% improved latrine coverage at baseline.

5.2 Sanitation coverage and sales data comparisons

Coverage data from the village-level survey was compared with monthly sales data from enterprises collated in the WaterSHED sales monitoring database (Table 10). Among the sample villages in the original pilot area, sales recorded by WaterSHED-supported enterprises accounted for 41.7% of all new pour-flush latrines (292 of 701 new pour-flush latrines). On average, 19 new pour-flush latrines per village were purchased during the intervention period, including an average of 8 latrines per village sold by WaterSHED-supported enterprises.

These results are comparable to findings from another sanitation marketing pilot project implemented by iDE during the same period in Kandal and Svay Rieng, which found an average of 47% of all new pour-flush latrines were purchased from project-supported enterprises (Pedi et al. 2012). As noted in the findings from that study, the data would indicate that marketing activities are able to stimulate consumer demand, creating positive 'ripple effects' for all enterprises (not just those working directly with the program). At the same time, the entry of the new lower-cost Latrine Core package may help to increase competition among existing enterprises, with other enterprises lowering prices of conventional latrine components to compete with the new technology.

Table 10: Latrine coverage and sales data comparisons in Kampong Speu pilot area, 2009-2012

	Kg Speu (36 villages, 3476 HH)
Number of new pour-flush latrines, June 2009 to June 2012, baseline and RCSAS village-level surveys	701
Latrine sales recorded from WaterSHED-supported enterprises, June 2010 to June 2012	292
Average number of new pour-flush latrines per village	19
Average number of WaterSHED-supported enterprise sales per village	8
WaterSHED-supported latrine sales as % of all new pour-flush latrines	41.7%

6. Defecation practice and latrine usage

6. Defecation practice and latrine usage

Households with installed Latrine Core use it. For those without an installed latrine, open defecation remains the norm.

6.1 Current defecation place

Installed adopters report that nearly all adults and children usually use their household latrine for defecation, although children are slightly more likely to continue the practice of open defecation.[1]

In Kampong Cham (Tables 13 and 14), among non-adopter/uninstalled households, the majority of adults (82.1%) and children (87.6%) usually practice open defection, while 15.3% of adults and 11.4% of children report that they usually use a neighbor's latrine for defecation.

Table 11: Changes to adult usual defecation place, Kampong Speu, Baseline and RCSAS

		Baseline*		RCSAS	
		Latrine Owner N=149	Non-Owner N=245	Installed Adopter N=111	Non-Adopter/ Uninstalled N=218
Where do **adults** in your household usually go to defecate?	Own household latrine	98.7%	0.0%	100.0%	1.8%
	Neighbor's/other latrine	0.0%	5.6%	0.0%	24.8%
	Public latrine	--	--	0.0%	0.5%
	Open defecation	1.3%	92.4%	0.0%	72.9%

Note: In the baseline survey, an additional 2% of non-owner households indicated that adults usually practiced 'buried defecation' near the house. These are not shown here.

Table 12: Changes to children defecation place, Kampong Speu, Baseline and RCSAS

		Baseline*		RCSAS	
		Latrine Owner N=120	Non-Owner N=202	Installed Adopter N=84	Non-Adopter/ Uninstalled N=188
Where do **children** in your household usually go to defecate?	Own household latrine	94.2%	0.0%	97.6%	1.6%
	Neighbor's/other latrine	0.0%	2.5%	0.0%	23.4%
	Public latrine	--	--	0.0%	0.0%
	Open defecation	0.0%	92.6%	2.4%	75.0%

Note: In the baseline survey, an additional 5% of non-owner households indicated that children usually practiced 'buried defecation' near the house. These are not shown here.

In Kampong Speu (Tables 11 and 12), among non-adopter/uninstalled households, the majority of adults (72.9%) and children (75%) usually practice open defection. Compared to the baseline, a much greater proportion of adults and children without latrines report usually using their neighbor's latrine for defecation: only 5.6% of adults and 2.5% of children report using a shared latrine at baseline, compared to about one-quarter of both adults and children in the RCSAS. The reasons for this shift are not entirely clear, but could be related to increased exposure to behavior change messages of both CLTS and the Stop the Diarrhea campaign.

In Kampong Speu, installed adopters with infants in the household (Table 15) indicated that baby feces are usually put into the latrine (56.2%) or buried (43.8%). This compares to a baseline of 48.6% for disposal in the latrine and 40.0% for burying feces. Among Kampong Speu non-adopters/uninstalled with infants in the household, 41.5% report burying the feces (compared to 76.8% at baseline) and 29.3% report leaving feces in the open (compared to 15.9% at baseline). Thus, findings for Kampong Speu are mixed, indicating a slight improvement in good practice for baby feces disposal among installed Latrine Core adopters compared to the general population of latrine owners at baseline, but an increase in unsafe disposal among those without an installed latrine.

1 It should be noted that there is potential for bias in self-reporting, so these findings should be treated with caution.

There is some progress on changing practices around disposal of baby feces, but more attention is needed.

Table 13: Defecation place for adults, Kampong Cham

		Kg Cham	
		Installed Adopter N=131	Non-Adopter/ Uninstalled N=235
Where do **adults** in your household usually go to defecate?	Own household latrine	99.2%	1.7%
	Neighbor's latrine	0.0%	15.3%
	Public latrine	0.0%	0.4%
	Open defecation	0.8%	82.1%

Table 14: Defecation place for children, Kampong Cham

		Kg Cham	
		Installed Adopter N=103	Non-Adopter/ Uninstalled N=193
Where do **children** in your household usually go to defecate?	Own household latrine	95.1%	1.0%
	Neighbor's latrine	0.0%	11.4%
	Public latrine	0.0%	0.0%
	Open defecation	4.9%	87.6%

Table 15: Changes to practice for disposal of baby feces, Kampong Speu, Baseline and RCSAS

		Baseline		RCSAS	
		Latrine Owner N=35	Non-Owner N=69	Installed Adopter N=16	Non-Adopter/ Uninstalled N=41
In your household, how are babies' feces usually disposed of?	Put into latrine	48.6%	4.3%	56.2%	7.3%
	Put into drain/ ditch	0.0%	0.0%	0.0%	4.9%
	Thrown in garbage	5.7%	1.4%	0.0%	17.1%
	Buried	40.0%	76.8%	43.8%	41.5%
	Left in open	2.9%	15.9%	0.0%	29.3%
	Burned	2.9%	1.4%	0.0%	0.0%

Table 16: Current practice for disposal of baby feces, Kampong Cham

		Kg Cham	
		Installed Adopter N=11	Non-Adopter/ Uninstalled N=30
In your household, how are babies' feces usually disposed of?	Put into latrine	81.8%	7.5%
	Put into drain/ditch	0.0%	0.0%
	Thrown in garbage	0.0%	20.0%
	Buried	9.1%	55.0%
	Left in open	9.1%	17.5%

In Kampong Cham, 81.8% of installed adopters with infants (Table 16) report putting baby feces in the latrine, while 9.1% practice the unsafe behavior of leaving baby feces out in the open (Table 14). Among non-adopters/uninstalled adopters in Kampong Cham, 55% report burying baby feces, 20% report throwing feces in the garbage, and 17.5% report leaving baby feces in the open. Again, the picture is mixed, with a variety of unsafe disposal methods currently being practiced across the board.

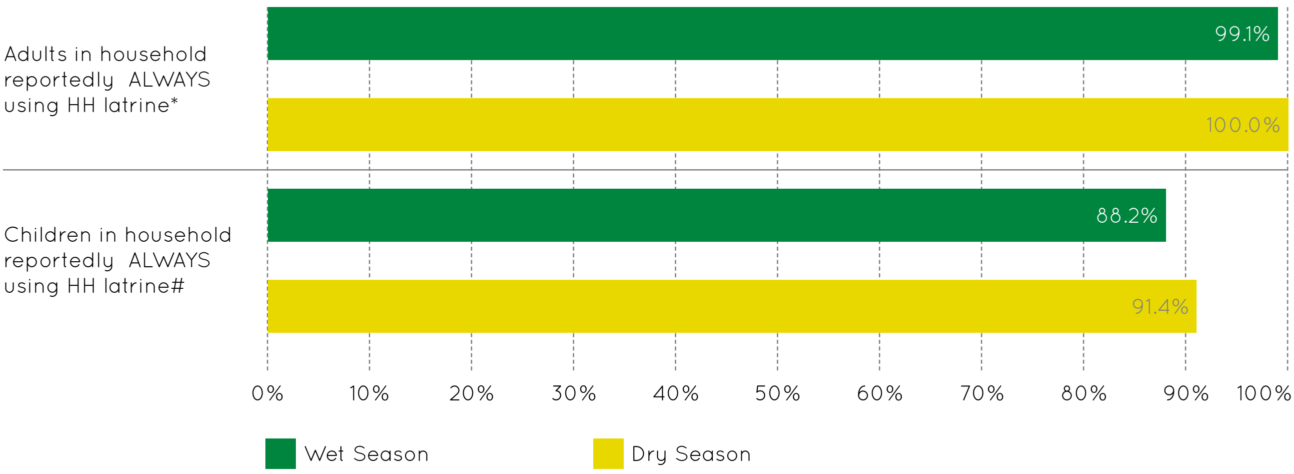
The findings indicate that this particular practice needs greater attention. Further consumer research may be needed to understand motivations and barriers to safe disposal as well as underlying assumptions, including whether baby feces are considered harmful. Social marketing messages specifically targeting disposal of baby feces (with a focus on new mothers) could be included in the Stop the Diarrhea campaign behavior change communications package, once these practices are understood better.

6.2 Reported latrine usage

Among adult adopters with installed latrines, reported latrine usage is consistently high in both the wet and dry seasons in both Kampong Speu and Kampong Cham (Figs. 6 and 7). Children in installed adopter households are reported to have less consistent latrine usage behavior in the wet and dry seasons, and are more likely than adults to defecate in the open despite having access to a household latrine.

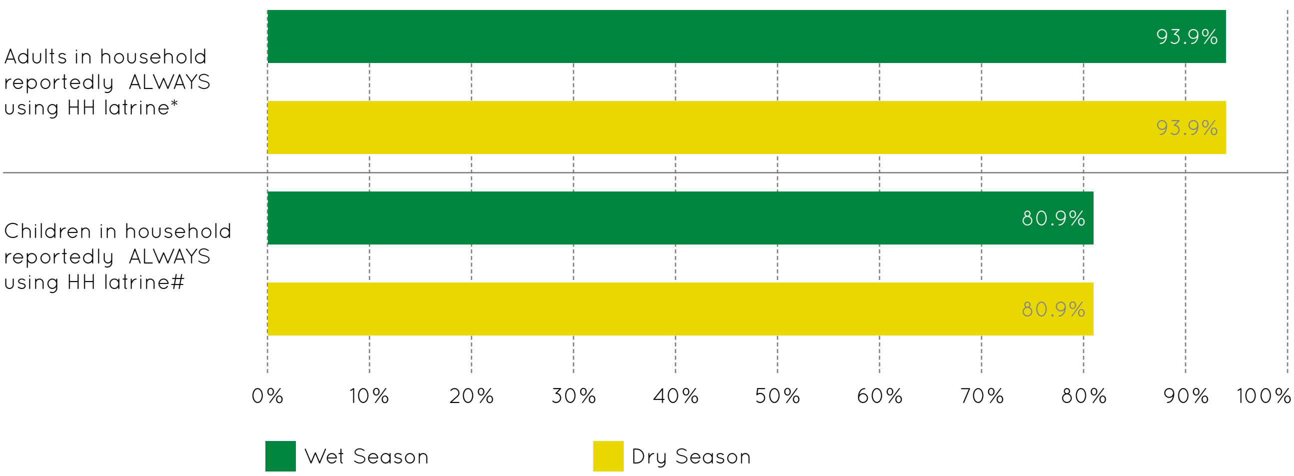
In Kampong Speu, Latrine Core adopters indicate slightly higher rates of consistent usage compared to pour-flush owners at baseline. Among adults in the RCSAS, rates were 99.1% in wet season, and 100% in dry season, compared to baseline rates of 94.2% and 92.5% respectively. Among children In the RCSAS, rates were 88.2% in wet season and 91.4% in dry season, compared to 82.5% and 79.4% at baseline. Some of this increase could be due to the age distribution in the respondent households. The studies also confirm much higher rates of consistent usage among pour-flush owners compared to dry pit owners. The Kampong Speu baseline rates of consistent usage for dry pit owners were just 79% in wet season and 55% in dry season for adults, and 61% in wet season and 52% in dry season for children.

Figure 6: Reported usage amongst adopters with installed latrines, Kampong Speu

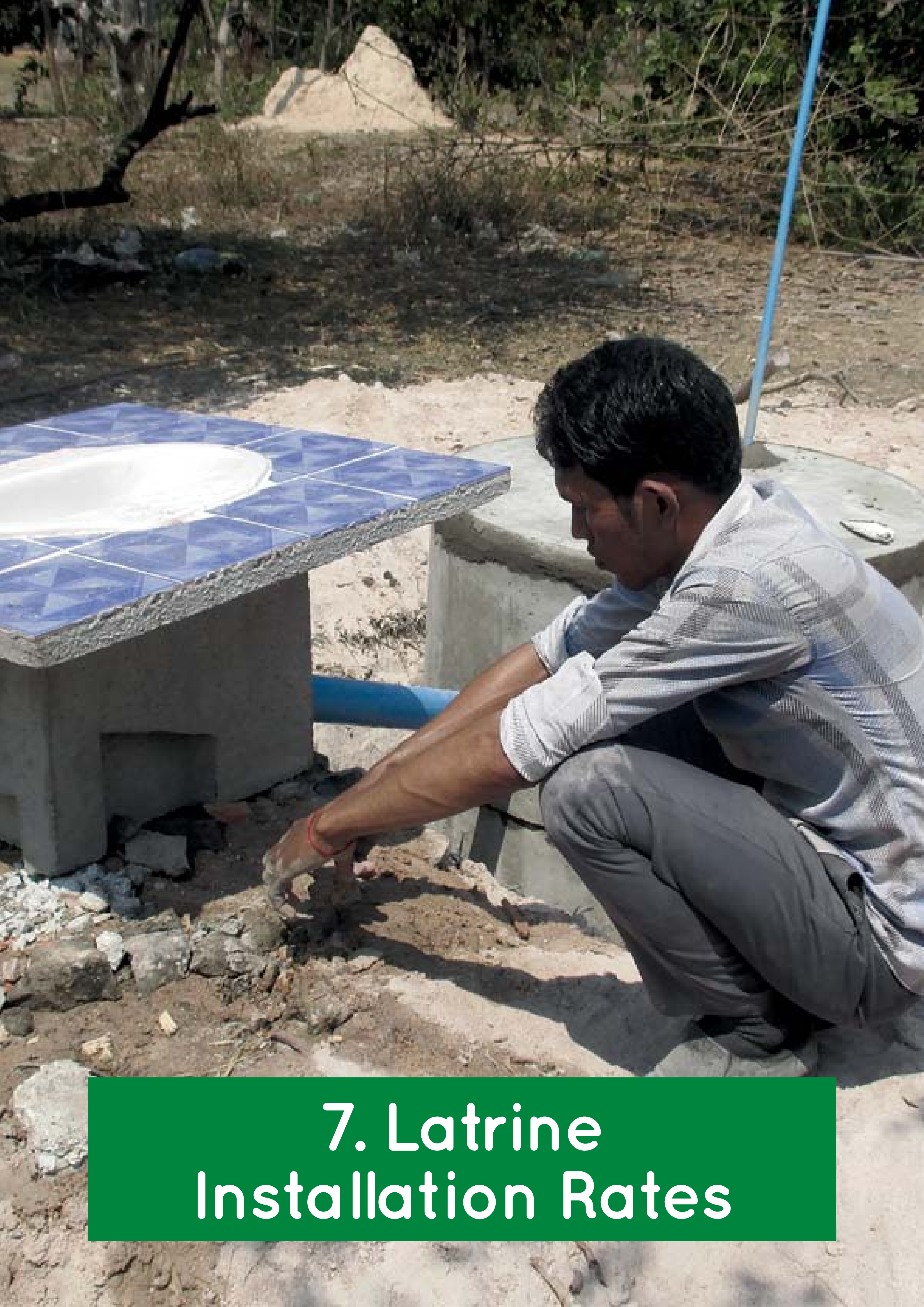


* *Expressed as percentage of installed adopters, N = 111*
\# *Expressed as percentage of installed adopters with children in household, N = 84*

Figure 7: Reported usage amongst adopters with installed latrines, Kampong Cham



* *Expressed as percentage of installed adopters, N = 131*
\# *Expressed as percentage of installed adopters with children in household, N = 103*



7. Latrine Installation Rates

7. Latrine Installation Rates

Over half of those purchasing a Latrine Core in the last 6 months had installed it. Nearly all adopters installed the latrine after 18 months. Conversion from purchase to installation was faster in Kampong Cham.

7.1 Lag-time from purchase to installation

Latrine Core adopters purchased their Latrine Core packages at different times. Across the sample, over 70% of latrine adopters had purchased their latrine over a year ago (Fig. 8). Installed adopters were more likely to have purchased over a year ago (77.7%) compared to uninstalled adopters (53%). In general, Kampong Cham adopters have purchased their latrines more recently than Kampong Speu adopters, reflecting the fact that the WaterSHED intervention has been underway for less time in Kampong Cham.

Among adopters who have purchased a Latrine Core within the last six months, 55% had an installed latrine at the time of the RCSAS study. These rates continue to increase over time, with 57% of adopters having installed within 7-12 months of purchase, 66% having installed at 13-18 months, and 90% having installed after 18 months. The study thus indicates that the majority of

Figure 8: Time of purchase among installed and uninstalled adopters

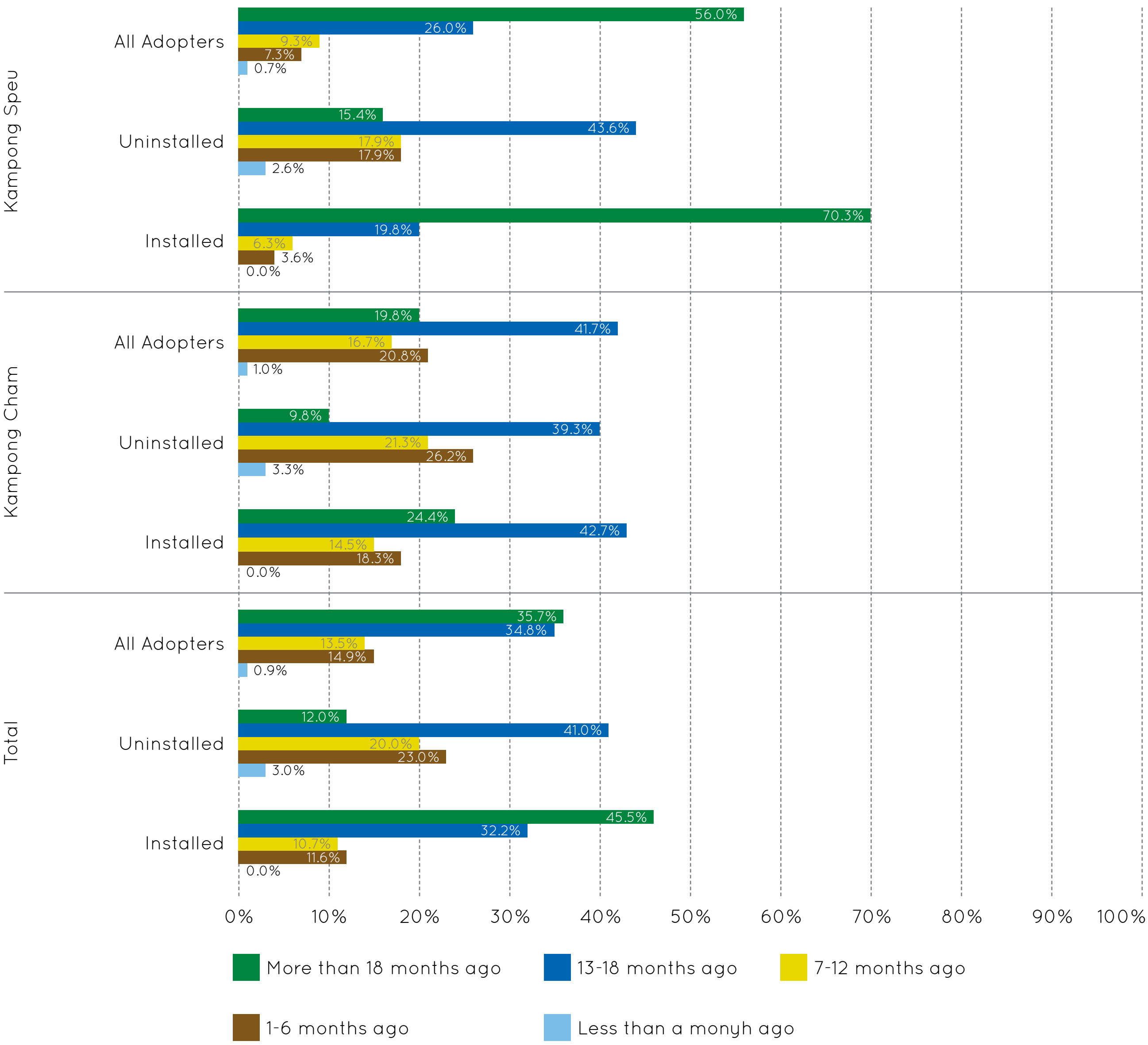
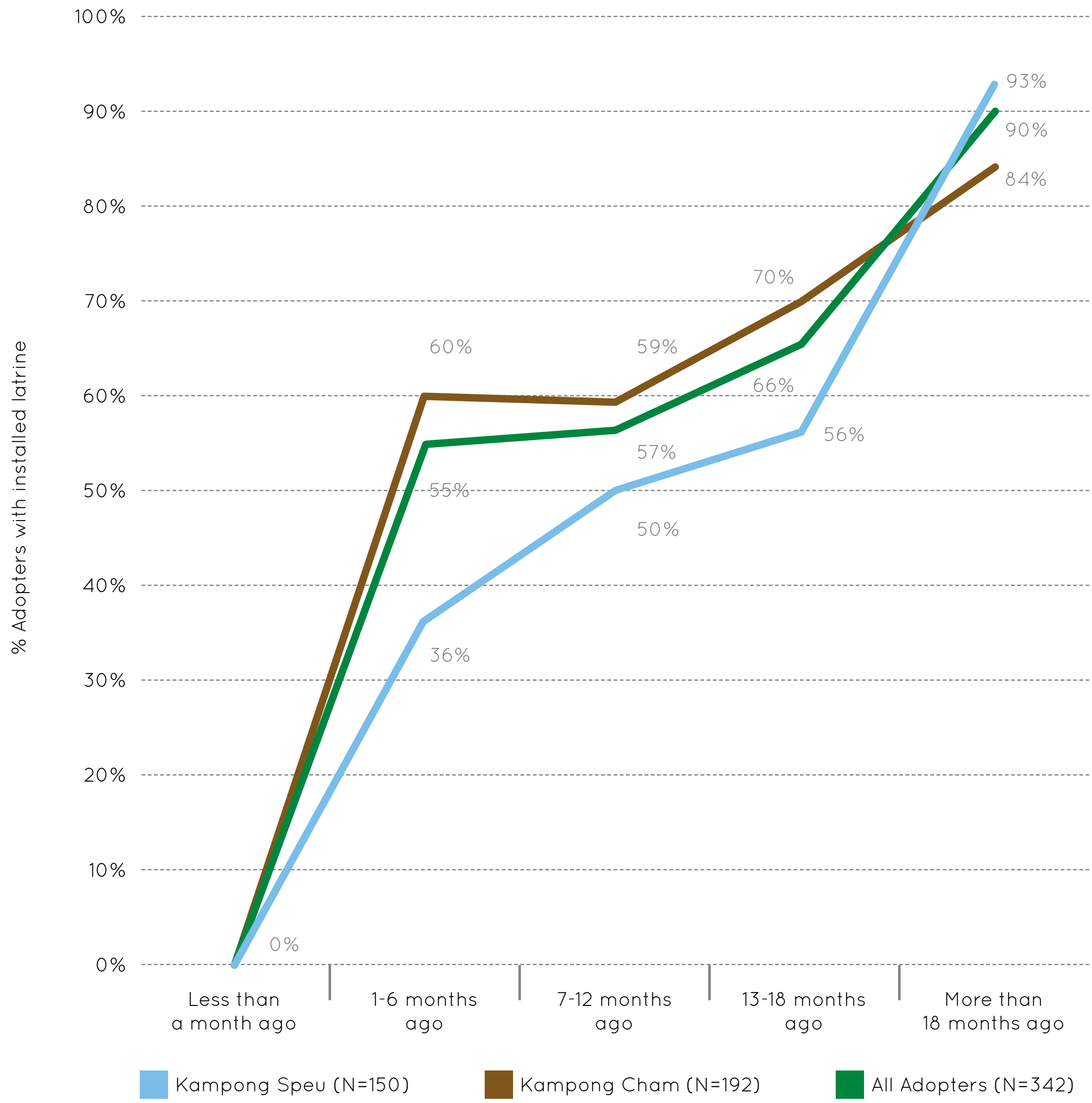


Figure 9: Time from purchase to installation, Latrine Core adopters



adopters will have an installed latrine within 18 months of purchase. A sizable proportion of adopters are installing in a relatively short timeframe, and others may delay.

Kampong Cham adopters seem to demonstrate a faster conversion from Latrine Core purchase to installation: Sixty percent of those purchasing six months ago had an installed latrine, compared to just 36% in Kampong Speu. At 7-12 months, 59% had installed in Kampong Cham, and 50% had installed in Kampong Speu, at 13-18 months, 70% had installed in Kampong Cham compared to 56% in Kampong Speu. After 18 months, 84% had installed in Kampong Cham, compared to 93% in Kampong Speu. The faster conversion rate in Kampong Cham could be due to improved SanMark strategies: by the time the program expanded into Kampong Cham, it had refined training, sales models and marketing messages compared to the Kampong Speu pilot area.

7.2 Construction rate among installed adopters

Although households may delay construction, once construction begins it generally occurs all at once and within one month (Table 17). Among installed adopters, the majority (85%) indicated that they constructed their latrine all at once within about a one-month period. Nearly 57% of all installed adopters completed latrine construction in less than two weeks. Installed adopters in Kampong Speu were more likely to take additional time to construct, with 15.3% indicating it took one to six months to complete their latrine (compared to 7% in Kampong Cham).

Desire for a high-end 'ideal' shelter results in installation delays.

7.3 Barriers to construction among uninstalled adopters

The additional cost and effort associated with higher-end shelter construction is the main cause of delayed installation (Fig. 10). Among those who have purchased but not yet installed their latrine, the most common reasons for delaying were that they were saving money for the shelter, saving money to hire labor, did not have enough money, and were waiting for free time to build (in that order).

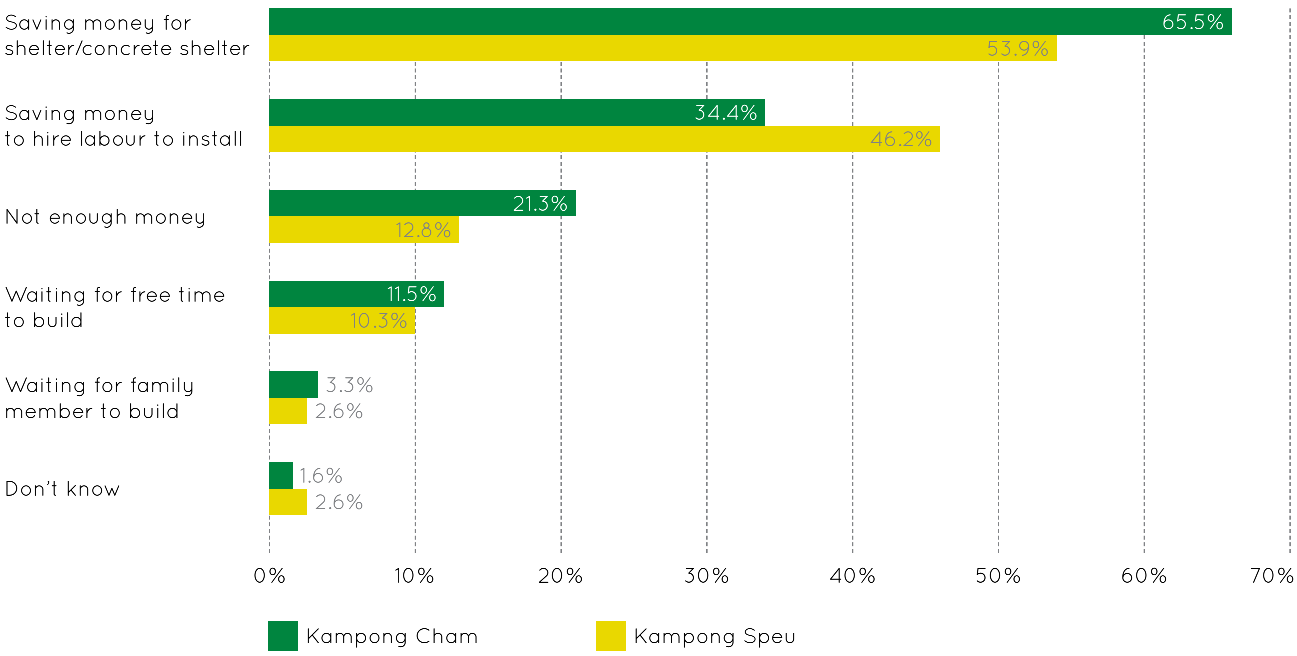
dian cost estimate was USD 61 in Kampong Speu and 28 USD in Kampong Cham (Table 19).

Not only are they better prepared with needed materials, Kampong Speu uninstalled adopters are also further advanced in the construction process, with about 10% having already installed the underground components (compared to just 1.6% in Kampong Cham) (Table 20). The majority of these households plan to construct a latrine shelter with concrete/brick walls (80%) and a galvanized steel roof (91%). Kampong Cham uninstalled

Table 17: Time from purchase to installation, Latrine Core adopters

		Kg Speu N= 111	Kg Cham N= 131	Total N= 242
How long did it take to complete building the latrine?	Less than 2 weeks	57.7%	55.7%	56.6%
	2 - 4 weeks	22.5%	33.6%	28.5%
	1-6 months	15.3%	6.9%	10.7%
	7-12 months	0.9%	1.5%	1.2%
	More than 13 months	3.6%	0.0%	1.7%
Did you construct your latrine all at once or in stages?	All at once	92.8%	91.6%	92.1%
	In stages	7.2%	7.6%	7.4%

Figure 10: Reasons for delayed installation, uninstalled adopters



Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of uninstalled adopters, Kampong Cham, N=61, Kampong Speu, N=39, Total, N=100

About 36% of uninstalled adopters in Kampong Speu, and 16% in Kampong Cham, indicate that they have all the materials they need to build their latrine (Table 18). About 26% of all non-installers, including 36% (22 of 61 uninstalled adopters) in Kampong Cham, did not know how much they have spent on shelter materials so far. For those who were able to estimate these costs, the me-

adopters are more likely to be planning to construct a latrine shelter of natural materials such as thatch. This is consistent with the higher proportion of natural material shelters actually installed in Kampong Cham compared to Kampong Speu (see Table 44).

Uninstalled adopters have invested in an improved latrine, plan to construct it, and are in the advanced stages of the process. It is likely that these households will be using their improved latrine within the next 18 months. However, while they delay installation, most of these households will continue to defecate in the open (see Section 6). It is clear that more emphasis is needed on faster conversion of purchased Latrine Cores into installed, functioning latrines. Program strategies should focus on cutting down the installation time lag by helping households to remove the last remaining barriers to installation. Strategies explicitly targeting and following up with Latrine Core purchasers might encourage shelter upgrading or lower-cost shelter options as intermediate steps on the pathway to their 'ideal' concrete latrine shelter.

Table 18: Latrine component ownership, non-installers

		Kg Speu N= 39	Kg Cham N= 61	Total N= 100
Does your household have all the materials needed for building the latrine?	Yes	35.9%	16.4%	24.0%
	No	64.1%	83.6%	76.0%

Table 19: Household expenditure on latrine materials, non-installers

		Kg Speu N= 39	Kg Cham N= 61	Total N= 100
Median expenditure for latrine materials, USD*	Underground Components	38	41	41
	Shelter	61	28	50

* *Estimates based on limited number of responses. For underground components, N=88. For shelter estimates, N=66.*

Table 20: Underground construction progress and plans, non-installers

		Kg Speu N= 39	Kg Cham N= 61	Total N= 100
Would your household pay to have someone install the part for you?	Underground parts are already installed	10.3%	1.6%	5.0%
	Yes	76.9%	62.3%	68.0%
	No	12.8%	27.9%	22.0%
	Don't know	0.0%	8.2%	5.0%
What kind of shelter walls will the latrine have?	Concrete/brick	84.6%	77.0%	80.0%
	Thatch	5.1%	11.5%	9.0%
	Galvanized steel	10.3%	6.6%	8.0%
	Fibrous cement	0.0%	1.6%	1.0%
	Plastic sheet	0.0%	1.6%	1.0%
	Don't know	0.0%	1.6%	1.0%
What kind of shelter roof will the latrine have?	Galvanized steel	84.6%	95.1%	91.0%
	Thatch	5.1%	4.9%	5.0%
	Fibrous cement	7.7%	0.0%	3.0%
	Tiles	2.6%	0.0%	1.0%

8. Equity and Access

8. Equity and Access

There is evidence of registered 'poor' households investing in the new Latrine Core.

8.1 Latrine uptake among poor households

In 2007, Cambodia began implementing the Identification of Poor Households (IDPoor) Program in order to develop a streamlined system for national identification and targeting of poor households for social services. The program develops Lists of Poor Households (LOPH) using a range of criteria including dependency ratio, productive land area, housing materials, durable assets and others. Those households on the list are classified as Poor Level 1 (very poor) and Poor Level 2 (poor), and are given an 'Equity Card' as an identification of their status (Ministry of Planning, n.d).

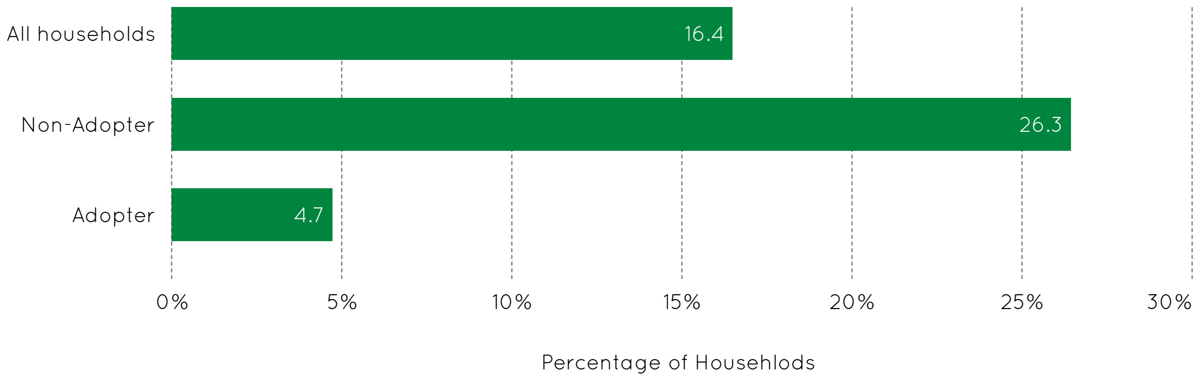
During the scale-up of the WaterSHED *Hands-Off* Sanitation Marketing program, the IDPoor system was rolled out across both of the study provinces (unfortunately, it was not yet underway during the baseline survey). While there are inevitably issues with inclusion and exclusion error in such schemes, the IDPoor system enables an assessment of latrine uptake by the official national poverty classification.

Consistent with other RCSAS findings and evidence from other sanitation marketing programs in Cambodia (see, for example, iDE 2011), it is clear that the poor are more highly represented among non-adopters compared to adopters. Nevertheless, the RCSAS findings from both provinces indicate that some IDPoor households were part of the first wave of 'early adopters' investing in the new Latrine Core within the first two years of on-ground marketing efforts. This indicates that at least some registered poor were willing to prioritize latrine purchase.

According to the Ministry of Planning, in Kampong Speu 21% of all households in the province are registered as IDPoor. Within the RCSAS, about 16.4% of all sample households in Kampong Speu were classified as IDPoor (Level 1 or 2), which would indicate that the villages in the original target area are slightly less poor compared to the provincial average. This is unsurprising, as the original target area was selected due to its proximity to natural supply chain routes and major markets within 20 kilometers of National Road #4 (see Section 2).

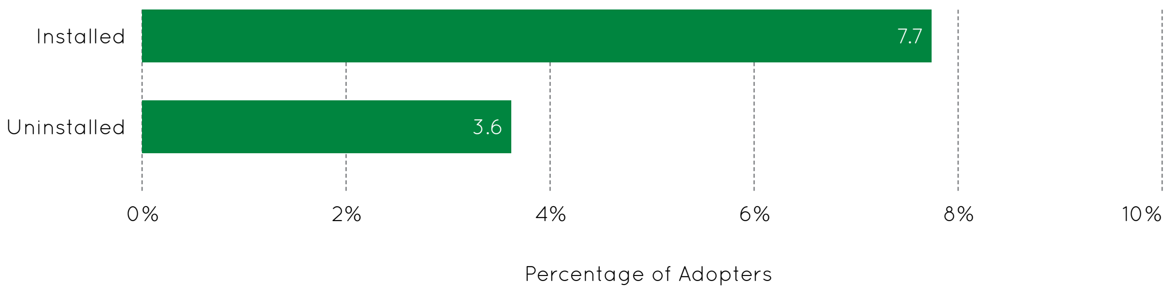
In Kampong Speu, a small proportion – about 5% - of Latrine Core adopters were classified as IDPoor, compared

Figure 11: Percentage of IDPoor households by latrine ownership, Kampong Speu



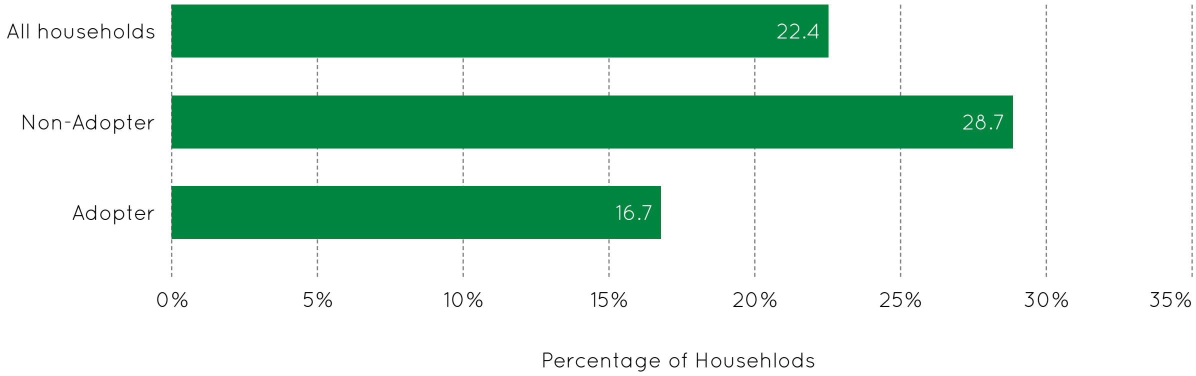
Includes households classified as IDPoor Level 1 and IDPoor Level 2. Expressed as percentage of households: All households, N = 329, Non-adopters N = 179, Adopters, N = 150

Figure 12: Percentage of IDPoor households, installed and uninstalled adopters, Kampong Speu



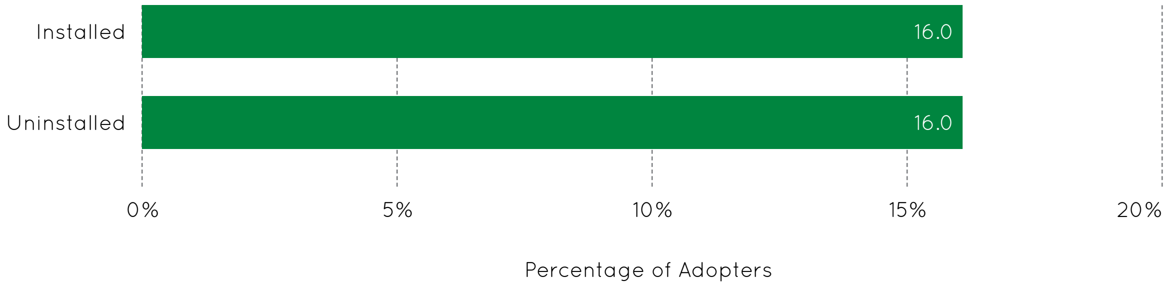
Includes households classified as IDPoor Level 1 and IDPoor Level 2. Expressed as percentage of Kg Speu adopters: Installed, N=111, Uninstalled, N=39, All adopters, N=150

Figure 13: Percentage of IDPoor households by latrine ownership, Kampong Cham



Includes households classified as IDPoor Level1 and IDPoor Level 2. Expressed as percentage of Kg Cham households: All households, N = 366, Non-adopters N = 174, Adopters, N = 192

Figure 14: Percentage of IDPoor households, installed and uninstalled adopters, Kampong Cham



Includes households classified as IDPoor Level1 and IDPoor Level 2. Expressed as percentage of Kg Cham adopters: Installed, N=131, Uninstalled , N=61, All adopters, N=150

to over 26% of non-adopter households (Fig. 11).[1] This corresponds to other RCSAS findings that adopter households are generally 'better off' compared to their non-adopter counterparts. IDPoor households were slightly more represented among non-adopter households, compared to the provincial average of 21% IDPoor.

Amongst adopters in Kampong Speu, uninstalled adopters are about two times as likely to be poor compared to those with an installed latrine (7.7% IDPoor among uninstalled, 3.6% IDPoor among installed) (Fig 12). This is consistent with stated reasons for installation delays related to saving more money for construction (see Section 7).

In Kampong Cham, 25.2% of all households in the province are registered as IDPoor (Ministry of Planning). In the RCSAS, 22.4% of all sample households in Kampong Cham were classified as IDPoor (Level 1 or 2), indicating that adopter households are slightly less poor than the provincial average.[2]

In Kampong Cham, 16.7% of Latrine Core adopters were registered IDPoor households, compared to 28.7% of non-adopter households (Fig. 13), indicating that non-adopter households are more likely to be poor. Amongst adopters in Kampong Cham, there was no difference between installed and installed adopters in terms of poverty classification (Fig. 14).

Further analysis of RCSAS results by IDPoor classification is presented in the sections that follow. This can be used as a 'baseline' to track changes in IDPoor latrine uptake over time, in order to monitoring the program's progress in further penetrating this market segment.

8.2 Latrine uptake by income, expenditure and assets

The majority of both latrine adopters and non-adopters in Kampong Speu sell rice as their main source of cash income (Table 21). Reported cash incomes were very difficult for households to estimate, and are not presented here due to data reliability issues.

In Kampong Speu, latrine adopters tend to have more permanent/durable roofing and wall material for their houses, suggesting slightly 'better off' economic status relative to non-adopters (Table 22). The findings for Kampong Speu households are largely consistent with the baseline, with some important exceptions. The proportion of households with 'permanent' concrete/brick house wall materials was 10.1% of all latrine owners at baseline, but only 7.3% of Latrine Core adopters. The proportion of those with palm, wood, or thatch walls was 4.7% of all latrine owners at baseline, compared to 9.3% of Latrine Core adopters.

The findings seem to point to two concurrent trends: firstly, SanMark activities and the new Latrine Core may

1 It is possible that difficulties related to accurate identification of Latrine Core owners in Kampong Speu resulted in the inclusion of latrine owners with other types of (higher-end, more expensive) latrines (see Section 16: Limitations).

2 It should be noted that Kampong Cham villages were not chosen as a representative sample, but rather as a sub-set of villages exposed to the intervention with 10 or more sales. If a representative sample of households had been included in the study, the share of IDPoor adopters may have been higher.

! Latrine adopters are generally 'better-off' than non-adopters.

Table 21: Primary source of household income, Kampong Speu

		Kg Speu	
		Adopter N= 150	Non-Adopter N= 179
Agricultural sources	Selling rice	75.2%	60.3%
	Selling non-rice crop	4.7%	3.9%
	Selling animals	0.7%	3.4%
	Fishing	1.3%	0.0%
Non-agricultural	Salary/wage	12.8%	19.0%
	Business/trading	4.7%	12.8%
	Remittances	0.7%	0.6%

Table 22: Comparison of housing materials, Kampong Speu, Baseline and RCSAS

		Baseline		RCSAS	
		Latrine Owner N= 149	Non-Owner N= 249	Adopter N= 150	Non-Adopter N= 179
Wall material on main living floor of house	Wood	82.6%	76.3%	82.0%	70.9%
	Palm/Bamboo/Thatch	4.7%	20.5%	9.3%	17.9%
	Concrete/brick	10.1%	0.8%	7.3%	6.1%
	Galvanized steel	2.7%	1.2%	1.3%	3.4%
Roof material	Galvanized steel	33.6%	45.8%	49.3%	57.5%
	Tiles	46.3%	21.7%	28.7%	15.6%
	Fibrous cement	16.8%	19.3%	19.3%	15.1%
	Palm/Bamboo/Thatch	1.3%	11.6%	2.7%	11.2%

Table 23: Primary source of household income, Kg Cham

		Kg Cham	
		Adopter N= 192	Non-Adopter N= 174
Agricultural sources	Selling rice	60.9%	46.6%
	Selling non-rice crop	13.5%	14.4%
	Selling animals	2.6%	3.4%
	Fishing	1.0%	1.1%
Non-agricultural	Salary/wage	12.5%	23.6%
	Business/trading	7.8%	9.8%
	Remittances	1.6%	1.1%

Table 24: Housing materials, Kampong Cham

		Kg Cham	
		Adopter N= 192	Non-Adopter N= 174
Wall material on main living floor of house	Wood	65.1%	43.1%
	Palm/Bamboo/Thatch	27.6%	42.0%
	Concrete/brick	2.6%	0.6%
	Galvanized steel	4.7%	14.4%
Roof material	Galvanized steel	36.5%	46.0%
	Tiles	53.6%	35.6%
	Fibrous cement	5.2%	5.7%
	Palm/Bamboo/Thatch	4.7%	12.6%

enable a greater proportion of the less economically well-off in the community to access a latrine. At the same time, Kampong Speu may be seeing a general rise in living conditions resulting in improved housing materials even among non-adopters.

Most latrine adopters and non-adopters in Kampong Cham sell rice as their main source of cash income. However, compared to latrine adopters, non-adopters rely more heavily on salary or wages for cash income and less on selling rice (Table 23). This is consistent with the reliance among Kampong Cham household heads on day labor (Table 27), and most likely indicates generally lower incomes among non-adopters compared to adopter households.

In Kampong Cham, few households have permanent concrete/brick walls. Latrine adopters tend to have more permanent/durable roofing and wall material for their houses, suggesting slightly 'better off' economic status relative to non-adopters (Table 24).

For both latrine adopters and non-adopters in both provinces, peak months of income availability are during and after the harvest time in the dry season months of November to April, with less income available during the wet season months of May to October. More latrine adopters than non-adopters reported having a steady income throughout the year. This was the general trend across both provinces.

A significant proportion of all respondents (e.g. 50% or more of all adopters and non-adopters in both provinces) own mobile phones, cows or buffalo, televisions, bicycles and batteries. Consistent with the baseline survey and with other findings from the RCSAS, latrine adopters tend to be better off, as indicated by their ownership of more expensive 'luxury' items such as mobile phones, televisions, motorbikes and radios. Latrine adopters are also more likely to own more expensive agricultural assets including irrigation pumps, rice mills and semi-tractors. It is important to note that significant proportions of non-adopters have prioritized ownership of other assets (of equal or greater cost) over a latrine.

8.3 Latrine uptake by household demographics

There are several notable differences in demographic characteristics of latrine adopters when one compares baseline and RCSAS data for Kampong Speu (Table 25). Comparing new Latrine Core adopters to all latrine owners surveyed at baseline (including dry pit owners), we find that new Latrine Core adopters tend to have less education (14% of adopters have had no formal education, compared to 7.4% of baseline latrine owners), are more likely to be female-headed households (24% of adopters, compared to 18.8% of baseline latrine owners), and are more likely to depend on agricultural incomes (91.4% of all adopters, compared to 67.8% of baseline latrine owners). The differences in the demographic profile of new Latrine Core adopters compared to previous latrine owners seem to indicate that SanMark program activities have resulted in latrine uptake among less 'better off' rural households.

Demographic characteristics for Kampong Speu non-adopters in the RCSAS are largely consistent with those of the non-owner population surveyed at baseline, with the notable exception that non-adopters are much more likely to be engaged in day labor (22.4%) compared to baseline non-owners (1.6%).

Comparing RCSAS adopters and non-adopters in Kampong Speu, demographic characteristics confirm that non-adopters are generally not as 'well-off' in terms of household head education and employment. Non-adopters are also younger, have more under-five dependents, and are more likely to engage in day labor. In terms of household composition (Table 26), Kampong Speu, non-adopter households are about twice as likely to have 2 or more children under five years old. Households with more under-five dependents often bear a greater financial burden, and these households are also more likely to be vulnerable to under-five morbidity and mortality related to diarrheal disease. Non-adopters are much more likely to be engaged in day labor (22.4% of non-adopters are engaged in day labor, compared to just 4.7% of adopters). Day labor may be a sign of more vulnerability, since day laborers often lack the land and assets to grow their own rice. The percentage of households with a household head aged 60 years or more was higher for adopters (17%) than for non-adopters (13%).

Comparing adopters and non-adopters in Kampong Cham, demographic characteristics also confirm that adopters are 'better off'. Non-adopters are more likely to be female-headed, have less education (29.9% of non-adopters have had no formal education, compared to 18.8% of adopters), and are more likely to be engaged in day labor (22.4% non-adopters, 6.8% of adopters) (Table 27). In Kampong Cham, non-adopters have more under-5 dependents than adopters: 81% of non-adopters have 2 or more children under 5, compared to 46.4% of adopters. Non-adopter households are more likely to have a family member with a disability. The percentage of households with a head aged 60 years or more was higher for adopters (27%) than for non-adopters (20%). Households with more elderly heads may be more likely to prioritize a latrine as it becomes physically more difficult for them to defecate in the open.

As noted above, the findings indicate that more can be done to encourage uptake among vulnerable households, particularly those with young children. It will be necessary to look at non-income based vulnerability indicators (for example, those with very young female heads, those with disabilities) to target these households for additional support, as the market alone may not be able to reach them.

8.4 Latrine uptake by household saving and borrowing habits

In Kampong Speu, the majority of adopters and non-adopters indicate that they rarely or never save money (Table 29). Compared to latrine owners at baseline, Latrine Core adopters were more likely to report rarely or never saving cash income (58.3% of baseline latrine owners, compared to 68.7% of Latrine Core adopters). Conversely,

SanMark activities have encouraged more latrine uptake among female-headed, less educated, and more vulnerable households.

Table 25: Comparison of household head profile, Kampong Speu, Baseline and RCSAS

		Baseline		RCSAS	
		Latrine Owner N= 149	Non-Owner N= 249	Adopter N= 150	Non-Adopter N= 174
HH head – gender	Male	81.2%	72.3%	76.0%	70.7%
	Female	18.8%	27.7%	24.0%	29.3%
HH head – educational attainment	None	7.4%	21.3%	14.0%	29.9%
	Pre-school/ Kindergarten	2.7%	1.6%	4.0%	0.6%
	Some Primary	28.9%	39.8%	32.0%	40.2%
	Finished Primary	10.7%	10.0%	16.0%	8.0%
	Some Secondary	23.5%	18.9%	19.3%	14.9%
	Finished Secondary	14.8%	5.6%	10.0%	4.6%
	Higher	12.1%	2.8%	4.7%	1.7%
HH head – occupation*	Rice/crop farming/other agricultural	67.8%	83.9%	91.4%	80.4%
	Day laborer	2.0%	1.6%	4.7%	22.4%
	Service/Sales/ Commercial	7.4%	6.8%	11.3%	11.5%
	Factory worker	0.7%	0.4%	8.7%	5.7%
	Civil service	16.8%	2.8%	9.3%	1.7%
	Professional/Technical	2.0%	2.0%	6.0%	6.3%
	Retired/too old to work			2.0%	1.7%
	Unemployed	3.4%	2.4%	2.7%	2.9%
	Housewife			0.0%	0.6%
HH head - age	Average age, years			49	47

Respondents could choose more than one option. Results expressed as percentage of respondents.

Table 26: Household member characteristics, Kampong Speu

	Kg Speu	
	Adopter N= 150	Non-Adopter N= 179
Percentage of household with HH head age 60 or above	17%	13%
Percentage of household with 2 or more children under 5 years old	38.7%	84.4%
Percentage of households with member with physical or mental disability	22.7%	21.2%
Average number of household members living in the home	5.5	4.9

reported savings among non-adopters in Kampong Speu has increased slightly. At baseline, 81.1% of non-adopters indicated they rarely or never saved, compared to 72.1% in the RCSAS. These findings may support the two trends described above; namely, a greater proportion of the less 'well-off' investing in the new Latrine Core, and a simultaneous rise in the living standards in the target area, perhaps resulting in more savings even for non-adopters (see Section 8.2).

In Kampong Speu, nearly half of all households have taken a microfinance loan at some time in the past (Table 30). From the baseline, households with a microfinance loan in Kampong Speu increased from 37.6% to 43.3% of adopters and from 41.4% to 46.9% of non-adopters.

Many households in Kampong Speu indicate their loans are being used for materials and house building. Loans for house building comprise over 20% of all loans (Table 31). Loans for latrines most readily fall into the home building/housing loan category. As noted in the baseline, respondents also take loans for a variety of non-productive uses including health treatment, marriage, school fees and daily expenses.

In Kampong Cham, patterns of savings and micro-finance borrowing are generally similar to Kampong Speu

8. Equity and Access

Table 27: Household Head Profile, Kampong Cham

		Kg Cham	
		Adopter N= 192	**Non-Adopter N= 174**
HH head – gender	Male	77.1%	70.7%
	Female	22.9%	29.3%
HH head – educational attainment	None	18.8%	29.9%
	Pre-school/ Kindergarten	5.2%	0.6%
	Some Primary	54.7%	40.2%
	Finished Primary	5.2%	8.0%
	Some Secondary	8.9%	14.9%
	Finished Secondary	4.7%	4.6%
	Higher	2.6%	1.7%
HH head – occupation*	Rice/crop farming/other agricultural	84.4%	80.4%
	Day laborer	6.8%	22.4%
	Service/Sales/ Commercial	9.4%	11.5%
	Factory worker	0.0%	5.7%
	Civil service	5.2%	1.7%
	Professional/Technical	1.6%	6.3%
	Retired/too old to work	6.2%	1.7%
	Unemployed	0.5%	2.9%
	Housewife	0.5%	0.6%
HH head - age	Average age, years	51	47

Respondents could choose more than one option. Results expressed as percentage of respondents.

Table 28: Household member characteristics, Kampong Cham

	Kg Cham	
	Adopter N= 192	**Non-Adopter N= 174**
Percentage of household with HH head age 60 or above	27%	21%
Percentage of household with 2 or more children under 5 years old	46.4%	81.0%
Percentage of households with member with physical or mental disability	9.9%	14.9%
Average number of household members living in the home	5.1	5.0

Table 29: Comparison of household saving habits, Kampong Speu, Baseline and RCSAS

		Baseline		RCSAS	
		Latrine Owner N= 149	**Non-Owner N= 249**	**Adopter N= 150**	**Non-Adopter N= 179**
How often does your household save money?	Never	26.8%	47.8%	64.0%	68.7%
	Rarely	31.5%	33.3%	4.7%	3.4%
	Daily	--	--	6.0%	6.1%
	Weekly	5.4%	2.4%	1.3%	1.1%
	Monthly	19.5%	9.2%	17.3%	16.8%
	2-3 times per year	7.4%	2.8%	0.7%	1.7%
	Yearly	--	--	6.0%	2.2%

Table 30: Comparison of access to microfinance, Kampong Speu, Baseline and RCSAS

	Baseline		RCSAS	
	Latrine Owner N= 149	**Non-Owner N= 249**	**Adopter N= 150**	**Non-Adopter N= 179**
Percentage of households that have ever taken a microfinance loan	37.6%	41.4%	43.3%	46.9%
Average loan size of most recent loan, USD	458	336	331	232

Table 31: Usage of microfinance loan, Kampong Speu

		Kampong Speu	
		Adopter N= 65	Non-Adopter N= 84
What is/was the loan used for?	Business	21.2%	16.5%
	Fertilizer	1.5%	7.1%
	Materials	28.8%	24.7%
	House Building	19.7%	23.5%
	Health treatment	12.1%	18.8%
	Daily expenses	1.5%	2.4%
	Marriage	7.6%	3.5%
	School fees	3.0%	0.0%

Table 32: Household saving habits, Kampong Cham

		Kg Cham	
		Adopter N= 192	Non-Adopter N= 174
How often does your household save money?	Never	68.8%	66.1%
	Rarely	11.5%	4.0%
	Daily	2.1%	12.6%
	Weekly	0.5%	0.6%
	Monthly	10.9%	9.8%
	2-3 times per year	4.2%	2.3%
	Yearly	1.6%	3.4%
	Don't know	0.5%	1.1%

Table 33: Access to microfinance, Kampong Cham

	Kg Cham	
	Adopter N= 192	Non-Adopter N= 174
Percentage of households that have ever taken a microfinance loan	52.6%	50.0%
Average loan size of most recent loan, USD	405	372

Table 34: Usage of microfinance loan, Kampong Cham

		Kg Cham	
		Adopter N= 101	Non-Adopter N= 87
What is/was the loan used for?	Business	36.6%	51.7%
	Fertilizer	13.9%	6.9%
	Materials	12.9%	12.6%
	House Building	11.9%	11.5%
	Health treatment	9.9%	9.2%
	Daily expenses	5.9%	5.7%
	Marriage	4.0%	0.0%
	School fees	1.0%	1.1%

(Tables 32-34). Most households, regardless of latrine ownership, indicate that they rarely or never save money, although adopters are somewhat less likely to save compared to non-adopters. About half of all households have taken a microfinance loan, with loan sizes slightly higher for adopters. The majority of households are using their microfinance loans for business, although as noted above, about one-quarter indicate that they are using their loans for materials or house building.

Section 13.2 of this report presents results on the use of microfinance loans for latrine purchase among adopters, and Section 14.2 presents results on intention to use a microfinance loan for latrine purchase among non-adopters.

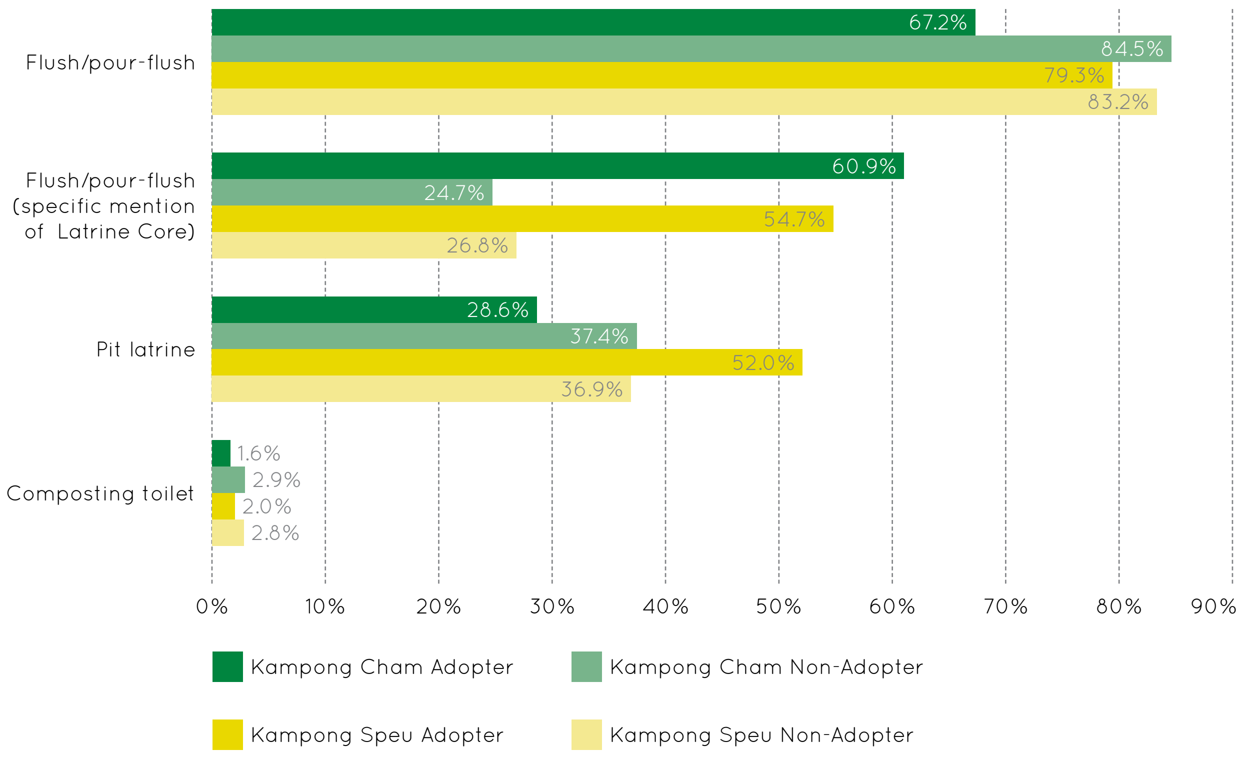
9. Latrine product knowledge and preferences

9. Latrine product knowledge and preferences

Without prompting, one-quarter of non-adopters mentioned the Latrine Core when asked what products they knew about.

The flush/pour-flush latrine is the most commonly known latrine technology in both Kampong Cham and Kampong Speu (Fig 15), and this has not changed since baseline. When asked what technologies they had heard of or seen before, about one-quarter of all non-adopters (24.7% in Kampong Speu, and 26.8% in Kampong Cham) specifically mentioned the pour-flush latrine with the new Latrine Core. At this stage of the interview, respondents were not yet introduced to the Latrine Core image, options were not read to respondents and they could state any latrines they knew. This frequency of mention without any prompting among non-adopters is a promising sign of awareness of the new product among potential new customers.

Figure 15: Known latrine technology types, unprompted



Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of respondents, N=695

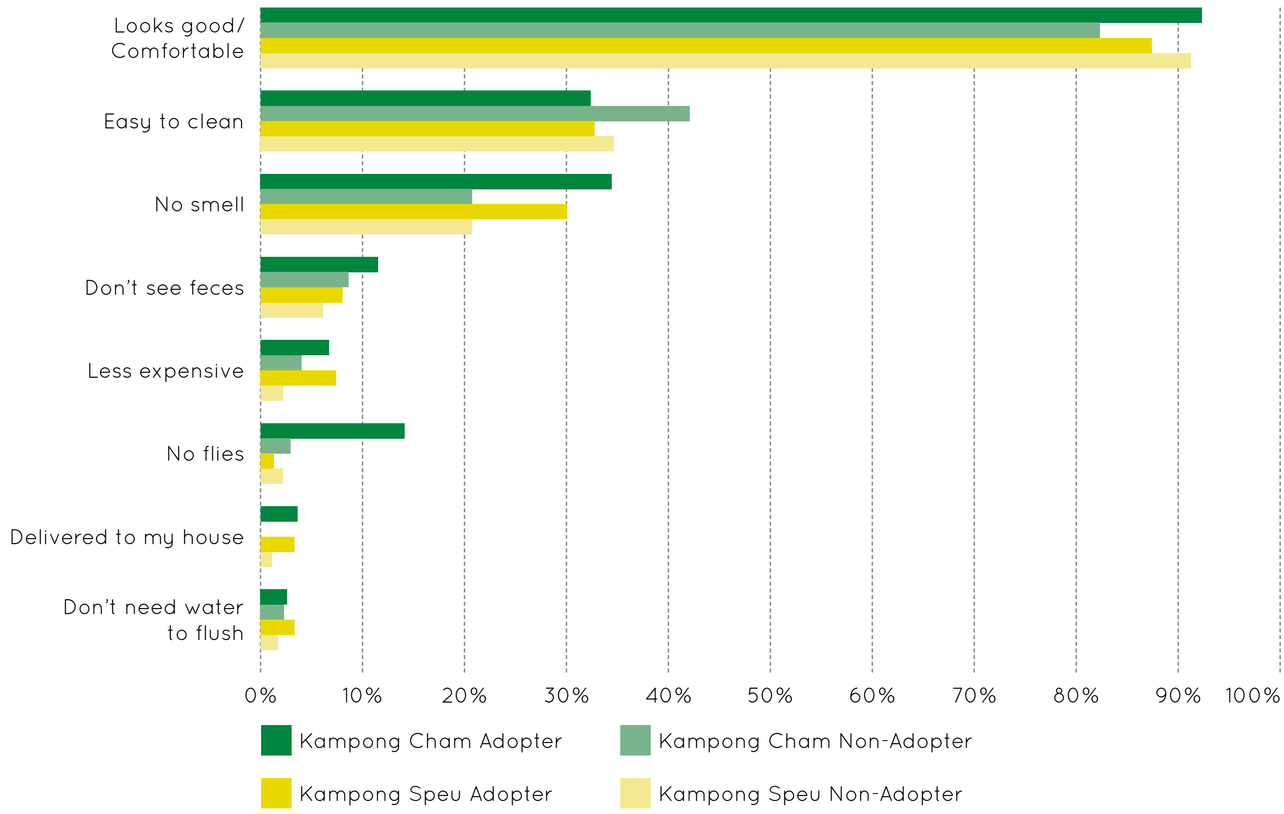
Table 35: Most preferred latrine technology type

		Kg Speu		Kg Cham		Total
		Adopter N= 150	Non-Adopter N= 179	Adopter N= 192	Non-Adopter N= 174	N= 695
What type of latrine do you most prefer for your household?	Flush/pour-flush	54.7%	78.1%	44.0%	75.9%	63.1%
	Flush/pour-flush (specific mention of Latrine Core)	44.7%	21.3%	56.0%	23.0%	36.4%
	Pit latrine	0.0%	0.0%	0.0%	1.1%	0.3%
	Don't Know	0.7%	0.6%	0.0%	0.0%	0.3%

Without prompting, more than 20% of non-adopters stated that the Latrine Core was the latrine type that they most preferred.

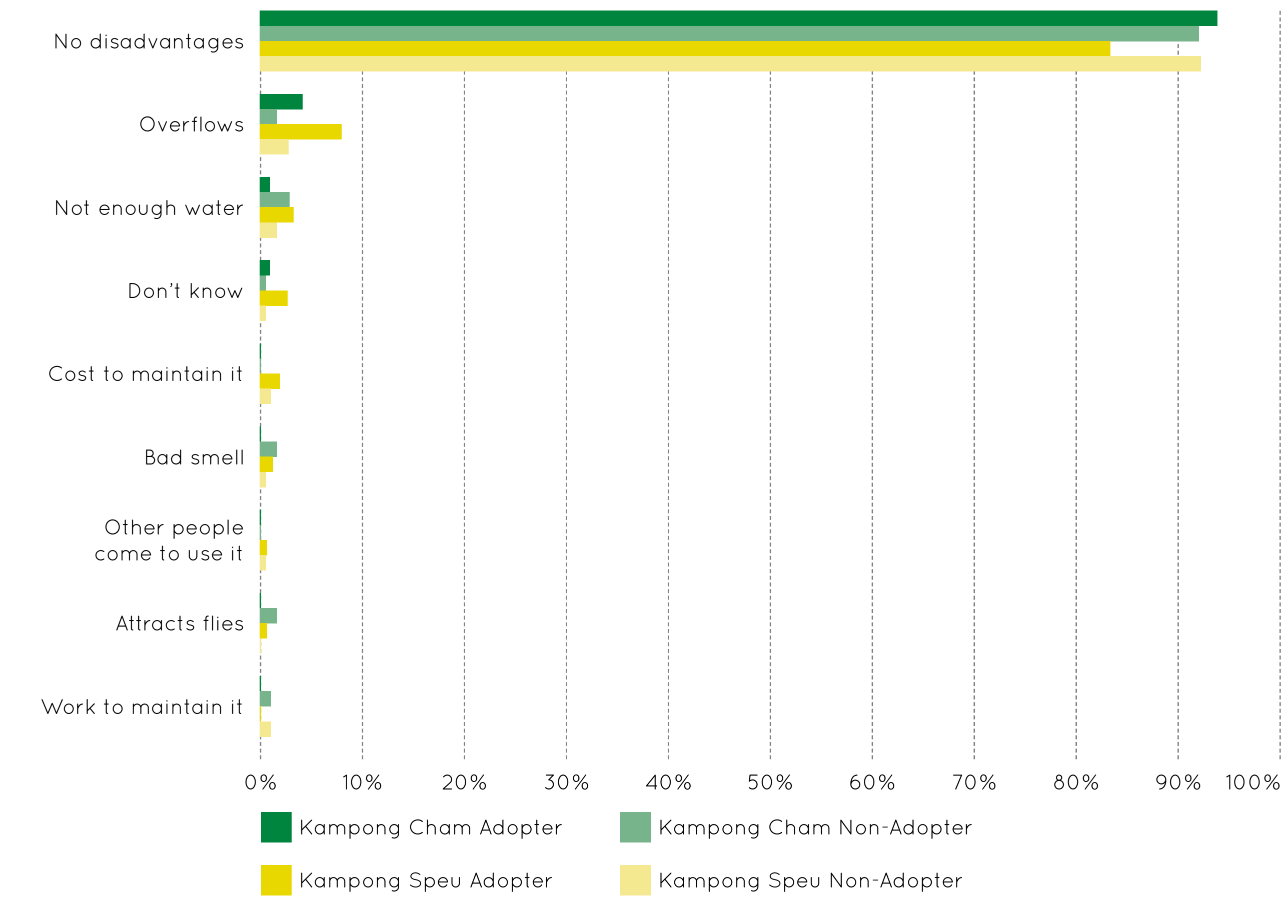
9. Latrine product knowledge and preferences

Figure 16: Favored attributes of most preferred latrine technology type



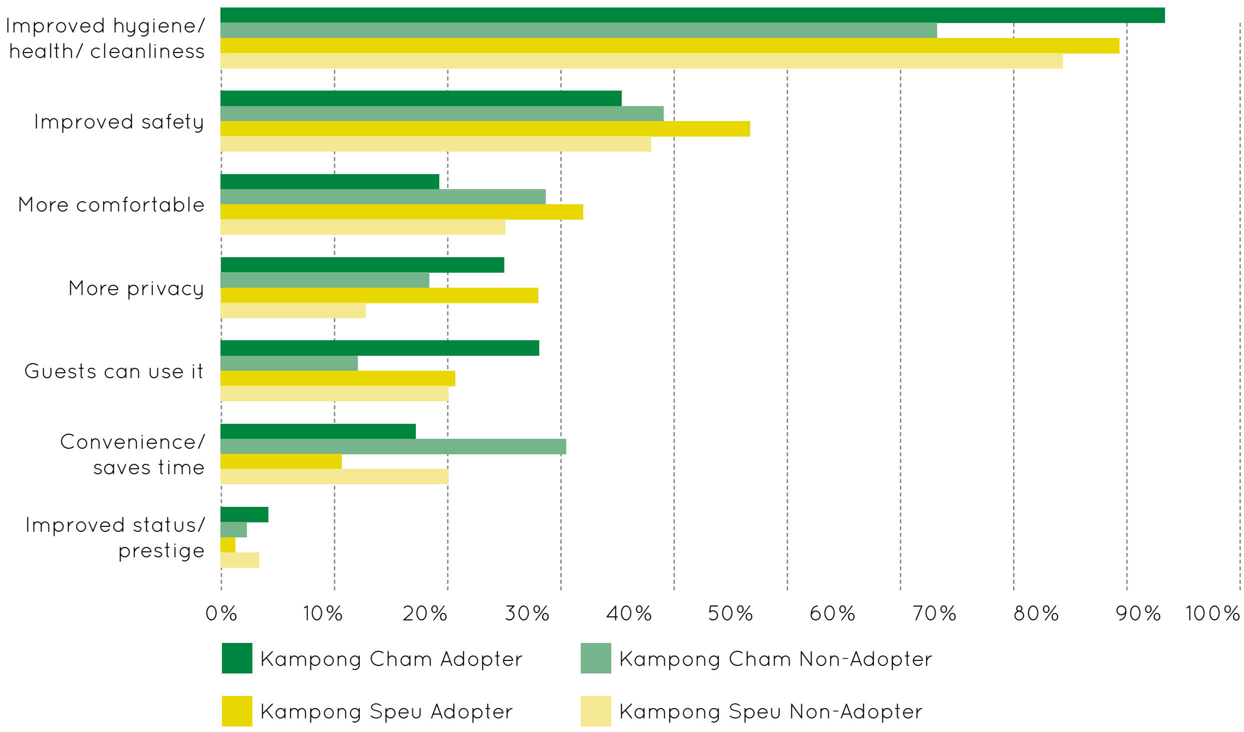
Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of respondents, N=695

Figure 17: Perceived disadvantages of latrine ownership



Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of respondents, N=695

Figure 18: Perceived advantages of latrine ownership



Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of respondents, N=695.

Unsurprisingly, a significant proportion of latrine adopters specifically mentioned the new Latrine Core technology that they had purchased. Adopters and non-adopters also mentioned pit latrine and composting toilet technologies, although with less frequency. In Kampong Speu, over 50% of latrine adopters mentioned pit latrines, perhaps reflecting greater exposure to this technology through CLTS.

Consistent with findings from the baseline and other market research (e.g. Salter 2008) the flush/pour-flush latrine is clearly the most preferred latrine technology, with near universal preference by all households (Table 35). When asked to state their most preferred technology type, 21.3% of non-adopters in Kampong Speu and 23% in Kampong Cham specifically mentioned the Latrine Core without any prompting. Interestingly, among Latrine Core adopters, only about 45% in Kampong Speu and 56% in Kampong Cham made specific mention of the Latrine Core, perhaps reflecting the fact that once the latrine is installed, the technical details of underground components become less important.

In terms of the most desirable attributes of their preferred latrine, both latrine adopters and non-adopters mentioned that their preferred latrine looks good/is comfortable, is easy to clean and does not smell (in that order) (Fig. 16). The order and frequency of these responses have not changed from baseline, and are fairly consistent across both provinces (and with other studies, e.g. Salter 2008). Consistent with baseline findings, the attribute 'no smell' was mentioned much more frequently by latrine adopters. These findings confirm that attributes related to comfort, aesthetics, ease and cleanliness are more important to households than cost. It is also interesting to note that a small percentage of latrine adopters mentioned 'delivered to my house' as an important attribute. The ease of Latrine Core purchase enabled through home delivery will be discussed in Section 10.

The majority of households in both provinces do not believe that latrine ownership poses any disadvantages (Fig. 17). Latrine owners are generally more likely to identify disadvantages, with a very few mentioning issues such as overflow, lack of water, and maintenance costs. In Kampong Speu, there were no differences from the baseline in terms of reported disadvantages.

Among all survey households, improved hygiene/health/cleanliness, improved safety, greater comfort, more privacy, the use of latrine by guests, and greater convenience were cited (in that order) as the main advantages of latrine ownership (Fig. 18). There was little difference across the provinces in this respect. The responses are broadly similar to baseline responses, although 'improved safety' seemed to have slightly increased in importance among latrine adopters and non-adopters in Kampong Speu.

The advantages of having guests use the latrine and having greater privacy were more frequently reported by latrine adopters compared to non-adopters, perhaps reflecting greater adopter experience with the social benefits of latrine ownership. Conversely, convenience and time saving were more frequently mentioned by non-adopters as key benefits, reflecting their dissatisfaction with the time and effort it currently takes to defecate in the open (see Section 14.1).

10. Awareness and perceptions of new latrine products

10. Awareness and perceptions of new latrine products

When shown the Latrine Core, over three-quarters of all households confirmed they had seen or heard of it before, nearly one-third knew an enterprise that sold it, and most knew how much it cost.

Respondents were shown a standard marketing image of the Latrine Core package (Annex 3), and asked about their knowledge of the product. When prompted with the image, 78.5% of all households stated they had seen or heard of it before (Table 36). Unsurprisingly, there was near-universal recognition of the product among adopters in both provinces. Well over half of all non-adopters were also aware of the product, although Latrine Core product awareness was much higher in Kampong Cham. Nearly 67% of Kampong Cham non-adopters recognized the product, compared to 52% of non-adopters in Kampong Speu. Considering the relatively small amount of time that the product has been available (2 years in Kampong Speu and 18 months in Kampong Cham), this level of non-adopter awareness is promising. [1]

When probed for more details about the product, fewer respondents could provide specific product information. About 28% of non-adopters in both provinces knew an enterprise selling the product in their area. Knowledge of a specific enterprise selling the Latrine Core was just 38% among Kampong Speu adopters and 28.6% among Kampong Cham adopters. It is unclear why so few adopters reported knowing the enterprise that sold the Latrine Core product. One possible explanation, discussed in Section 12, relates to the new latrine ordering process in which households often purchase through an agent who comes to their village or house, and may not directly interface with the enterprise itself. [2]

The median cost estimate for the Latrine Core product was close to actual retail prices in both provinces. In the baseline survey, latrine owners and non-owners in Kampong Speu estimated a median cost of 100 USD for the Latrine Core product when shown the product image. Thus, the WaterSHED program has shown marked success in building accurate price awareness for the new lower-cost product, an important factor in reducing barriers to investment.

Table 36: New Latrine Core product awareness and cost perceptions

	Kg Speu		Kg Cham		Total
	Adopter N= 150	Non-Adopter N= 179	Adopter N= 192	Non-Adopter N= 174	N= 695
Percentage of households who have ever seen or heard of the new Latrine Core*	98.0%	52.0%	99.0%	66.7%	78.5%
Percentage of households who know an enterprise who sells the new Latrine Core in their area	38.0%	27.9%	28.6%	27.6%	30.2%
Estimated median cost of new Latrine Core, USD	38				
	40	41			
	45	41			

** Respondents were shown standard marketing image of the 'Latrine Core'.*

Non-adopters are hearing about the new products from neighbors and family members.

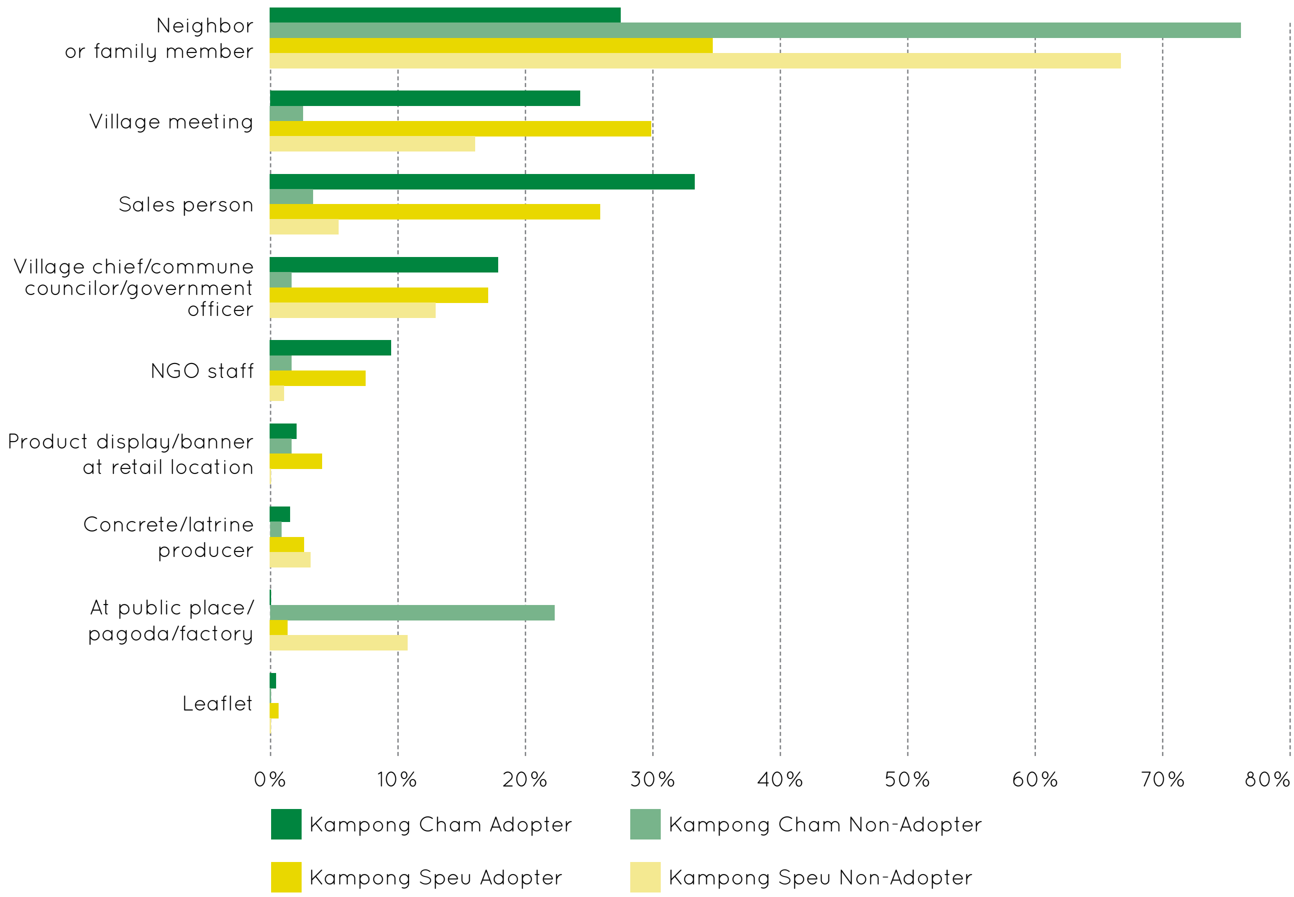
Among those who were aware of the new Latrine Core, the vast majority of non-adopters (nearly 67% in Kampong Speu and 76% in Kampong Cham) reported hearing about or seeing the new product from a friend or family member (Fig. 19). In Kampong Speu, non-adopters also reported seeing or hearing about the new product in a village meeting (16%), from a village chief or other government official (13%), or at a public place (11%). In Kampong Cham, non-adopters also reported seeing or hearing about the new product in a public place with some frequency (22%). In both provinces, all other communications channels about the new product were mentioned by less than 5% of non-adopters.

Although friends and family are also the most common communication channels for latrine adopters, in both provinces latrine adopters are also hearing about the new product through other direct communication

1 However, it should be noted that in Kampong Speu the sampling method involved purposively selecting villages where there has been product exposure and sales activity.

2 The program does not pay for enterprise advertising nor is the product centrally branded by the program, and some enterprises rely more heavily on commissioned agents than others. See Section 12 for further discussion.

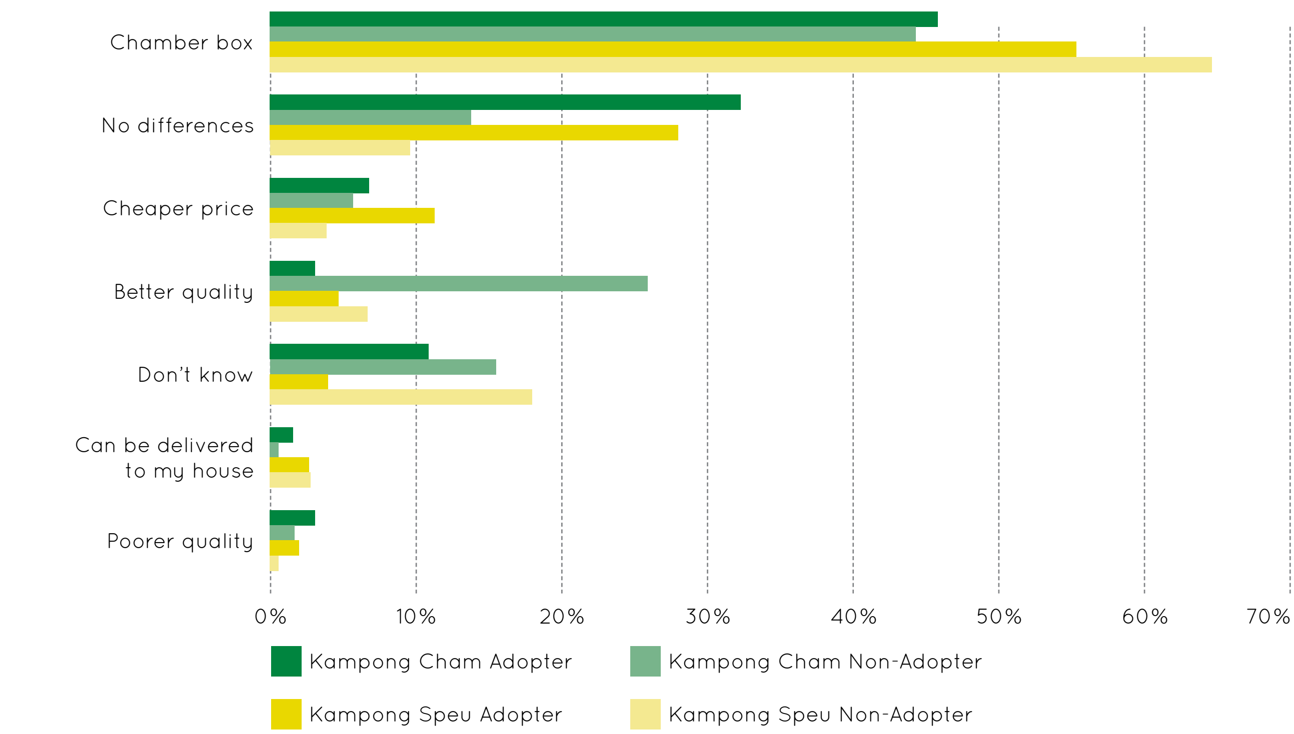
Figure 19: Channel where consumers saw or heard of new Latrine Core product



Options were not read to respondents. Respondents could choose more than one option. Results expressed as percentage of respondents who have seen or heard about new product, N=546.

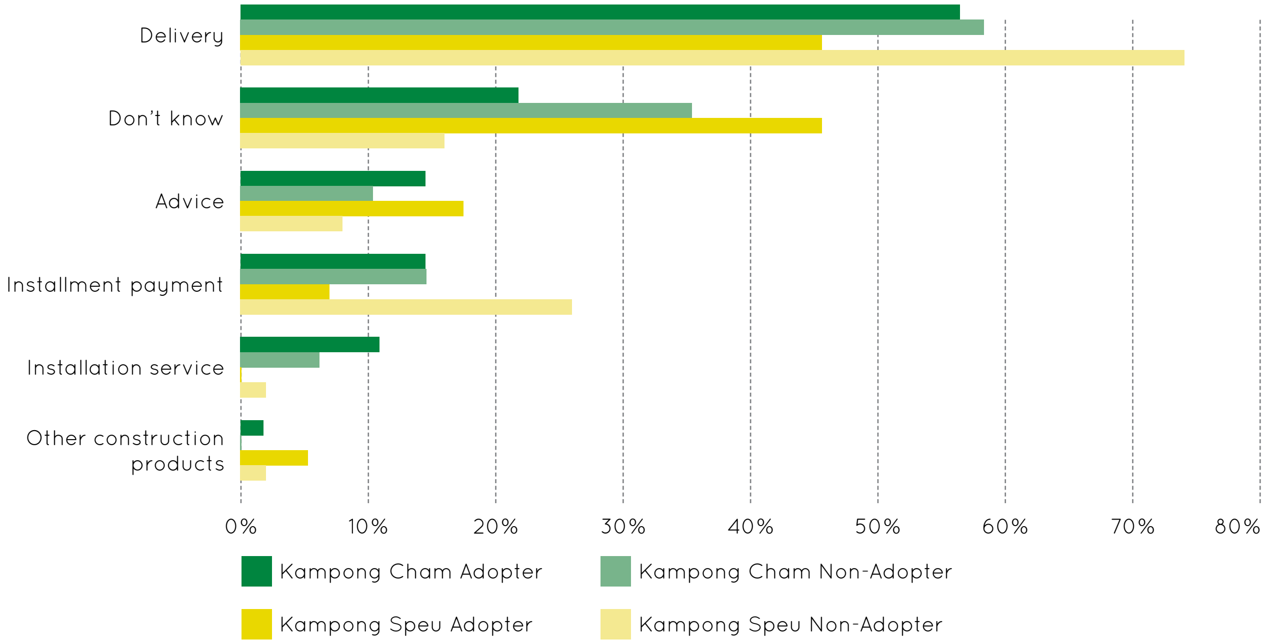
Non-adopters are aware that enterprises selling the Latrine Core can offer home delivery.

Figure 20: Perceived differences between Latrine Core and other known latrines



Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of respondents, N=695

Figure 21: Unprompted Awareness of other services offered by enterprises selling Latrine Core



Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of respondents who know an enterprise selling the Latrine Core, N=210.

Enterprises selling the Latrine Core are generally considered reliable, trustworthy, and offering good quality products.

channels. In Kampong Speu, the most common channels were neighbor or family member (35%), village meeting (30%), sales person (26%), village chief or government official (17%) and NGO staff (8%). Similarly, in Kampong Cham, the most common channels were sales person (33%), neighbor or family member (28%), village meeting (24%), village chief or government official (18%) and NGO staff (10%). Typically, Latrine Core sales people present at village meetings (sales events). When 'village meeting' and 'sales person' channels are combined, these mechanisms stand out as the most common channel. Compared to Kampong Speu a much greater proportion of adopters in Kampong Cham purchased their latrine through a sales agent. Greater exposure to these new channels seems to have a direct impact latrine purchase behavior, as will be discussed in Section 12.

When asked about the differences between the new Latrine Core and other latrines they know about, most respondents mentioned the chamber box as the distinguishing feature (Fig. 20). Respondents in Kampong Speu mentioned the chamber box more frequently than those in Kampong Cham. A substantial proportion of latrine adopters (32% in Kampong Cham and 28% in Kampong Speu) said there were no differences between the new Latrine Core and other latrines. Among adopters, cheaper price was the third most common response.

Among non-adopters, responses were similar, with the important exception of 'better quality' featuring highly among the perceived differences. Among Kampong Speu non-adopters, chamber box (65%), don't know (18%), no differences (10%) and better quality (7%) were the most common differences mentioned. In Kampong Cham, chamber box (44%) also ranked first among mentioned differences, followed by better quality (26%), don't know (16%), and no differences (14%).

Without prompting, respondents were asked about their knowledge and awareness of other services offered by the enterprises selling the Latrine Core. Home delivery, don't know, advice and installment payments were the four most common services mentioned (Fig. 21). Over half of all non-adopters (74% in Kampong Speu and 58% in Kampong Cham) were aware of the new home delivery service. Interestingly, in both provinces home delivery was mentioned more frequently by non-adopters than by adopters. The difference is particularly pronounced in Kampong Speu, where only 46% of adopters mentioned home delivery.

Among Kampong Speu non-adopters, the second most common response was 'installment payments' (mentioned by 26% of non-adopters). This service was mentioned by only 7% of Kampong Speu adopters, perhaps indicating that the service is fairly new to the province or that non-adopters are over-estimating its availability. Installation service (e.g. pit digging, physical assembly of the latrine), was mentioned by 11% of adopters and 6% of non-adopters in Kampong Cham, but by very few respondents in Kampong Speu. This could indicate that such services are more common to Kampong Cham.

Among the 30% of all households who were aware of an enterprise selling the Latrine Core (see Table 36), respondents were asked to give their opinions about the enterprise (Table 37). Nearly 92% of all respondents stated that the enterprise was reliable or very reliable; 73% stated it had good or very good product quality, and

Table 37: Consumer perceptions of enterprises selling Latrine Core

		Kg Speu		Kg Cham		Total
		Adopter N= 57	Non-Adopter N= 50	Adopter N= 55	Non-Adopter N= 49	N= 211
In terms of reliability /trust-worthiness, what is your opinion of enterprise?	Very Reliable/ Reliable	100.0%	80.0%	96.4%	89.8%	91.9%
In terms of product quality, what is your opinion of enter-prise?	Very Good or Good	79.0%	70.0%	74.5%	69.4%	73.4%
In terms of access to credit, what is your opinion of enter-prise?	Very Good or Good	80.7%	58.0%	74.50%	61.20%	69.2%

Expressed as percentage of respondents who know an enterprise selling the Latrine Core.

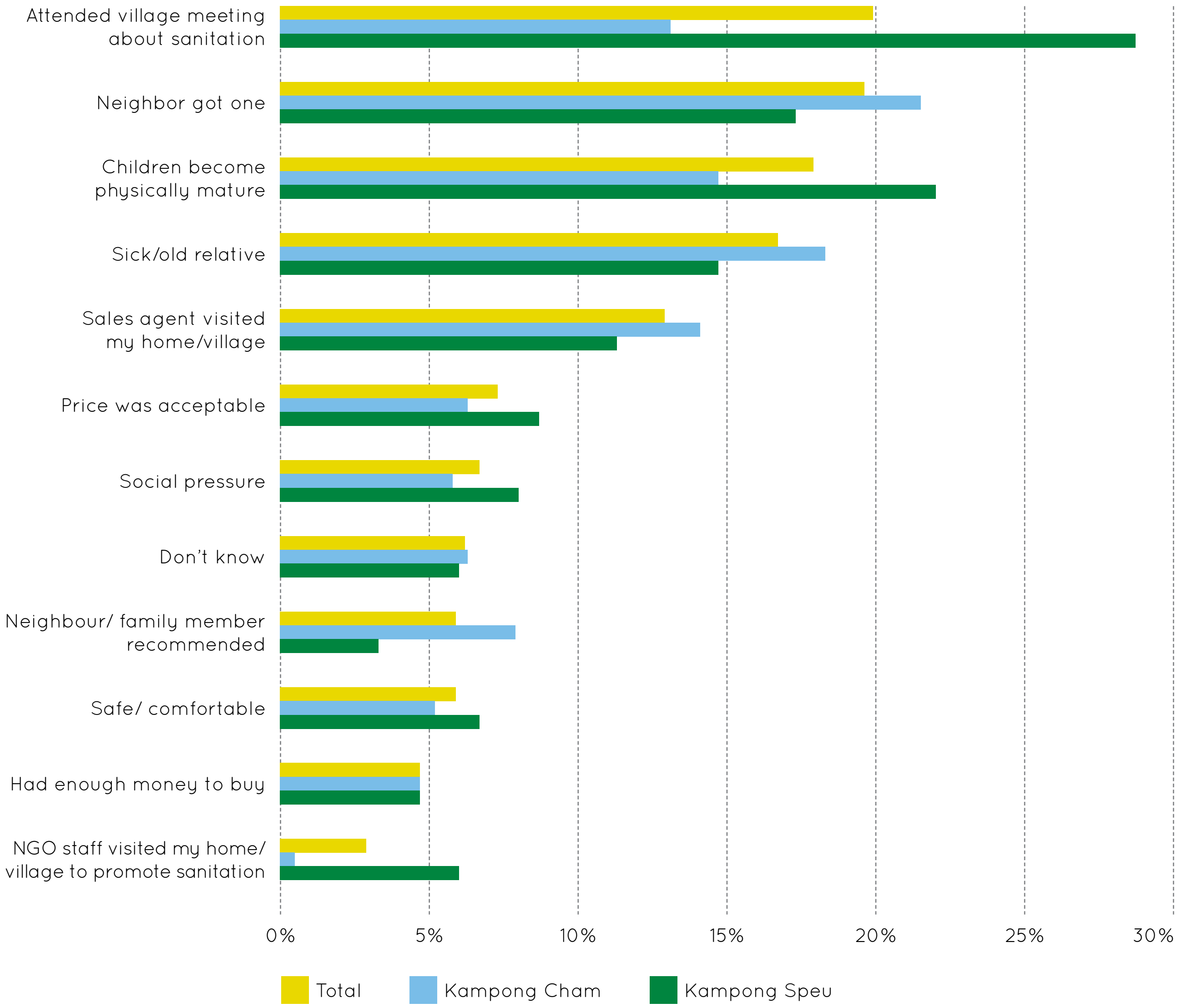
69% said it ranked good or very good in terms of access to credit. There was little difference between provinces in terms of opinion of the enterprises. In general, latrine adopters had a higher opinion of enterprises than non-adopters. Adopters have had actual experience with the enterprise and may be more likely to offer a strong opinion about their services. This positive feedback on enterprises supports the conclusion that enterprises selling the Latrine Core have a generally positive reputation within the target market.

11. Adopters: Decisions and drivers of latrine purchase

11. Adopters: Decisions and drivers of latrine purchase

Product exposure and peer pressure has the greatest influence on purchase decisions.

Figure 22: Reasons for purchasing the latrine at the time they did



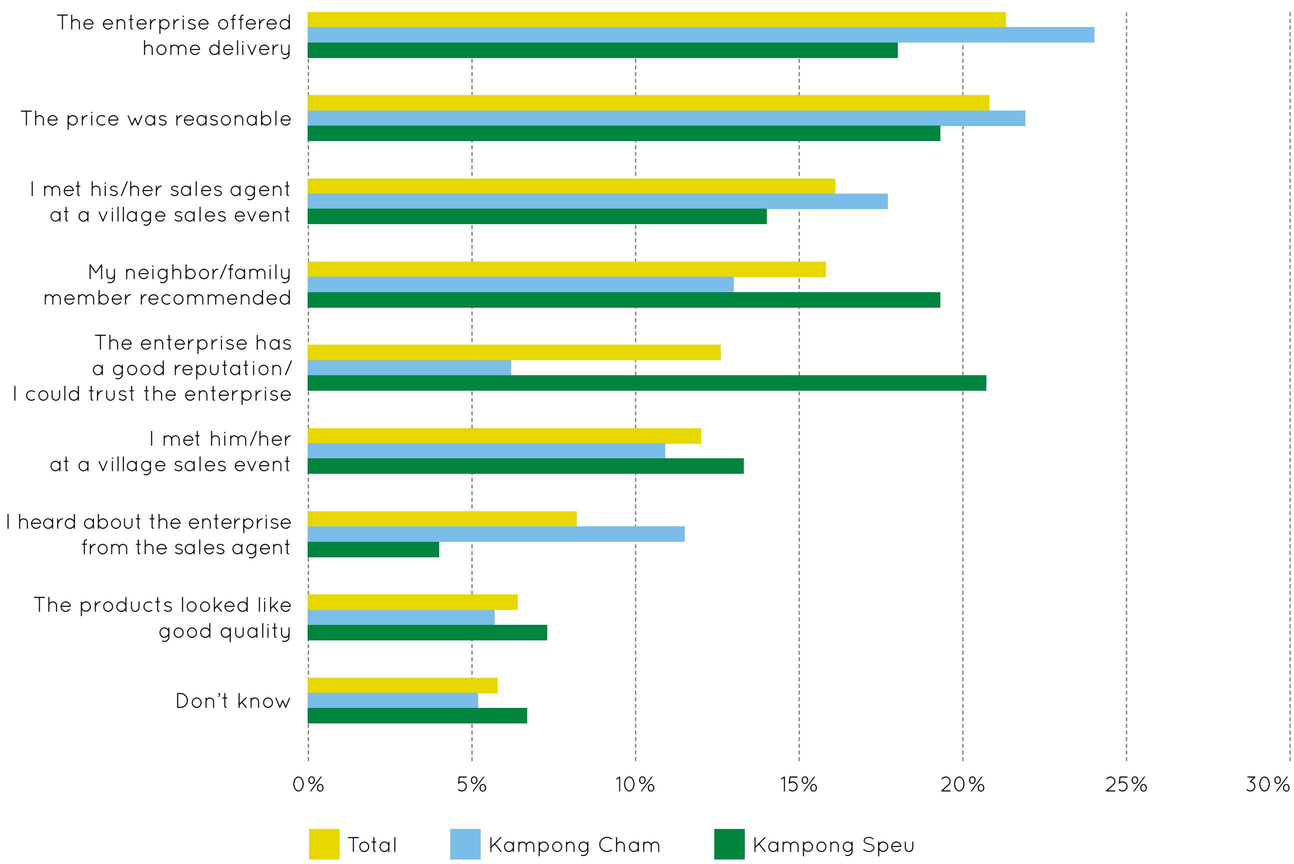
Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of adopters, N=342

Latrine adopters were asked why they purchased their latrine when they did, e.g. what was the event or situation that finally moved them from considering a latrine to actual latrine purchase (Fig. 22). The most common responses were: attended a village meeting about sanitation (20%), my neighbor got one (20%), children became physically mature (18%), sick/old relative (17%), sales agent visited my home/village (13%), price was acceptable (7%), and social pressure (7%). Although there were some slight differences to the order and frequency of these responses, findings were broadly similar across the two provinces. The findings suggest that although motivations for latrine construction might include benefits such as convenience, comfort or health, the triggers for actual purchase relate to more immediate concerns, in particular exposure to the new product (seeing and learning about it at a village meeting) and peer pressure or influence (wanting the latrine that your neighbor has).

When disaggregated by installed and uninstalled adopters, the drivers of purchase were generally the same, but it is worth mentioning some differences to the order. The reasons for deciding to purchase among installed adopters were: my neighbor got one, children became physically mature, sick/old relative, attended village meeting about sanitation, and sales agent visited

Home delivery, affordable prices, and new promotional models are what motivate households to buy from WaterSHED-supported enterprises.

Figure 23: Reasons for choosing selected enterprise for Latrine Core purchase



Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of adopters, N=342

my home/village (in that order). Among uninstalled adopters, the top five reasons were: attended a village meeting about sanitation, sales agent visited my home/village, neighbor got one, sick/old relative, and children became physically mature. It may be that households who have purchased but not yet installed their latrines were more heavily influenced by the immediacy of the sales opportunity, making a kind of 'impulse buy' during the time of a village event or sales visit, but perhaps with less thought or preparation given to how they would install and use the Latrine Core once purchased. The positive implication is that these households have made a decision to own their own latrine and are much further along the adoption path towards use than non-adopters.

We can also compare the drivers of latrine purchase among Latrine Core adopters to drivers of purchase among latrine owners surveyed at baseline in Kampong Speu. Prior to the WaterSHED *Hands-Off* program, the stated reasons latrine owners purchased when they did included: visitor was coming from outside the village; children became physically mature; social pressure; neighbor got one; and program was offering a latrine subsidy (in that order). Many of these top drivers have not changed; in fact, marketing strategies purposefully aimed to exploit these drivers, e.g. by increasing social and peer pressure. However, among Latrine Core adopters, there are now new reasons for purchase, which relate to specific sales and promotional tactics introduced by the program (e.g. village sales meetings, sales agent home visits, and more transparent pricing information).

To probe more deeply into the latrine adoption decision-making process, latrine adopters were asked what made them decide to buy from the particular enterprise they chose (Fig. 23). The most common responses were: the enterprise was offering home delivery (21%), the price was reasonable (21%), I met his/her sales agent at a village sales event (16%), my neighbor/family member recommended (16%), the enterprise had a good reputation (13%), and I met him/her at a village sales event (12%). Although frequency and order of top responses was broadly similar across the two provinces, reasons related to the reputation/trustworthiness of the enterprise and family recommendations were much more common in Kampong Speu, while advice and information from sales agents was more common in Kampong Cham. There were no major differences between installed and uninstalled adopters.

Table 38: Household decision-making among adopters

		Kg Speu N= 150	Kg Cham N= 192	Total N= 342
Who made the final decision to purchase your latrine?	Head of household	31.3%	25.7%	28.2%
	Head of household and spouse jointly	27.3%	29.8%	28.7%
	Spouse	16.7%	14.1%	15.2%
	Family together	24.7%	30.4%	27.9%

The findings confirm that the distribution, promotion, and sales strategies introduced by the WaterSHED *Hands-Off* program are increasing consumer preference for and selection of enterprises selling the Latrine Core. Home delivery and reasonable prices are the top reasons why consumers are choosing these enterprises; and exposure to sales agents, enterprises and village sales events are providing them with the information and assurance they need to place an order. When responses for sales agent exposure and village sales events are aggregated, it is clear that sales outreach is a main driver influencing household purchase decisions.

It is worth mentioning that none of the new adopters mentioned specific technical features (e.g. the 'chamber box') as the reason for choosing the enterprise: in the eyes of consumers, a pour-flush latrine delivered to the home at the right price may be more important than the specific technical features of the latrine design itself.

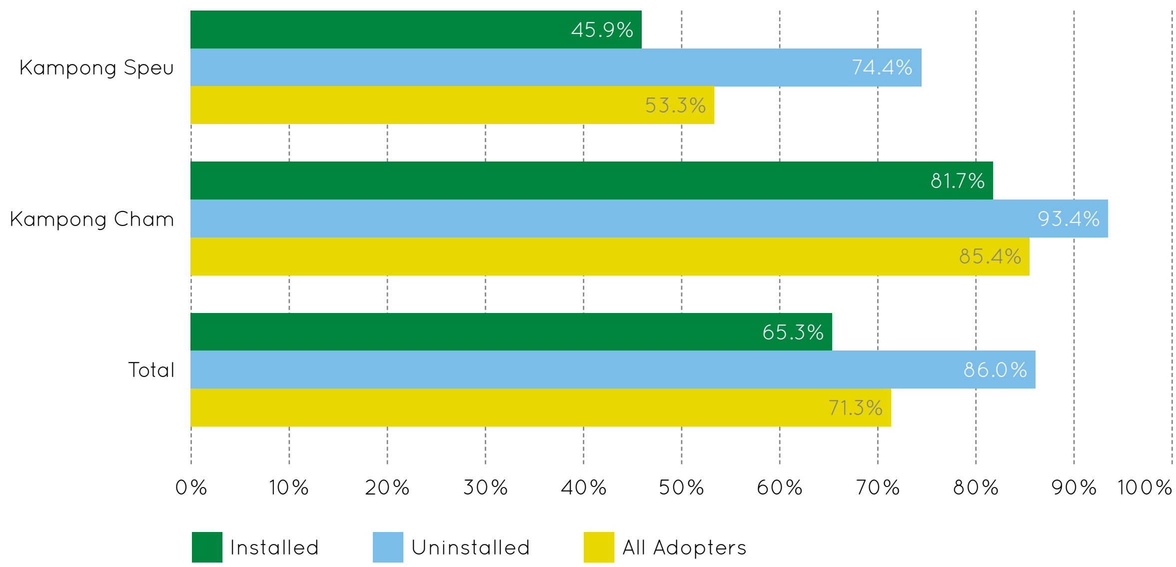
Among new adopter households, the final decision to purchase the latrine was taken by the head of household (28%) jointly by the household head and spouse (29%) or by the family as a whole (29%). These findings are consistent with baseline findings and confirm a fairly 'decentralized' decision making process within the home. In rural Cambodia, other members of the household, in particularly the (usually female) spouse of the (usually male) head of household have some influence over purchase decisions.

12. Adopters: Latrine purchase experience and process

12. Adopters: Latrine purchase experience and process

Nearly three-quarters of all adopters purchased the Latrine Core through a sales agent. Purchase through an agent was much more common in Kampong Cham.

Figure 24: Percentage of adopters purchasing Latrine Core through a sales agent



Results expressed as percentage of adopters, N=342

Over 71% of all adopters report purchasing their Latrine Core through a sales agent (Fig. 24). Kampong Cham adopters were much more likely to report a sales agent purchase, with 85.4% reporting sales agent purchase compared to just 53.3% in Kampong Speu. Difficulties related to identification of Latrine Core owners in Kampong Speu (see Annex 1) may have resulted in inclusion of some latrine owners who owned other types of latrines. Another possible reason could be that by the time of the Kampong Cham scale-up the sales agent model was functioning more smoothly than at the early stages of pilot sales in the original Kampong Speu target area. A third possibility is that Kampong Speu adopters, for various reasons, may prefer to purchase directly from enterprise.

In general, uninstalled adopters were more likely than installed adopters to purchase through a sales agent. This difference was most pronounced in Kampong Speu, where nearly 75% (29 of 39 respondents) of uninstalled adopters reported sales agent purchase, compared to 46% (51 of 111 respondents) of installed. In Kampong Cham, the differences were less pronounced, with 93% (57 of 61 respondents) of uninstalled reporting sales agent purchase, compared to 82% (107 of 131 respondents) of installed. This finding, together with data on purchase drivers (Section 11) and barriers to installation (Section 7) could indicate that delayed installation is associated with a kind of 'impulse buying' during a sales visit or event. Household consumers may purchase the Latrine Core to take advantage of the immediate sales opportunity (particularly if they think it will not come again) but then store away the product until they have all the other materials they need.

The 71% of latrine adopters who purchased through a sales agent were asked a series of questions to understand their awareness of the sales agent and his/her roles (Table 39). The majority of these adopters (nearly 61%) learned about the sales agent through the village chief or a commune official, while 37% learned the person was a sales agent when s/he held a sales event in the village. Compared to Kampong Speu, Kampong Cham adopters were more likely to hear about the agent from an official. Nearly 60% of all adopters who purchased through a sales agent reported knowing the agent prior to buying a latrine through them. Uninstalled adopters in Kampong Speu were the least likely to be familiar with the sales agent, with only 48% reporting to know the agent before the purchase.

Close to half (48%) of all those purchasing through a sales agent stated they did not know or could not identify any other roles or jobs the sales agent held in the community. Again, the Kampong Speu uninstalled had the least knowledge of the sales agent, with 72% reporting that they did not know any other jobs this person held. Across both provinces, over 29% of those purchasing through a sales agent identified the agent as their village chief, and 18% identified the agent as a commune official. Kampong

! Government officials play key roles in connecting consumers with sales agents. Latrine adopters are often familiar with their agent as a community member.

Table 39: Awareness of sales agent roles among adopters purchasing through an agent

		Kg Speu N= 80		Kg Cham N= 164		All Adopters N= 244
		Installed N= 51	Uninstalled N= 29	Installed N= 107	Uninstalled N= 57	--
How do you know he/she was a sales agent?	Village or commune official told me	52.9%	48.3%	63.6%	68.4%	60.70%
	He/she held a village event	43.1%	48.3%	33.6%	29.8%	36.55%
	He/she had a banner showing the product	2.0%	0.0%	0.9%	1.8%	1.20%
	He/she gave out fliers with latrine information	2.0%	3.4%	0.0%	0.0%	0.80%
Familiarity with agent	Knew sales agent before buying latrine	62.7%	48.3%	59.8%	63.2%	59.8%
Knowledge of other job(s) of the sales agent	Don't know	47.1%	72.4%	44.9%	42.1%	48.0%
	Village chief	29.4%	17.2%	34.6%	24.6%	29.1%
	Commune official	15.7%	6.9%	15.9%	29.8%	18.0%
	Neighbor/community member	2.0%	3.4%	3.7%	3.5%	3.3%
	NGO staff	5.9%	0.0%	0.0%	0.0%	1.2%
	District official	0.0%	0.0%	0.9%	0.0%	0.4%

Expressed as percentage of those adopters who purchased a latrine through a sales agent, N=244

Cham adopters were more likely to know and identify these other roles of the sales agent.

The findings confirm the role that trust, relationships, and familiarity can play in helping consumers to make purchase decisions. Recognition of the sales agent as a trustworthy member of the community, or as someone who is introduced by the village or commune leadership, does seem to influence purchase decisions. However, it is unclear how important the identity of the sales agent is (e.g. their precise role in the community), compared to other characteristics such as being locally known (not a 'stranger'), confidence, sales technique, and a friendly, energetic manner (e.g. what they do/ their 'sales skills'). More research is also needed to understand dynamics of local leaders and their influence on latrine uptake.

Among the adopters who had purchased through a sales agent, respondents were asked to give their opinions about the sales agent (Table 40). Ninety-three percent stated that the sales agent was reliable or very reliable; over 82% stated they were helpful or very helpful; and 84.5% said they were a good or very good source of information/advice. There was little difference between provinces in terms of opinion of the sales agent. In general, installed adopters had a slightly higher opinion of the sales agent compared to uninstalled adopters. This could reflect a greater satisfaction with their current sanitation situation or a generally better sales experience that resulted in faster installation, compared to uninstalled adopters.

It should be noted that there might be some bias in reporting, as households may be unwilling to provide negative feedback on village chiefs, commune officials, or other community members that they know who are involved in arranging the latrine purchase. Nevertheless, the generally positive feedback on sales agents seems to confirm the findings above related to the importance of trust and familiarity not only in facilitating the latrine sale, but also in ensuring a good degree of customer satisfaction.

Most adopters report that they ordered their latrine at a village sales event and waited for home delivery (35%), or immediately purchased available stock at a village sales event (18%) (Fig. 25). Over one-quarter of all Kampong Cham adopters reported immediate purchase (compared to 9% in Kampong Speu), and 15% called a sales agent to order (compared to 5% in Kampong Speu). Kampong Speu adopters were much more likely to call an enterprise directly to order or purchase from a retail location.

The vast majority (92.4%) of latrine adopters reported that they did not pay extra for transportation of the materials to their house as it was included in the price. Among the 13 adopters who paid for materials to be transported to their houses, the median transport cost was USD 2.50.

! Sales agents promoting the Latrine Core are generally considered reliable, helpful, and good sources of information and advice.

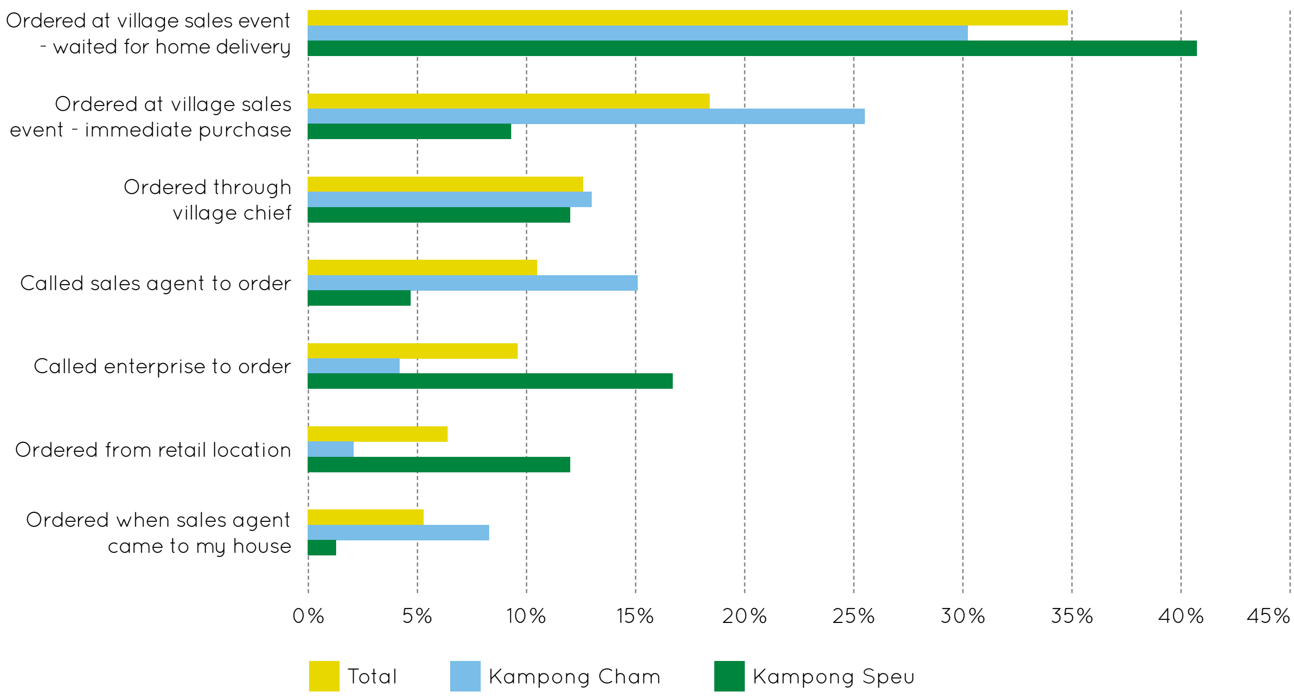
Latrine adopters are taking advantage of new order and delivery mechanisms.

Table 40: Consumer satisfaction with sales agent experience

		Kg Speu N= 80		Kg Cham N= 164		All Adopters N= 244
		Installed N= 51	Uninstalled N= 29	Installed N= 107	Uninstalled N= 57	--
In terms of reliability/ trustworthiness, what is your opinion of sales agents(s) promoting this type of latrine?	Very Reliable or Reliable	96.1%	89.7%	94.4%	89.5%	93.0%
In terms of helpfulness, what is your opinion of sales agents(s) promoting this type of latrine?	Very Good or Good	90.2%	79.3%	79.5%	82.4%	82.4%
As a source of information/advice about the latrine, what is your opinion of sales agents(s) promoting this type of latrine?	Very Good or Good	92.2%	82.8%	83.1%	80.7%	84.5%

Expressed as percentage of those adopters who purchased a latrine through a sales agent, N=244

Figure 25: Latrine ordering method among adopters



Results expressed as percentage of adopters, N=342

There were some differences between installed and uninstalled adopters in terms of latrine ordering (Table 41). In Kampong Speu, uninstalled adopters were much more likely to have ordered from a village sales event, while installed adopters were more likely to call an enterprise to order. In Kampong Cham, uninstalled adopters were more likely to call a sales agent to order, while installed adopters were more likely to order through a village chief.

A key element of the WaterSHED-introduced Latrine Core package was the inclusion of installation and proper usage instructions. The simple A-4 instruction sheet (Fig. 26) includes a step-by-step pictorial guide to installing the Latrine Core, as well as information about where to site the latrine (away from drinking water sources) and other key messages. The instruction sheet was designed to be easily photocopied by enterprises, who were coached to include it as a key element of the product package.

Only 36% of all latrine adopters recalled receiving paper instructions with their Latrine Core product (Fig. 27). Kampong Cham adopters were much more likely to receive the instructions: Nearly 41% of Kampong Cham adopters recalled received them, compared to just over 29% of Kampong Speu adopters. While receipt of paper instructions was fairly consistent among the installed and uninstalled in Kampong Cham, in Kampong Speu 27% of installed adopters recalled receipt of the instructions, compared to 36% of uninstalled adopters. As noted above, this could be due to difficulties with recall in Kampong

Only 36% of adopters recalled receiving installation instructions. Those who received instructions used them.

Table 41: Latrine Core ordering method by installed and uninstalled adopters

		Kg Speu N= 150		Kg Cham N= 192	
		Installed N= 111	Uninstalled N= 39	Installed N= 131	Uninstalled N= 61
How did your household order the latrine?	Ordered at village sales event – waited for home delivery	31.5%	66.7%	32.8%	24.6%
	Ordered at village sales event – immediate purchase	9.0%	10.3%	21.4%	34.4%
	Ordered through village chief	13.5%	7.7%	16.8%	4.9%
	Called sales agent to order	4.5%	5.1%	11.5%	23.0%
	Called enterprise to order	22.5%	0.0%	5.3%	1.6%
	Ordered from retail location	15.3%	2.6%	3.1%	0.0%
	Ordered when sales agent came to my house	1.8%	0.0%	7.6%	9.8%

Figure 26: Latrine Core Instruction Sheet

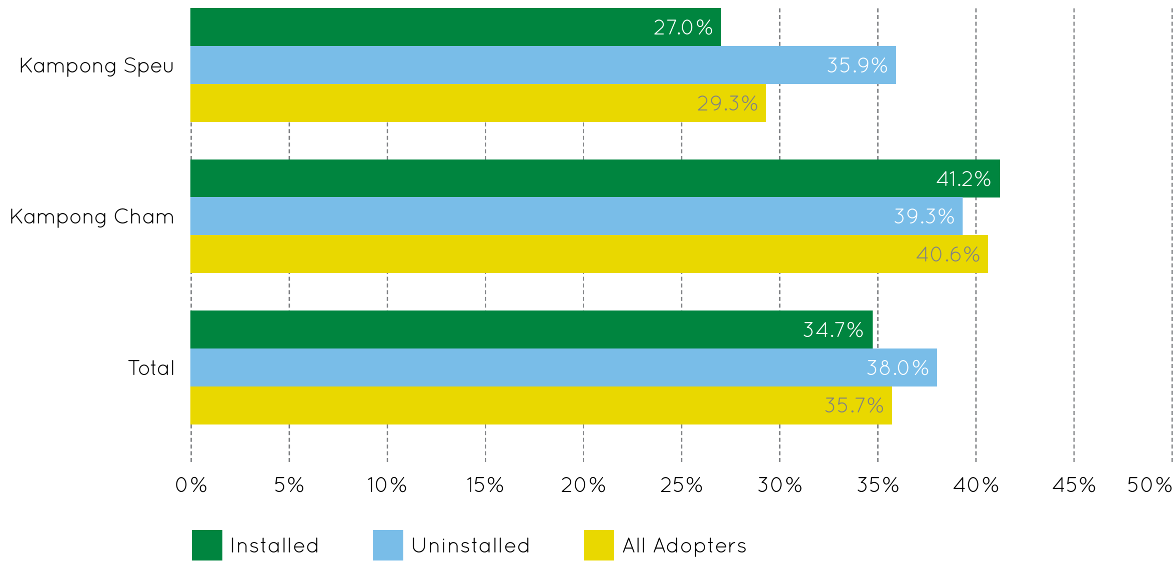
Speu (Annex 1), but could also relate to start-up issues in Kampong Speu during early stages of the pilot.

Among the installed adopters who did receive the instructions, 65.5% reported using them during installation. Almost 95% of these adopters reported satisfaction with the instruction sheet, stating they were good or very good in terms of their helpfulness during the installation process (Table 42).

The generally low reported receipt of paper instructions should be viewed with caution, as respondents may have had difficulty remembering whether they had received them, particularly if it was some time ago or if they were not involved in the construction and installation (likely the case among female respondents). Nonetheless, the findings point to the need for improvements in this area.

12. Adopters: Latrine purchase experience and process

Figure 27: Receipt of paper installation instructions with Latrine Core among adopters



Results expressed as percentage of adopters, N=342

Table 42: Usage and satisfaction with installation instructions, installed adopters recalling receiving instructions

		Kg Speu N= 30	Kg Cham N= 54	Total N= 84
Did your household USE the installation instructions on paper with the latrine?	USED instructions during installation	66.7%	64.8%	65.5%
If the latrine was installed using instruction sheet, how helpful was the instruction sheet to guide the installation process?*	Very good or good	100%	91.4%	94.6%

**Expressed as percentage of installed adopters using the instruction sheet, Kampong Speu N=20, Kampong Cham N=35, Total N=55*

13. Installed adopters: Latrine types, satisfaction, usage

13. Installed adopters: Latrine types, satisfaction, usage

! Households do not need to climb a 'sanitation ladder' to reach improved coverage: Over 90% of new adopters have never owned a latrine before.

13.1 Latrine types in use

For nearly 91% of all installed adopters, the Latrine Core is their first household latrine (Table 43). There were some differences between provinces, with 85.6% of Kg Speu installed adopters owning their latrine for the first time, compared to 95.4% in Kg Cham. A slightly greater proportion (92.9%) of households in non-CLTS villages were using their first latrine, compared to 88.1% in CLTS villages. In the Kampong Speu pilot area, where CLTS activities have been more intensive, 8.1% of installed adopters 'upgraded' from a dry pit latrine. This compares to about 5% dry pit upgrades in Kampong Cham. The finding confirms that many households can and will 'jump' from open defecation directly to an improved latrine, if the right products are available for the right price. When they are motivated to change their sanitation situation, households do not necessarily need to climb a 'sanitation ladder' to reach improved coverage.

installed and 42% of Kampong Cham installed opted for latrine facilities with two or more pits in series. Most installed adopters have invested in latrine shelters with concrete/brick walls (79%) and a galvanized iron roof (over 86%). There is evidence of 'lower-end' shelter constructions in Kampong Cham, with 20% of all installed adopters building shelter walls and roof of lower-cost materials such as iron, thatch and wood (compared to 5-10% in Kampong Speu).

Compared to pour-flush latrine owners at baseline, Kampong Speu installed adopters are more likely to have concrete/brick shelter walls (90% of installers compared to 81% at baseline) and galvanized iron/metal roof (95.5% of installers, compared to 83.3% at baseline).

While WaterSHED SanMark activities are encouraging greater uptake of improved latrines, thus far marketing activities do not seem to have changed consumer perceptions or desires for a 'high-end' latrine shelter. Most households are still opting to construct this type of shelter, which requires greater cash investment (see Section 13.2). Lack of materials for a high-end latrine shelter is also causing delays in construction among uninstalled adopters (Section 7). These findings are consistent with those from the iDE sanitation marketing pilot project (Pedi et al. 2012), and point to the need to improve low-cost shelter options that can deliver desired durability and privacy for lower-income households. On the demand side, this could be done through marketing and promotional strategies that encourage households to start with a well-constructed shelter made with 'natural' (low-cost) materials and then upgrade over time. On the supply side, WaterSHED could expand on earlier efforts to design and encourage enterprises to produce and sell affordable, desirable latrine shelter packages as an alternative to traditional bricks and mortar.[1]

Table 43: Previous latrine ownership and evidence of upgrading, installed adopters

		Kg Speu N= 111	Kg Cham N= 131	Total N= 242
Previous latrine ownership and type	No previous latrine	85.6%	95.4%	90.9%
	Flush/pour-flush	7.2%	0.0%	3.3%
	Dry pit	8.1%	4.6%	6.2%

! Latrine adopters are installing more than the basic Latrine Core and building high-end shelters. Preferences for the 'ideal' latrine persist.

The Latrine Core was designed as an affordable entry-level product that would allow low-income households to obtain the underground component of a pour-flush latrine at a substantially lower cost than conventional pour-flush latrines. The new product and promotions introduced by the program aimed to change perceptions around the unaffordable 'ideal' latrine by allowing households to invest in the basic package and start with a simple low-cost shelter that could be upgraded over time.

Findings from the RCSAS indicate that installed adopters have made substantial investments in additional underground materials and 'higher-end' shelter constructions (Table 44). Although the basic Latrine Core comes with three or four concrete rings for the pit lining, 42.6% of installers purchased five or more concrete rings. Kampong Speu installed adopters were more likely to purchase extra rings. Over 60% of the Kampong Speu

1 In the early stages of product design, the WaterSHED pilot project used the Human Centered Design approach to develop a lower cost latrine shelter package of galvanized steel that could be self-assembled. This design was not taken up by enterprises.

Table 44: Technology description

		Kg Speu N= 111	Kg Cham N= 131	Total N= 242
Pit lining	1-2 concrete rings	1.8%	3.1%	2.5%
	3-4 concrete rings	39.6%	67.9%	54.9%
	5-6 concrete rings	49.5%	26.7%	37.2%
	7 or more concrete rings	9.0%	2.3%	5.4%
Number of pits	1 pit	48.6%	58.0%	53.7%
	2 pits	50.5%	40.5%	45.0%
	3 or more pits	0.9%	1.6%	1.2%
Shelter Walls	Concrete/brick	90.1%	69.5%	78.9%
	Galvanized steel	3.6%	11.5%	7.9%
	Thatch	3.6%	9.2%	6.6%
	Wood	0.9%	4.6%	2.9%
	Fibrous cement	1.8%	0.8%	1.2%
Shelter Roof	Galvanized steel	95.5%	78.6%	86.4%
	Thatch	0.0%	9.9%	5.4%
	No roof	1.8%	6.1%	4.1%
	Fibrous cement	0.9%	2.3%	1.7%
	Tiles	1.8%	0.8%	1.2%
	Plastic sheet	0.0%	2.3%	1.2%
Average distance from house		4 meters	4 meters	4 meters

Table 45: Assistance with latrine construction

		Kg Speu N= 111	Kg Cham N= 131	Total N= 242
Did your household hire anybody to build or help to build your latrine?	Hired someone to install/help install UNDERGROUND	55.9%	61.1%	58.7%
	Hired someone to build/help build latrine SHELTER	67.6%	54.2%	60.3%

! Household investment in the latrine shelter is high.

The Latrine Core was designed and packaged to facilitate self-installation by households and thus reduce construction labor costs. RCSAS data indicate that about 59% of all installed adopters hired someone to help install the underground Latrine Core, and about 60% hired someone to construct their shelter (Table 45). Kampong Speu installed adopters were much more likely to hire someone for shelter construction, corresponding to the higher proportion of 'higher end' concrete shelters in Kampong Speu compared to Kampong Cham.

In Kampong Speu, although the majority of households are still opting to hire construction labor, this has decreased slightly from the baseline: 72.5% of pour-flush latrine owners in Kampong Speu stated they hired someone to build their latrine, compared to around 60% of Latrine Core installed adopters.

13.2 Household investment and payment

Across the sample, more than 95% of installed adopters (231 of 242 installed adopters) paid for their latrines themselves. Eighteen percent of respondents (41 respondents) did not know the cost of materials for constructing the underground parts of the latrine, and 25% (58 respondents) did not know the cost of the shelter materials. Among those who were able to estimate material costs, these estimates varied widely, with median costs of around USD 200 in Kampong Speu and USD 150 in Kampong Cham. Only 6% stated that they used locally available materials to construct their latrine shelter, and did not pay for shelter materials. The significant investment in the latrine shelter has not changed much from the baseline, and is a substantial amount of money for the average rural Cambodian family. Bearing in mind the difficulties in estimating costs, these data seem to indicate that early marketing efforts are capturing latent demand among better-off 'early adopter' households.

Installed adopters also had difficulty estimating costs for construction labor. A total of 90 stated that they installed the latrine core by themselves and did not pay for additional labor, and 37 respondents did not know if they paid for labor. Similarly, 86 respondents stated that they installed the latrine shelter by themselves and did

Table 46: Household investment in latrine materials

		Kg Speu	Kg Cham	Total
Median expenditure for latrine MATERIALS, USD*	Latrine Core (Underground)	41	43	42
	Shelter	200	150	175

Respondents had great difficulty recalling costs. Median costs shown here based on respondents who could estimate costs, Latrine Core, N=196, Shelter, N=177.

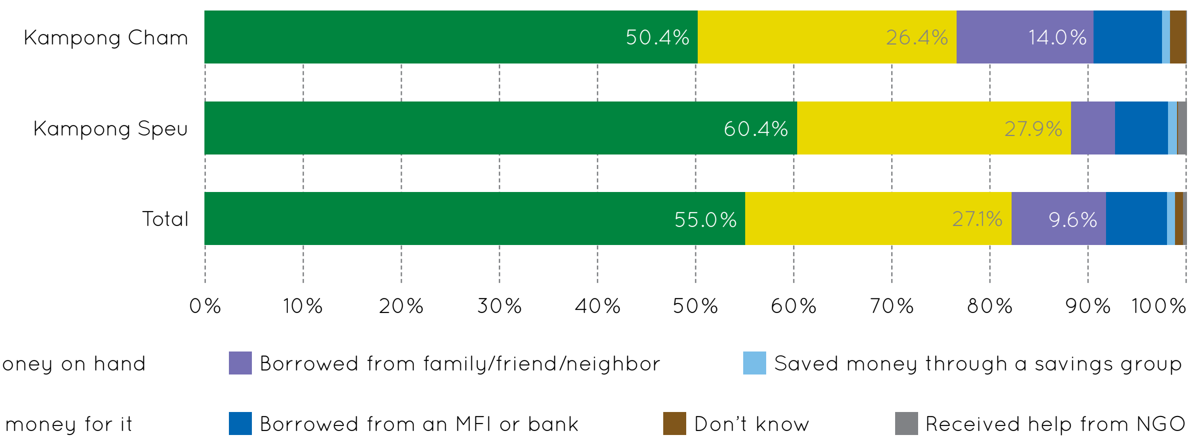
Table 47: Household investment in construction labor

		Kg Speu	Kg Cham	Total
Median expenditure for LABOR, USD*	Latrine Core (Underground)	25	18	19
	Shelter	50	38	44

Respondents had great difficulty recalling costs. Median costs shown here based on respondents who had hired labor and who could estimate costs, Latrine Core, N=115, Shelter, N=105

Nearly half of all installed adopters saved or borrowed for their latrine. About 6% took an MFI loan and 7% paid the enterprise in installments.

Figure 28: Source of funds for latrine material purchase



not pay for additional labor, while 51 respondents did not know if they paid for labor. Among those who hired labor and could estimate costs, Kampong Speu adopters spent significantly more than Kampong Cham adopters. Median shelter construction labor cost was 50 USD in Kampong Speu, compared to 38 USD in Kampong Cham (Table 35).

Among installed adopters, 55% indicated they paid for their latrine with money they had on hand (Fig. 28). This corresponds with findings above indicating that most rural households do not usually set aside cash savings (Section 5). Households tend to purchase larger items when they have cash on hand, particularly after the harvest. The findings could also indicate that many installed adopters are among the better off with some existing cash on hand. Over 60% of Kampong Speu installed adopters were able to pay with existing cash, compared to 50% in Kampong Cham.

Other households needed to explicitly save or borrow the cash to make their latrine investment. About 27% of all installed adopters saved their own money, nearly 10% borrowed from family or friends, and just over 6% (15 respondents) borrowed from an MFI or bank in order to get the cash for latrine purchase. Kampong Cham households were more likely to borrow from family or friends (14% compared to 4.5% in Kampong Speu) or from an MFI (7% compared to 5.4% in Kampong Speu). At the time of the study WaterSHED was working with MFI partners to pilot consumer loans for latrines. Cross-checking was not undertaken to determine whether the respondents captured in the RCSAS were part of this study, or had independently taken an MFI loan for their latrine. [2]

The majority (nearly 92%) of all installed adopters paid for their latrine all at once in one up-front payment (Table 48). A total of 7.1% of all installed adopters (17 respondents) paid for their latrine in installment payments, with the majority paying the enterprise in two installments. There was little difference across provinces in terms of access to payment plans. Among the 17 installers who paid in installments, over 64% had paid for

2 The study, *Evaluating the effect of microcredit on latrine uptake in rural Cambodia*, undertaken between 1 Oct 2011 and 31 Dec 2012, found that end-user are interested in loans for latrines. Of those who participated in sales events during the study, approximately 27% applied for or intended to apply for a latrine loan. However, a good portion were unable to get a loan because they did not qualify or meet the MFI loan credit requirements. See www.watershedasia.org/sanitation-marketing/wash-finance for study details.

Table 48: Type of payment for latrine materials

		Kg Speu N= 111	Kg Cham N= 131	Total N= 242
How was the latrine paid for?	All at once/up-front payment	91.0%	92.2%	91.7%
	In TWO installments	4.5%	4.7%	4.6%
	In THREE installments	2.7%	1.6%	2.1%
	In FOUR installments	0.9%	0.0%	0.4%
	Did not pay anything	0.9%	0.8%	0.8%
	Don't know	0.0%	0.8%	0.4%

Table 49: Installment payment periods among those with payment plans

		Kg Speu N= 9	Kg Cham N= 8	Total N= 17
If the latrine was paid for in installments, how many months from the time the latrine was received to the time that you finished paying for it?	1 month	0.0%	25.0%	11.8%
	2 months	44.4%	62.5%	52.9%
	3 months	33.3%	0.0%	17.6%
	4 months	22.2%	12.5%	17.6%

their latrine within 2 months, and all had paid for their latrine within 4 months (Table 49). Installed adopters in Kampong Cham were much more likely to repay within a two month period (87.5% of those on installment plans, compared to 44% in Kampong Speu).

From this data on payments from consumers, it is not possible to determine the types and extent of installment payment plans or other consumer credit options offered by WaterSHED-supported enterprises. However, RCSAS data indicate that these options are still fairly uncommon. The decision to extend product on credit can be risky for a small enterprise, and can often create or exacerbate cash flow problems. Installment payment plans can also be difficult to manage without good record-keeping systems in place. Nevertheless, the RCSAS also indicates demand among non-adopters for installment payment plans and/or MFI loans for latrines (see Section 14).

13.4 Satisfaction with new product and services

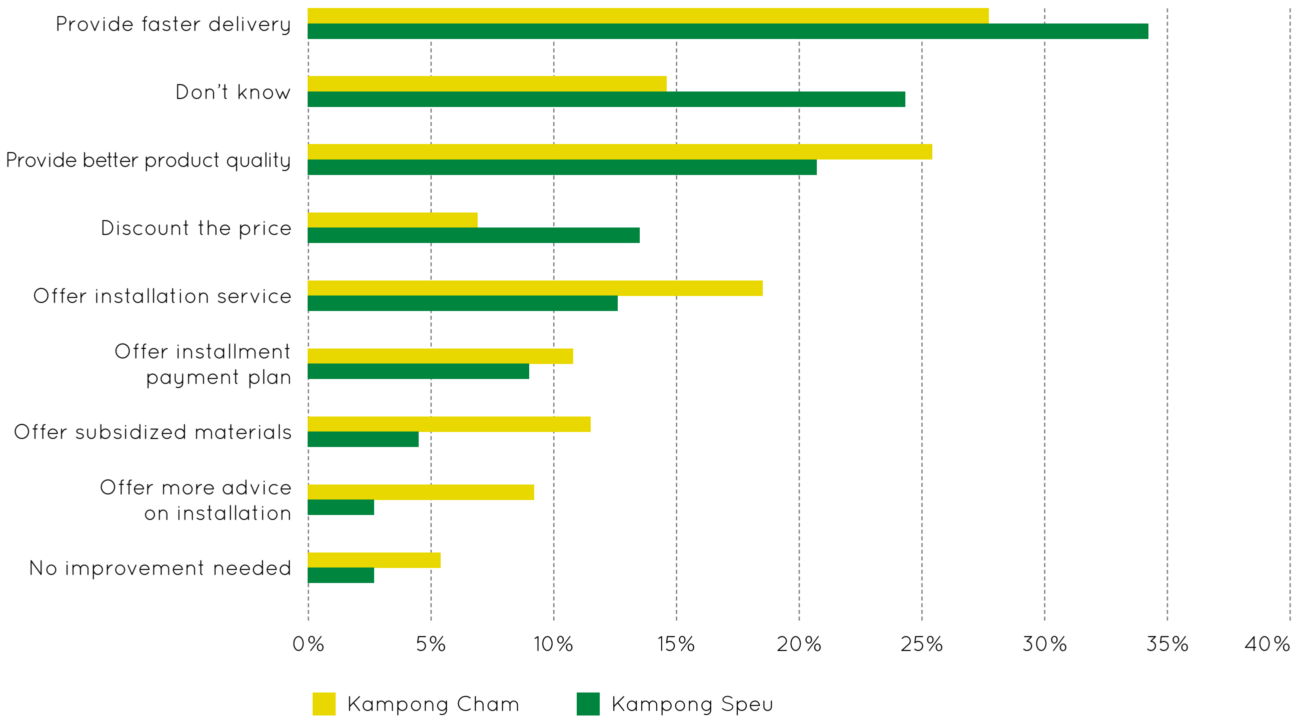
Installed adopters were asked to give their opinions of the new Latrine Core product and services (Table 50). Nearly all (97%) of installers were satisfied or very satisfied with their new latrine and the services they received from the enterprise. About three-quarters of all installed adopters (72% in Kampong Speu and 76% in Kampong Cham) have recommended the latrine product to friends, neighbors, or family members. About half of all installed adopters have bought or would consider buying other materials or services from the enterprise, although Kampong Speu installers were much more likely to be repeat customers (66% have bought or would consider buying from the enterprise again, compared to 35% in Kampong Cham).

Table 50: Consumer satisfaction with Latrine Core product and services

		Kg Speu N= 111	Kg Cham N= 131	Total N= 242
How satisfied are you with the latrine?	Very satisfied or satisfied	98.2%	95.4%	96.7%
Have you recommended this latrine product to your friends, neighbors or family members?	Have recommended	72.1%	75.6%	74.0%
If your household purchased the latrine from an enterprise, how satisfied are you with the services you received from the enterprise?	Very satisfied or satisfied	96.4%	97.7%	97.1%
Have you bought or would consider buying any other services or materials besides the latrine from the enterprise?	Have bought	48.6%	15.3%	30.6%
	Would consider buying	17.1%	19.9%	18.6%
	Total	65.8%	35.1%	49.2%

! Nearly all installed adopters report high levels of satisfaction with their new latrine. Three-quarters have recommended the product to their family and friends.

Figure 29: Recommendations to improve enterprise services, installed adopters



Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of installed adopters, N=242

Of the 9 installed adopters who were unsatisfied with the Latrine Core product, 6 respondents stated the reason they were dissatisfied was because the latrine required too much water, 2 respondents said they received broken parts, and one stated it was difficult to take care of the latrine. Of the 7 installed adopters stating they were unsatisfied with the enterprise that sold the Latrine Core, 4 respondents stated the latrine was too expensive, 2 complained of late delivery, and one stated there was no installation service.

Installed adopters were also asked how the enterprise could improve its services (Fig. 29). The most common recommendations were to provide faster delivery, provide better product quality, discount the price, offer installation services, and offer installment payment plans (in that order). Many installed adopters stated that they did not know how the enterprise could improve. Kampong Speu installed adopters were more likely to recommend faster delivery, while Kampong Cham installed adopters were more likely to mention installation services and better product quality. In Kampong Cham, offering subsidized materials and advice on installation was also recommended.

13.5 Latrine usage, upgrading, operation and maintenance

Over half (52%) of all Kampong Speu installed adopters report sharing their latrine with people from neighboring households, compared to just 32% of installers in Kampong Cham (Table 51). This is consistent with the findings on defecation practice (Section 6), which indicate that one-quarter of those without a functioning installed latrine usually use their neighbor's latrine.

The majority of households bathe in the same building as their latrine, although this is much more common in Kampong Speu reflecting the generally 'higher-end' latrine facilities there (Table 52). Over 90% of adopters in both provinces report having enough water for flushing their latrine in the dry season.

Most latrine owners have not made any changes or improvements to their latrine since installing it. Of the four installers that have made changes, two replaced a broken slab, one replaced a broken ring, and one replaced a connection pipe. In terms of planned improvements, about 40% of all installers would like to make some changes to their latrine in the future (Table 53).

Differences in the types of planned changes between Kampong Cham and Kampong Speu reflect differences in the current latrine types in use in the two provinces, with Kampong Cham adopters much more likely to have shelters of lower-end materials (Fig 36).

Of the 242 adopters with installed latrines, only 26 (10.7%) have experienced emptying their latrine pit when it became full (Table 54). Of these, the majority had a family member empty the pit manually with a bucket/shovel/hand pump (61.5%, N=16) or hired someone to empty the pit manually (19.2%, N=5). A few hired someone to empty the pit with a mechanical pump. Eighteen of the 26 respondents spread the pit contents directly on the field as fertilizer.

When asked what their household planned to do when the latrine pit becomes full in the future, about 40% of installed adopters indicated they would have someone in their family manually empty the pit, 29% indicated they planned to hire someone to empty the pit with a mechani-

Table 51: Reported sharing among installed adopters

		Kg Speu N= 111	Kg Cham N= 131	Total N= 242
Does anybody from neighboring households use your latrine?	Yes	51.8%	32.1%	41.1%
	No	48.2%	67.9%	58.9%

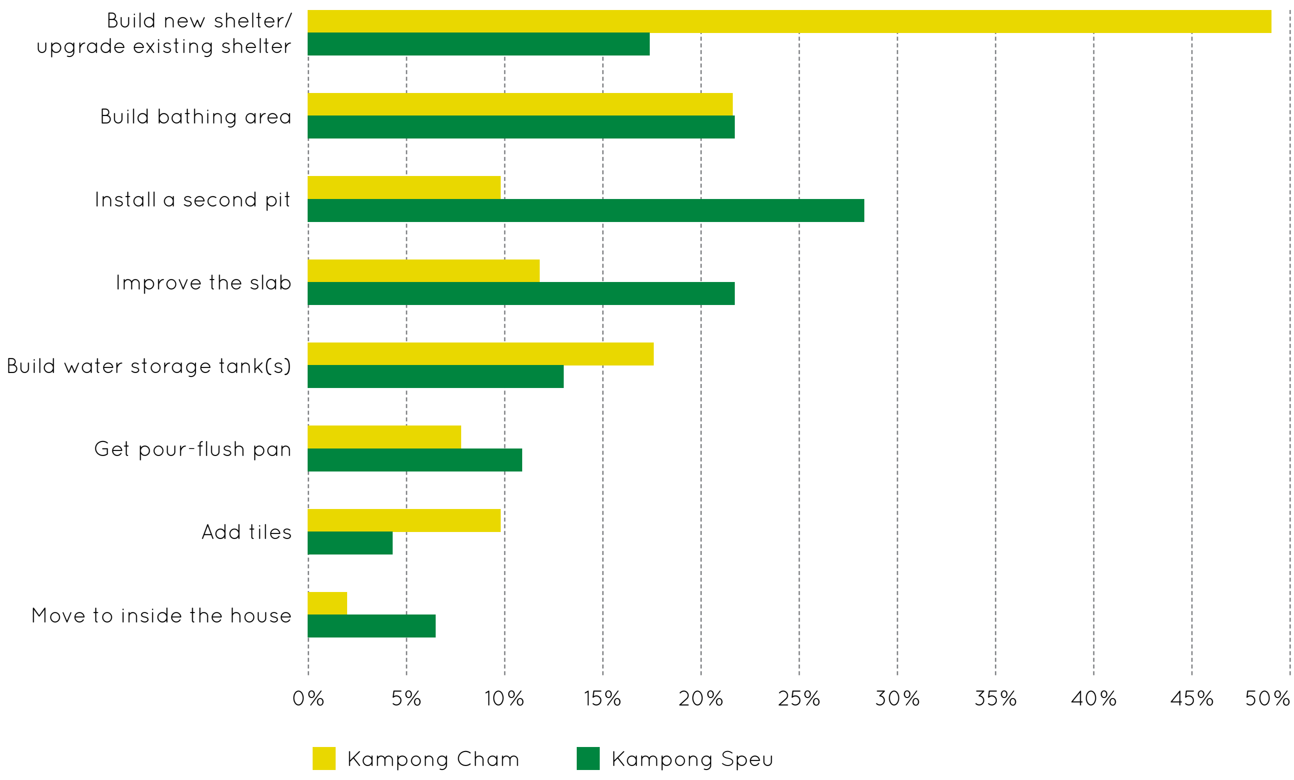
Table 52: Bathing and water usage among installed adopters

	Kg Speu N= 111	Kg Cham N= 131	Total N= 242
Percentage of installed adopter households that bathe in same building as latrine	82.0%	68.7%	74.8%
Percentage of installed adopters that have enough water to flush the latrine in the dry season	93.7%	93.1%	93.4%

Table 53: Plans for changes and improvements to installed latrines

		Kg Speu N= 111	Kg Cham N= 131	Total N= 242
In the future, do you plan to make changes or improvements to your latrine?	Yes	41.4%	38.9%	40.1%
	No	58.6%	61.1%	59.9%

Figure 30: Types of planned changes and improvements



Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of installed adopters planning to make changes, Kampong Cham, N=51, Kampong Speu, N=46, Total, N=97

Knowledge and practice around safe pit emptying must be addressed.

cal pump, and 22% stated they would hire someone to empty it manually (Table 55). Most installed adopters plan to spread the pit contents directly on their field as fertilizer. This intended practice was more common among Kampong Speu installed adopters, with 82% of them planning to use contents immediately as fertilizer compared to 59% in Kampong Cham. About 3% of Kampong Cham installed adopters planned to dispose of pit contents by dumping it in a river, pond or canal. On average, respondents thought it would take about 6 years for their pit to fill up. When asked how much they would be willing to pay for a pit emptying service, the median cost estimate was USD 12.50.

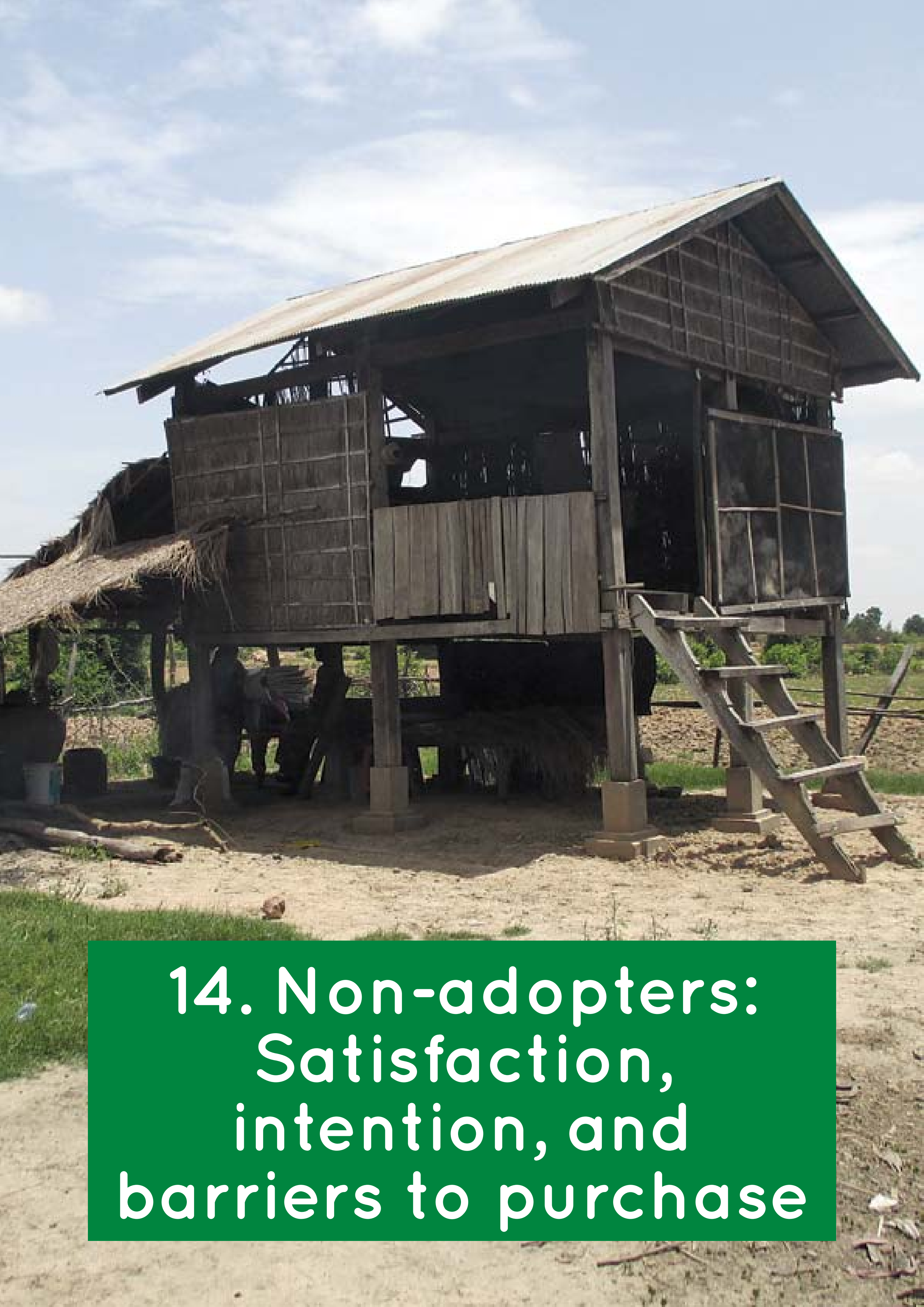
Table 54: Past pit emptying practices

		Kg Speu N= 14	Kg Cham N= 12	Total N= 26
How was your household latrine pit emptied?	A family member emptied it with a bucket/shovel/hand pump	71.4%	50.0%	61.5%
	Hired someone to empty it with a bucket/shovel/hand pump	14.3%	25.0%	19.2%
	Hired someone to empty it with a mechanical pump	14.3%	16.7%	15.4%
	Don't know	0.0%	8.3%	3.8%
What did you do with the pit contents?	Spread on field as fertilizer	78.6%	58.3%	69.2%
	Empty pit contents into new hole, never unearth to use as fertilizer	7.1%	8.3%	7.7%
	Don't know	14.3%	33.3%	23.1%

Table 55: Planned pit emptying practice

		Kg Speu N= 111	Kg Cham N= 131	Total N= 242
How will you empty your pit when it is full?	A family member will empty it with a bucket/shovel/hand pump	38.7%	41.2%	40.1%
	Hire someone to empty it with a mechanical pump	32.4%	26.0%	28.9%
	Hire someone to empty it with a bucket/shovel/hand pump	24.3%	20.6%	22.3%
	Don't know	4.5%	9.2%	7.0%
	Bury the pit	0.0%	3.1%	1.7%
When you empty your pit where will you put the contents?	Spread on field as fertilizer	82.0%	58.8%	69.4%
	The contents will be taken away	8.1%	19.8%	14.5%
	Don't know	4.5%	10.7%	7.9%
	Empty pit contents into new hole, never unearth to use as fertilizer	3.6%	6.9%	5.4%
	Dump in the river/pond/canal	0.0%	3.1%	1.7%
How long do you think it will take to fill your pit?	Median, years	6	6	6
How much would you be willing to pay for someone to empty your latrine when it is full?	Median, USD	12.50	12.50	12.50

These findings, which are consistent with baseline findings, confirm the need for serious attention to excreta management and safe pit emptying practices. Sanitation marketing efforts are resulting in substantial behavior change and accelerated uptake of pour-flush latrines. RCSAS results indicate that pour-flush coverage has almost doubled in the WaterSHED Kampong Speu pilot area in less than three years. The simple offset pit technologies being promoted do not include primary or secondary treatment and will eventually result in pits filled with excreta. To address this public health issue through the program, more attention should be given to social marketing messages and user education on safe handling and re-use of human excreta. At the same time, market-based solutions and business models to address other areas of the sanitation value chain - including collection, treatment, and reuse - should be trialed and piloted. The findings confirm at least some preference and willingness to pay for pit emptying services. These services should be in higher demand as the first wave of new adopter pits begin to fill.



14. Non-adopters: Satisfaction, intention, and barriers to purchase

14. Non-adopters: Satisfaction, intention, and barriers to purchase

! Non-adopters are not satisfied with their current defecation practice.

14.1 Non-adopter satisfaction with current practice

Nearly 70% of non-adopters stated they were unsatisfied or very unsatisfied with their current defecation practice (Fig. 31).

Kampong Speu non-adopters show slightly higher rates of dissatisfaction, with 71.3% dissatisfaction compared to 67.6% in Kampong Speu. Interestingly, the percentage of non-adopters who were unsatisfied or very unsatisfied has decreased slightly in Kampong Speu from a baseline of 75.5%. This could be explained by the increase in latrine coverage (very dissatisfied non-adopters may have already converted to latrine ownership) and the growth in latrine sharing in Kampong Speu (non-adopters are now less likely to practice open defecation).

When asked why they were unsatisfied or very unsatisfied with their current defecation place, the most common reasons were that the place is too far, not safe, dirty, not convenient, and smelly (in that order) (Fig. 32). Kampong Speu non-adopters were much more likely to state that the defecation place is too far away, corresponding to the greater distance they need to travel from their home. Kampong Speu non-adopters defecated an average of 60 meters from their house, compared to just 30 meters in Kampong Cham (Table 56).

14.2 Non-adopter purchase intention

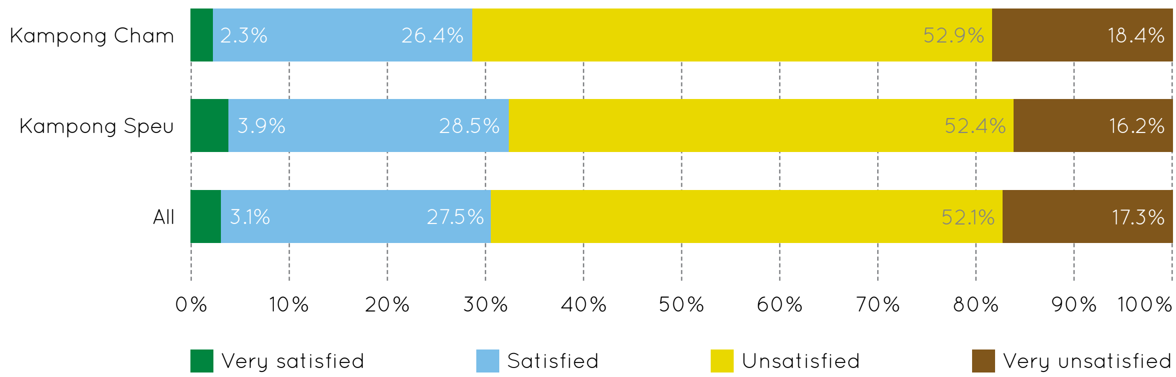
To measure baseline demand and segment the market of potential adopters, WaterSHED used the 'latrine adoption decision' framework (Jenkins and Scott, 2007). Within this framework, non-adopters are grouped based on what stage they are at – preference, intention, choice - in the latrine adoption process; that is, how close they are to adopting and using an improved latrine. The RCSAS used a series of questions to determine current non-adopter purchase intention in the two study provinces, and to compare changes in purchase intention from the Kampong Speu baseline.

Latrine Adoption Stage 1: Preference – 'I want a latrine for my family'

People with 'preference' have considered the idea of building an improved latrine and view it positively for themselves. They have some motivation for acquiring a latrine. They are dissatisfied with their current practice and are attracted to the benefits of an improved latrine.

Among all non-adopter households, over 92% have thought about or discussed building a latrine for their family, indicating a potentially high preference for building a latrine (Table 57). However, nearly half (47.2%) have not discussed building a latrine within the last year. Kampong

Figure 31: Non-adopter satisfaction with current defecation place

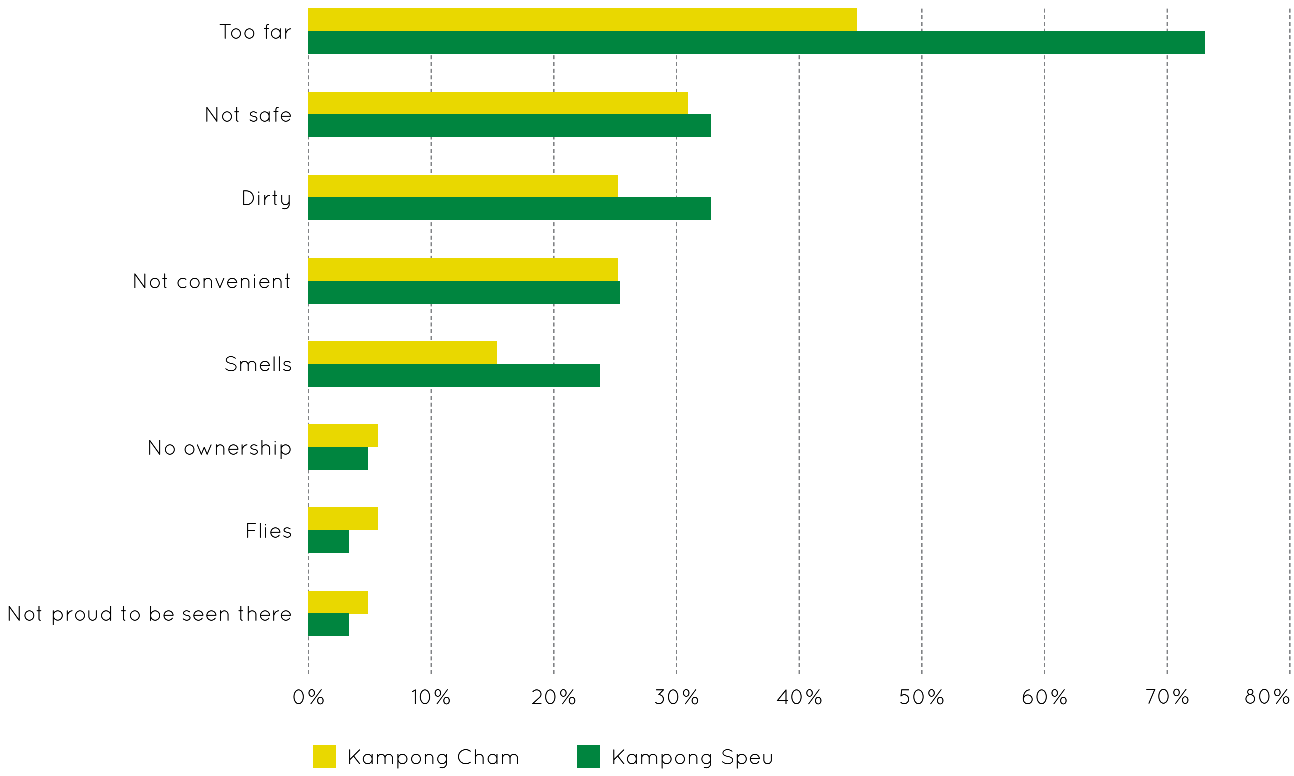


Results expressed as percentage of non-adopters, N=353

Table 56: Distance to current defecation place, non-adopters

		Kg Speu N=179	Kg Cham N=174	Total N=353
How many meters is your current defecation place from your house?	Distance (meters)	60m	30m	50m

Figure 32: Reasons for dissatisfaction with current defecation place, non-adopters



Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of those who are unsatisfied or very unsatisfied non-adopters, Kampong Cham, N=123 Kampong Speu, N=122, Total, N=245

Cham non-adopters were slightly more likely to have discussed building a latrine compared to Kampong Speu, but were less likely to have done so within the last year.

RCSAS findings indicate a growing preference for latrine adoption in Kampong Speu compared to the baseline. The percentage of non-adopters who have talked about or discussed latrine building increased from a baseline of 85.5% to 89.9%. Non-adopters have also discussed latrine building more recently, indicating that latrine ownership is growing as an immediate concern for the family (Fig. 33). The percentage of non-adopters discussing latrine construction within the last six months increased from just over one-quarter (25.8%) at baseline to nearly half (45.9%) in the RCSAS. Those discussing latrine building in the last month grew from 7% to 16.1%.

Stage 2: Intention – 'I am actively planning to acquire a latrine'

A household moves from the 'preference' to the 'intention' stage when they begin planning for a latrine. This can be demonstrated by identifying the latrine they want, planning how they will acquire the materials for it, choosing an enterprise or mason, or saving towards a latrine purchase.

WaterSHED *Hands-Off* program activities aim to increase non-adopter motivation for latrine ownership and remove barriers in the planning process by making it easier and cheaper for them to attain the latrine they want.

When asked what type of latrine they would buy, nearly 100% of non-adopters said they would buy a flush/pour-flush latrine. As we have seen above, this is by far the most

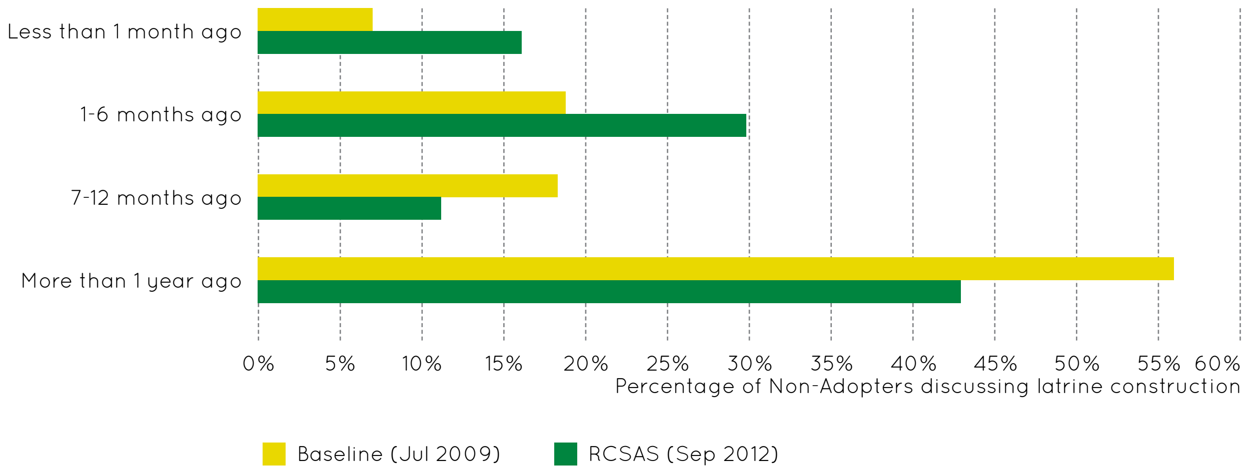
Table 57: Non-adopters consideration of latrine construction

		Kg Speu N= 179	Kg Cham N= 174	Total N= 353
Has your household ever thought about or discussed building a latrine for your family?	Have discussed	89.9%	93.7%	91.8%
If yes when was the last time your household discussed this?*	Less than 1 month ago	16.1%	11.0%	13.6%
	1-6 months ago	29.8%	27.0%	28.4%
	7-12 months ago	11.2%	10.4%	10.8%
	More than 1 year ago	42.9%	51.5%	47.2%

**Expressed as percentage of non-adopters who have thought about or discussed building, Kg Speu N=161, Kg Cham N=163, Total N=324*

Compared to the baseline, more non-adopters have discussed a latrine purchase, and have done so more recently.

Figure 33: Changes in non-adopter consideration of latrine construction, Kg Speu



Expressed as percentage of non-adopters considering purchase in Kg Speu province, Baseline, N=213; RCSAS, N=161

Table 58: Type of latrine non-adopters would buy

		Kg Speu N= 179	Kg Cham N= 174	Total N= 353
If you buy a latrine, what type of latrine will you buy?	Flush/pour-flush	69.8%	82.2%	75.9%
	Flush/pour-flush (specific mention of Latrine Core)	28.5%	16.7%	22.7%
	Don't Know	1.7%	0.6%	1.1%
	Would not buy	0.0%	0.6%	0.3%

Table 59: Latrine ordering method non-adopters would use

		Kg Speu N= 179	Kg Cham N= 174	Total N= 353
How would your household order a latrine?	Call enterprise to order	67.0%	47.7%	57.5%
	Order at village sales event - wait for home delivery	8.9%	20.7%	14.7%
	Don't know	11.2%	10.9%	11.0%
	Order from retail location	6.7%	6.9%	6.8%
	Call sales agent to order	3.4%	6.9%	5.1%
	Order at village sales event - immediate purchase	2.2%	5.2%	3.7%
	Order when sales agent comes to my house	0.6%	1.7%	1.1%

! Non-adopters indicate an awareness of and intention to use WaterSHED-introduced latrine purchase mechanisms.

preferred latrine technology type. Over 28% of non-adopters in Kampong Speu and nearly 17% in Kampong Cham specifically mentioned that they would purchase a Latrine Core (Table 58). However, earlier in the interview they were shown an image of the Latrine Core, so this could have biased the response.

The majority (89%) of non-adopter households could state how they would order the materials they needed for their latrine (Table 59). In Kampong Cham, most non-adopters would call an enterprise to order their latrine. Kampong Cham non-adopters were much more likely to mention latrine ordering methods introduced by the WaterSHED *Hands-Off* program: over one-third (34.5%) stated they would use one of the new ordering mechanisms (e.g. a village sales event, sales agent phone call, or sales agent home visit), compared to just 15% of Kampong Speu non-adopters mentioning these options.

Across the sample, only 6.8% of non-adopters said they would order their latrine from a retail location. This indicates a shift in the way households are thinking about acquiring the latrine they want, as previous studies note that households had to physically go to at least one shop to buy their latrine materials in the past (see Salter 2008).

About 69% of non-adopters said they would purchase their latrine through a sales agent, although this was more common in Kampong Cham (79.3%) than in Kampong Speu

Table 60: Awareness and intention to purchase through a sales agent, non-adopters

		Kg Speu N= 179	Kg Cham N= 174	Total N= 353
Intention to purchase through sales agent	Percentage of non-adopter household who would purchase latrine through a sales agent	59.8%	79.3%	69.4%
Awareness of sales agent	Percentage of non-adopters who could state the name of local sales agent	49.2%	30.5%	39.9%
Knowledge of other job(s) of sales agent	Don't know	91.1%	90.8%	90.9%
	Village chief	6.7%	8.1%	7.4%
	Commune official	1.1%	0.6%	0.9%
	Neighbor/community member	0.6%	0.6%	0.6%
	Representative of enterprise	0.6%	0.0%	0.3%

Table 61: Awareness and intention to purchase from enterprise, non-adopters

		Kg Speu N= 179	Kg Cham N= 174	Total N= 353
Awareness of enterprise	Percentage of non-adopters who could state the name of enterprise they would purchase latrine from	35.2%	28.2%	31.7%
How would you get the materials for your household latrine to your house?	Enterprise offers home delivery	95.0%	84.5%	89.8%
	Pick them up at retail location	1.1%	6.9%	4.0%
	Sales agent will arrange it	1.1%	6.9%	4.0%
	Don't know	2.8%	1.7%	2.3%
Does this enterprise allow latrine payment in installments?	Yes	36.3%	16.7%	26.6%
	No	51.4%	56.9%	54.1%
	Don't know	12.3%	26.4%	19.3%

(59.8%) (Table 60).[1] Differences between the provinces are consistent with actual latrine ordering methods used by adopters, with Kampong Cham generally having higher use and intended use of sales agents than Kampong Speu.

About 40% of all non-adopters could state the name of the local sales agent selling latrines. Compared to adopters, non-adopters are much less likely to know other roles of sales agents in their community. While roughly half of all adopters were able to mention another role of their sales agent, the vast majority of non-adopters – over 90% – were unable to do so. Although awareness of sales agent mechanisms is lower among non-adopters than adopters, non-adopters are demonstrating new knowledge about latrine purchase options that did not exist prior to the WaterSHED *Hands-Off* program.

Close to one-third of all non-adopters could state the name of the enterprise they would purchase their latrine from, with Kampong Speu non-adopters being more likely to know the enterprise's name (Table 50). When asked to mention services the enterprise provides, just over half of non-adopters mentioned home delivery (Fig. 34). However, when asked specifically how they would get latrine materials to their house, nearly 90% of non-adopters stated they would arrange home delivery through the enterprise. These findings offer further evidence of non-adopter awareness and intention to use new latrine home delivery mechanisms introduced through the program.

Among non-adopters, reasons for selecting an enterprise are similar to reasons given by those who have actually purchased (see Fig. 22), but with some important distinctions between provinces. The most common reasons given by non-adopters were: my neighbor/family member recommended (30%), the enterprise offers home delivery (24%), the enterprise has a good reputation (23%), the price is reasonable (11%) and don't know (10%) (Fig. 34). Kampong Speu non-adopters were much more likely to mention home delivery as an important reason. Over 11% of Kampong Speu non-adopters also mentioned installment payment options as the reason for selecting the enterprise (this was mentioned by only 3% of non-adopters in Kampong Cham).

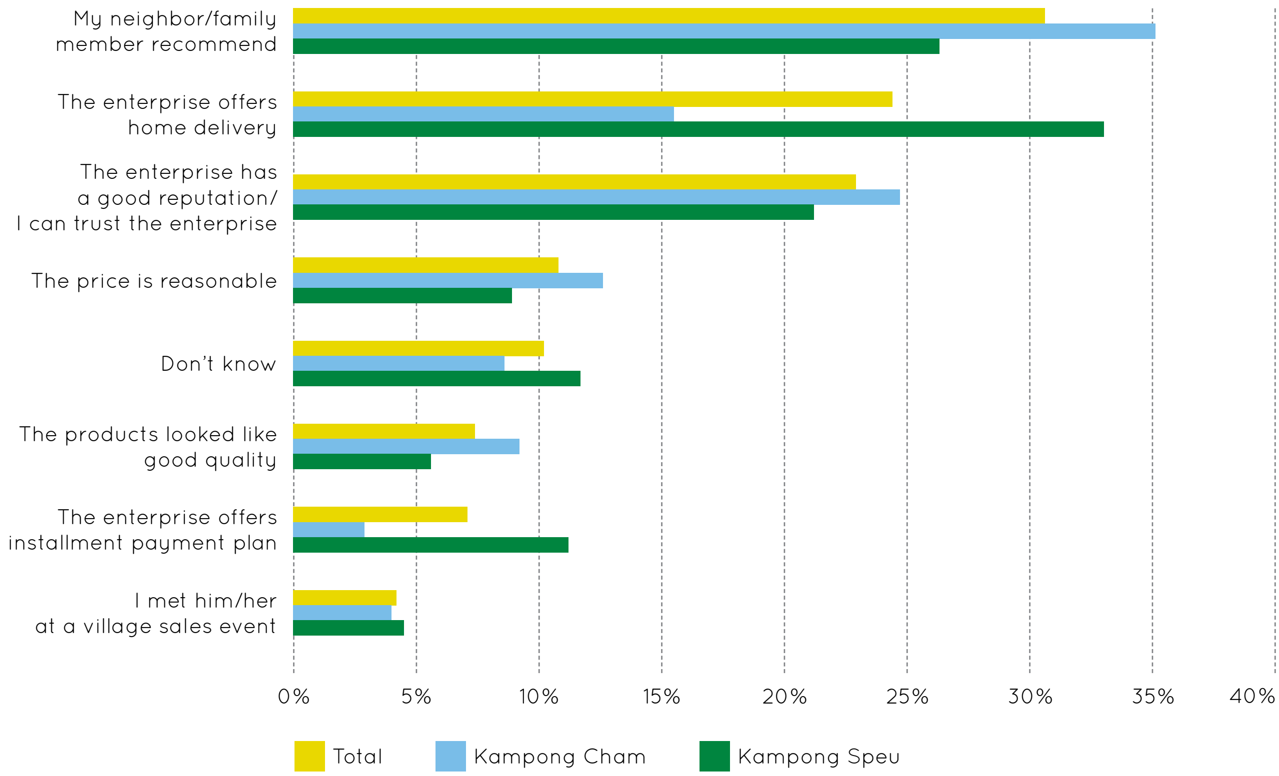
About 43% of non-adopters (41% in Kampong Speu and 45% in Kampong Cham) stated that they have identified a mason to help them with construction of the latrine (Table 63). When asked why they selected this mason, the most common response was that this person was a relative or friend, that he/she has a good reputation, and that the respondent saw and liked a latrine that he/she had built. Compared to Kampong Cham, non-adopters in Kampong Speu were much more likely to state that they would install their latrine by themselves (18.4% in Kampong Speu, compared to 7.5% in Kampong Cham).

RCSAS findings show a growth and change in intention related to latrine construction in Kampong Speu. The percentage of non-adopters who have chosen a site for their

1 This finding conflicts somewhat with the stated latrine ordering methods in Table 59. There may have been some confusion in terms of what was meant by 'purchasing through a sales agent': Some households may have stated that they would 'purchase though an agent' if they planned to call the enterprise they heard about or saw in Latrine Core promotional materials (sales agents circulate the contact phone number of the enterprise in all of their promotions).

14. Non-adopters: Satisfaction, intention, and barriers to purchase

Figure 34: Reasons for choosing selected enterprise for latrine purchase



Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of non-adopters, N=353

Table 62: Mason and site identification

		Kg Speu N= 179	Kg Cham N= 174	Total N= 353
If your household is interested in hiring a mason, have you identified a mason for the job?	Yes, have identified mason for the job	41.3%	44.8%	43.1%
	No/ Not yet identified	38.5%	44.3%	41.4%
	Will install by myself	18.4%	7.5%	13.0%
	Don't Know	1.7%	3.4%	2.5%
Why did you pick this person?*	Relative/friend	56.9%	62.0%	59.6%
	Has good reputation	26.4%	19.0%	22.5%
	Saw and liked a latrine they had built	15.3%	20.3%	17.9%
	Had hired before	9.7%	5.1%	7.3%
	Least expensive	8.3%	2.5%	5.3%
	Recommended by sale agent	0.0%	1.3%	0.7%
Have you chosen a site for the latrine?	Yes, have chosen site	80.4%	73.0%	76.8%

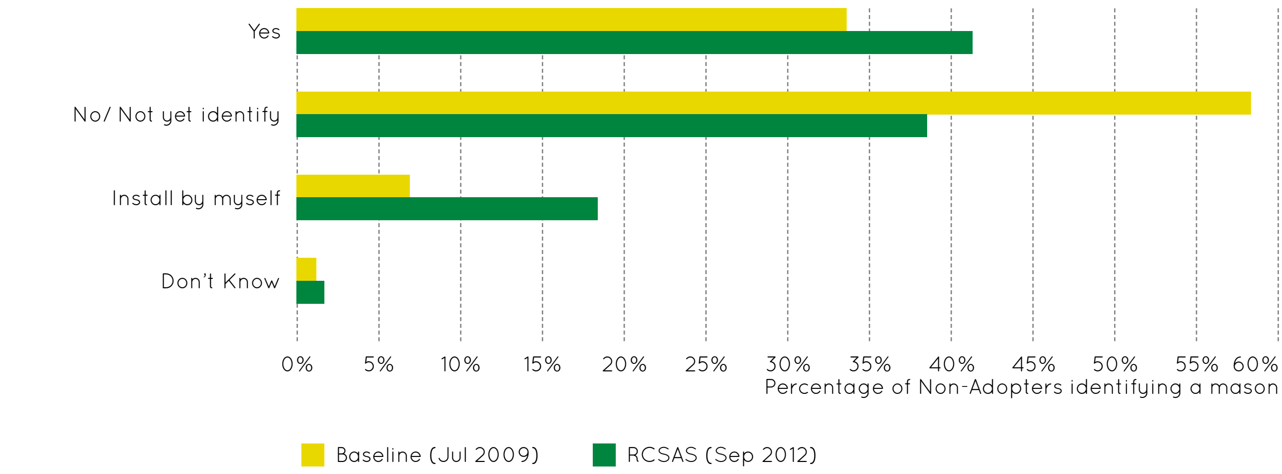
*Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of non-adopters who have chosen a mason, N=152

! Compared to the baseline, more non-adopters have identified a site and the construction labor for a latrine.

latrine increased from 67.9% of non-adopters at baseline to 80.4% of non-adopters in the RCSAS. Those who have selected a mason increased from 33.6% to 41.3% of non-adopters (Fig. 35). At the same time, a greater proportion of non-adopters are indicating they will construct their latrine by themselves. From a baseline of 6.9%, those who plan to self-install increased to 18.4%, demonstrating a change in how people are planning to construct. Together with findings above, which demonstrate new awareness and intention to use program-introduced purchase mechanisms, these findings indicate that the WaterSHED *Hands-Off* program is having a positive impact on non-adopter intention.

Saving towards a latrine is often a good indicator of purchase intention, although it should be noted that most households in the survey indicated they do not regularly save cash (for any purpose). Only 5.7% of non-adopters (5% in Kampong Speu and 6.3% in Kampong Cham) stated they were currently saving money towards buying a latrine (Ta-

Figure 35: Changes in non-adopter identification of a mason, Kg Speu



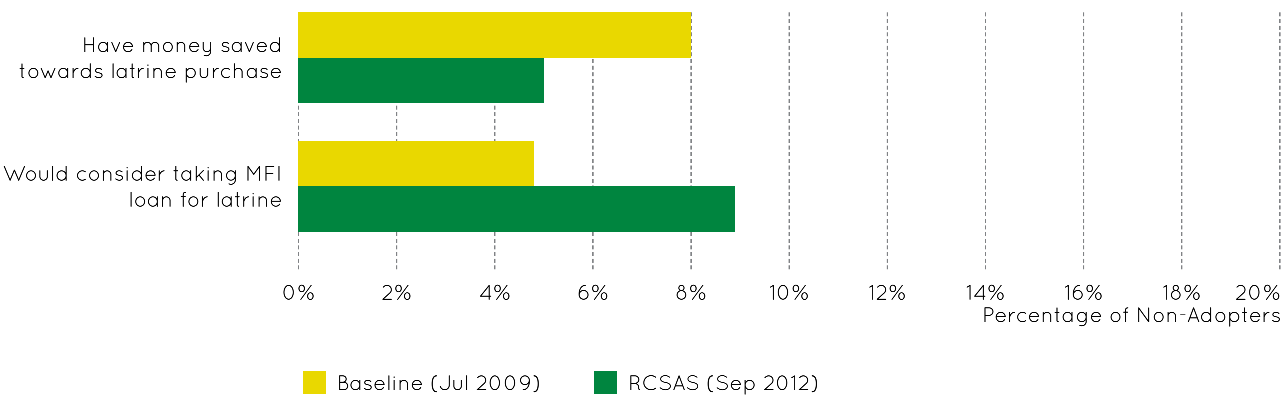
Expressed as percentage of non-adopters in Kg Speu province, Baseline, N=249; RCSAS, N=179

Table 63: Savings towards latrine purchase

		Kg Speu N= 179	Kg Cham N= 174	Total N= 353
Do you currently have any money saved towards buying a latrine?	Yes, have money saved	5.0%	6.3%	5.7%
Would you consider taking a microfinance loan to purchase a latrine?	Yes, would consider MFI loan	8.9%	6.9%	7.9%
What is the lowest amount that you would need to spend to build an acceptable latrine for your household?	Average amount needed for acceptable latrine, USD	137	91	114

Compared to the baseline, fewer non-adopters are saving towards a latrine, but more would now consider taking a loan for construction.

Figure 46: Changes in non-adopter savings towards latrine purchase, Kg Speu



Expressed as percentage of non-adopters in Kg Speu province, Baseline, N=249; RCSAS, N=179

ble 63). On average, the minimum perceived amount needed to purchase an acceptable latrine was 114 USD. The average estimated cost of an acceptable latrine was much lower in Kampong Cham (91 USD) than in Kampong Speu (137 USD). Nonetheless, when compared to the mean monthly household consumption for households in the lower income quintiles, this will likely be unaffordable for many poorer rural households (see Pedi et al. 2012). About 9% of Kampong Speu non-adopters and 7% of Kampong Cham non-adopters would consider taking a microfinance loan for a latrine.

Compared to the baseline, RCSAS findings indicate a decrease in non-adopters saving towards a latrine purchase in Kampong Speu, from a baseline of 8% in 2009 to 5% of non-adopters in 2012. While there are fewer non-adopters saving for a latrine, there is a greater willingness among non-adopters to consider taking on debt for their latrine purchase. The percentage of non-adopters stating they would consider taking a microfinance loan for a latrine increased from 4.8% to 8.9%. The minimum perceived amount needed to purchase an acceptable latrine has also reduced, from an average of 178 USD at baseline to 137 USD in the RCSAS. However, this cost would still be higher than many households are willing or able to pay. These data confirm the need and latent demand for financing mechanisms that can ease barriers to purchase. As discussed above, lack of money is frequently cited as a major barrier by non-adopters.

Stage 3: Choice – 'I will have a latrine in the next 12 months'

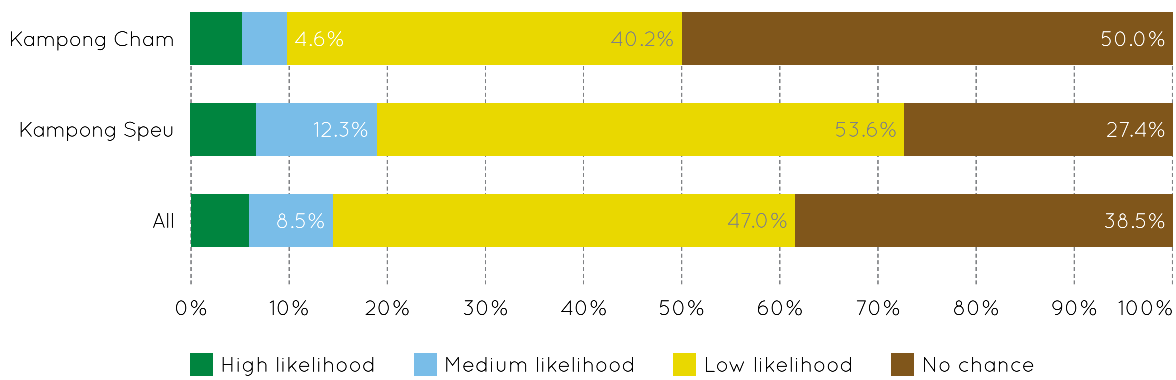
In the final 'choice' stage of latrine adoption, people with preference and intention are able to successfully overcome the remaining barriers to planning, purchase, and installation. One way to capture this is by measuring the likelihood of completing construction within the next 12 months.

About 62% of non-adopters indicated there was some likelihood of latrine construction in the next year, however only 5.9% reported a high likelihood of building in the next 12 months (Fig. 37). The majority of non-adopters indicated that there was a low likelihood (47%) or no chance (38.5%) of latrine construction in the next year. There were some notable differences between the two provinces, with Kampong Speu non-adopters expressing much higher likelihood of construction. Nearly 73% of all non-adopters in Kampong Speu reported some likelihood of construction compared to just half of Kampong Cham non-adopters. Non-adopters in Kampong Speu were also more likely to express high and medium likelihood of construction in the next year. These findings may suggest low rates of new demand among non-adopters in future.

RCSAS data indicate that likelihood of construction has generally decreased among non-adopters, from a baseline of 84% to 72.6% of non-adopters expressing some likelihood, and from 16% to over 27% stating there was no chance of latrine construction in the next year (Fig. 38). At the same time, the proportion of non-adopters with a high likelihood of construction has increased slightly from 5.3% to 6.7%.

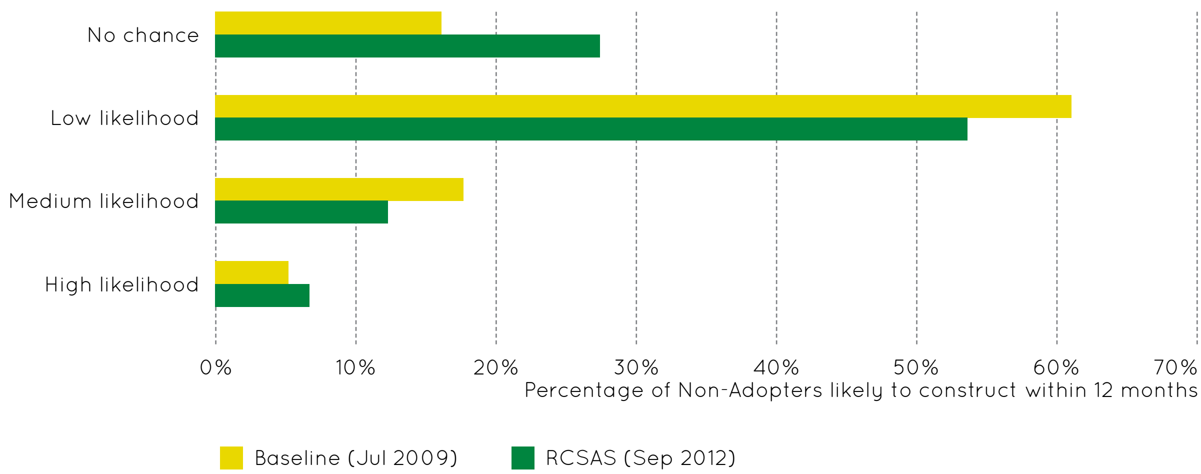
The findings suggest that although sanitation marketing activities may capitalize on latent demand and increase intention to own an improved latrine, barriers to actual investment still exist. The findings may reflect a problem of early adopter 'saturation': as current marketing efforts encourage those 'better off' early adopters in the commu-

Figure 37: Likelihood of latrine construction within next 12 months, non-adopters



Compared to the baseline, likelihood of construction has generally decreased.

Figure 38: Changes in likelihood of latrine construction within next 12 months, Kg Speu



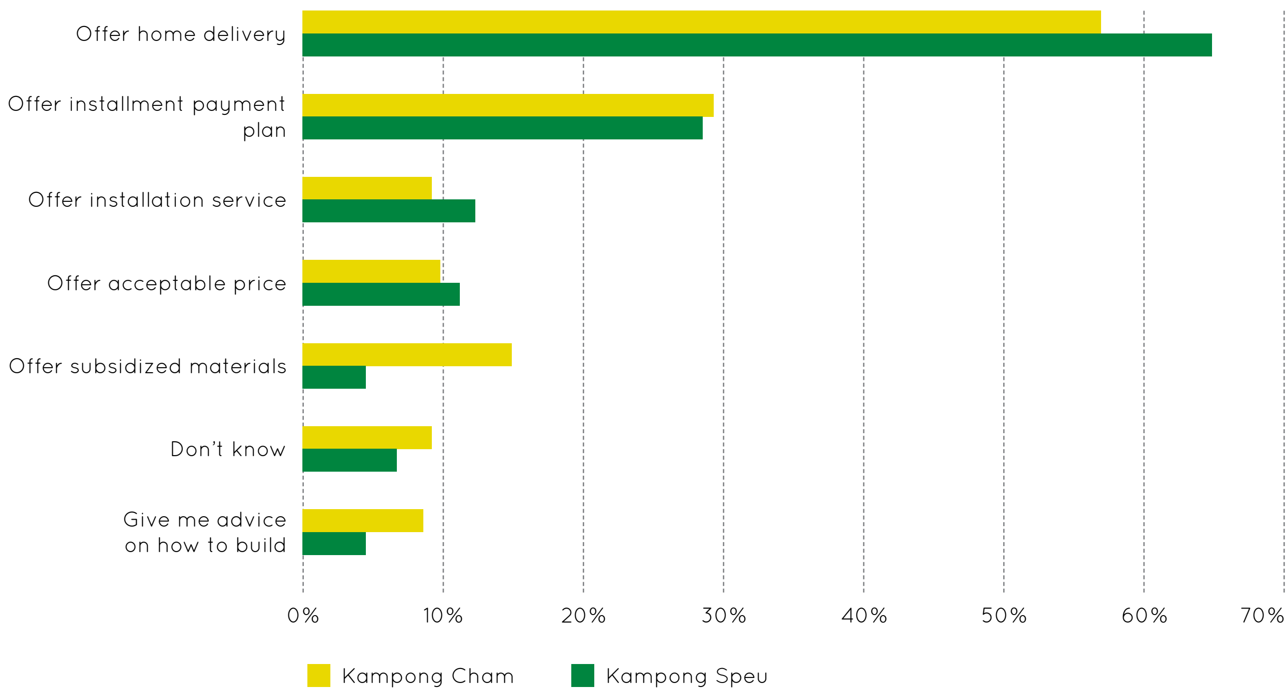
Expressed as percentage of non-adopters in Kg Speu province, Baseline, N=249; RCSAS, N=179 nity to purchase and install their latrines, the rates of new households who are willing and able purchase may decrease (see Pedi et al. 2012). The findings suggest that new and more targeted strategies will need to be developed to remove barriers for the early and late majority of non-adopters in order to reach further down into the non-adopter market. Given the relatively short timeframe of marketing activities thus far, it is also possible that early and late majority households may move towards investment as social norms shift and more households invest.

14.3 Non-adopter purchase barriers

Over 90% of non-adopters stated the reason they had not yet purchased a latrine was that they did not have enough

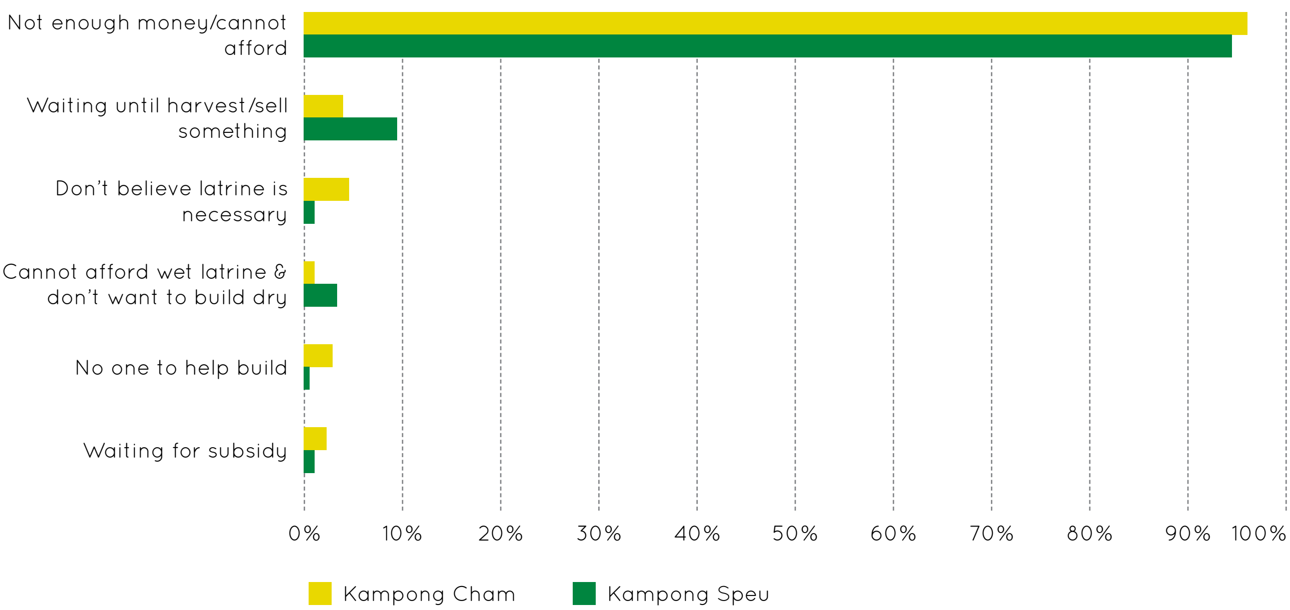
Affordability remains a critical purchase barrier for many.

Figure 40: Non-adopter recommendations to enterprise to make it easier to purchase latrine



Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of Non-adopters , Kampong Cham, N=,174 Kampong Speu, N=179, Total, N=353

Figure 39: Reasons for not purchasing a latrine yet among non-adopters



Options not read to respondents. Respondents could choose more than one option. Results expressed as percentage of non-adopters, N=353 money/could not afford (Fig. 39). This finding is consistent with other surveys in Cambodia, and points to real or perceived financial constraints as the most significant barrier to purchase.

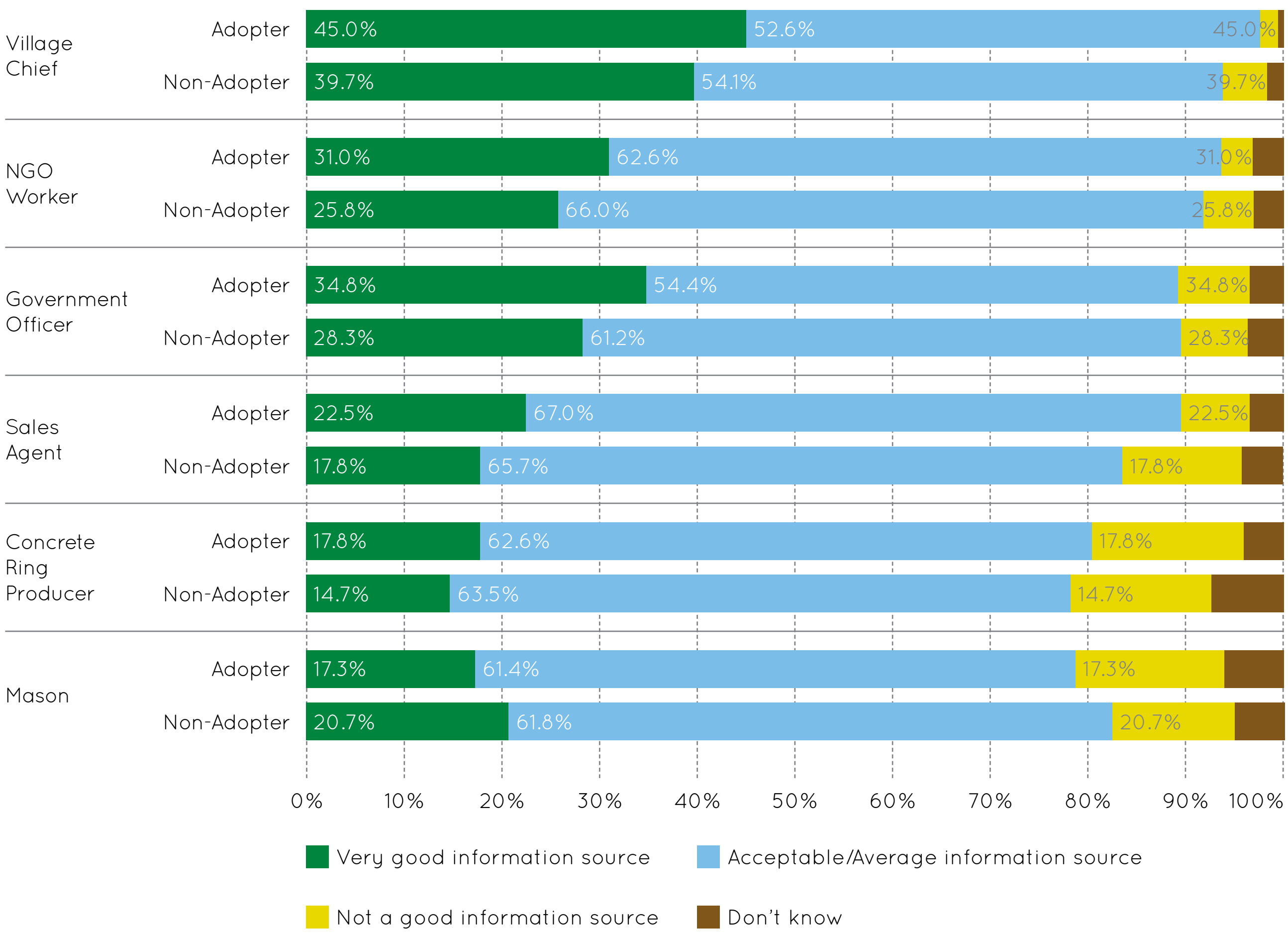
When asked how an enterprise could make it easier for them to be able to purchase a latrine (Fig. 40), the two most common responses were to offer home delivery and to offer installment payment plans. Offering installation services and an acceptable price were also mentioned with less frequency. About 15% of all non-adopters in Kampong Speu mentioned that offering subsidized materials would help them to be able to purchase, while subsidy was mentioned by just 5% of non-adopters in Kampong Cham.

15. Sources of information for households

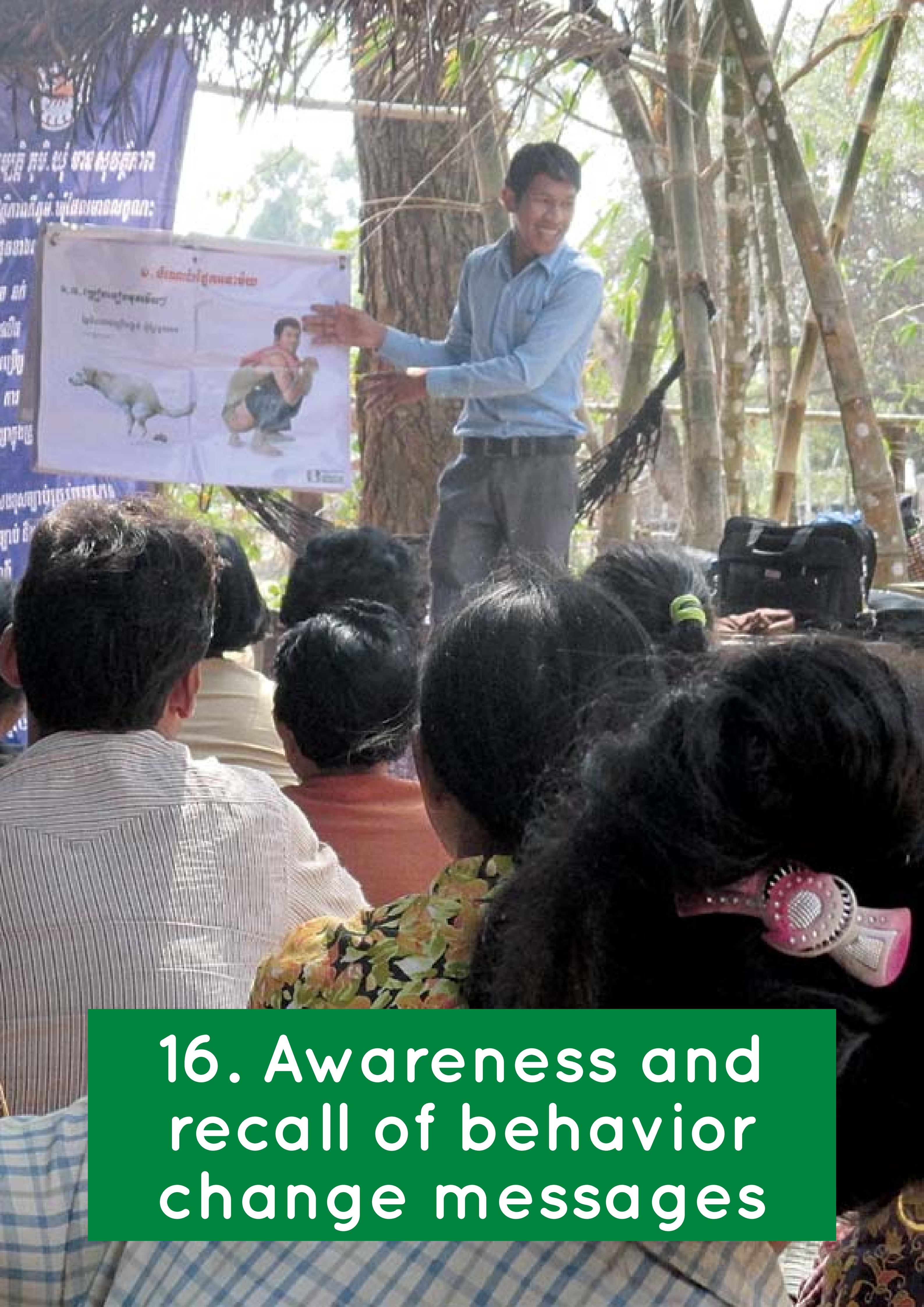
15. Sources of information for households

Most households – both adopters and non-adopters – indicate village chiefs, government officers and NGO workers are very good sources of information about building or purchasing sanitation products (Fig. 41), confirming that households tend to find these 'official' sources trustworthy and reliable. Sales agents, concrete ring producers and masons are perceived as fairly good or acceptable sources of information. Adopters are more likely to think that these people are very good sources of information.

Figure 41: Opinion of information sources for building or purchasing sanitation products



Results expressed as percentage of all households, N=695



16. Awareness and recall of behavior change messages

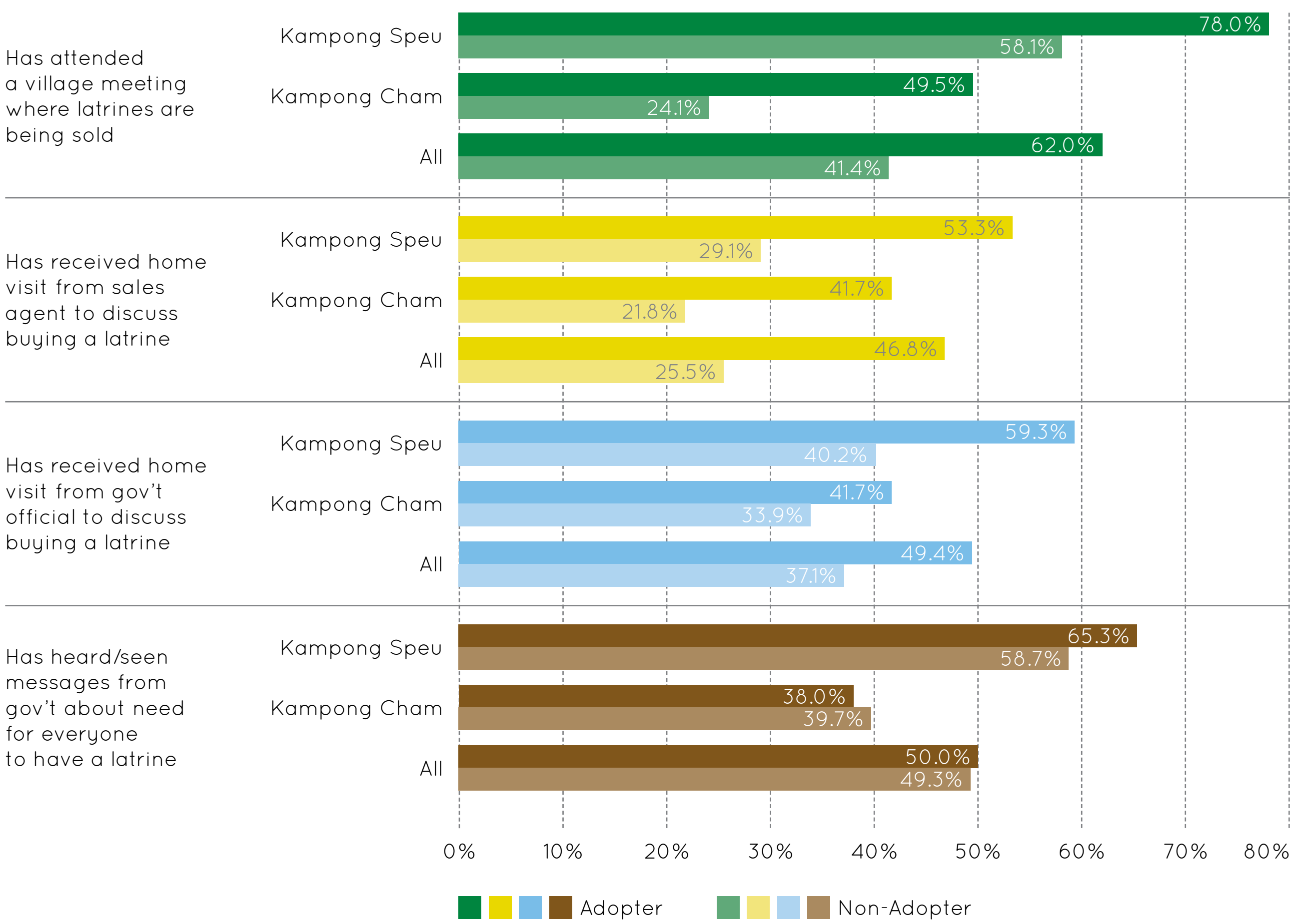
16. Awareness and recall of behavior change messages

Exposure to product sales opportunities and product information is essential.

Compared to non-adopters, latrine adopters are more likely to have attended a village sales event and to have received a home visit from a sales agent or government official specifically to discuss buying a latrine (Fig. 42). In general, households in Kampong Speu have had greater exposure to these channels than Kampong Cham, reflecting the fact that marketing activities have been underway for longer there. There was little difference between IDPoor and non-IDPoor households in terms of exposure to these channels: IDPoor households were as likely as non-IDPoor households to have attended a village sales meeting or received a home visit from a sales agent.

Non-adopters and adopters report hearing messages from the government that everyone needs to have a latrine in equal proportions in both provinces, although Kampong Speu households were more likely to report hearing these messages. Although 50% of all households stated they had heard messages about the need for latrines from the government, 61% of households could not recall any specific messages they had heard. This finding may indicate that general messages about the need for latrines are less likely to be remembered and recalled, compared to other more specific messages that address a 'call to action', such as those related to specific product purchase opportunity.

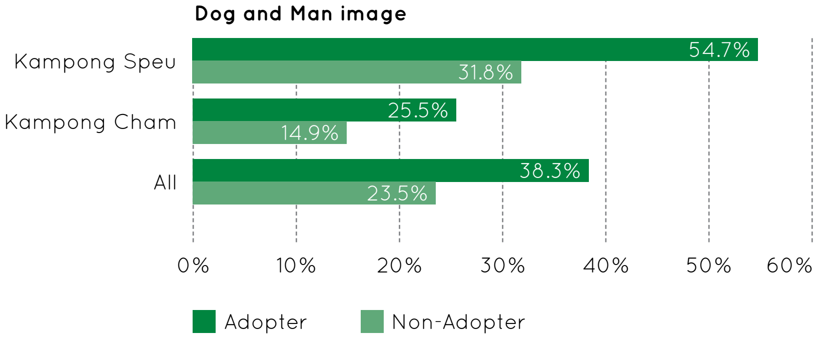
Figure 42: Exposure to channels for sanitation product sale and behavior change

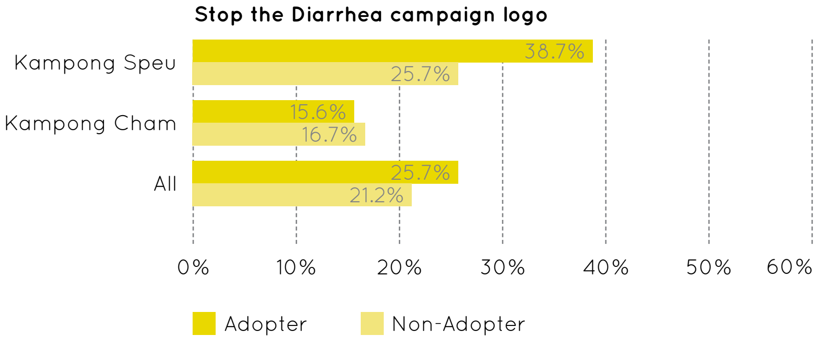


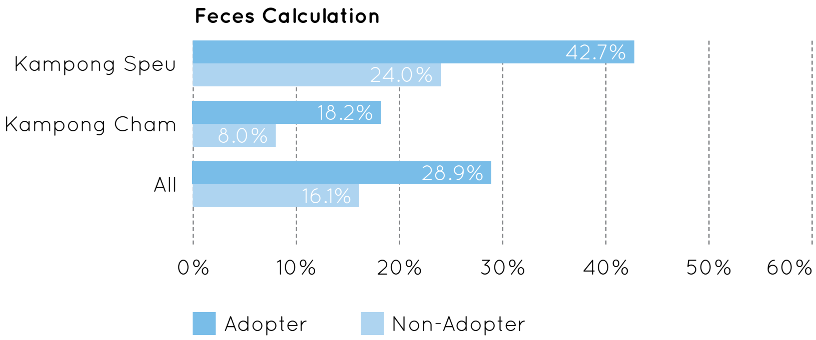
Results expressed as percentage of all households, N=695

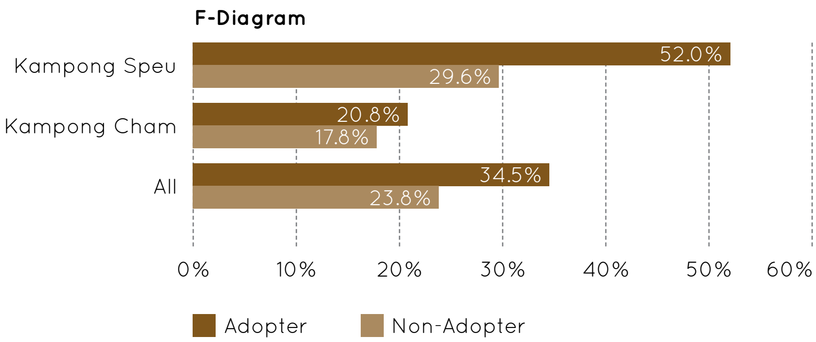
Adopters were also more likely than non-adopters to recall specific WaterSHED-introduced behavior change communication messages from the 'Stop the Diarrhea' campaign. Households were shown different images used in the behavior change campaign and during sales events. As indicated in Figure 43, the image with the highest recall (31% of all respondents) was the 'dog and man' image from the 'Stop the Diarrhea' campaign, followed by the 'Stop the Diarrhea' campaign logo (24%), feces calculation image (22%) and the F-diagram (19%). In general, Kampong Speu household had higher recall of these images than Kampong Cham households.

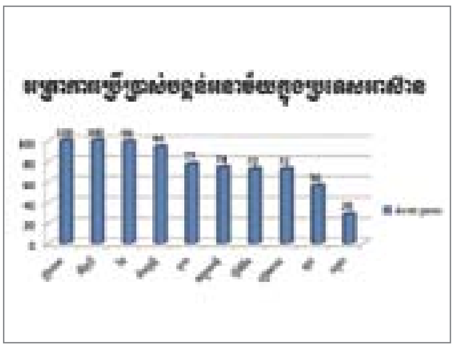
Figure 42: Exposure to channels for sanitation product sale and behavior change

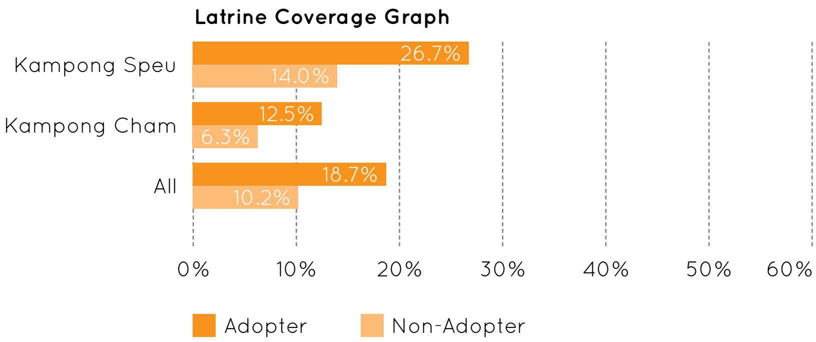












Results expressed as percentage of all households, N=695

17. Conclusions and Recommendations

17. Conclusions and Recommendations

The RCSAS confirms that the WaterSHED program has resulted in a substantial acceleration in improved latrine coverage and usage. Household consumers are now able to access an improved latrine more easily and more cheaply than before. New distribution and sales mechanisms are increasing household awareness of and exposure to more affordable latrine products and increasing motivation to invest in an improved latrine. Enterprises are demonstrating that they serve at least some segments of the previously un-served rural market. Nonetheless, significant challenges still remain. These include:

1. Further overcoming the affordability barrier and other barriers to access for poor;
2. Supporting enterprises to expand and improve their reach,
3. Assisting government to inspire and motivate sustained change in social norms to end open defecation and to ensure latrine purchase and ownership results in sustained and safe sanitation and hygiene behaviors and practices.

The RCSAS points a number of opportunities to break down the remaining barriers to improved sanitation uptake, and further evolve WaterSHED's market-based approach:

Barrier 1: Overcoming affordability and other barriers for the poor and poorest

- **Explore and expand consumer lending for those with some ability to pay:** The RCSAS confirms a growing demand for microfinance and installment payment plans among non-adopters. WaterSHED should continue to work with microfinance partners and enterprises to refine these types of flexible consumer financing options. This may including offering supply-side finance to enable more enterprises to offer consumer installment payment options.
- **Consider alternative financing options for the poorest:** A number of opportunities, including conditional cash transfer (CCT), voucher, or output-based aid (OBA) options may enable the poorest to access improved sanitation if effectively targeted. The national IDPoor scheme in Cambodia offers a simple means of poverty targeting. The RCSAS finds that households with 2 or more children under 5 years old are much more represented among non-adopters, offering another potential inclusion criteria for such schemes. IDPoor households are more highly represented among uninstalled adopters, pointing to the potential that cash rebates may play in incentivizing these households to move from purchase to full installation. Such OBA trials are currently being explored in Cambodia, and may be replicable within the WaterSHED program.
- **Develop more explicit mechanisms for measuring equity:** WaterSHED should develop specific indicators and targets for the *Hands-Off* program to measure its progress in reaching the poor and poorest. Indicators might include the percentage of IDPoor households installing an improved latrine.

Barrier 2: Expanding and improving the reach of the program

- **Continue to strengthen IPC channels and mechanisms:** The RCSAS confirms that interpersonal communications are highly effective in encouraging and enabling latrine purchase, since most households learn about and decide to install a latrine by interacting with trusted sources of information such as friends and respected leaders. The study recommends further strengthening these models and tactics, including the door-to-door sales and one-on-one sales opportunities already in use, as well as improved tactics and techniques during sales events.
- **Specifically target those who purchase latrines to help convert purchase into installation:** Local government officials should be supported to follow-up with new purchasers to discuss when and how they plan to install their latrine, and talk through what to do if they are having problems or delays. WaterSHED can use its recently announced WASH Civic Champions program as an opportunity to explore how best to engage local officials in this type of activity, as well as other ways to encourage faster installation after purchase uptake.
- **Use communications and sales tools to promote an 'upgrade pathway' for the latrine shelter:** The RCSAS indicates that much more emphasis is needed on the latrine shelter. Communication messages and images should discuss and show cheaper (natural) shelter options and how to build them. Sales and promotional tactics should include persuasive arguments about why it is better to install the new Latrine Core with a natural shelter straight away than to delay purchase or installation while waiting for the 'ideal' shelter.
- **Design and promote low-cost shelter options:** WaterSHED should continue to pursue the development of affordable, desirable latrine shelters that can be bundled with the Latrine Core.

- **Ensure a good understanding of baseline coverage prior to the launch of marketing activities:** Although it may slow down expansion into new sales areas, taking the time to understand baseline coverage (e.g. through baseline surveys or using reliable secondary data) before marketing efforts begin is a critical step that helps the program to meaningfully track and measure progress in terms of growth in community coverage, not just in terms of new sales.

Barrier 3: Ending open defecation and ensuring that latrine purchase results in sustained, safe improved sanitation behavior

- Expand behavior change communications campaign messages to include disposal of baby feces: The Stop the Diarrhea campaign can be expanded to include key messages about simple ways to safely dispose of infant feces and latrine use among children. RCSAS findings indicate that this particular practice needs greater attention, including consumer research to understand motivations and barriers to safe disposal.
- Strengthen focus on proper packaging for correct usage: Enterprises should be encouraged to include installation instructions as an integral part of the product package. More research may be needed to understand whether enterprises are including instructions and, if not, the reasons why. Changes may be needed to make it easier for enterprises to offer correct usage instructions.
- Develop specific messages and user education on safe handling and re-use of human excreta. The Stop the Diarrhea campaign and/or product marketing materials can be expanded to include key messages about what to do (and what not to do) when latrine pits fills up.
- Design and test business models to address other areas of the sanitation value chain: Service models for collection, treatment, and reuse should be piloted in the short to medium term, so that workable models are in place as the first wave of new adopter pits begin to fill.

The RCSAS was commissioned to provide key insights that can help inform WaterSHED *Hands-Off* Sanitation Marketing program improvements. In terms of next steps, the following short- and medium-term activities can be undertaken to share and build on the RCSAS research:

- **Communicate RCSAS results to enterprises, sales agents and local government:** RCSAS data should be shared widely with key private and public sector stakeholders. Specific recommendations from consumers, levels of consumer satisfaction, and other key data on consumer preferences and experiences are vital to enterprises and can build their confidence and encourage them to further improve their business models.
- **Undertake further analysis of village-level factors impacting on latrine uptake:** The RCSAS data will be further analyzed to develop a more nuanced understanding of adoption behavior in CLTS vs. non-CLTS villages. Additional qualitative research can be also be used to identify key characteristics of government leaders that may affect adoption patterns.
- **Undertake further analysis of supply-side factors:** The RCSAS focused on understanding household consumers only. Other WaterSHED program data can be analyzed alongside RCSAS finding to understand enterprises and their business models, including key success factors and opportunities to further incentivize them to expand their reach.
- **Support comparative analysis of sanitation marketing models in Cambodia:** A comparative review of the WaterSHED program with other large-scale sanitation marketing programs in Cambodia can help improve practice and guide national decision-making around scale-up and expansion of market-based approaches. A comparative analysis should focus particularly on program cost effectiveness, evidence of reaching the poorest, scalability and sustainability of different program strategies and activities.

References & Annexes

References

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Annex 1: Constraints and Limitations of the Study

The following constraints and challenges were encountered during household survey data collection:

- Lists of latrine adopters collected through the village latrine inventory relied on household recall of Latrine Core chamber box ownership. It was difficult to verify with complete accuracy whether or not a latrine owner was a chamber box adopter, as the underground components of installed latrines were difficult to observe. In 9 of the 31 villages in Kampong Speu, latrine adopter lists were found to be inaccurate. In these villages, the field survey team asked village chiefs to help identify adopters of the Latrine Core chamber box. The use of the village chief as a key informant may have introduced some bias. In a total of 47 cases, further investigation of households listed as chamber box owners using household head recall revealed that they were owners of latrines without chamber boxes. These cases were removed from the final data set and additional surveys were undertaken.
- There was some confusion and difficulty in finding randomly selected respondents due to the use of nicknames and both spouses retaining family names, which are often not captured in village household name lists.
- Households had great difficulty responding to Question 3.8 '*What was the combined household monthly income for the last 12 months?*' and Question 3.10 '*Can you give an estimate of how much you and your family spent on the following last month?*' Enumerators raised concerns that households were not confident about their estimations and/or were not willing to respond accurately (possibly due to fears about taxation or expectations about potential services). For these reasons, household income and expenditure data were not included in the analysis report.
- The survey was conducted at a busy time of the year, during rice planting in the early part of the rainy season. Enumerators had some difficulty arranging a meeting with the head of the household or spouse during village visits. In some cases, enumerators could not arrange a meeting at the house, but rather met the respondent and conducted the interview in the rice field. Rainy conditions also created logistical difficulties such as poor road conditions, which made travel between and within sample villages a challenge.
- Households had difficulty stating whether or not their villages had had a CLTS intervention. Household recall was determined not to be the most accurate means of verifying whether CLTS activities had taken place in a village. Household recall responses to these questions were not used in the final analysis. Instead, WaterSHED field staff cross-checked data from provincial records, village chief recall, and government and NGO data to verify the CLTS history of each sample village. Each of these sources was also found to have reliability issues. The final list of 'CLTS villages' are those that were verified by at least two of the four data sources. Results on CLTS/non-CLTS comparisons will be presented in a separate report.

Annex 2: Household Questionnaire Survey (English)

Water SHED
Water, Sanitation & Hygiene Enterprise Development

USAID
FROM THE AMERICAN PEOPLE

Rural Consumer Sanitation Adoption Study

Household Questionnaire

July 2012

[Respondent must be an adult member of the household, ideally the head of the household or their spouse. Interviewers should spend a few minutes building rapport with the respondent.]

Introduction:

My name is ____________________ and I am working with a local NGO called WaterSHED. We are gathering information about people's knowledge and experience with household sanitation. We do not plan to build any toilets but we want people that build and sell latrines to provide better and less expensive products in your area.

You can ask me to explain anything you don't understand at any time during our conversation, and you are free to end the conversation at any time. All information you provide will be kept confidential, that is, your name or other identification will not be reported along with your answers to the questions.

I want to thank you and say I hope this interview will only take 45 minutes. I want to remind you that all your answers are very important. There are no wrong answers. Therefore, I want to ask you to answer truthfully. This will allow my team to give true information to the WaterSHED and MRD/PDRD to plan for sanitation services for people around the country.

Do you have any questions for me? Can I start asking the questions now?

Please follow the instruction by CHECK (✓) to the relevant block or writing down the answer in the space provided.

EXAMPLE of how to complete this questionnaire:

Your gender?

If you are female:

1. Male	
2. Female	✓

Q#: ☐-☐-☐-☐

I. Location and Identification of Household - All households

1.1 Province: __________________ Code______

1.2 District: ___________________ Code______

1.3 Commune: _________________ Code______

1.4 Village: ____________________ Code______

1.5 CLTS Village

1. Yes	
2. No	
3. Don't know	

1.6 How would you describe the area in which you are residing?

1. Rural	
2. Prochumchun/Tiphsa*	
3. Other __________	

*It means a place residing with high density of households (e.g., market area, has electricity.

1.7 Date: ________/_______/_______

1.8 Interviewer: __________________ Code______

1.9 Supervisor: ___________________ Code______

1.10 Checked by: __________________ Code______

1.11 Does your household own any type of latrine?

1. Yes	
2. No **if No Skip to Q 2.1**	

1.12 Do you own a latrine with a chamber box? [show picture/observe if possible]

1. Yes	
2. No	
3. Don't know	

II. Background information of Household -All households

2.1 (9) What is your name?

2.2 (11) Respondent's sex? *[answer this question by observation only]*

1. Male	
2. Female	

2.3 What is your age?

2.4 (10) What is your relationship to the head of the household?

1. Self	
2. Spouse	
3. Son/daughter	
4. Parents/in-law	
5. Brother/sister/relative	
6. Other	

2.5 (12) What is the sex of the Head of household?

1. Male	
2. Female	

2.6 What is the Head of household's age?

2.7 Does anyone living in this house have a physical or mental disability?

1. Yes	
2. No	

2.8 What is the Head of household's ethnic affiliation?

1. Khmer	
2. Cham	
3. Vietnamese	
4. Laotian	
5. Others:	

2.9 (16) What level of schooling did the head of household achieve?

1. None	
2. Pre-school/ Kindergarten	
3. Some Primary	
4. Finished Primary	
5. Some Secondary	
6. Finished Secondary	
7. Higher	

2.10 What is the size of this household, i.e. the number of people, including yourself, who live in your house/dwelling for at least three months of the year?

Age Range	Working				Total
	Male (n)		Female (n)		
	Yes	**No**	**Yes**	**No**	
< 5 years old					
6 - 15 years old					
16 – 59 years old					
> 60 years old					
Total					

III. Economic background of Household -All households

3.1 (20) What kind of shelter walls does your house have on the main living floor?[*Determine by direct observation if possible*] [*Check one. If more than one wall material is used, choose the material that covers the largest area*]

1. Concrete/brick	
2. Fibrous cement	
3. Galvanized steel	
4. Wood	
5. Palm/Bamboo/Thatch	
6. Bamboo/straw with mud	
7. Stone with mud/cement	
8. Salvaged material	
9. No walls	
10. Other (specify) ________________	

3.2 (21) What kind of roof does your house have? [*Determine by direct observation if possible*] [*Check one. If more than one roof material is used, choose material that covers the largest area*]

1. Concrete	
2. Fibrous cement	
3. Galvanized steel	
4. Wood	
5. Tiles	
6. Palm/Bamboo/Thatch	
7. Plastic sheet	
8. Salvaged material	
9. No roof	
10. Other (specify) ________________	

3.3 (22) Which of the following does your household own? [Prompt by reading the list (multiple answers possible)]

1. Motorbike	
2. Bicycle	
3. Television	
4. Radio	
5. Mobile phone	
6. Cow(s)buffalo	
7. Pig(s)	
8. Ox cart	
9. Semi-tractor	
10. Rice mill /thresher	
11. Generator	
12. Battery	
13. Electric pump for irrigation	
14. Automobile (truck or car)	
15. Other (specify) ________________	

3.4 Has your household been classified by the ID Poor Program?

1. Yes	
2. No **if No Skip to Q 3.6**	

3.5 What is the household ID poor classification? *[Ask to see ID Poor card]*

1. Level 1 (very poor) with card	
2. Level 2 (poor) with card	
3. Level 1 (very poor) without card	
4. Level 2 (poor) without card	
5. Don't know	

3.6 (13) What is the occupation of the head of the household? *[Check all that apply]*

1. Rice/crop farming	
2. Other agricultural activities	
3. Professional/Technical	
4. Factory worker	
5. Day labourer	
6. Civil service	
7. Service/Sales/Commercial	
8. Student	
9. Retired/too old to work	
10. Housewife	
11. Unemployed	
12. Other (specify)	

3.7 What were the two primary sources of your household's cash income of all your family members in the last 12 months? *[Read all options Check only TWO options]*

1. Selling rice	
2. Selling non-rice crop (eg. Fruit, vegetable, cassava...etc.,)	
3. Selling animal/poultry	
4. Fishing	
5. Business/trading	
6. Salary/wage	
7. Remittances from relatives who not living in the household	
8. Gift from others	
9. Other Specify)__________	

3.8 What was the combined household monthly income for the last 12 months? *[including gifts/ remittances from relatives not living in the house-hold]*

1. Amount	
2. Don't know	

3.9 (25) In what months do you have the highest income?

1. January	
2. February	
3. March	
4. April	
5. May	
6. June	
7. July	
8. August	
9. September	
10. October	
11. November	
12. December	
13. All months have same income	
14. Don't know	

3.10 Can you give an estimate of how much you and your family spent on the following last month?

Expense Items	Amount
1. Food	
2. Health	
3. Clothes	
4. Education	
5. Entertainment/Leisure activities	
6. Social expenses e (eg. weddings, funerals, etc.	

3.11 How often does your household save money?

1. Never	
2. Rarely	
3. Daily	
4. Weekly	
5. Monthly	
6. 2-3 times per year	
7. Yearly	
8. Don't know	

3.12 (27) Has your household ever taken a microfinance loan? *[including a group loan]*

1. Yes	
2. No **if No Skip to Q 4.1**	

3.13 (28) If Yes, when was the most recent loan?

1. Last three months	
2. Last six months	
3. A year ago	
4. More than 1 year ago	

3.14 (30) How much is/was the amount of loan?

1. Amount ____________________	
2. Don't know	

3.15 (29) What is/was the loan used for?

1. (Specify) ____________________	
2. Don't know	

IV. Current defecation practice – All households

4.1 (31) Where do adults in your household <u>usually</u> go to defecate?

1. Own household latrine	
2. Neighbor's latrine	
3. Public latrine	
4. Open defecation	
5. Other (specify)__________	

4.2 (34) Where do children in your household usually go to defecate?

1. Own household latrine	
2. Neighbor's latrine	
3. Public latrine	
4. Open defecation	
5. No children	
6. Other (specify)______________	

4.3 (35) In your household, how are babies' feces usually disposed of?

1. No baby	
2. Put into latrine	
3. Put into drain/ditch	
4. Thrown in garbage	
5. Buried	
6. Left in open	
7. Other (specify)______________	

V. Product awareness and preferences – All households

5.1 (36) What types of latrines do you know about? *[DO NOT read options, check all that apply]*

1. Flush/pour-flush	
2. Flush/pour-flush (Specific mention of 'latrine core')	
3. Pit latrine	
4. Composting toilet	
5. Other (specify) ______________	

5.2 (39) What type of latrine do you most prefer for your household? *[DO NOT read options, check only one]*

1. Flush/pour-flush	
2. Flush/pour-flush (Specific mention of 'latrine core')	
3. Pit latrine	
4. Composting toilet	
5. Other (specify) ______________	

5.3 (40) What particular features do you like the most about your preferred latrine? *[DO NOT read options, check all that apply]*

1. Looks good/Comfortable	
2. No smell	
3. No flies	
4. Don't see feces	
5. Easy to clean	
6. Don't need water to flush	
7. Less expensive	
8. Delivered to my house	
9. Not so expensive	
10. Other (specify) ______________	

5.4 (42) What are the disadvantages of owning a latrine? *[DO NOT read options, check all that apply]*

1. Bad smell	
2. Attracts flies	
3. Cost to maintain it	
4. Work to maintain it	
5. Other people come to use it	
6. Affects groundwater quality	
7. Overflows	
8. No disadvantages	
9. Don't know	
10. Other (specify) ______________	

5.5 (43) What are the advantages of owning a latrine? *[DO NOT read options, check all that apply]*

1. Improved hygiene/ health/ cleanliness	
2. More privacy	
3. More comfortable	
4. Convenience/saves time	
5. Improved safety	

6. Improved status/prestige	
7. Guests can use it	
8. No advantages	
9. Don't know	
10. Other (specify) ___________	

5.6 Have you ever seen or heard about this type of latrine? *[Show standard marketing images: hand out of latrine core - underground parts only]*

1. Yes	
2. No	
3. Don't know **if no Skip to Q 5.8**	

5.7 Where have you seen or heard about this latrine type? *[Prompt twice for any other places/sources] [DO NOT read options; check all that apply]*

1. Sales person	
2. Village meeting	
3. Village chief	
4. Commune councilor	
5. Leaflet	
6. Banner at retail location	
7. Product display at retail location	
8. NGO staff	
9. Concrete/latrine producer	
10. Government officer	
11. Neighbor or family member	
12. Other (specify) ___________	

5.8 How much does this type of latrine cost?

1. Amount ___________	
2. Don't know	

5.9 What is different about this latrine type, compared to other latrines you know about? *[DO NOT read options; check all that apply]*

1. Chamber box	
2. Available in the village	
3. Cheaper price	
4. Can be delivered to my house	
5. Can be self-installed	
6. Sold by sales agents in the village	
7. Can pay by installments	
8. Promoted by NGO staff	
9. Better quality	
10. Poorer quality	
11. No differences	
12. Don't know	
13. Other (specify) ___________	

5.10 Do you know an enterprise that sells this latrine in your area?

1. Yes	
2. No **if No Skip to Q 15.16**	

5.11 If yes, what is the name of the enterprise(s) that sells this type of latrine?

1. Name(s):___________	
2. Don't know	

5.12 In addition to selling latrines what other services does the enterprise offer?

1. Advice	
2. Delivery	
3. Installation service	
4. Installment payment	
5. Shelter construction	
6. Other construction products	
7. Other (specify) ___________	
8. Don't know	

5.13 In terms of reliability/trustworthiness, what is your opinion of enterprise(s) selling this type of latrine? *[Read options; select one]*

1. Very reliable	
2. Reliable	
3. Unreliable	
4. Very unreliable	
5. Don't know	

5.14 In terms of access to credit, what is your opinion of enterprise(s) selling this type of latrine? *[Read options; select one]*

1. Very Good	
2. Good	
3. Average	
4. Poor	
5. Very Poor	
6. Don't know	

5.15 In terms of product quality, what is your opinion of enterprise(s) selling this type of latrine? *[Read options; select one]*

1. Very Good	
2. Good	
3. Average	
4. Poor	
5. Very Poor	
6. Don't know	

5.16 If someone in this village has money ready to purchase a latrine, is it possible to purchase this latrine without leaving the village?

1. Yes	
2. No	

IF RESPONDENT DOES NOT OWN A LATRINE → GO TO PART XIV

VI. Latrine owners – Technology Types

6.1 When was the latrine purchased? *[observe]*

1. Less than a month ago	
2. One month – six months ago	
3. Seven months – Twelve months ago	
4. One year – One and half year ago	
5. Before Jan 2011	
6. Don't remember	

6.2 Is the latrine installed? *[observe]*

1. Yes	
2. No	

(Latrine cannot be used) → Go to PART IX

6.3 When was the latrine installed?

1. Less than a month ago	
2. One month – six months ago	
3. Seven months – Twelve months ago	
4. One year – One and half year ago	
5. Before Jan 2011	
6. Don't remember	

6.4 (47) Is the latrine functioning now? *[observe if possible]*

1. Yes **If Yes, Skip to Q6.6**	
2. No	

6.5 (48) If no, why not? *[DO NOT read options; check all that apply]*

1. Dirty	
2. Full	
3. No water to flush	
4. Slab broken	
5. Superstructure broken/missing	
6. Used as storage	
7. Smells bad	
8. Prefer the field/forest	
9. Other (specify)_________________	

6.6 (65) Is this latrine the households first latrine?

1. Yes **If Yes, Skip to Q6.8**	
2. No	
3. Don't know	

6.7 What kind of latrine was your first latrine? *[Picture cards]*

1. Flush/Pour-flush	
2. Dry pit	
3. Other (specify)_________________	

6.8 What kind of latrine is your current latrine? *[Observe if possible/Picture cards]*

1. Flush/Pour-flush	
2. Dry pit	
3. Other (specify)_________________	

6.9 Does the latrine have a box that looks like this? *[Show image of chamber box]*

1. Yes	
2. No	
3. Don't know	

6.10 Does the latrine pit have concrete rings?

1. Yes	
2. No	

6.11 How many concrete rings does the latrine pit have? ______________________________

6.12 How many pits does the latrine have? __________

____

6.13 (59) What kind of shelter walls does the latrine have? *[Check one. If more than one wall material is used, choose material that covers the largest area]*

1. Concrete/brick	
2. Fibrous cement	
3. Galvanized steel	
4. Wood	
5. Thatch	
6. Plastic sheet	
7. Salvaged material	
8. No walls	
9. Other (specify)_________________	

6.14 (60) What kind of shelter roof does the latrine have? *[Check one. If more than one roof material is used, choose material that covers the largest area]*

1. Concrete	
2. Fibrous cement	
3. Galvanized steel	
4. Tiles	
5. Thatch	
6. Plastic sheet	
7. Salvaged material	
8. No roof	
9. Other (specify)_________________	

6.15 (32) How many meters is the latrine from the house? *[Observe]* ______________________meters

VII. Latrine Owners - Costs and Payment – Installed

7.1 How did you come to own your latrine?

1. Paid for it	
2. Some parts provided/subsidized	
3. Given/offered **If Given/offered or existed, Skip to Q8.1**	
4. Existed with the house	
5. Other (specify)__________	

7.2 How much money did the materials to construct the underground part of the latrine cost?

1. Amount ____________________	
2. Received materials for free	
3. Some part provided	
4. Don't know	

7.3 How much money did the labor to construct the underground part of the latrine cost?

1. Amount ____________________	
2. Self-installed /installed for me did not pay	
3. Don't know	

7.4 How much money did the materials to construct the shelter of the latrine cost?

1. Amount _________________________	
2. Received materials for free	
3. Used locally available materials	
4. Don't know	

7.5 How much money did the labor to construct the shelter of the latrine cost?

1. Amount ________________________	
2. Self-installed/ Was installed for me	
3. Don't know	

7.6 How did your family get the money to purchase the latrine?

1. Borrowed from family/friend/neighbor	
2. Borrowed from an MFI or bank	
3. Had money on hand	
4. Money saving for it	
5. Saved money through a savings group	
6. Received it for free	
7. Other (specify)_________________	
8. Don't know	

7.7 How was the latrine paid for?

1. All at once/up-front payment	
2. In TWO installments	
3. In THREE installments	
4. In FOUR installments	
5. In FIVE or more installments	
6. Did not pay anything **If Did not pay anything or Don't know skip to Q8.1**	
7. Don't know	
8. Other (specify)_________________	

7.8 If the latrine was paid for in installments, how many months from the time the latrine was received to the time that it was finished being paying for it?

1. Amount ________________________	
2. Self-installed/ Was installed for me	
3. Don't know	

VIII. Latrine Owners – Satisfaction

8.1 How satisfied are you with the latrine?

1. Very satisfied **If Very satisfied/ Satisfied, Skip to Q8.3**	
2. Satisfied	
3. Unsatisfied	
4. Very unsatisfied	
5. Don't know	
6. Uninstalled **Skip to 8.3**	

8.2 If unsatisfied or very unsatisfied, what is the main reason?

1. Too much water needed	
2. Broken parts	
3. Difficult to install	
4. Difficult to take care	
5. Other (specify) _________________	

8.3 Have you recommended this latrine product to your friends, neighbors or family members?

1. Yes	
2. No	

IF THE LATRINE EXISTED WITH THE HOUSE → GO TO PART XII

8.4 If your household purchased the latrine from an enterprise, how satisfied is the household with the services you received from the enterprise?

1. Very satisfied **If Very satisfied/Satisfied, Skip to Q8.6**	
2. Satisfied	
3. Unsatisfied	
4. Very unsatisfied	
5. Did not pay for latrine	
6. Bought it from a sales agent	
7. Don't know **Skip to Part IX**	

8.5 If unsatisfied or very unsatisfied why?

1. Late delivery	
2. No payment plan	
3. No installation service	
4. Too expensive	
5. Other (specify)_______________	

8.6 Have your household bought any other services or materials besides the latrine from this enterprise?

1. Yes **If Yes, Skip to Q8.8**	
2. No	
3. Don't know	

8.7 If not, would your household consider buying from this enterprise again?

1. Yes	
2. No	
3. Don't know	

8.8 How could the enterprise improve its services? *[DO NOT read options; check all that apply]*

1. Offer installation service	
2. Offer more advice on installation	
3. Offer subsidized materials	
4. Offer installment payment plan	
5. Provide faster delivery	
6. Provide better product quality	
7. No improvement needed	
8. Don't know	
9. Other (specify) ________________	

IX. Latrine Owners – Purchase and Construction Process - Installed and uninstalled

9.1 Who made the final decision to purchase your latrine? — with 'who would'?

1. Head of household	
2. Head of household and spouse jointly	
3. Spouse	
4. Family together	
5. Other (specify) ______________	
6. Don't know	

9.2 What made/influenced your household to decide to purchase and build the latrine at the time you did? *[DO NOT read options; check all that apply]* Prompt 1 time with "any other things that made you decide?"

1. Program was offering subsidy	
2. Someone told me I had to	
3. Had enough money to buy	
4. Sick/old relative	
5. Children become physically mature	
6. Social pressure	
7. Construction of new house	
8. Neighbor got one	
9. Event (wedding/funeral/New Year)	
10. Had visitors from outside village coming	
11. Was available in my village	
12. Price was acceptable	
13. Could be delivered to my house	
14. Could be self-installed	
15. Sales agent visited my home/village	
16. Attended village meeting about sanitation	
17. NGO staff visited my home/village to promote sanitation	
18. Neighbour/ family member recommended	
19. Don't know	
20. Other (specify) ______________	

IF UNINSTALLED SKIP TO PART X

9.3 Did you build the latrine all at one time or in stages?

1. All at once	
2. In stages	
3. Don't know	

9.4 How long did it take to complete building the latrine?

1. Less than 2 weeks	
2. 2 – 4 weeks	
3. 1-6 months	
4. 7-12 months	
5. More than 13 months	
6. Not yet completed	
7. Don't know	

9.5 Did your household hire anybody to install or help to install the underground part of the latrine?

1. Yes	
2. No	
3. Don't know	

9.6 Did your household hire anybody to build or help to build the latrine shelter?

1. Yes	
2. No	
3. Don't know	

X. Latrine Component Purchasers – UNISTALLED (purchased "core" latrine but not yet completed installation - not fit for immediate use)

10.1 Can you tell me why your household has not installed/fully installed the latrine so it can be used? *DO NOT read options; check all that apply]*

1. Waiting for family member to build	
2. Waiting for free time to build	
3. Saving money for concrete shelter	
4. Saving money for a shelter	
5. Saving money to hire labour to install	
6. Other (specify) ________________	
7. Don't know	

10.2 Do your household have all the materials needed for building the latrine?

1. Yes	
2. No	
3. Don't know	

10.3 When were the latrine components first bought?

1. Less than a month ago	
2. One month – six months ago	
3. Seven months – Twelve months ago	
4. One year – One and half year ago	
5. Before Jan 2011	
6. Don't remember	

10.4 Does the latrine have a box that looks like this? *[Show image of chamber box/observe if possible]*

1. Yes	
2. No	
3. Don't know	

10.5 Did you receive free or subsidized materials for the latrine from the government or an organization?

1. Yes	
2. No	
3. Don't know	

10.6 How much money did your household pay for materials for the underground part of the latrine?

1. Amount ____________	
2. Did not pay	
3. Don't know	

10.7 Is the underground part of the latrine installed? *[Observe]*

1. Yes skip to 10.09	
2. No	

10.8 If uninstalled - Would your household pay to have someone install the underground part for you?

1. Yes	
2. No	
3. Don't know	

10.9 How much money did your household pay for materials for the shelter of the latrine?

1. Amount ____________	
2. Will use local materials 1.	
3. Have not purchased yet 2.	
4. Don't know 3.	

10.10 What kind of shelter walls will the latrine have? *[Check one. If more than one wall material is used, choose material that covers the largest area]*

1. Concrete/brick	
2. Fibrous cement	
3. Galvanized steel	
4. Wood	
5. Thatch	
6. Plastic sheet	
7. Salvaged material	
8. No walls	
9. Other (specify) _______________	
10. Don't know	

10.11 What kind of shelter roof will the latrine have? *[Check one. If more than one roof material is used, choose material that covers the largest area]*

1. Concrete	
2. Fibrous cement	
3. Galvanized steel	
4. Tiles	
5. Thatch	
6. Plastic sheet	
7. Salvaged material	
8. No roof	
9. Other (specify)________________	

XI. Latrine Component Purchase Process and Drivers – Installed and uninstalled

11.1 Did your household purchase the latrine through a sales agent?

1. Yes	
2. No **Skip to Q11.10**	
3. Don't know **Skip to Q11.10**	

11.2 How do you know he/she was a sales agent?

1. Village or commune official told me	
2. He/she held a village event	
3. He/she had a banner showing the product	
4. He/she gave out fliers with information about the latrine	
5. He/she gave me receipt for payment	
6. He/she was knowledgeable about the product	
7. Other (specify)_________________	

11.3 Did you know the sales agent who arranged your latrine purchase before you bought the latrine?

1. Yes	
2. No	

11.4 What is the name of the sales agent who arranged your latrine purchase?

1. Name: ______________________	
2. Don't know	

11.5 Do you know if the sales agent has some other job other then selling latrines?

1. Yes	
2. No **Skip to Q11.7**	
3. Don't know **Skip to Q11.7**	

11.6 What is the other job of the sale agent other then selling the latrines? *[Check only one]*

1. Representative of the enterprise	
2. Village chief	
3. Commune official	
4. District official	
5. Provincial official	
6. NGO staff	
7. Neighbor/community member	
8. Don't know	
9. Other (specify)	

11.7 In terms of reliability/trustworthiness, what is your opinion of sales agents promoting this type of latrine?

1. Very Reliable	
2. Reliable	

3. Unreliable	
4. Very unreliable	
5. Don't know	

11.8 In terms of helpfulness what is your opinion of sales agents promoting this type of latrine?

1. Very Good	
2. Good	
3. Average	
4. Poor	
5. Very Poor	
6. Don't know	

11.9 As a source of information/advice about the latrine, what is your opinion of sales agents promoting this type of latrine?

1. Very Good	
2. Good	
3. Average	
4. Poor	
5. Very Poor	
6. Don't know	

11.10 How did your household order the latrine? *[Check only one]*

1. Ordered at village sales event – immediate purchase	
2. Ordered at village sales event – waited for home delivery	
3. Ordered when sales agent came to my house	
4. Called sales agent to order	
5. Called enterprise to order	
6. Ordered from retail location	
7. Ordered through village chief	
8. Don't know	
9. Other (specify) ________________	

11.11 How did your household get the materials for the latrine to your house? *[Check only one]*

1. Enterprise offered home delivery	
2. Picked them up at retail location	
3. Sales agent arranged it	
4. Mason arranged it	
5. Village chief arranged it	
6. Don't know	
7. Other (specify) ________________	

11.12 How much did your household pay for the transport to get the materials to your house?

1. Riel________________________	
2. No transport cost/free transport	
3. Don't know	

11.13 What is the name of the enterprise that sold your household your latrine?

1. Name: ______________	
2. Don't know	

11.14 Why did your household purchase a latrine from this enterprise? *[DO NOT read options; check all that apply]*

1. I met him/her at a village sales event	
2. I met his/her sales agent at a village sales event	
3. I heard about the enterprise from the sales agent	
4. The products looked like good quality	
5. The enterprise offered home delivery	
6. The price was reasonable	
7. The enterprise offered installation	
8. My neighbor/family member recommended	
9. The enterprise offered an installment payment plan	
10. The enterprise has a good reputation/ I could trust the enterprise	
11. Don't know	
12. Other (specify)	

11.15 Do you know of any other products this enterprise offers? *[DO NOT read options; check all that apply]*

1. No/don't know	
2. Rainwater jars	
3. House posts	
4. Bricks	
5. Building materials	
6. Other (specify) ______________	

CONSTRUCTION PROCESS:

11.16 Did your household receive installation instructions on paper with the latrine? *[Show instruction sheet?]*

1. Yes	
2. No **If the latrine not yet in install, skip to part XVII.**	
3. Don't know **If the latrine already install, skip to part XII**	

11.17 Did your household use the installation instructions on paper with the latrine? *[Show instruction sheet?]*

1. Yes	
2. No If no skip Q 11.17	
3. Don't know	

11.18 If the latrine was installed using instruction sheet, how helpful was the instruction sheet to guide the installation process? [

1. Very Good	
2. Good	
3. Average	
4. Poor	
5. Very Poor	
6. Don't know	
7. Someone else installed it	

IF RESPONDENT HAS NOT INSTALLED THEIR LATRINE ➔ GO TO PART XVII

XII. Latrine Owners - Usage, Maintenance and Upgrades - Installed

12.1 (50) In the DRY SEASON, do adults in your household use the latrine for defecation?

1. Always	
2. Sometimes	
3. Never	
4. Don't know	

12.2 (52) In the DRY SEASON, do children in your household use the latrine for defecation?

1. Always	
2. Sometimes	
3. Never	
4. Don't know	

12.3 (51) In the RAINY SEASON, do adults in your household use the latrine for defecation?

1. Always	
2. Sometimes	
3. Never	
4. Don't know	

12.4 (53) In the RAINY SEASON, do children in your household use the latrine for defecation?

1. Always	
2. Sometimes	
3. Never	
4. Don't know	

12.5 (54) Does anybody from neighboring households use your latrine?

1. Yes	
2. No	

12.6 Does your household bathe in the same building as your latrine?

1. Yes	
2. No	

12.7 (62) Does your household use water to flush your latrine? [observe]

1. Yes	
2. No **If No Skip to Q12.9**	

12.8 (64) Do you have enough water to flush the latrine in the dry season?

1. Yes	
2. No	
3. Don't know as have not had it installed long enough	

12.9 What changes/improvements to your household latrine since it was installed? *[DO NOT read options, check all that apply]*

1. None	
2. Replaced connection pipe	
3. Replaced pan	
4. Relocated connection pipe	
5. Replaced broken rings	
6. Replaced broken pit cover	
7. Replaced broken slab	
8. Added another pit	
9. Don't know	
10. Other (specify) __________	

12.10 (76) In the future, do you plan to make changes/ improvements to your latrine?

1. Yes	
2. No **If No Skip to Q13.1**	

12.11 (77) If yes what changes/improvements do you plan to make? *[DO NOT read options, check all that apply]*

1. No	
2. Line the pit	
3. Install a second pit	
4. Add ventilation pipe to pit	
5. Improve the slab	
6. Get pour-flush pan	
7. Build a new shelter or upgrade the existing shelter	
8. Build water storage tank(s)	
9. Build bathing area	
10. Build hand washing area	
11. Move to inside the house	
12. Other (specify) ________________	

XIII. Latrine Owners - Pit emptying – Installed

13.1 (78) Has your household latrine pit ever been emptied?

1. Yes	
2. No **If No/don't know, skip to Q13.5**	
3. Don't know	

13.2 How was your household latrine pit emptied? *[DO NOT read options, check all that apply]*

1. A family member emptied it with a bucket/shovel/hand pump	
2. Hired someone to empty it with a bucket/shovel/hand pump	
3. Hired someone to empty it with a mechanical pump	
4. Don't know	
5. Other (specify) ________________	

13.3 If your household hired someone, how much was this person paid?

Amount ____________________________	

13.4 (79) What did you do with the pit contents? *[DO NOT read options, check all that apply]*

1. Spread on field as fertilizer	
2. Dumped in the forest	
3. Dumped in the river/pond/canal	
4. Empty pit contents into new hole – never unearth to use as fertilizer	
5. Empty pit contents into new hole – unearth in future for fertilizer	
6. Contents were taken away	
7. Other (specify) ________________	

13.5 How long did it will take to fill your pit?

1. ____________________________Years	
2. Don't know	

13.6 How will you empty your pit when it is full? [DO NOT read options, check all that apply]

1. A family member will empty it with a bucket/shovel/hand pump	
2. Hire someone to empty it with a bucket/shovel/hand pump	
3. Hire someone to empty it with a mechanical pump	
4. Don't know	
5. Other (specify) ________________	
6. Contents were taken away	

13.7 How much would you be willing to pay for someone to empty your latrine when it is full?

Riel ____________________________	

13.8 When you empty your pit where will you put the contents? *[DO NOT read options, check all that apply]*

1. Spread on field as fertilizer	
2. Dump in the forest	
3. Dump in the river/pond/canal	
4. Empty pit contents into new hole – never unearth to use as fertilizer	
5. Empty pit contents into new hole – unearth in future for fertilizer	
6. The contents will be taken away	
7. Other (specify) ________________	

➔ NOW GO TO PART XVII

XIV. Non-latrine owners – Satisfaction

14.1 How many meters is your current defecation place from your house?

____________________________meters	

14.2 (33) How satisfied are you with your current defecation place?

1. Very satisfied **If very satisfied/satisfied, skip to Part XV**	
2. Satisfied	
3. Unsatisfied	
4. Very unsatisfied	
5. Don't know	

14.3 If not satisfied with your current defecation place why?

1. Too far	
2. Not convenient	
3. Not safe	
4. Smells	
5. Flies	
6. Dirty	
7. Not proud to be seen there	
8. Other	
9. Don't know	

XV. Non-latrine owners – Purchase Intention

15.1 (89) Has your household ever thought about or discussed building a latrine for your family?

1. Yes	
2. No **If No, Skip to Q15.3**	

15.2 (90) If yes when was the last time your household discussed this?

1. Less than 1 month ago	
2. 1-6 months ago	
3. 7-12 months ago	
4. More than 1 year ago	

15.3 (91) Who in your household would make the final decision to build a latrine?

1. Head	
2. Spouse	
3. Husband and wife jointly	
4. All (joint decision)	
5. Other ___________________	

15.4 If you buy a latrine, what type of latrine will you buy? *[Don't read and Check only one]*

1. Pour-flush with new latrine core	
2. Pour-flush any	
3. Dry pit	
4. Don't know	
5. Would not buy	
6. Other (specify) _______	

15.5 How would your household order a latrine? *[Check only one]*

1. Order at village sales event – immediate purchase	
2. Order at village sales event – waited for home delivery	
3. Order when sales agent comes to my house	
4. Call sales agent to order	
5. Call enterprise to order	
6. Order from retail location	
7. Don't know	
8. Other (specify) ________________	

15.6 Would your household purchase a latrine through a sales agent?

1. Yes	
2. No **If No/Don't know, Skip to Q15.8**	
3. Don't know	
4. Don't know a sales agent	

15.7 What is the name of the sales agent who could arrange your household latrine purchase?

1. Name: ______________________	
2. Don't know	

15.8 Do you know if the sales agent has some other job other than selling latrines?

1. Yes	
2. No **If No/Don't know, Skip to Q15.10**	
3. Don't know	

15.9 What is the other job of the sales agent other than selling latrines? *[DO NOT read options; check only one]*

1. Representative of the enterprise	
2. Village chief	
3. Commune official	
4. District official	
5. Provincial official	
6. NGO staff	
7. Neighbor/community member	
8. Don't know	
9. Other (specify) _______________	

15.10 How would you get the materials for your household's latrine to your house? *[DO NOT read options; check only one]*

1. Enterprise offers home delivery	
2. Pick them up at retail location	
3. Sales agent will arranged it	
4. Mason will arrange it	
5. Don't know	
6. Other (specify) _______________	

15.11 What is the name of the enterprise that your household would purchase the latrine from?

1. Name: ___________________	
2. Don't know	

15.12 Why would your household purchase a latrine from this enterprise? *[DO NOT read options; check all that apply]*

1. I met him/her at a village sales event	
2. I heard about the enterprise from the sales agent	
3. The products looked like good quality	
4. The enterprise offers home delivery	
5. The price is reasonable	
6. The enterprise offers installation	
7. My neighbor/family member recommend	

8. The enterprise offers installment payment plan	
9. The enterprise has a good reputation/ I can trust the enterprise	
10. Don't know	
11. Other (specify) ________________	

15.13 Does this enterprise allow latrine payment in installments?

1. Yes	
2. No	
3. Don't know	

15.14 (92) If your household is interested in having a person/mason build your latrine, has your household identified the mason for the job?

1. Yes	
2. No/Not yet identified **If No, skip to Q15.17**	
3. Will build my own latrine	
4. Don't know	

15.15 (94) Why did you pick this person? [read options, check all that apply]

1. Had hired before	
2. Relative/friend	
3. Has good reputation	
4. Saw and liked a latrine they had built	
5. Least expensive	
6. Other (specify) _______________	

15.16 (95) How did you learn about this person? [read options, check all that apply]

1. Community meeting	
2. Recommended by family	
3. Relative/friend	
4. Recommended by latrine owner	
5. Recommended by village chief	
6. Recommended by someone in village	
7. Recommended by material supplier	
8. Recommended by ring producer	
9. Recommended by NGO/agency	
10. Poster/Advertisement	
11. Radio	
12. Other (specify)__________	

15.17 (98) Have you chosen a site for the latrine?

1. Yes	
2. No	
3. Don't know	

15.18 (99) For example, if I return to your house one year from today, how likely is it that you will have built a latrine at your house?

1. No chance	
2. Low likelihood	
3. Medium likelihood	
4. High likelihood	

15.19 (100) What is the lowest amount that you would need to spend to build an acceptable latrine for your household?

Amount ________________________	

15.20 (101) Do you currently have any money saved towards buying a latrine?

1. Yes	
2. No	

15.21 (102) Would you consider taking a microfinance loan to purchase a latrine?

1. Yes	
2. No	
3. Don't know	

XVI. Non-latrine owners – Purchase Barriers

16.1 What is your households reason for not buying a latrine yet? *[DO NOT read options; check all that apply]*

1. Not enough money/ cannot afford	
2. No one to help build	
3. Do not believe a latrine is necessary	
4. Waiting until harvest/sell something	
5. Cannot afford wet latrine and don't want to build dry latrine	
6. Waiting for subsidy	
7. I am going to build it myself	
8. Other (specify) ________________	

16.2 How could an enterprise make it easier for your household to be able to purchase a latrine? *[DO NOT read options; check all that apply]*

1. Offer installation	
2. Give me advice on how to build	
3. Offer subsidized materials	
4. Offer installment payment plan	
5. Home delivery	
6. Don't know	
7. Other (specify)________________	

16.3 What would convince you to buy a latrine?

1. Low cost	
2. Easy to install	
3. Convenience	
4. Safety	
5. Prestige	
6. Marriage	
7. Other (specify)____________	

XVII. Sources of Information - All

17.1 (160) How often do you travel outside the village?

1. More than once per week	
2. Once per week	
3. 1-2 times per month	
4. Less than once per month	
5. Less than once per year	
6. Rarely	
7. Never	

17.2 (161) In your opinion, would a <u>Mason</u> be able to give trustworthy information about building or purchasing sanitation products? *[Read options; select one]*

1. Very good information source	
2. Acceptable/Average information source	
3. Not a good information source	
4. Don't know	

17.3 (162, 163) In your opinion, would a <u>Concrete ring producer/Shop/seller/Enterprise</u> be able to give trustworthy information about building or purchasing sanitation products? *[Read options; select one]*

1. Very good information source	
2. Acceptable/Average information source	
3. Not a good information source	
4. Don't know	

17.4 In your opinion, would a <u>Sales Agent</u> be able to give trustworthy information about building or purchasing sanitation products? *[Read options; select one]*

1. Very good information source	
2. Acceptable/Average information source	
3. Not a good information source	
4. Don't know	

17.5 (164) In your opinion, would a <u>Government officer</u> be able to give trustworthy information about building or purchasing sanitation products? *[Read options; select one]*

1. Very good information source	
2. Acceptable/Average information source	
3. Not a good information source	
4. Don't know	

17.6 (165) In your opinion, would an <u>NGO worker</u> be able to give trustworthy information about building or purchasing sanitation products? *[Read options; select one]*

1. Very good information source	
2. Acceptable/Average information source	
3. Not a good information source	
4. Don't know	

17.7 In your opinion, would a Village chief be able to give trustworthy information about building or purchasing sanitation products? [Read options; select one]

1. Very good information source	
2. Acceptable/Average information source	
3. Not a good information source	
4. Don't know	

XVIII. Awareness and Recall of Behaviour Change Messages - All

18.1 Have you ever been to a village meeting where latrines were being sold?

1. Yes	
2. No	
3. Don't know	

18.2 Has a sales agent ever visited your home to tell your household about latrines you could purchase?

1. Yes	
2. No	
3. Don't know	

18.3 Has a village chief or another official ever visited your home to tell you about building a latrine?

1. Yes	
2. No	
3. Don't know	

18.4 Have you ever heard or seen messages from your provincial or district government about the need for everyone to have a latrine?

1. Yes	
2. No	
3. Don't know	

18.5 What can you recall that you saw or heard at the meeting or house visit? *[DO NOT read options; check all that apply]*

1. No/don't remember	
2. Brochure/leaflet about latrine	
3. Dog and man poster	
4. I can start with a basic pit latrine and save my money to upgrade to pour-flush	
5. Cambodia is lagging behind	
6. The government says all households should have a latrine	
7. Calculate feces	
8. If I don't have a latrine, I can get sick	
9. Other (specify)	

18.6 Have you seen this picture before? (show picture of dog and man)

1. Yes	
2. No	
3. Don't know	

18.7 Have you seen this picture before? (show picture of "5 f diagram)

1. Yes	

2. No	
3. Don't know	

18.8 Have you seen this picture before? (show picture of faeces calculation)

1. Yes	
2. No	
3. Don't know	

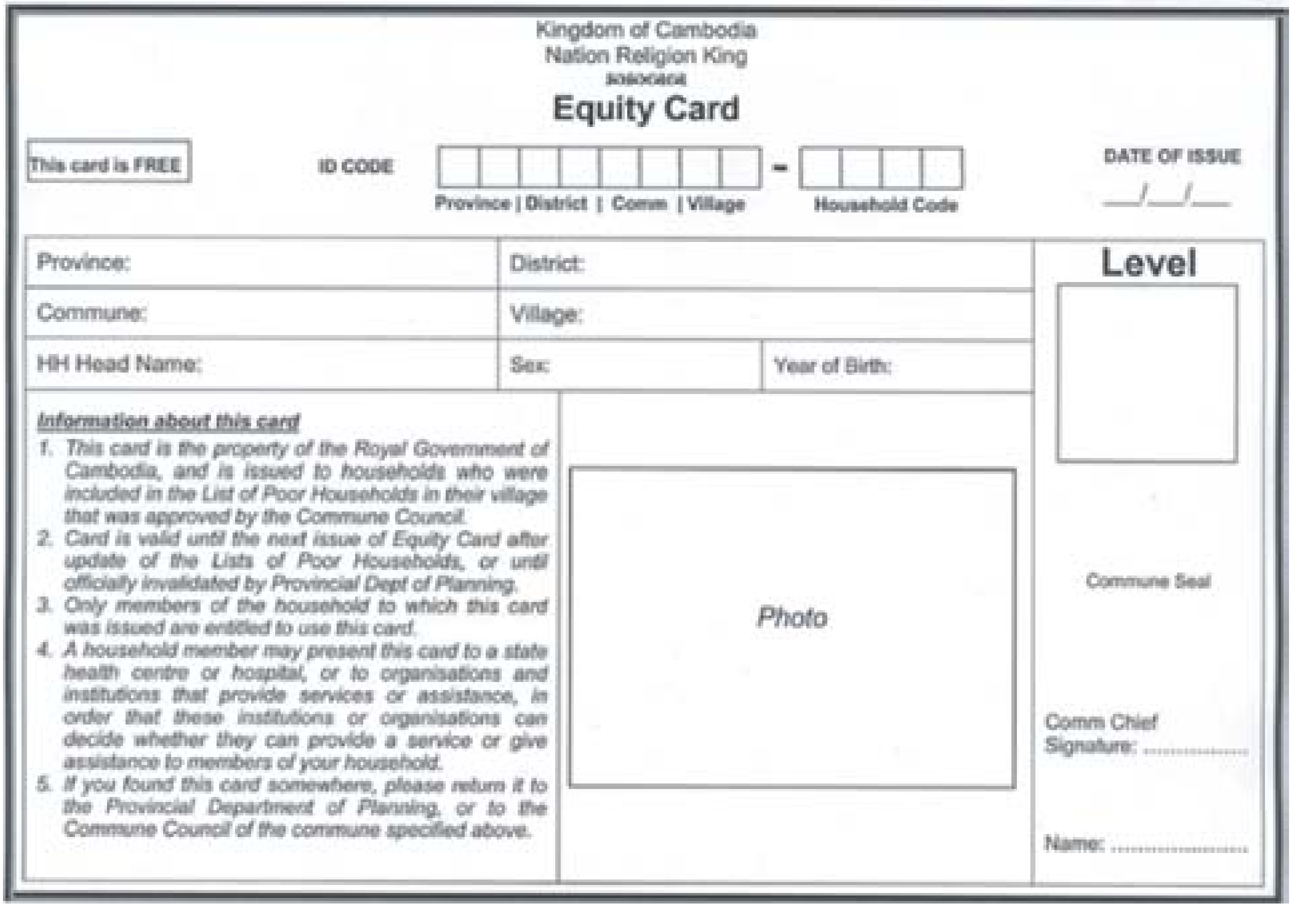
18.9 Have you seen this picture before? (show picture of latrine coverage graph)

1. Yes	
2. No	
3. Don't know	

18.10 Have you seen this picture before? (show the "stop the diarrhea" logo)

1. Yes	
2. No	
3. Don't know	

Annex 3: Images used in Household Surveys



Kingdom of Cambodia
Nation Religion King

Equity Card

This card is FREE

ID CODE [ ][ ][ ][ ][ ][ ][ ][ ] - [ ][ ][ ][ ]
Province | District | Comm | Village — Household Code

DATE OF ISSUE
__/__/__

Province:	District:	Level
Commune:	Village:	
HH Head Name:	Sex: / Year of Birth:	

Information about this card

1. *This card is the property of the Royal Government of Cambodia, and is issued to households who were included in the List of Poor Households in their village that was approved by the Commune Council.*
2. *Card is valid until the next issue of Equity Card after update of the Lists of Poor Households, or until officially invalidated by Provincial Dept of Planning.*
3. *Only members of the household to which this card was issued are entitled to use this card.*
4. *A household member may present this card to a state health centre or hospital, or to organisations and institutions that provide services or assistance, in order that these institutions or organisations can decide whether they can provide a service or give assistance to members of your household.*
5. *If you found this card somewhere, please return it to the Provincial Department of Planning, or to the Commune Council of the commune specified above.*

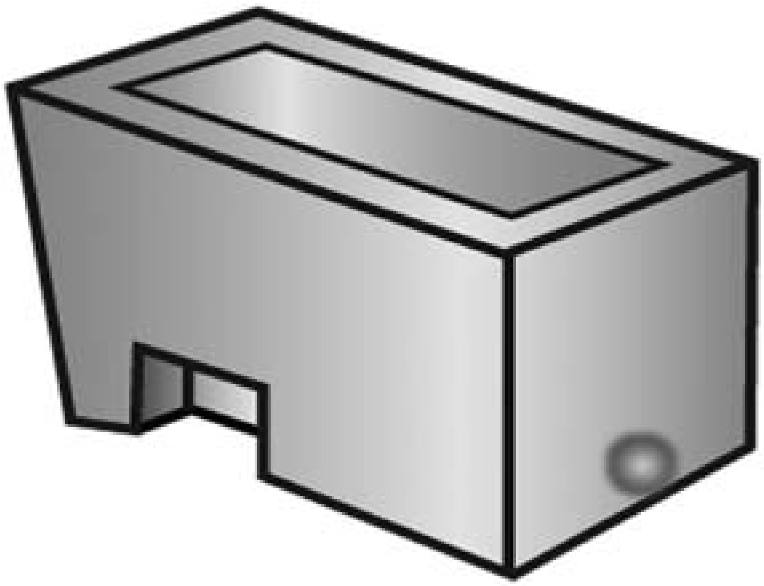
Photo

Commune Seal

Comm Chief
Signature: ....

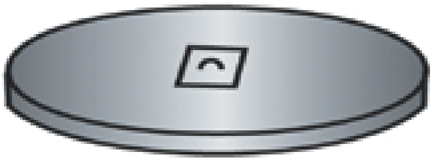
Name: ....

Chamber Box

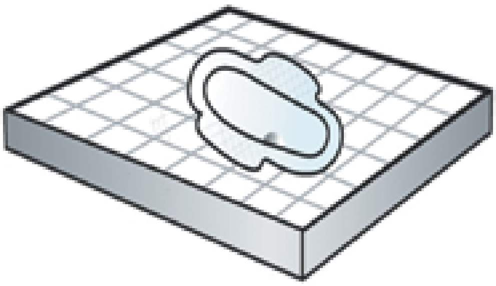


Latrine Tools

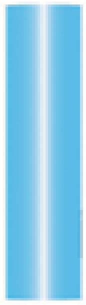
Concrete Ring



Pit cover



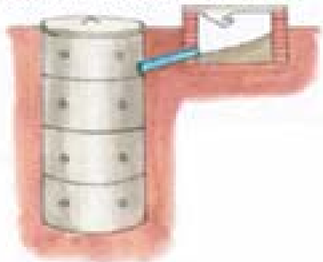
Slab and Pan



Connection Pipe

Type of Latrines

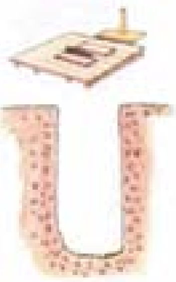
Pour Flush Latrine



Pour Flush Latrine with Chamber Box

Dry Pit Latrine with Lined Pit

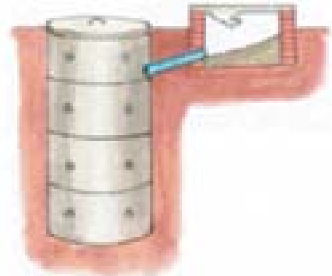
Dry Pit Latrine with unlined Pit



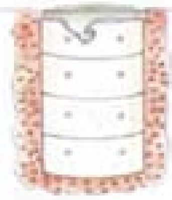
Western style flush Latrine

Type of Pits

Concrete ring lined pit off set

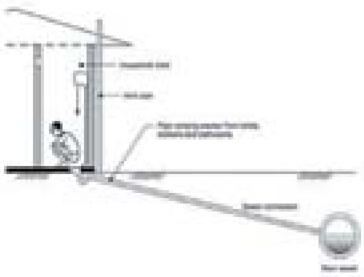


concrete lined pit beneath pan



Unlined Pit

Pipe to sewer connection



Annex 4: Field Team Composition

List of RUPP Fieldwork and data entry Staff

No	Name	Sex	Responsibility	Location	Number
1	Chap Nimol	M	Field Supervisor	Kg Cham	1
2	Heng Sitha	M	Field Supervisor	Kg Speu & Kg Cham	1
3	Chan Narith	M	Field Supervisor	Kg Speu & Kg Cham	1
4	Loeuk Savann	M	Data Entry Supervisor	Kg Speu & Kg Cham	1
5	Mel Phanny	M	Ass. to Data Entry Supervisor	Kg Speu & Kg Cham	1
6	Kem Sarom	M	Data Entry staff	Kg Speu & Kg Cham	1
7	Chea Phanna	M	Data Entry staff	Kg Speu & Kg Cham	1
8	Hok Borin	M	Data Entry staff	Kg Speu & Kg Cham	1
9	Cheng Peng Heak	M	Interviewer	Kg Speu & Kg Cham	1
10	Huy Dalen	F	Interviewer	Kg Speu & Kg Cham	1
11	Lek Maly	F	Interviewer	Kg Speu & Kg Cham	1
12	Soy Kimly	F	Interviewer	Kg Speu & Kg Cham	1
13	Duong Chanthou	F	Interviewer	Kg Speu	1
14	Seng Sokhak	F	Interviewer	Kg Cham	1
15	Long Sori	M	Interviewer	Kg Speu & Kg Cham	1
16	Tep Chansophat	M	Interviewer	Kg Speu & Kg Cham	1
17	Kim Mavirak	M	Interviewer	Kg Speu	1
18	Chet Selavichet	M	Interviewer	Kg Speu & Kg Cham	1
19	Chan Sovanna	M	Interviewer	Kg Speu & Kg Cham	1
				TOTAL	19