CAMBODIA MSME2/BEE

END OF PROJECT REPORT OF THE SANITATION MARKETING PILOT PROJECT.

TASK ORDER NO. 04

SEPTEMBER 2011.

This publication was produced for review by the United States Agency for International Development. It was prepared by iDE Cambodia for the Cambodia MSME project implemented by DAI.

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END OF PROJECT REPORT OF THE SANITATION MARKETING PILOT PROJECT.

CONTRACT NO. EEM-I-00-07-00009-00

TASK ORDER NO. 04

Program Title:	*Strengthening Micro, Small and Medium Enterprises in Cambodia*
Sponsoring USAID Office:	*USAID/Cambodia*
Contract Number:	*EEM-I-00-07-00009-00*
Contractor:	*DAI*
Date of Publication:	*September 20, 2011*
Author:	*iDE Cambodia*

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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Acknowledgements

There have been a number of people and organizations whose contributions have been instrumental to the success of the project. The authors' sincere appreciation goes to the following organizations and individuals.

USAID/Cambodia Micro, Small, and Medium Enterprises (MSME) Project, the Water and Sanitation Program (WSP) of the World Bank, and the Ministry of Rural Development (MRD) for their support.

Lien Aid for their contributions and insights. IDEO, Rainwater Cambodia, WaterSHED, and the World Toilet Organization (WTO) for their collaboration and contributions.

The project staff who brought the project to life: Klann Mab, Om Sopheak, Ou Savoeun, Ros Khemra, Ken Savath, and the field staff in Kandal and Svay Rieng.

The numerous consultants, interns, and supporters for their hard work and dedication: Jeff Chapin, Ben Clouet, Yi Wei, April Warren, Genevieve Kelly, Jon Mohr, and Mai-Anh Hoang.

The village, commune, district, and provincial authorities in Cambodia who have helped support the development of sanitation markets in their communities.

And finally to all the men and women entrepreneurs who have invested their time and money into producing, distributing, and promoting sanitation and latrines in rural Cambodia. You are the success story!

Abbreviations and Acronyms

CLTS	Community Led Total Sanitation
EOP	End-of-Project
HCD	Human Centered Design
iDE	International Development Enterprises
M&E	Monitoring and Evaluation
MRD	Ministry of Rural Development (Cambodia)
MSME	Mirco, Small, and Medium Enterprise Project (USAID/Cambodia)
PAT	Poverty assessment tool
USAID	United States Agency for International Development
WDO	Wholistic Development Organization
WSP	Water and Sanitation Program (World Bank)
WTO	World Toilet Organization

All monetary values have been converted from Riels to USD at an exchange rate of 4,000 Riels=US$1.

1 Executive Summary

The *Sanitation Marketing Pilot Project* was funded and technically supported by the USAID Cambodia MSME Project and the Water and Sanitation Program (WSP) of the World Bank and was implemented by iDE Cambodia. The project was designed to address the urgent need for improved sanitation in rural Cambodia by working through and strengthening existing market channels in Kandal and Svay Rieng provinces.

Uptake of improved sanitation facilities by poor rural households in Cambodia has been slow. Prior to the start of this project, Cambodia had achieved approximately 23% rural sanitation coverage (2008 census) towards the Millennium Development Goal (MDG) of 30% coverage by 2015. These are among the lowest rates of latrine coverage and the lowest targets for improvement in the SE Asia region and globally.

Research conducted in preparation for this project indicated a latent demand for latrines among households and that about 80% of the latrines that had already been installed in the country had been purchased by individual households directly from private sector suppliers. Clearly, private sector actors were already active in addressing the demand for latrines to some degree. At the same time, a history of well-meaning subsidies had depressed the demand for latrines and stymied the growth of private sanitation markets.

To address this situation, the project aimed to improve the affordability, accessibility, and attractiveness of latrine options available to rural households through the market; to build household demand for latrine purchases through social marketing; and to demonstrate to private enterprises that they could profit from creating demand for and supplying sanitation products and services to rural households.

Prior to this project, limited latrine options and the many steps in purchasing and installing a latrine posed significant barriers to uptake. To address this constraint, the project designed an affordable (US$35), upgradable, and desirable latrine model that could be sold at a profit by rural businesses.

Along with the latrine design, the integrated sanitation marketing project combined i) village-level promotional activities and mass media campaigns to generate demand for sanitary latrines, ii) training and support for latrine producers to ensure adequate supply of sanitation products and services, and iii) collaboration with authorities at all levels to promote an enabling environment that would support private sector initiatives to achieve sanitation goals.

After a 12-month preparation phase and 16 months of active promotional activity, a total of 15,379 latrines were purchased by rural households in Kandal and Svay Rieng (net additional latrines above the background rate of latrine installations) and 12,309 of these had been installed by the end of the project. In total, the latrines sold during the project period represented a 300% increase above the background rate of latrine sales. Approximately 20% of the new latrines purchased during the project

period were purchased without subsidy by households classified as poor or very poor (compared with 29.4% poor and very poor in the general population).

The project has demonstrated that rural households, even poor households, are willing and able to purchase latrines that are affordable, accessible, and aspirational. Furthermore, private enterprises have been willing to invest their own resources to develop local sanitation markets. This report summarizes key lessons to support the design and implementation of future sanitation marketing projects in Cambodia and beyond.

2 Lessons Learned

In implementation of "The Sanitation Marketing Pilot Project," we gained important lessons on how to stimulate both demand and supply for sanitation. In this section, we summarize key lessons in the hope that they will inform the design, implementation, and cost-effectiveness of future sanitation marketing projects.

1. Product innovations stimulate both supply and demand

Prior to this project, limited latrine options and the many steps in purchasing and installing a latrine posed significant barriers to scaling up the latrine market. Prior to Easy Latrine, consumers had to buy individual pieces of a latrine and then assemble. Easy Latrine—as a one-stop packaged product—offered both consumers and suppliers a quality low-cost product that was convenient. These new design features proved mutually beneficial for both entrepreneurs and consumers and catalyzed both supply and demand.

Easy Latrine added features and characteristics that were previously unavailable: lighter components that were easier to transport and install; a pre-cast chamber that made installation easier and did not require a mason; new concrete mix and production methods that helped producers increase their capacity; packaged components available at one purchase location (i.e. one-stop-shop); lower cost; and a brand identity ("Easy Latrine") that made the product easy to talk about and market via word-of-mouth.

Although Easy Latrine offered new design features that appealed to many people, it was not envisioned as the only latrine option or the best option for every potential market segment. Instead, it is an example of how product innovations can "stir up" the market. Moreover, it demonstrates that even a humble toilet could be actively promoted as an aspirational product.

2. Businesses will create demand once they see profits are possible

The market share captured by Easy Latrine, stimulated more innovation in the supply chain. Concrete producers, seeing that new product design features captured consumer's dollars, began making their own improvements to the production process and promoting different combinations of latrine components to respond to their clients' needs and competition.

3. Consumers will buy latrines if the product, price, and timing are right

Consumers will shy away from purchasing latrines if they feel that the latrines are unaffordable, not convenient to purchase, and of poor quality. To motivate consumers to buy, it's important to remove purchase barriers and to make the purchase of a latrine as easy as possible. When consumers have a quality product, at a price they can afford, at a time when have money to buy, and that is convenient to purchase, people will have less excuse not to buy and more reasons to buy.

4. Developing sanitation markets needs to be an iterative process

Market-based initiatives should approach implementation the same way businesses operate. That is, by taking the best information available to create and test strategies, continuously listening to the marketplace and stakeholders to see what is working and what isn't: Test, Listen, Revise, and Repeat. The strategies for supply chain strengthening and promotion in this project evolved continuously in response to information from the field and from other sanitation marketing projects in Cambodia and internationally. Sanitation marketing, like any market facilitation approach, would not work well with "blueprint" implementation planning.

5. Sanitation markets benefit from active government support but need not depend on it

The project areas had different levels of government engagement. In Svay Rieng, government authorities at all levels were very engaged. In Kandal, although government authorities were supportive, there was little active engagement. This lack of government engagement may have contributed to lower sales in Kandal. However, the project did not depend on government involvement for any critical activities; therefore, we leveraged strong government support where it existed, but did not rely on it entirely for scaling up the latrine market.

Engagement of Sales Agents need not be limited to government support and participation. Some project partners have been creative with whom they recruited to be commissioned Sales Agents. For example, one partner has engaged a monk to sell latrines and the commissions go to the pagoda. A lesson learned is that project partners should actively seek out and recruit as Sales Agents members of the community who are held in high regard.

6. Enterprises need to have their own money at stake

Risk is important for creating motivation and sustainability. Enterprises need to invest their own money into the business, without support from a project, as financial risk is a strong motivator for success. In the beginning, it may be necessary to lessen that risk in order to demonstrate market potential (as the project did by providing a guarantee to the first two partner producers), but this should ever only be a stop-gap measure.

Moreover, the project learned the importance of limiting in-kind support, such as training and mentorship. In the beginning of the pilot, latrine producers who were provided with training were not given an end date. As a result, some entrepreneurs received mentorship for six months or more. This led to some latrine producers becoming dependent on project staff and feeling less self-motivated.

We learned that to motivate entrepreneurs, they needed a "graduation" date. The staff determined that three months of training and mentorship was sufficient. We communicated this limited duration of training and mentorship to new latrine producers from the beginning so they could determine if they wanted to go forward with the program. For a business to be truly sustainable they need to self-motivated and independent of NGO support – financial risk and a limited period of training and mentorship were strategies to motivate self-reliance and sustainability.

7. Competition is critical

Central to the market-based approach is the need to encourage competition, which drives innovation in quality and efficiency and creates urgency for growth:

- *Quality*. Consumers exhibited a concern for quality when purchasing latrines, for instance, by refusing chipped or cracked concrete rings. Latrine producers in the project responded by replacing cracked rings and taking care to reduce ring damage during transport. If a latrine producer's products did not meet the expectations of customers, the information would spread by word-of-mouth. When customers have no alternatives (i.e., no competition in the marketplace), enterprises have less incentive to meet the needs of customers, only doing the minimum required.

- *Price.* Customers want to pay the lowest price possible and enterprises want to charge the highest price possible. To reach the largest number of households, particularly the rural poor, it is important that price remains as low as possible. Competition brings prices down as customers have more alternatives to choose between and the fear of losing a sale to a competitor drives down prices. Increased competition also reduces the risk of price fixing and collusion that arises in monopolistic or oligopolistic market environments.

- *Active demand creation*. In a competitive environment enterprises are motivated to proactively promote their products. If they don't go after the given market, someone else will. The project established 16 latrine producers and a number of copycats emerged creating a degree of competition in the project areas. Many of the latrine producers expanded their service range into new geographic areas where there were no other producers. These producers determined that it was less costly to expand than to compete aggressively in their local areas. This is one reason that much of the growth in sales came through expansion to new districts rather than deeper penetration in each district (average penetration in the project areas during the project period was 8%).

8. Seeing is believing

Once the viability of the latrine production business model was demonstrated with two initial enterprises, other enterprises were willing to look seriously at sanitation markets and some actively sought out training from the project. Establishing proof of concept for the business model is a critical initial step in encouraging entrepreneurs to begin inventing in sanitation.

9. The ability to maintain sufficient stock and transport goods upon demand is a key determinant of success for latrine producers

Demand creation activities in combination with the introduction of Easy Latrine design resulted in demand that quickly outstripped supply. The purchase priorities of poor rural households can quickly change due to the nature of their cash flow—typically characterized as small, irregular, and unpredictable. For this reason, when a household made a decision to purchase a latrine, the latrine

provider needed to deliver the product as soon as possible. A delay of even a few days often resulted in a household changing their minds and deciding not to purchase, even if they had already put down a US$2.50 deposit.

Good stock management proved profitable for enterprises. The advantages of keeping higher levels of stock were communicated to enterprises. Initially, enterprises resisted, but as competition increased and enterprises without stock available lost sales to enterprises with stock, motivation to keep greater levels of stock increased. The most successful project partners always had latrines in stock and access to transportation so they could supply demand as quickly as they created it. Initially, the project recommended that producers have 30 latrines in stock before commencing their first sales, but even 30 latrines in stock turned out to be insufficient during peak sales seasons.

Part of the resistance to increase stock was a lack of cash flow. Cash quickly gets tied up in stock with the concrete requiring 10 days of curing time before it can be sold. This made investments in higher levels of stock challenging for some enterprises. There is a need for supply chain financing options, like a line of credit, that would allow enterprises to make greater investments in stock.

In addition to stock as a bottleneck, a latrine producer is limited to how many latrines they can deliver in one trip by the size of their transport vehicle. For example, a latrine producer with a simple motorcycle cart can only deliver one latrine at a time, a small truck can deliver four, and a large truck 10 to 12 latrines.

10. Enterprises can undertake sanitation promotion activities but this does not eliminate the need for public-sector promotion of sanitation

Consumer education by concrete producers, Sales Agents, and other suppliers was largely limited to promotional-type messaging necessary to sell a latrine. To this end, many enterprises incorporated health and hygiene related messages in their promotions. However, some important messages—correct distance from water sources, proper and consistent latrine use, safe pit emptying, and hand washing—that have less of a direct influence on a latrine purchase tended not to be discussed with prospective consumers. There is little financial incentive for a Sales Agent to encourage a household to safely empty their existing latrine pit as it does not motivate a latrine sale. The market is not yet at the stage where it will promote “pubic good” messages. Thus, there is still a need for additional sanitation education by government and NGOs.

The practice of recruiting government officials as Sales Agents raises an interesting question. Is it a conflict of interest for government officials (mostly village and commune leaders) to use their position and influence to earn commissions from the sale of latrines when the promotion of public good should be part of their existing responsibilities? In theory, under the framework of the Cambodian Millennium Development Goals, the government has a responsibility to promote improved sanitation although, in practice, there are few resources devoted to this task and it is not clear if it is part of the official job description of government officials at all levels. In this context, the relationship between government officials and latrine producers could be viewed as a public-private partnership that helps the government achieve objectives that would otherwise not be addressed.

11. Sanitation marketing on its own is not an effective approach for achieving rapid open defecation free (ODF) status

After 16 months of implementation, no villages in the target area achieved ODF status through the purchase and installation of latrines. Although the project demonstrated that market-based latrine promotion does reach some poor households, even the most effective market system will not be able to meet the needs of all households, especially extremely poor households. Private enterprises can only be expected to promote sanitation adoption to the extent that it is profitable for them to do so. As the marginal cost of making the next sale becomes too high, they will naturally seek opportunities in less costly regions, market segments, or products.

Since private enterprises are unlikely to invest resources to reach every household in a village, the ability of the Sanitation Marketing approach *alone* to help communities reach Open Defecation Free (ODF) status has limitations. This fact should be acknowledged and accepted in order to focus on the private sector's comparative advantage, i.e., efficiently reaching the market segments that can be addressed profitably. To make an analogy: in a burning building, the private sector is the rescuer running down the halls banging on doors to get as many people out as possible. The painstaking job of room-by-room clearing is better handled by publicly-funded organizations with different incentives. But the more successful the private sector has been, the easier room-clearing task will be.

The largest public health benefit, however, occurs when virtually all sources of fecal contamination are eliminated. Since the ultimate goal is that everyone has a latrine, it is less important who gets one first. And it is economically more efficient to create circumstance where those who can afford to pay, do pay. This is where the sanitation marketing approach adds value.

3 Project Implementation

3.1 Project Background

Uptake of improved sanitation facilities by poor rural households in Cambodia has been slow. Prior to the start of this project, Cambodia had achieved approximately 23% rural sanitation coverage (2008 census) towards the Millennium Development Goal (MDG) of 30% coverage by 2015. These are among the lowest rates of latrine coverage and the lowest targets for improvement in the SE Asia region and globally.

Research conducted in preparation for this project indicated a latent demand for latrines among households and that about 80% of the latrines that had already been installed in the country had been purchased by individual households directly from private sector suppliers.[1] Clearly, private sector actors were already active in addressing the demand for latrines to some degree. At the same time, a history of well-meaning subsidies had depressed the demand for latrines, stymied the growth of private sanitation markets, and resulted in latrines that were often not used or maintained.

The 77% of the rural population that still needed a latrine represented a great market opportunity, but the mismatch between products and services offered by existing enterprises and the needs, wants, and desires of households resulted in a failure of the market to capitalize on this opportunity.

To address this situation, USAID/Cambodia Micro, Small, and Medium Enterprise Project (MSME) and the Water and Sanitation Program (WSP) of the World Bank jointly funded the Sanitation Marketing Pilot Project. The pilot project was implemented by iDE Cambodia in three districts in Kandal province (Kandal Steung, S'ang, and Koh Thom) and three districts in Svay Rieng province (Svay Chrum, Rumdoul, and Romeas Heak).

Image 1: Location of pilot project provinces

The project aimed to improve the affordability, accessibility, and attractiveness of latrine options available to rural households through the market; to build household demand for latrine purchases through social marketing; and to demonstrate to private enterprises that they could profit from creating demand for and supplying sanitation products and services to rural households.

The pilot project was implemented in two phases: i) the project and latrine design phase and ii) the implementation phase.

[1] Salter D, et al., 2008. *Sanitation Demand and Supply in Cambodia: Field Note*. Washington, Water and Sanitation Program, World Bank.

Phase 1: Project and Latrine Design

Image 2: Photo of the Easy Latrine

Latrine affordability and accessibility in the marketplace were identified as one of the biggest barriers to increased latrine adoption by households. Part of the first phase of the project was a 9-month design process (Jan to Sep 2009) aimed at developing an affordable, upgradable, and desirable latrine model that could be sold at a profit by rural businesses. The project applied the Human Centered Design (HCD) approach—an approach that develops a deep understanding of the user and the supply chain as the basis for developing, prototyping, testing, and refining design options—to develop a latrine design for Cambodia's market. The result was a US$35 pour-flush latrine that was branded as the 'Easy Latrine'. Designed to be produced and sold by local enterprises, the basic Easy Latrine kit includes three concrete rings, a pit lid, a collection chamber, a slab with integrated ceramic pan, a PVC drain pipe, a bag of mortar to seal the drain pipe joints, and illustrated installation instructions. A shelter (not part of the kit) can be constructed of simple thatch or more expensive materials depending on the owner's budget. The Easy Latrine can be self-installed and responds to the needs of rural households by being aspirational (pour flush, offset pit), accessible (home delivery, packaged product), and affordable. The Easy Latrine was recognized by the international design community as an innovative design response to a pressing social need.[2] Annex A contains a more detailed description of the Easy Latrine.

In addition to the design challenge, the first phase the project included designing the project strategy and implementation plan. To develop the project strategy the project t drew upon experience from other countries in the region, particularly Vietnam where, in 2003, iDE had developed a successful sanitation marketing approach. The project strategy for The Sanitation Marketing Pilot Project was completed in July 2009 and comprised of a marketing, supply chain, and monitory and evaluation (M&E) strategy. From July to December 2009 the project tested and refined strategies in the field on a small scale before launching full scale in January 2010. Insights from

Box 1: Human Centered Design

The usefulness of the HCD process—with its focus on careful listening and iterative testing of ideas—extended beyond the design of sanitation products to the design and implementation of entire sanitation marketing project. The HCD approach was used to generate insights and to prototype strategies for social marketing, supply chain strengthening and stakeholder engagement.

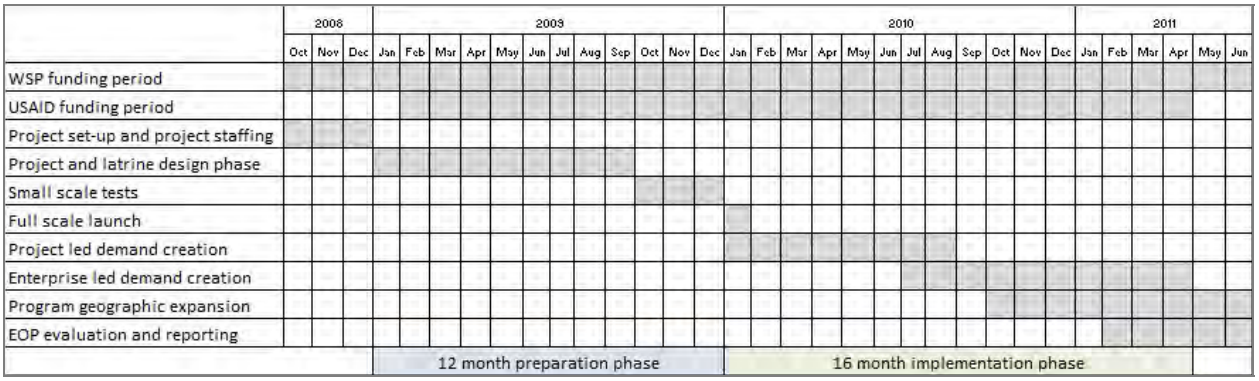
[2] The Easy Latrine received one of only three "Best in Show" awards out of more than 1,900 entrants in the 2010 International Design Excellence Awards. The Easy Latrine also took second place in the IDEAKEN International Sanitation Innovation Contest and was a finalist in the 2011 INDEX:Award.

the testing period are discussed in more detail in the following section on implementation.

Phase II: Implementation

The 16-month implementation phase focused on building capacity of the enterprises in the sanitation supply chain and stimulating household demand for latrines.

Figure 1: Project timeline



3.2 Project Iterations: Improving Supply and Building Demand

The WSP-funded, Supply and Demand Assessment, and the latrine design research found that the existing rural sanitation supply chain consisted primarily of masons, concrete producers, and building supply shops. For these small enterprises, latrine materials and services typically accounted for a small percentage of their overall business. Very little communication existed between enterprises comprising the supply chain. Moreover, many exhibited a passive sales approach and lacked the capacity to innovate or differentiate in terms of quality, new products, service or financing. These supply chain weaknesses resulted in latrine materials and services sold at 'low volume, high margin' making latrines expensive, time consuming to purchase, and difficult to install.

Demand side constraints included making sanitation a priority and overcoming the preference for a costly latrine through having a more affordable, aspirational, and accessible toilet product. Through the HCD process extensive user research was done to determine desirability, feasibility, and viability. It was determined that people knew and cared the least about the underground 'plumbing': they only cared that the latrine used water and was concrete. In contrast, preferences regarding the shelter abounded. The shelter can be highly customized, depending on the tastes and financial means of the household. By focusing the latrine design on the core components, the Easy Latrine standardized the most desirable type of latrine: underground, pour flush, off-set pit. The household then has the flexibility to build a shelter according to their specific preferences (e.g. material, size, and color) and budget.

To stimulate markets for sanitation, there were three main challenges the project faced in order to address the demand and supply mismatch:

1) Make sanitation products affordable, accessible, and aspirational for rural households.

2) Make sanitation a greater purchase priority in the minds of rural households.
3) Convince enterprises that latrine sales could be a big business opportunity and that they should invest their own resources.

The Easy Latrine design played a role in addressing each of these challenges. To make sanitation both affordable and accessible to rural households and an attractive business opportunity for enterprises, modifications to the existing supply chain and business model were needed:

- *'One-stop-shop'*. Selling a branded product with all parts packaged and available at one shop made latrines convenient and accessible to consumers and gave enterprises a distinctive product to sell. With the Easy Latrine, enterprises were no longer selling mere product components but a complete, ready-to-install product. Oftentimes, the Easy Latrine is sold in villages and delivered to the household. Latrine producers have the option of offering installation for a fee. However, as the Easy Latrine is an easy, self-install product, households may not opt for paid installation.

  Concrete producers were identified as the optimal enterprises to engage in manufacturing and selling the Easy Latrine as they were already manufacturing the majority of the components and had the technical skills, facilities, and resources.

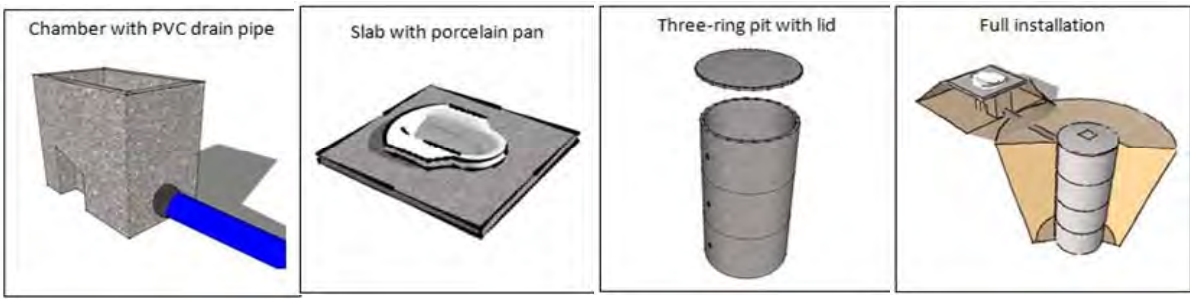


Image 3: Easy Latrine core components

- *'High volume, low margin'*: Low margins would help make latrines affordable for households. In order for latrines to be a profitable business opportunity at low margins, enterprises would need to sell high volumes. To sell high volumes, enterprises would need to do more actives sales and promotion (home deliveries, offering installation services, using marketing materials, hiring Sales Agents, work with local government to create awareness campaigns, etc). To garner high volume sales and capture economies of scale, enterprises also needed to increase their production capacity.

3.2.1 Testing business and value chain models

Prior to the project, sanitation had never been viewed as a profitable business in Cambodia. Therefore, the third challenge was encouraging enterprises (concrete producers) to invest in and actively take up the sanitation business opportunity. Demand for sanitation and the Easy Latrine was unproven and to begin manufacturing and selling the Easy Latrine enterprises would need to invest US$400 for

manufacturing equipment and a minimum of US$750 for a stock of 30 latrines. When first approached with this opportunity only two concrete producers were willing to take the risk and make this investment with a guarantee that the project would repay their investment if it did not work out.

Starting with these first two concrete producers in July 2009, one in Svay Rieng and one in Kandal, the project began testing manufacturing techniques, business models, as well as sales and marketing tactics. These tests demonstrated notable success and proof of concept to prospective enterprises. Therefore by the end of January 2010, the project was able to engage a total of three concrete producers in Kandal and four in Svay Rieng. After the first two concrete producers, the project did not need to extend any more guarantees.

3.2.2 Easy Latrine sales and marketing

To build the capacity of the engaged concrete producers, the project offered training in manufacturing, sanitation and latrine construction, and sales and marketing. It quickly became obvious that manufacturing latrines would not be the main challenge for the enterprises—the challenge was sales and promotion. The original strategy was to have the concrete producers pursue latrine sales and continue promotional activities after project staff held a sanitation promotional event in targeted villages. However, the owners and employees of these enterprises did not prove to have the skills or time to do active village level latrine promotion so demand creation was initially led by the project staff.

Based on lessons learned from the testing period the project revised the social marketing strategies and tools in January 2010. The project launched at full scale the 'Have Latrine, Have Good Life' social marketing campaign. The social marketing messages and materials developed were based on multiple sources of research—WSP assessment and demand study, project baseline survey, Easy Latrine design process, and through market testing with the target audience through all stages of creative development.

Box 2: Sales Agents

A sales agent is an individual that is selected by the latrine producer to promote and sell latrines in the communities that the latrine producer sells in. Typically, they are compensated through a commission on each latrine sold. The commission amount is negotiated between the sales agent and the latrine producer (typically between $1 and $2.5). The sales agent agrees to market in an assigned a geographic area.

In June 2010—based on an idea first tested by Lien Aid[3]—the project began encouraging and training latrine producers to establish a network of commissioned Sales Agents in surrounding villages to generate latrine demand and drive sales. The use of Sales Agents was subsequently scaled up for implementation in all project areas in September 2010.

[3] Lien Aid is a Singapore-based NGO that received support from the USAID-funded WaterSHED project to implement a sanitation marketing project in Kampong Speu province. The Lien Aid project is based on the sanitation marketing approach developed by iDE in Vietnam in 2003 and introduced into Cambodia through the Sanitation Marketing Pilot Project in 2009. Project staff shared information and experience with Lien Aid to support the start-up and implementation of their activities through: access to project research; participation in regular steering group meetings; and participation in the Human Centered Design process; among others. Lien Aid successfully adapted the approach and made significant contributions to its ongoing improvement. This has been a good example of inter-agency cooperation.

Before project implementation in a village, project staff would organize a government workshop that brought together local government officials and latrine producers. The aim of the workshop was to build government support for the project and to share information about the planned project activities with village chiefs and/or commune council members. These meetings also helped latrine producers in identifying potential Sales Agents. In some communities, government staff was identified as having the right characteristics for being Sales Agents, but this was not always the case.

To kick-off sanitation promotion in a village, sanitation promotion events would be held in each village. A sanitation promotion event is a village meeting where villagers are engaged in sanitation behavior change/social marketing activities and discussions that focus on encouraging latrine adoption. At the end of this meeting the Easy Latrine is shown and available for purchase.

Initially project staff aided Sales Agents by coordinating village sanitation promotion events. However, Sales Agents quickly saw the benefit of using village sanitation promotion events and sanitation social marketing materials as sales tools and asked the project staff to teach them how to conduct the events and use the social marketing materials themselves. With these new skills they could market latrines anywhere, anytime, without needing to connect with project events or be limited to the geographical scope of the project area.

Starting in December 2010, project staff no longer conducted any village level sanitation promotion themselves. Instead, Sales Agents were taught to use the social marketing materials and messaging from the campaign 'Have Latrine, Have Good Life'. Enterprises and their Sales Agents were both creating and supplying the demand for latrines using sanitation promotion events and social marketing materials as tools to motivate latrine purchases. Field staff served as market facilitators, providing training to interested concrete producers and Sales Agents in sanitation, latrine construction, business and sales management, government relations, and sales and marketing.

3.3 Market Development

3.3.1 A changing marketplace for sanitation

The process of engaging concrete producers has evolved during the course of the project. Initially, the project had to approach and sell enterprises on the concept of sanitation as a profitable business opportunity. Engagement of new concrete producers became easier over time. Eventually, enterprises started approaching the project for training. And, in some instances, concrete producers took up the opportunity themselves without engaging with the project at all. They had observed what other enterprises were doing, realized the opportunity, and figured out how to copy production methods (including reverse engineering of the catchment box) and other aspects of the business model such as offering home delivery and using Sales Agents.

Project staff learned about these copycat enterprises through villagers, government officials, and enterprises directly engaged by the project. When project staff met with the copycat enterprises they expressed an interest in manufacturing training to improve their product quality. In exchange for this training (which was an abbreviated version of the training provided to the original partner enterprises) the copycat enterprises agreed to provide the project with weekly sales data. To date there are 16 ”project partner” enterprises that are selling the branded Easy Latrine design and have received formal training from the project and 8 copycat enterprises that are selling the Easy Latrine design and have received short training from the project.

Box 3: Business principles that foster business viability

The project applied the following business principles in support of business viability.

- Use the private sector as the primary channel for delivering latrines;
- Use aspirational motivators and social pressure (“better life”, “keeping up with the Joneses”) to encourage latrine uptake instead of focusing on health benefits alone;
- Leverage public-private partnerships where government support exists but do not entirely depend on active government support for reaching scale;
- Mobilize the financial resources of households and enterprises to reach larger scale;
- Apply world-class product design to develop latrine options that are attractive to both consumers and supply chain enterprises; and,
- Encourage competition to keep prices low, quality high, and to spur urgency in reaching large numbers of rural households in short timeframes.

3.3.2 Competition and geographic spread

Initially, the project partner enterprises had no geographic overlap in the area they serviced. As more enterprises entered the marketplace and as the success of their latrine businesses took off, the enterprises became more ambitious and expanded into new areas to capture more early adopters. The enterprises’ service areas began to overlap, which created a more competitive environment. Neighboring latrine producers began selling in the same geographic area; and, in some cases, in the same villages. Competition between Easy Latrine branded enterprises, copycat enterprises selling the Easy Latrine design, and enterprises selling traditional latrine models created a dynamic marketplace which increased quality, kept prices competitive, and spurred more active sales and promotion driven by urgency to capture market share. Maps in Annex C illustrate latrine sales by village and by producer, which shows the average radius of latrine producer service areas and the geographic overlap of producers service areas.

3.4 Study Sites and Regional Differences

The two target provinces are in distinctly different regions of the country and their environmental, political, and demographic differences provided opportunities for learning.

- Kandal province surrounds the country's capital city of Phnom Penh. The province is relatively urban, characterized by higher population density, good access to markets, good water resources, favorable road conditions, multiple income earners in one household, greater household wealth, and baseline latrine coverage of 40%.[4]

- Svay Rieng is a rural province situated in the southeast of Cambodia along the Vietnamese border. It is one of the poorest provinces with low population density, poor market access and unfavorable road conditions. A large majority of the population are subsistence farmers. The baseline latrine coverage was 18%.

Given the greater discretionary income, access to markets, and population density, it was our initial hypothesis that Kandal would have the greater latrine sales and sanitation market development than Svay Rieng.

3.5 Enhancing the Supply Side: Product Marketing Activities

The Easy Latrine is an off-set soaking pit latrine with a pour-flush squat pan. This type of latrine was already widely available in Cambodia and, as research demonstrated, was the most desired type of latrine to own. One of the features that differentiated the Easy Latrine from similar latrines on the market was that it is sold as an all-in-one packaged product. This was a new way of purchasing a latrine—as a single product—instead of a collection of generic building materials and components.

The project decided to brand the latrine package to give the latrine a distinctive identity that one could easily promote both as a product for purchase and a business opportunity to invest in. A branded product is easier for people to talk about than generic terms (e.g., "that latrine with three rings and the box") and so would take better advantage of word-of-mouth marketing in rural communities. Moreover, branded products are also easier for people to identify with. Therefore, a secondary objective of the branding Easy Latrine was to create a product that people would associate with social status.

The latrine brand also helped to encourage confidence among latrine producers who were considering expanding the sanitation component of their businesses. The enterprises were more co jjnfident investing in a new business opportunity when they have heard of it and knew others had demonstrated success with it.

3.5.1 Use of Easy Latrine promotional materials

The enterprises that the project worked with were not accustomed to active promotion and sales. To demonstrate that promotional materials would increase sales, the project designed three simple printed promotional pieces that used the Easy Latrine brand—a promotional leaflet, an installation/instructions leaflet, and PVC banner for a retail location. The leaflets were designed in color and black and white and limited quantities were given for free to enterprises when they first received training from project staff.

[4] The baseline latrine coverage quoted here for Kandal and below for Svay Rieng are taken from the project baseline study (village-level questionnaire data) and apply to the six original project districts.

Black and white materials were designed in addition to color so they would be easier and less expensive for an enterprise to photocopy and replicate on their own.

Once enterprises were convinced of the benefit of promotional materials they started to create their own materials, copy the project provided materials, and even offered to pay the project to produce materials that they wanted but did not have the ability to create themselves (e.g., PVC banners and car decals).

As these promotional materials were designed to be used by enterprises, no donor, implementing organization or government ministry logos were printed on them.

Image 4: The Easy Latrine--Easy to Buy, Easy to Install, Easy to Use

Image 5: PVC banner outside of latrine producer's shop

3.6 Stimulating the Demand Side: Social Marketing Activities

Findings from the demand assessment showed that although people do in fact desire to own a latrine, latrines were not a high purchase priority for most households. Rural households struggle not only to meet basic needs (food, water, shelter) but also to obtain aspirational items, such as motorcycles, cell phones, education for their children, etc. The priority to purchase a latrine usually fell behind these other desires. Through HCD process, it was found that aspirational value was already attached to latrine ownership as owning a latrine had become a status symbol in villages. It was something the poorer aspired to as, usually, only the wealthy households could afford them.

3.6.1 Social marketing campaign

To move latrine ownership up as a purchase priority, a social marketing campaign was created that positioned latrine ownership as an achievable aspiration with the introduction of lower-cost latrine option. The 'Have Latrine, Have Good Life' campaign used tools, messages, and concepts inspired by the

Community Led Total Sanitation (CLTS) approach. The campaign used shock, disgust, and embarrassment, combined with humour and a focus on the (non-health) aspirational benefits of latrine ownership—status, pride, convenience, safety, savings, etc.

The project originally planned to use mass media as the primary channel for promotion but early marketing research showed that to quickly motivate latrine adoption in large numbers a more "targeted and personal" approach would be needed.

Though the baseline survey showed that rural non-latrine owning households do regularly interact with mass media (radio and TV) these channels were more expensive and less effective at quickly motivating latrine adoption when compared with more targeted approaches (e.g. personal, interactive channels). Thus the core of the social marketing campaign focused on developing targeted approaches that could be supplemented by mass media campaigns (radio).

Image 6: 'Have Latrine, Have Good Life'

Part of the targeted and personal approach included village meetings that brought the community together. However, the campaign's key messages were not only effective in a community setting, but were also effective when Sales Agents applied them one-on-one with a customer.

Similar to CLTS village triggering events, the project's social marketing campaign used village sanitation meetings and home visits executed by project staff to promote sanitation and latrine adoption and used simple communication tools and leave-behind materials. Village meetings were also designed as an opportunity for latrine sales activities. And as discussed previously, enterprises and their Sales Agents started to not only use sanitation messages to encourage latrine purchase but were also organizing village meetings and doing home visits themselves without project support. The majority of project partner' enterprises began to invest in social marketing materials for their Sales Agents, seeing promotion materials as an important part of their business. In lieu of materials for purchase by the project, many enterprises photocopied the social marketing materials created by the project and some worked with project staff to create their own simple social marketing materials that are inexpensive to produce such as using flipchart paper to recreate a diagram of the fecal-oral contamination route.

Radio broadcasts were used to complement the village level promotions and were broadcast throughout the duration of the project. The project worked closely with the USAID Cambodia MSME 'Success Starts with You' radio programming and Equal Access to develop and broadcast one minute spots, 30 minute pre-recorded broadcasts and one hour call-in shows. The one hour call-in shows proved to be particularly popular. There were always more calls received than could be answered during the call-in show. Moreover, after the broadcast, many people called the radio station asking for more information.

Latrine producers from the project also participated in two MSME trade fairs (Svay Rieng, Oct 2010 and Bavet, Dec 2010). For both events, the latrine producers paid their own costs for travel, marketing materials, demonstration model, etc. Groups of about six latrine producers and their Sales Agents cooperated to prepare the materials and work the booth, handing out information leaflets, etc. A few latrines were sold at the events and the latrine producers thought it was a good opportunity to promote the latrines to the public and got many names and numbers for follow-up sales opportunities.

Sanitation promotion activities required close interaction with government authorities at the provincial, district, commune, and village levels. As sanitation promotion is traditionally the role of government it was decided that the social marketing collateral developed had only the Cambodia Ministry of Rural Development (MRD) logo and did not have any donor or implementing organization logos on them with the exception of village and government meeting banners. Only the MRD logo was included on the social marketing materials.

Image 7: Photo of village banner of sanitation promotion

3.7 Working with Government Partners

The enabling environments in Kandal and Svay Rieng were very different. In Svay Rieng government representatives were eager to support the development of sanitation markets and the enterprises in any way they could. This included integrating sanitation marketing efforts with their already existing programming and working with enterprises to discuss challenges and opportunities. In Kandal government representatives were supportive of sanitation marketing but were not interested in being as actively engaged.

The less engaged government support in Kandal provided the impetus for the project to develop approaches that did not rely on active government support or involvement. The resulting approaches, such as recruiting Sales Agents that were not connected to the government, allowed enterprises to benefit from government support when and where it was available but did not slow them down if

support did not exist. Enterprises were encouraged to look for people with sales ability to act as their Sales Agents. Government representatives tend to be a good source of prospective Sales Agents but were not the sole source of Sales Agents as motivation or ability was not always present.

3.7.1 Government workshops

Commune and district level half-day workshops were facilitated by the project with the objective of motivating government authorities to promote latrine adoption in their communities and as an opportunity to bring enterprises into contact with government and discuss the products and services they offer as well as challenges and opportunities in supporting latrine adoption.

At the government workshops it is discussed that the latrine producer uses Sales Agents. These Sales Agents organize village meetings or go door to door in communities. It is also discussed that if they are interested they can become a Sales Agent. It is also discussed that if you are not interested in becoming a Sales Agent that you agree to allow a Sales Agent come into your community so that there are no issues, for example, when village chief A goes as a Sales Agent into village B.

In each district/commune, pre- and post-project workshops were held to increase motivation to promote latrine adoption by setting and reviewing targets publicly in front of peers and superiors. In the pre-project workshop, project staff introduced the project and the concept of sanitation marketing; encouraged government officials to promote both sanitation and latrine adoption; discussed latrine coverage in their communities; introduced government officials to Easy Latrine business opportunities; and set latrine adoption targets to be achieved by the post-commune workshop.

Post-project workshops in each district/commune were held to review latrine adoption results to date, discuss successes and challenges, and work with government officials to create an action plan for future sanitation promotion and working with the private sector.

3.7.2 Defining government roles

The debate over role of government in sanitation marketing was a subject that the project engaged in at both national and local levels. Government can give legitimacy to projects and enterprises with lower levels of government, actively promote sanitation and hygiene messages, and coordinate enterprise with existing government sanitation programs.

There are, however, potential pitfalls of government involvement if it acts to impede competition rather than encourage it. For example, in a province near to one of the project areas, the provincial government was given funds from another donor to carry out their own sanitation marketing project. They enlisted one enterprise per district. When concrete producers that had been engaged through this project began selling latrines in those districts the provincial government tried to deny them access because the enterprises they had enlisted in their own province could not compete on price or quality. The provincial government wanted to ensure the success of the enterprises they had enlisted but at the expense of wider competition. Through meetings with national and provincial levels of government, the project was able to make the point that trying to control enterprises and marketplace competition does not support the full potential of sanitation marketing and can eventually hurt consumers through higher

prices, lower quality, and less innovation. In the end, the concrete producers were not blocked from entering the province.

3.8 Working with NGO Partners

The project was approached by two non-profit, non-government international organizations with a request to use the Easy Latrine as part of their subsidy-based sanitation projects in Svay Rieng. The project used this as an opportunity to test how concrete producers could work with non-government organizations (NGO) sanitation projects. Memoranda of Understanding (MoU) were signed between the project and with the following conditions put in place to minimize negative impact on the market:

1. Recipient households would make a cash contribution to the cost of the latrine;
2. Recipients would be told that the cash contribution was for the underground portion of the latrine (i.e., the Easy Latrine components). This was done to prevent the perception that the Easy Latrine was a give-away product;
3. Recipients would receive sanitation education; and
4. The NGO would negotiate the purchase directly with the latrine producer as it was the enterprise's decision whether to accept the order or not.

Box 4: Latrine producers' views on subsidies

When NGOs offered subsidies in one of the project areas, two latrine producers working in that district were discouraged by the subsidy and thought it would cause their business to fail.

Project field staff facilitated meetings with commune and village government leaders working with subsidy programs and the latrine producers to discuss the situation. Through the course of these discussions and their experience over time, the latrine producers now feel that subsidies are only short term issues and that they still have a large market share to capture.

Project staff made follow-up visits and conducted focus group discussion in the NGO-supported villages as well as discussed field implementation with the NGO program staff. Based on these assessments, experience was mixed. Points 2 and 3 listed above were not always adhered to and latrines did not reach the poorest households for whom they were intended.

Subsidy-based sanitation programs can undermine markets by creating an environment where households are not willing to pay for the product, instead preferring to wait until a subsidy becomes available. The project found that subsidized sanitation programs created other dilemmas for concrete producers. When an NGO places a large order for latrines, this is of course a business opportunity for the enterprise, but it can have negative effects. Filling a large order takes up all of the enterprise's resource for a period of time, leaving them without time or stock to continue cultivating other markets and their Sales Agent network. Without product to sell, the enterprise risks having Sales Agents lose motivation and shift their time and attention to other income opportunities.

The project was also approached by a third NGO that wanted to test how sanitation marketing could support their CLTS initiatives by training two concrete producers in Kampong Cham. This initiative was short lived and terminated due to internal issues at the NGO. It is not clear how much support was provided by this NGO to the concrete producers and households.

3.9 Scaling-up within the Pilot

As the success of the enterprises selling Easy Latrines took off they kept expanding their geographical reach, engaging Sales Agents, doing sales and deliveries at farther distances from their manufacturing sites, and selling into bordering provinces and districts outside the project target areas.

In October 2010, the project decided to officially expand the target area adding an additional two districts in Svay Rieng (Svay Teab and Kampong Rou), covering 5 of 8 districts in that province, and three in Kandal (Ponhea Lueu, Mukh Kampul, and Khsach Kandal), covering 6 of 11 districts in that province.

There were four reasons motivating this expansion:

1. Government officials from expansion districts, having heard of the success of the sanitation enterprises from their counterparts in the original target areas, approached the project asking if enterprises could also be established in their districts as well.
2. Enterprises were already selling the Easy Latrine in areas of these districts showing that there was demand and opportunity for new growth.
3. As the processes and skills needed to engage enterprises had been refined while working in the original districts, the project could expand geographically without additional resources, effectively spreading the same amount of resources over a larger area resulting in greater cost-effectiveness and sanitation adoption.
4. Expanding within the pilot project provided an opportunity to learn what it would take to eventually expand on a national scale.

To date, project-led sanitation promotion events have taken place in 602 villages (248 in Kandal and 354 in Svay Rieng). Easy Latrine sales have been recorded in 1060 villages (358 in Kandal, 495 in Svay Rieng, and 207 outside the target provinces).

4 End-of-Project Evaluation Methodology

4.1 Calculating Latrine Installations

The project spanned 16 months of active field promotion across more than 1,000 villages. The methods for counting and calculating the number of latrine installations required that various village types and time periods be broken down into categories. Each category has a specific method for counting or calculating the latrine installations. The general methodology was discussed and agreed to at a meeting with DAI and WSP in June 2010.

Figure 2: Categories for calculating latrine installations

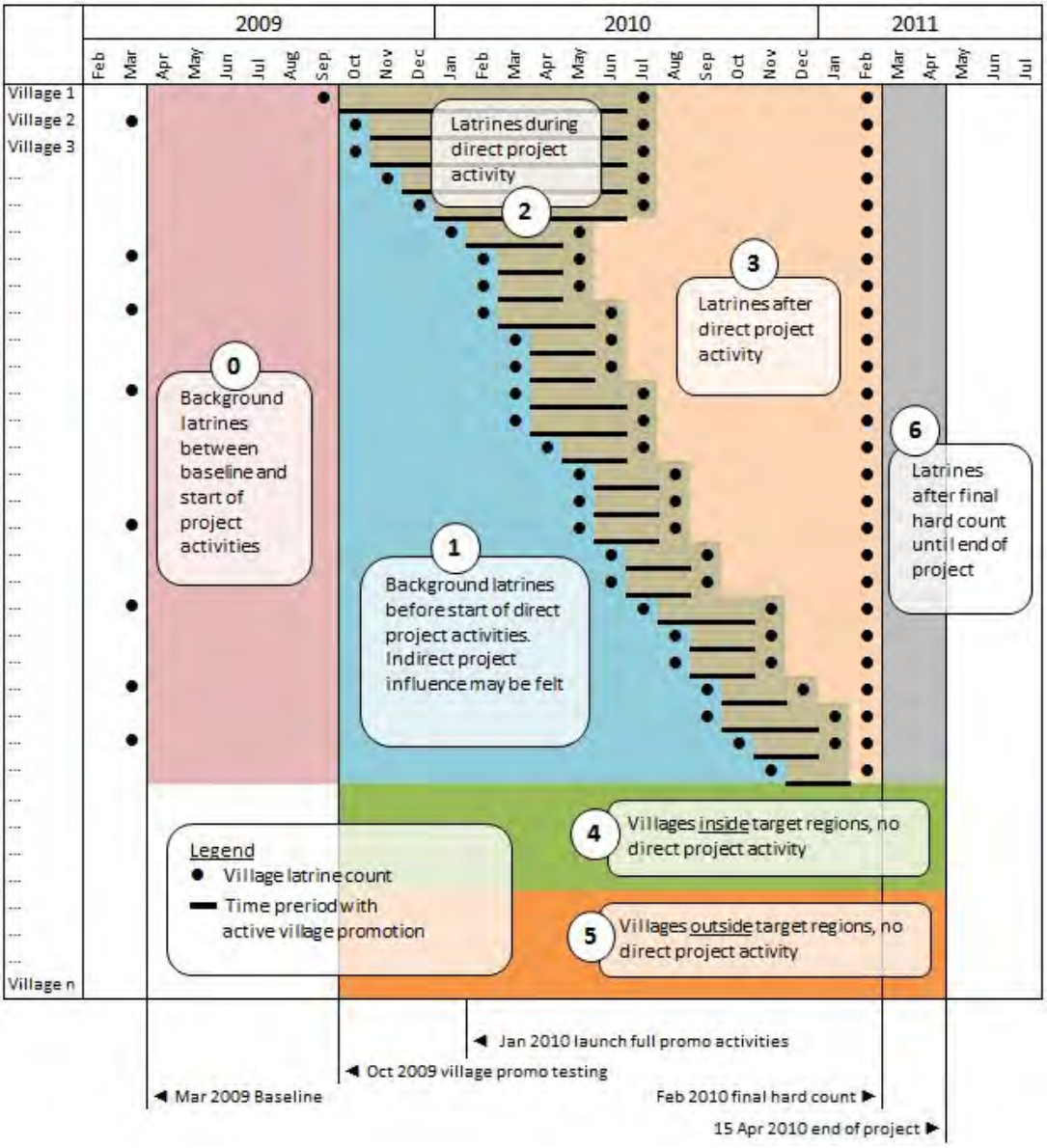


Table 1: Methods for calculating latrine installations

Category	Justification for Inclusion/Exclusion	Measurement/Calculation Method
Category 0 Background installations between baseline and start of promotion (March 2009 - Oct 2009)	• The latrines sold and installed during this period were not attributable to the project.	• Not counted.
Category 1 Background installations before direct project activity	• These villages may have been influenced by promotional activities in nearby villages before activity began in the village itself. If any households purchased a latrine as a result of this influence, it could be attributed to the project. However, this attribution is difficult to quantify.	• Not counted.
Categories 2 and 3 Installations from the start of direct project activity through to the final count in February 2011 (601 villages in Kandal and Svay Rieng)	• Latrines in these villages were sold by latrine producers that were directly trained by the project (partner producers) or inspired by the project (non-partner producers) • These villages were subject to direct promotional activities conducted by the project and/or promotional activity conducted by Sales Agents • The count includes a) Easy Latrines and b) other wet latrines	• Immediately prior to beginning direct project activity, a baseline latrine count was conducted for every village. • All installations in all villages with direct project activities were counted again during a final count in February 2011. The final count determined the number of wet latrines, dry latrines, installed or not, and whether the latrine had been obtained through a subsidy. • Latrines purchased during the project period were determined as the difference between the baseline and final counts. Only latrines that were obtained without subsidy were counted. • The proportion of purchased latrines that were actually installed was determined from the village count data. Specific ratios were determined for Kandal original districts, Kandal expansion districts, Svay Rieng original districts, and Svay Rieng expansion districts. These values are used below in Category 4 and 7 calculations. • The ratio of Easy Latrines to 'other latrines' was determined by comparing total new wet latrines in a region with the Easy Latrine sales in the same region. Specific ratios were determined for the four district groups noted above. These values are used below in the Category 4 and 7 calculations.

Category	Justification for Inclusion/Exclusion	Measurement/Calculation Method
Category 4 Installations in villages that are in the target region but in which project activities did not take place (329 villages in Kandol and Svay Rieng)	• The villages in this Category were interspersed among the villages of Category 2-3. • Latrines in these villages were sold by the same partner producers and non-partner producers as in Category 2-3. • The villages were exposed to promotional activity conducted by Sales Agents. • The villages were indirectly exposed to promotional activities conducted by the project in nearby villages. • The villages were exposed to the same mass media messages as the Category 2-3 villages. • The count includes a) Easy Latrines and b) other wet latrines.	• Data on Easy Latrine sales by partner producers were available for all target region villages, including the Category 4 villages where no direct project activity occurred. • The number of 'other latrine' sales by non-partner producers is calculated based on the proportion determined in Category 2-3 above. In the absence of actual latrine counts in these villages, we believe that applying this factor is a reasonable method for estimating the number of 'other latrines' purchased. As noted to the left, most project influences were common to Category 4 and Category 2-3 villages. The main difference is that village-level promotional activities were conducted by Sales Agents in Category 4 villages instead of project staff as in Category 2-3 villages. We expect that any effect on latrine sales caused by this difference would be similar for both Easy Latrines and 'other latrines'. Thus, the ratio of Easy Latrines to 'other latrines' is expected to be similar in both cases. • The number of latrine sales that were actually installed is calculated using the installation rates determined in Category 2-3 above.
Category 5 Installations in villages outside target regions with Easy Latrine sales Oct 2009 - April 2011 (220 villages in other provinces)	• Easy Latrines in these villages were sold by the same partner producers and copycat producers as in Category 2-3. • The number of non-Easy Latrine sales by non-partner producers was not counted in this Category because attribution to project activities is unlikely. • Although outside the target provinces, these latrine installations are relevant in that they show the initiative and ambition of latrine producers to expand geographically. • The count includes only Easy Latrines.	• Easy Latrine sales to these non-target villages were collected from partner producers and non-partner producers. • The number of Easy Latrine sales that were actually installed is calculated using installation rates determined in Category 2-3 above.

Category	Justification for Inclusion/Exclusion	Measurement/Calculation Method
Category 6 Installations after final count (Feb 2011) until project end date (15 April 2011) in the villages where direct project activity occurred (i.e., the same villages as Category 2-3)	• Same villages as in Category 2-3 • Promotional activities of Sales Agents continued after the final count. • The count includes a) Easy Latrines and b) other wet latrines.	• Easy Latrine sales data were collected from partner producers and non-partner producers during this period. • The number of 'other latrine' sales is calculated based on the proportion determined in Category 2-3 above. Applying this ratio is justified since Category 6 covers sales in the same villages where the ratios were determined. There is no reason to expect that the ratios would change in the short time (~6 weeks) following the final count. • The number of latrine sales that were actually installed is calculated using the installation rates determined in Category 2-3 above. The installation rate increased over time. Since the latrines counted in this Category were all purchased recently, use the lowest calculated installation rate (i.e., the rate for villages where project activities had occurred less than 90 days previous = 39%). • Note that this method considers only installations of newly purchased latrines. It does not include previously purchased latrines that were counted as uninstalled during the final count but were subsequently installed before the project end date.

4.2 End-of-Project Surveys

This section describes the design of the end-of-project (EOP) evaluation surveys, logistics, the methods applied, and the limitations. The evaluation consisted of two parts: enterprise surveys and household surveys.

4.2.1 Evaluation design

The evaluation design and survey tools developed by the project management team were discussed at a January 2011 meeting with WSP and USAID representatives. The project amended the framework and survey tools based on the outcomes from the meeting and other feedback before receiving approval from WSP and USAID representatives. The household and enterprise surveys were pre-tested in non-study sites. Changes were made to surveys as a result of the pre-testing.

4.2.2 Logistics

The evaluation team was divided into enterprise and household surveyors. Two members of the project's M&E team supervised the survey teams. Four enterprise surveyors were engaged for eight days. Two surveyors were allocated to each pilot province. Twenty household surveyors were engaged for eight days. Ten two-person teams were divided into five teams per province. Surveying took place from 27 January through 6 February 2011.

4.2.3 Sample selection and data collection

For the household survey, study villages were selected using probability proportional to size to randomly select 13 villages in each of the three original districts in both pilot provinces. The total number of study sites was 26 villages. The population of each village was stratified based on their latrine ownership. The four groups were:

- Group 1: Households without latrine;
- Group 2: Households that had purchased an Easy Latrine;
- Group 3 : Households that had purchased any other type of latrine but not Easy Latrine during the project period (i.e., from October 2009 through to the survey date); and
- Group 4: Households that purchased any type of latrine before the project started (i.e., prior to October 2009).

A total of 520 households were surveyed. Table 2 details the number of households surveyed per group.

Table 2: Households surveyed during the evaluation

	No latrine	Easy Latrine	Other latrine during the project	Any latrine before project	Total
Kandal	70	41	76	73	260
Svay Rieng	73	50	68	69	260
Total	**143**	**91**	**144**	**142**	**520**

In each village, the surveyors grouped household into the four groups by walking house to house and asking a member of household about their latrine ownership. When all households had been identified into their group the surveyors listed and numbered each household in that group and randomly identified five households to be interviewed in each group. This resulted in a total sample size of 20 households in each village, with 260 households in each pilot province and a total of 520 households. In villages that did not have five households for each group the surveyors conducted surveys with all households identified in that group. In villages with less than five households in any group, the shortfalls were replaced with additional households in other groups, ensuring 20 households were surveyed in each village.

Table 3: Location and number of households surveyed during the evaluation

					# of household questionnaire					
Nr	**Province**	**District**	**Commune**	**Village name**	Group 1	Group 2	Group 3	Group 4	Total	Mason
1	Kandal	Kandal Stueng	Ampov Prey	Ampov Prey Ti Bei	5	0	8	7	**20**	1
2	Kandal	Kandal Stueng	Cheung Kaeub	Srok Thum	5	2	7	6	**20**	1
3	Kandal	Kandal Stueng	Kouk Trab	Kouk Pring	5	4	6	5	**20**	2
4	Kandal	Kandal Stueng	Preaek Slaeng	Prasat	5	5	5	5	**20**	2
5	Kandal	Kandal Stueng	Tbaeng	Chrolong	5	5	5	5	**20**	2
6	Kandal	Kaoh Thum	Kaoh Thum Kha	Svay Ta Mekh	5	5	5	5	**20**	2
7	Kandal	Kaoh Thum	Preaek Sdei	Pratheat	7	3	5	5	**20**	3
8	Kandal	Kaoh Thum	Preaek Sdei	Preaek Me Srok	5	5	5	5	**20**	1
9	Kandal	Saang	Krang Yov	Andoung	6	2	6	6	**20**	0
10	Kandal	Saang	Preaek Ambel	Sampan Kraom	6	0	7	7	**20**	2
11	Kandal	Saang	Preaek Koy	Preaek Run	5	5	5	5	**20**	3
12	Kandal	Saang	S'ang Phnum	Preaek Slaeng	5	5	5	5	**20**	5
13	Kandal	Saang	Svay Rolum	Lekh Muoy	6	0	7	7	**20**	4
14	Svay Rieng	Romduol	Bos Mon	Srama	5	2	7	6	**20**	4
15	Svay Rieng	Romduol	Pong Tuek	Andong Krasang	5	6	2	7	**20**	4
16	Svay Rieng	Romduol	Svay Chek	Svay Chek	5	3	6	6	**20**	1
17	Svay Rieng	Romeas Hek	Chantrei	Samla Chhau	2	3	7	8	**20**	0
18	Svay Rieng	Romeas Hek	Doung	Trapeang Kralanh	5	5	4	6	**20**	1
19	Svay Rieng	Romeas Hek	Krasang	Trapeang Chrey	6	10	2	2	**20**	0
20	Svay Rieng	Romeas Hek	Sambatt Mean Chey	Prey Srah	7	0	10	3	**20**	0
21	Svay Rieng	Svay Chrum	Angk Ta Sou	Prey Chheu Teal	6	4	5	5	**20**	1
22	Svay Rieng	Svay Chrum	Chamlang	Ta Chey	5	5	5	5	**20**	2
23	Svay Rieng	Svay Chrum	Chek	Kok Pae	9	0	5	6	**20**	0
24	Svay Rieng	Svay Chrum	Kouk Pring	Chambak Thloeng	5	5	5	5	**20**	4
25	Svay Rieng	Svay Chrum	Pouthi Reach	Tbaeng	8	0	5	7	**20**	2
26	Svay Rieng	Svay Chrum	Svay Thum	Traok Touch	5	7	5	3	**20**	4
				Sub total:	**143**	**91**	**144**	**142**	**520**	**51**

In the enterprise survey, four types of enterprises were included (Table 4):

- Masons,
- Building material supply shops,
- Project partner concrete producers (enterprises that produce the Easy Latrine and received comprehensive training from the project), and
- Non-partner concrete producers (enterprises that are selling latrines but not Easy Latrines and have not had any direct engagement with the project).

Table 4: Enterprises surveyed during the evaluation

	Kandal	Svay Rieng	Total
Masons	28	23	51
Building material supply shops	24	13	37
Project-partner concrete producers	7	9	16
Non-partner concrete producers	24	9	33
Total	**83**	**54**	**137**

Masons were interviewed in the same villages that had been selected for the household surveys. The surveyors used opportunistic sampling to identify masons, interviewing the first few in each village that could be found. Masons are often working away from their home and locating them required some effort.

All building material supply shops that were interviewed in the Mar 2009 baseline survey were included in EOP survey.

Similarly, all concrete producers that were interviewed in the Mar 2009 baseline survey were included in EOP survey. Added to this were new concrete producers who became project partners.

Copycat producers (enterprises that began producing the Easy Latrine on their own and later received short training from the project) were not captured by the survey. This oversight was due to a mix up in the latrine producer lists during the survey planning process.

4.2.4 Limitations

The surveys conducted for the evaluation of this project faced a number of constraints and limitations, which should be taken into consideration when interpreting the results.

Reliability. Much of the data collected from households and enterprises relied on respondent recall . This data will have been affected by the length of time that had lapsed since the project activities had occurred (e.g., village meetings, home visits, trainings). The responses of enterprises may also be biased if they believed that further support or funding is determined by their response to the survey. The latter risk is mitigated by the fact that the project had not previously given hand-outs.

Poverty measures. This study used three approaches to measure livelihood: USAID Poverty Assessment Tool (PAT), the Cambodian Ministry of Planning ID Poor categorization (only available in Svay Rieng), and self-reported annual income. The PAT survey did not show similar levels of poverty ranking when compared to the ID Poor categorization. The PAT survey identified 2.5% of households as very poor and 32.1% as poor. The ID Poor categorization identified 5% of households as very poor and only 8% as poor. This example illustrates the challenges of measuring poverty using different survey approaches. This report uses the ID Poor method for poverty related analyses.

5 Project Results: Latrine Purchases and Installations

5.1 Impact Indicators

The pilot project's success in improving access to sanitary latrines was evaluated against the number of latrines installed as a result of the project, as follows:

- WSP target: Increase in latrine purchases and installations, with a minimum of 3,700 households gaining access to safe sanitation over the life of the project.
- DAI/ MSME target: At least 5,000 households (majority poor households) have installed latrines in each of the targeted districts of Kandal and Svay Rieng province, for a total of 10,000 latrines over the life of the project (the DAI/MSME objective is inclusive of the WSP objective above).

5.2 Easy Latrine Sales

Easy Latrine sales data was collected weekly by project staff from all project partner and copycat latrine producers. The enterprises used record keeping forms provided by the project to keep track of the total sales by village.

As of April 15, 2011 a total of 10,621 Easy Latrines were sold without subsidy by project partners and copycat enterprises (Table 5). The majority of the Easy Latrine sales, 53%, were generated in Svay Rieng with 27% occurring in Kandal and 19% in provinces outside of the project area. In addition, a total of 2,247 Easy Latrines were sold by project partner latrine producers to three NGOs that provided them to households with a full or partial subsidy. Latrines that were sold to NGOs are not included in the final latrine counts for this project.

Table 5: Easy Latrine sales to private and NGO customers

	Private sales		NGO sales	
Kandal	2,902	27%	0	0%
Original target districts	1,937		0	
Expansion districts	965		0	
Svay Rieng	5,674	53%	1,944	87%
Original target districts	4,758		1,944	
Expansion districts	916		0	
Provinces outside target area	2,045	19%	303	13%
Takeo	807		0	
Kampong Cham	18		303	
Kampong Chhnang	61		0	
Kampong Speu	32		0	
Kampong Thum	186		0	
Phnom Penh	27		0	
Prey Veaeng	914		0	
Total	10,621	100%	2,247	100%

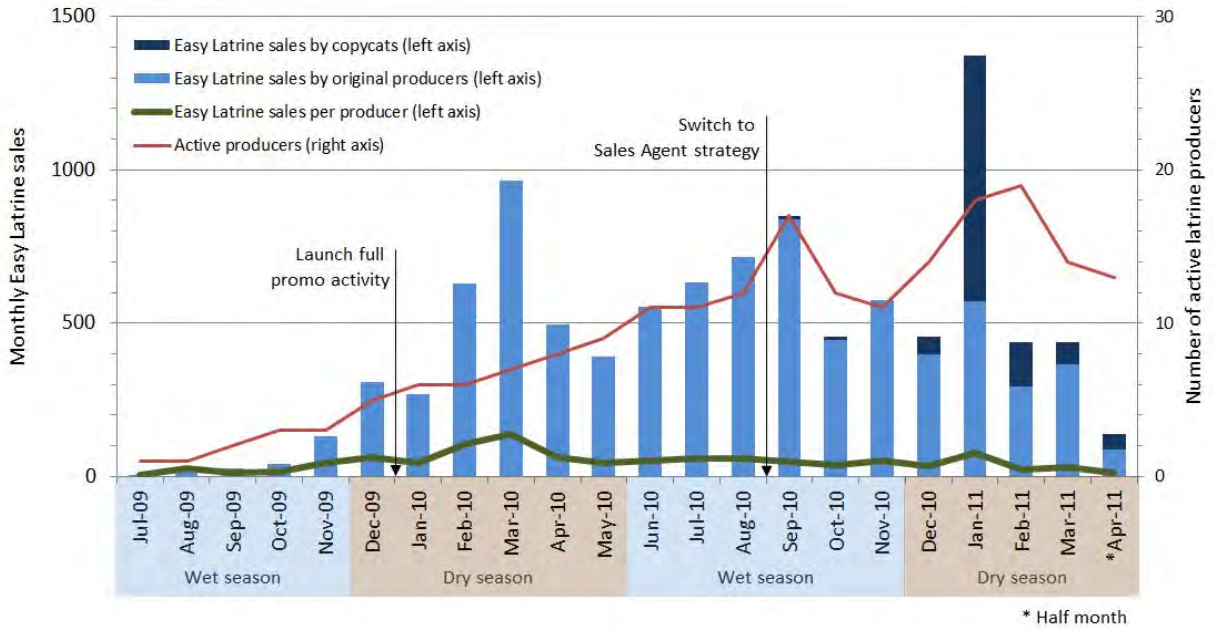
Figure 3 below shows the total monthly Easy Latrine sales by all producers in all provinces over the project period. The data show a gradual build up during the small-scale test period (Jul - Dec 2009) during which time about 5% of the total Easy Latrines were sold. The remaining 95% were sold during the 16-month implementation phase extending from Jan 2010 through Apr 15, 2011. The figure also indicates the number of active latrine producers in any given month and the average number of latrine sales per producer each month.

Sales peaks occur approximately twice per year, once in the dry season and once in the wet season with the dry season peak being the larger of the two. In Sep 2010, the project's demand creation strategy changed with project staff handing over village promotional activities to the network of Sales Agents linked to each latrine producer. During this period, monthly sales and the average sales per producer tended to be lower than the previous period and tended to decrease over time. The lower sales are attributed to i) the fact that most Sales Agents promoted sanitation on a part-time basis only, ii) the increasing saturation of markets surrounding the original latrine producers, and iii) less "push" from project staff. Although the promotion through Sales Agents was perhaps less effective than promotion led by project staff, we expect that Sales Agent-led promotion is likely a more sustainable and scaleable model.

Also in Sep 2010, copycat producers began appearing and made increasing contributions to monthly sales. In Jan 2011, copycat sales peaked at an astounding 802 latrines by the six copycat producers that were active in that month. There were two main reasons behind this anomalous event:

- One copycat producer in Svay Rieng had set up a second production location and had begun selling latrines to groups that paid for their latrines in installments. These strategies helped him to reach 94 Easy Latrine sales in January. Initially, he organized 22 groups of 3-5 households each. Recent follow-up contacts with this producer indicate that the original 22 groups have repaid and he has sold latrines to another 13 groups.
- Two copycat producers in Prey Veng province sold 158 and 472 Easy Latrines, respectively. They had a connection with a project implemented by the Provincial Department of Rural Development that created local demand for latrines. We understand that the recipient households paid full cost for the latrines but there is some lack of clarity on this point.

Figure 3: Monthly Easy Latrine sales and number of active producers



5.3 Other Latrine Sales

The Easy Latrine was used as a catalyst in this project to stimulate interest and rapid uptake of latrines among enterprises and consumers. But the Easy Latrine was by no means the only latrine being produced and sold. Traditional latrine types continued to be sold as well. Table 6 below shows that for the original and expansion districts of Kandal and Svay Rieng, for every one Easy Latrine sold, 1.12 "other latrines" were also sold. The table indicates that the Easy Latrine stimulated sales of other latrines in Kandal more than in Svay Rieng. In Kandal, about three other latrine types were sold for each Easy Latrine sale. This may be due to the fact that disposable income is higher in Kandal, which enabled people to purchase higher end-latrine options.

Table 6: Number of 'other latrines' purchased relative to number of Easy Latrines purchased

Region	Number of 'other latrines' sold for every one Easy Latrine sold
Kandal (original districts)	2.68
Kandal (expansion districts)	3.03
Svay Rieng (original districts)	0.35
Svay Rieng (expansion districts)	0.57
Total	**1.12**

5.4 Installation Rates

Not all latrines that make it to a family's house get installed immediately. In discussions with households, two main reasons for not immediately installing the latrines were given:

- They were waiting until there was enough labor available (e.g., waiting for family members to return from seasonal employment away from home), or
- They were waiting to amass enough materials or money to build a suitable shelter along with the underground portion and slab that they had already purchased.

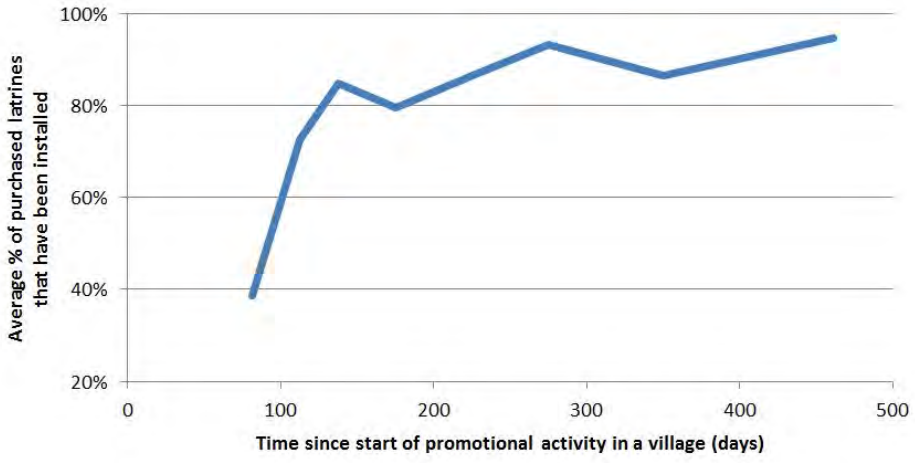
Data from the end of project latrine count (Feb 2011) indicates that 87% of all latrines, Easy Latrine or other, had been installed. The rates differed for each area as indicated in Table 7 below.

Table 7: Installation rates by region

Region	Installation rate at the time of the EOP latrine count (%)
Kandal (original districts)	95%
Kandal (expansion districts)	94%
Svay Rieng (original districts)	77%
Svay Rieng (expansion districts)	76%
Total	**87%**

Figure 4 illustrates the average installation rate against the length of time elapsed since project activities began in a village. After 100 days (3 months), about 50% of all latrines that had been purchased up to that time had been installed. At 450 days (15 months) the rate rises to 95% with a continuing upward trend. This confirms that the vast majority of purchased latrines are eventually installed, which is as expected since the latrine cost is a significant cash outlay for a rural household and is not likely to be abandoned.

Figure 4: Installation rate by time since start of promotional activities



5.5 Attribution of Latrine Purchases

Not all of the latrines purchased in project areas during the project period can be attributed to the project. The latrines purchased during the project may be broken down as follows:

- Total latrines: the total number of latrines purchased between the project start and end date;
- Background latrines: the number of latrines that would have been purchased without the project; and
- Additional latrines: the number of latrines attributable to the project, equal to the total latrines minus background latrines.

Even though the Easy Latrine design was introduced by the project, it is not possible to say that all Easy Latrines are additional latrines or that all 'other latrines' are background latrines. There are some households that would have purchased some kind of latrine without the project but ended up purchasing an Easy Latrine because the project did exist. Similarly, there are some households that were influenced by the project to purchase a latrine—which they would not otherwise have purchased—and that decided to purchase a latrine other than an Easy Latrine. Thus, we can estimate the overall number of additional latrines resulting from the project but it is not possible to determine the number of additional Easy Latrines or the number of additional 'other latrines'.

The March 2009 baseline survey yielded an estimate of the annual rate of latrine installations in the original six target districts. As shown in Table 8 below, these baseline installation rates were used to estimate the expected background latrine installations in the original and expansion districts.

Table 8: Calculation of background latrine installations

Description	Kandal		Svay Rieng		Totals
	Original Districts	Expansion Districts	Original Districts	Expansion Districts	
A: Baseline rate of latrine installation [a] (latrines/year)	2,807	-	1,297	-	-
B: Baseline rate of latrine installations per 1,000 households [b] (latrines/year/1000 HHs)	30.9	-	18.9	-	-
C: Expected number of background latrine installations [c] (latrines)	1,790	405	1,139	190	3,524

[a] The March 2009 baseline study estimated the baseline rate of latrine installations from interviews of randomly selected households throughout the original project districts. Two methods were used to calculate the baseline installation rate; the values given here are the average of the two estimates. Baseline latrine installation rates are available only for the original districts, not the expansion districts.

[b] Calculated by dividing the baseline rate of latrine installation ('A' above) by the 2008 population (households) of the original districts. Population data is from the 2008 national census. Data from 2008 is used because it coincides with the time period covered by the March 2009 baseline study. This latrine installation rate is assumed to apply also to the expansion districts.

[c] This is the number of background latrines expected to occur in the villages where project activity occurred

either directly (Category 2-3 villages) or indirectly (Category 4 villages) and during the period extending from the start of project activity in each village until the end of the project.

C = B × P × T, where:

P = number of households (in thousands) in 2010; the 2010 population is extrapolated from 2008 population using the annual population growth rates for Kandal (1.63%/year) and Svay Rieng (0.09%/year) from the 2008 census. 2010 population is used because most of the project implementation occurred in that year.

T = time (in years) between the start of project activities and the end of project (15 Apr 2011). Calculated on a village by village basis and summed for the four groups in the table.

5.6 Summary of Purchased and Installed Latrines

The following tables incorporate the information from the previous sections to arrive at overall estimates of the number of latrines purchased and installed. Key project results, in terms of numbers of latrines, are summarized in Table 9 below.

Table 9: Key latrine counts

Easy Latrines installed in target provinces. Not including NGO sales.	Original districts Expansion districts All districts	5,438 1,441 6,879
Easy Latrines purchased in all provinces Includes target and other provinces, not necessarily installed yet, not including NGO sales.		10,621
Additional latrines installed in target provinces Includes Easy Latrines and other latrines, not including NGO sales.		12,309
Additional latrines purchased in target provinces Includes Easy Latrines and other latrines, not necessarily installed yet, not including NGO sales.		15,379
Additional latrines purchased in all provinces Includes Easy Latrines and other latrines, not necessarily installed yet, target provinces and other provinces (assumes that all Easy Latrines in other provinces are additional), not including NGO sales		17,424

The following tables provide a more detailed breakdown of the number of latrines purchased (Table 10) and installed (Table 11). The estimates are disaggregated as follows:

- Geographically, by province and by original versus expansion districts,
- By Easy latrine and 'other latrine' types, and
- By the categories used in calculating the latrine counts.

This detailed breakdown allows for calculation of totals that include or exclude specific areas or categories.

Separate tables are provided for "purchased latrines" and "installed latrines". The installed latrines are a sub-set of the purchased latrines. Based on the project findings, virtually all purchased latrines are

expected to be installed by their owners eventually. The number of "purchased latrines" therefore represents the final state that ultimately defines the project impact. The "installed latrines" represents a transition state at the project end date, which is important also, since the project objectives are stated in terms of installed latrines.

Table 10: Number of latrines purchased during project period

PURCHASED Latrines [a]							
Description	**Category** (from Figure 2)	**Type**	**Kandal**		**Svay Rieng**		**Totals**
			Original Districts	**Expansion Districts**	**Original Districts**	**Expansion Districts**	
Inside target regions, direct project activity	2-3	Easy Latrines	1,539	180	3,329	334	**5,382**
		Other latrines	4,128	546	1,175	191	**6,040**
Inside target regions, no direct project activity	4	Easy Latrines	393	551	1,261	508	**2,713**
		Other latrines	1,054	1,671	445	291	**3,461**
Same as Category 2-3, from final count to end of project	6	Easy Latrines	5	234	168	74	**481**
		Other latrines	15	710	59	42	**826**
Total latrines			**7,134**	**3,892**	**6,437**	**1,440**	**18,903**
Background latrines			1,790	405	1,139	190	**3,524**
Additional latrines			**5,344**	**3,487**	**5,299**	**1,250**	**15,379**
Other provinces, no project activity	5	Easy Latrines					**2,045**
Total (including other provinces)							**17,424**

[a] Numbers in the table do not include NGO sales or dry pit latrines.

Table 11: Number of latrines purchased and installed during project period

INSTALLED Latrines [a]							
Description	**Category** (from Figure 2)	**Type**	**Kandal**		**Svay Rieng**		**Totals**
			Original Districts	**Expansion Districts**	**Original Districts**	**Expansion Districts**	
Inside target regions, direct project activity	2-3	Easy Latrines	1,469	168	2,558	253	**4,448**
		Other latrines	3,939	511	903	144	**5,497**
Inside target regions, no direct project activity	4	Easy Latrines	375	515	969	384	**2,244**
		Other latrines	1,006	1,563	342	223	**3,134**
Same as Category 2-3, from final count to end of project	6	Easy Latrines	2	91	66	29	**188**
		Other latrines	6	277	23	17	**322**
Total latrines			**6,797**	**3,126**	**4,861**	**1,050**	**15,833**
Background latrines			1,790	405	1,139	190	**3,524**
Additional latrines			**5,007**	**2,720**	**3,722**	**860**	**12,309**
Other provinces, no project activity	5	Easy Latrines					**1,781**
Total (including other provinces)							**14,089**

[a] Numbers in the table do not include NGO sales, dry pit latrines, or latrines that have been purchased but not yet installed.

5.7 Change in Latrine Coverage

Table 12 below shows the increase in latrine coverage between baseline and end of project (counting only installed wet latrines). The increase in coverage was larger in Kandal province, especially in the expansion districts. Overall, latrine coverage increased by 8.0% during the 16-month period of active promotion. At the end of the project, the latrine coverage trend was continuing upward at a rate of approximately 0.4 percentage points per month in both Svay Rieng and Kandal.

Table 12: Change in latrine coverage

Description	Kandal		Svay Rieng		Totals
	Original Districts	Expansion Districts	Original Districts	Expansion Districts	
A: Latrine coverage at baseline [a] (% of 2008 population)	33.5%	21.2%	13.1%	17.4%	22.7%
B: Latrine coverage at end of project [b] (% of 2010 population)	42.5%	37.9%	19.3%	24.6%	30.7%
C: Increase in latrine coverage [c] (% points)	8.9%	16.7%	6.2%	7.1%	8.0%

[a] Data from the baseline latrine count conducted in each Category 2-3 village before commencing project activity. Date of count varies. Includes only wet latrines, not dry pit latrines.

[b] Data from the end of project latrine count conducted in each Category 2-3 village in Feb 2011. Includes only wet latrines that were installed at the time of the count. Subsidized latrines not included.

[c] C = B – A

6 Project Results: EOP Enterprise Survey

6.1 Impact Indicators

Success of the pilot project to stimulate the market for sanitation was evaluated against five impact indicators:

- Number of enterprises engaged (target = 50)
- Increase in sanitation-related sales (target = 100%)
- Increase in sanitation-related investment (target = 100%)
- Improved business operations
- Expanded markets

6.2 Number of Enterprises Engaged

6.2.1 Partner and non-partner concrete producers engaged

A total of 16 project partner enterprises were directly engaged during the project through training provided in the manufacture, promotion, and sales of the Easy Latrine. However, a total of 63 enterprises were eventually engaged in the project, including several other 'copycat' enterprises that commenced manufacturing the Easy Latrine model (without receiving formal training from the project), and other sanitation-related businesses (Table 13).

Box 5: Copycats

Copycats are latrine producers that prior to engaging with project staff had figured out how to manufacture the Easy Latrine. In fact, some had already copied the sales model and had engaged sales agents. Once identified by project staff, they were offered short trainings in areas that they were interested in but none received the same comprehensive training that the project partner producers received. Short trainings were about a day or half day, with project staff troubleshooting, providing ideas to increase latrine purchases, and discussing various business scenarios.

Table 13: Number of enterprises engaged during project period

Enterprise Category	Kandal	Svay Rieng	Other Provinces	Total
Project-partner concrete producers	8	8	0	16[a]
Copycat concrete producers	0	5	3	8
Sanitation-related businesses	14	24	1	39
Total	**22**	**34**	**4**	**63**

[a] Two of the partner producers combined their sanitation businesses to create a joint venture, which has been counted only once. Two former project partners that stopped producing latrines to focus on other business opportunities are also not counted.

In addition to the 63 total enterprises engaged, the project trained 88 masons in proper latrine installation. While doing village level sanitation promotion activities, project staff offered local masons the basic training, which included latrine installation and preventing contamination of water sources. However, the project did not do rigorous follow-up to determine if they put the training into practice and so they are not included in the above table.

In-depth interviews with project partners found they were very supportive of the training and skills development approach. Project partners particularly noted the important role of training in 'promotion' and 'sales skills'.

6.2.2 Sanitation-related businesses

The EOP enterprise survey asked the 16 project partners to identify their suppliers and their suppliers' location. These sanitation-related businesses were within the local supply chain and were not directly engaged by project staff. Data was gathered by asking project latrine producers who were their suppliers. The three most commonly identified suppliers included cement, sand, and ceramic pan suppliers. The project partners identified linkages with local suppliers in their own provinces and suppliers in Phnom Penh and Vietnam. If the same enterprise was a supplier to multiple concrete producers, the supplier was counted only once. In total, 39 unique sanitation-related businesses were identified (Table 14).

Table 14: Number of sanitation-related businesses engaged

Supply chain actor	Concrete producer province	Location of supplier	Number of businesses identified
Cement supplier	Kandal	Phnom Penh Local	3 4
	Svay Rieng	Vietnam Local suppliers	1 7
Sand supplier	Kandal	Local suppliers	6
	Svay Rieng	Local suppliers	8
Ceramic pans	Kandal	Local supplier	1
	Svay Rieng	Vietnam Local suppliers	1 7
Mould maker	Kandal Svay Rieng	Phnom Penh	1
Total			**39**

6.3 Increase in Sanitation Related Sales

6.3.1 Latrine producers' sales volume

In Table 15, the number of latrines sales in the original target districts is compared with the expected background sales to calculate the increase in sales over baseline. In the two project provinces, the increase in latrine sales volume that can be attributed to the project is 300%.

Table 15: Increase in latrine sales volumes

	Kandal (original districts)	Svay Rieng (original districts)	Kandal and Svay Rieng combined (original districts)
A: Expected number of background latrine installations during the project period [a]	1,790	1,760	3,550
B: Total latrines sold during the project period (includes both installed and uninstalled latrines; Easy Latrines and 'other latrines'; does not include subsidized latrines)	7,118	7,080	14,198
C: Increase in latrine sales between A and B, [C = (B-A)/A*100] (%)	298%	302%	300%

[a] From Table 8

6.3.2 Latrine producers' sales value (revenue)

On average, the annual revenue of latrine producers in the two target provinces increased by 259% (Table 16). This increase in sales revenue applies to the sanitation portion of the concrete producers business. For the enterprises that supply sand, cement, etc. to the latrine producers, the sanitation portion of their business also increased. However, the project was not able to track the percentage increase in business for these other sanitation-related businesses.

Table 16: Increase in latrine sales revenue

	Kandal (Original districts)	Svay Rieng (Original districts)
Baseline		
A: Annual latrine sales [a]	2,807	1,297
B: Number of concrete producers [b]	36	14
C: Average latrines/producer/year [A/B]	78.0	92.6
D: Average revenue per latrine (USD) [c]	$38.50	$38.50
E: Average annual revenue [C × D] (USD)	$3,002	$3,567
Current		
F: Number of Easy Latrine sales [d]	1,166	3,047
G: Number of concrete producers [e]	5	8
H: Average latrines/producer/year [F/G]	233	381
J: Average revenue per latrine (USD) [f]	$35	$35
K: Average annual revenue [H × J] (USD)	$8,162	$13,331
Percent increase in annual revenue	**172%**	**274%**
	259%	

[a] Average of two methods used to estimate latrine sales from the March 2009 baseline study

[b] Data from the March 2009 baseline study, Annex 1: List of Enterprises Identified in the Pilot Areas (the total number of producers in the districts, not the number interviewed)

[c] Based on typical retail cost for the latrine components of the most common latrine type indicated in the baseline study [(4 rings x $5.0) + (1 lid x $2.50) + (1 slab with pan x 15.00) = $38.5].

[d] Number of Easy Latrine sales in the original pilot districts from latrine producer production records of latrine

[e] Number of 'producer-years' among latrine producers that made Easy Latrines in the original districts including both partner producers and copycats (e.g., a producer active for six months during the project is counted as 0.5 producer-years).

[f] Based on typical retail cost for the Easy Latrine (mode = $35). Note that although the baseline cost of a latrine was higher than the Easy Latrine cost, the concrete producers captured less of the total revenue themselves.

6.3.3 Enterprise viability

The producers that invested in sanitation markets during the project were already making a range of concrete products, including some latrine products. With assistance from the project, they all increased the proportion of their business that came from latrines. Some enterprises continued to invest in developing their local sanitation market and expanding into new regions. Others took advantage of high demand for latrines while it lasted and then returned to more-or-less their previous product mix as local demand for latrines tapered off. Out of the 25 latrine producers who were trained by the project (including partners and copycats), 92% continued to produce at least some latrines through to the end of the project and 56% continued to average at least one Easy Latrine sale per day in the final months of the project (January through mid-April 2011). Two of the enterprises (8%) stopped latrine production completely in order to concentrate on other business opportunities (one in Svay Teap district, Svay Rieng, and one in Sa'ang district, Kandal). Therefore, in the majority of cases, latrines remained a part of the enterprises' product mix, assuring ongoing availability of latrines and replacement parts for new and returning customers even in areas where producers scaled down their latrine production.

Because the initial investment in equipment was relatively small (about US$440 for crane and moulds), enterprises could scale up their latrine production quickly and then scale down over time—if they chose to do so—with minimal financial difficulty. The producers typically earned a gross profit of at least US$5 on each latrine sale (including materials, direct labor, transportation, and equipment depreciation but not including the owner's time). On average therefore, enterprises needed to sell about 88 latrines in order to earn back their initial investment. Fifteen out of the 17 direct partner enterprises reached this breakeven point (the other two stopped latrine production, as noted above, and both were able to sell their equipment) and 4 out of the 8 copycats had reached the breakeven point by the end of the project. The four who did not reach the breakeven point were the ones who had started latest (less than 4 months before the end of the project).

Box 6: When the Going Gets Tough

Table 10 shows that Easy Latrine sales in the three original Kandal districts dropped off sharply, with only five sales in the approximately six-week period between the final latrine count and the end of project (Category 6) compared with 168 sales in the original Svay Rieng districts during the same period.

In discussion with the latrine producers in the original Kandal districts, they indicated that they found it more difficult to make latrine sales over time. One producer decided to expand his service area and focus on sales in other districts while others simply decreased latrine production to focus on other opportunities. In the original Svay Rieng districts, on the other hand, latrine producers remained motivated and strong sales continued. The difference between the two provinces may indicate that i) it became objectively more difficult to generate new latrine sales in Kandal compared with Svay Rieng and/or ii) Kandal latrine producers had more options available to them and so were more easily diverted away from latrine production as it began to require more effort.

This situation illustrates that private enterprises can only be expected to promote sanitation adoption to the extent that it is profitable for them to do so. As the marginal cost of making the next sale becomes too high, they will naturally seek opportunities in less costly regions, market segments, or products.

6.3.4 Masons

An increase in Easy Latrine sales does not necessarily lead to an increase in revenue for masons since one of the Easy Latrine's selling features was that it could be installed by the owners themselves, without needing to hire a mason. Nevertheless, about a third of all Easy Latrine purchasers did use a mason's services and the increased adoption of latrines created more demand for shelters. Challenges with data from the EOP enterprise survey and inconsistencies the baseline data made it difficult to estimate the increase in mason sales and, therefore, the value is not calculated for this report.

6.4 Increase in Sanitation-related Investment

The investments made by concrete producers into their sanitation business include the following:

- Cost of raw materials that go into production (cement, sand, ceramic pans). This investment also applies to the suppliers of cement, sand, and ceramic pans,[5]
- Cost of equipment for production and transport,
- Cost of Sales Agents, and
- Cost of debt on business loans.

In addition to the items listed above, there were other minor investments made such as copying promotional material. In this report, because of difficulties in establishing baseline levels, only the first item listed above is quantified in terms of a percentage increase. The definitions and methods for counting investment are designed to harmonize with the indicators used by the MSME Project.

[5] It may be argued that the cost of raw materials and cost of laborers and sales agents are expenses and not business investments. They were included here, following discussion with DAI and WSP, as a proxy of the increased investment in product stock levels. The indicators were designed to harmonize with indicators used by the Cambodia MSME Project.

6.4.1 Raw material investment

The investment in raw materials is calculated in Table 17. Note that this table is almost identical to Table 16 except for rows D and J, which use 'cost of materials' instead of 'revenue' per latrine. Investment in raw materials increased by 149% overall for the sanitation portion of the concrete producers business and that of their suppliers (63 enterprises). The increase in Svay Rieng (196%) was higher than in Kandal (92%).

Table 17: Investment in raw materials

	Kandal (Original districts)	Svay Rieng (Original districts)
Baseline		
A: Annual latrine sales [a]	2,807	1,297
B: Number of concrete producers [b]	36	14
C: Average latrines/producer/year [A/B]	78	93
D: Average cost materials per latrine (USD) [c]	$28.35	$28.35
E: Average annual investment in cost of materials	$2,211	$2,626
Current		
F: Number of Easy Latrine sales [d]	1,166	3,047
G: Number of concrete producers [e]	5	8
H: Average latrines/producer/year [F/G]	233	381
J: Average cost of materials per latrine (USD) [f]	$18.30	$18.30
K: Average annual investment in cost of materials	$4,268	$6,970
Percent increase in annual investment in cost of raw materials	**93%**	**165%**
	155%	

[a, b, e] All methods and assumptions are the same as Table 16 above.

[c] Based on typical material costs to the producer for the latrine components for the most common latrine type indicated in the baseline study (excluding labor and transport) [(4 rings × $3.9) + (1 lid × $1.75) + (1 slab & pan × 11.00) = $28.35]

[f] Based on typical material costs to the producer for Easy Latrine components (excluding labor and transport) [(3 rings × $2.1) + (1 lid × $2.25) + (1 slab × $2.25) + (1 pan × $7.5) + (1 chamber × $2) = $20.3]

6.4.2 Transport and production equipment

A survey of partner and copycat concrete producers (a special purpose survey, not the EOP enterprise survey) aimed to assess the amount of investments made by the partner and copycat concrete producers. Table 18 shows the producers estimate of the amount of investment they made in the enterprise the previous year. Transport investments included trucks and motorcycle trailers used primarily for delivery of latrine products (although vehicles were also likely to be used for other business as well). Production equipment included rings moulds and cranes that were used exclusively for latrine production. The level of investment in Svay Rieng was 20 to 30% higher than in Kandal.

Table 18: Investment in transport and production equipment

	Kandal (n=7) USD	**Svay Rieng (n=8) USD**	**Combined (n=15) USD**
Transport (trucks, motorbike trailer)	$5,046	$6,675	$5,915
Production equipment (moulds, crane)	$789	$946	$873
Total	**$5,835**	**$7,621**	**$6,788**

6.4.3 Sales Agents

Table 19 presents the commissions paid to Sales Agents by latrine producers. The project offered similar guidance to all partner producers but the final amount paid was negotiated individually between the producers and their agents. The commissions paid by project partners in both Kandal and Svay Rieng was similar (mode = 5,000 Riel or $1.25). The data indicates that 100% of non-partner producers in Kandal use Sales Agents, which is not consistent with field observations (see note on table). None of the non-partners in Svay Rieng used Sales Agents, which is consistent with field experience. In all cases, Sales Agent commissions are new expenses for the latrine producers (i.e., baseline equals zero).

Table 19: Sales Agent commissions

	Project partners		**Non project partner**	
	Kandal	Svay Rieng	Kandal	Svay Rieng
Producers that use Sales Agents	86%	100%	100% [a]	0%
Average commission (among those paying commission) (USD)	$1.44	$1.31	$4.37	-

[a] It is not likely that 100% of non-partner producers in Kandal use Sales Agents as defined in this project. It is more likely that contractors, distributor, and/or small shops that are associated with the non-partner producers were counted as Sales Agents.

6.4.4 Debt

Willingness to accept debt is an important measure of the level of investment of the private sector into sanitation. The EOP enterprise evaluation survey asked respondents how much in loans did they borrow in the past year for their overall business, and how much money in the past year was borrowed for only sanitation-related business. The survey did not ask respondents to detail what they used their loan for beyond investment into their sanitation related business. Table 20 shows that in Svay Rieng all non-partners accepted no debt over the last 12 months. This may mean that project partners were more confident in future business growth. In Kandal, the amount of enterprises accepting debt was found to be higher in non-project partners.

Table 20: Amount borrowed for latrine component of the business in the last 12 months

	Project Partners		Non-project Partners	
	Kandal	Svay Rieng	Kandal	Svay Rieng
Producers that borrowed for their latrine business (%)	43% (3 of 7)	33% (3 of 9)	33% (8 of 24)	0% (0 of 9)
Loan source	Friend Supplier MFI	MFI × 2 Bank × 3	Friend MFI Bank × 4	-
Average amount borrowed (among those that borrowed) (USD)	$550	$1,250	$1,680	-

6.5 Improvement in Operations

Through the training provided to partner enterprises, the project introduced ideas and innovations for improving business operations. Operational improvements were quantified in four areas:

- recording keeping practices,
- adoption of innovative production methods (use of rice husk ash),
- confidence in providing installation advice, and
- expanding markets through the use of Sales Agents.

The results presented in the following sections indicate that the trainings had a generally positive influence on the enterprises operations.

6.5.1 Record keeping

In exchange for the training provided to project partners, the project requested that they keep records on latrine costs and sales (the records were collected by project staff on a regular basis and formed and important part of the project monitoring system). Some of the enterprises reported that they subsequently began keeping records for their other product lines as well. Table 21 indicates that the majority of enterprises in Svay Rieng kept such records ‘always’ or ‘sometimes’. The majority of Kandal enterprises, on the other hand, did not.

Table 21: Proportion of enterprises that reported record keeping for all products

	Project Partners		Non-project Partners	
	Kandal	Svay Rieng	Kandal	Svay Rieng
Always (%)	14%	44%	0%	44%
Sometimes (%)	14%	11%	0%	33%
Never (%)	57%	33%	100%	22%

6.5.2 Production methods

The addition of rice husk ash into concrete is an innovative practice introduced by the project.[6] Table 22 indicates that a majority of project partner latrine producers extended the practice to other products. As expected, none of the non-partners added rice husk ash to any of their products since none of them had been trained in the practice.

Table 22: Proportion of enterprises that applied rice husk ash practice to other products

	Project partners		Non-project partners	
	Kandal (n=7)	Svay Rieng (n=9)	Kandal	Svay Rieng
Always (%)	57%	78%	0%	0%
Sometimes (%)	0%	11%	0%	0%
Never (%)	43%	11%	100%	100%

6.5.3 Installation advice

Svay Rieng producers expressed greater confidence than Kandal producers in their ability to give advice on latrine installation to their customers (Table 23). There was no difference between partner and non-partner producers in Svay Rieng, suggesting that the training on this topic may not have been effective and/or necessary. In Kandal, by contrast, partner producers were more confident than non-partners.

Table 23: Reported confidence in providing advice to customers on installation

	Partner Producers		Non-Partner Producers	
	Kandal	Svay Rieng	Kandal	Svay Rieng
Confident they can provide advice (%)	57%	100%	38%	100%
Can provide basic information (%)	43%	0%	38%	0%
No, cannot provide advice (%)	0%	0%	25%	0%

[6] Replacing 5% of the cement in a concrete mix with rice husk ash increases the concrete strength by up to 20%. Rice husk ash consists mainly of amorphous silica. Its fine grains fit into the spaces between the cement and sand particles reducing voids, which in turn reduces crack initiation and increases strength. During project implementation, however, it was noted that latrine producers did not take great care to source clean ash (free of organic material) or to measure the amount of ash accurately, which can lead to strength reduction. The practice should be reviewed before promoting rice husk ash during future scale-up projects.

6.5.4 Expanding markets

In-depth interviews with project partners indicated a strong willingness to expand into new areas, recruit more Sales Agents, and to improve sales. There are at least five partner producers that have significantly expanded their markets, adding new districts to their reach by establishing Sales Agent networks, buying more trucks for deliveries, renting land and hiring labor in these new locations, and setting up second production facilities and stock warehouses.

Table 24 details the number of Sales Agents active in the target provinces. Partner producers have been able to expand their market reach through the use of Sales Agents to create demand at the village level. The majority of Sales Agents (83%) come from government positions. However, the engagement of Sales Agents is not limited to government and some project partners have been creative about who they recruit to be a Sales Agent. For example, one partner has engaged a monk to sell latrines with the commissions going to the pagoda.

In Kandal, there was a higher proportion of female Sales Agents (41%) than in Svay Rieng (9%). This is likely due to the fact that Kandal tends to have a greater gender balance among government officials at all levels in comparison with Svay Rieng.

Table 24: Number of Sales Agents currently active with project partners

	Partner Producers		
	Kandal	Svay Rieng	Total
Total Sales Agents currently active	106	58	164
Average Sales Agents per producer	13	7.2	21
Sales Agent sex			
Female (%)	41%	9%	29%
Sales Agent occupation			
Village chief or deputy chief (%)	15%	22%	18%
Other government, e.g., authorities from the commune, district, or province levels (%)	73%	52%	65%
Non-government (%)	12%	26%	17%

6.6 USAID Attribution

Awareness of USAID and their support for sanitation is high among project partners in both provinces, but particularly high in Svay Rieng where 100% recognized the USAID logo and knew that USAID supported sanitation and latrine ownership in the community.

Table 25: Proportion of respondents who said they had seen the USAID logo

	Project Partners		Non-Project Partners		Masons		Building Supply Shops	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
Yes	57%	100%	21%	89%	36%	65%	33%	77%

Table 26: Proportion of respondents that knew USAID promotes sanitation and latrine ownership in the community

	Project Partners		Non-Project Partners		Masons		Building Supply Shops	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
Yes	57%	100%	4%	89%	18%	61%	12%	85%

7 Project Results: EOP Household Results

7.1 Impact Indicators

The household study aimed to gauge the impact of project messages and activities as well as perceptions and practices across the different respondent groups:

- Poverty indicators and latrine subsidy
- Latrine materials and upgrades
- Latrine owner satisfaction
- Use and maintenance
- Awareness of project message
- USAID attribution

7.2 Poverty Indicators and Latrine Subsidy

7.2.1 Household income indicators

Kandal households reported a higher annual income in the past 12 months from all sources than Svay Rieng households across all four groups. In Kandal, the Easy Latrine group reported the lowest level of annual income (Table 27). In Svay Rieng, no significant difference was found between the income level of households with no latrine and those that purchased an Easy Latrine suggesting that obstacles other than price are preventing them from purchasing a latrine. Households that purchased a latrine prior to October 2009 reported higher annual incomes than households with no latrine. Of the households that purchased latrines after October 2009, households with higher incomes tended to purchase non-Easy Latrine options and poorer households tended to buy Easy Latrines.

Table 27: Reported annual income

	No Latrine n = 70	Easy Latrine n = 41	Other latrine during project n = 76	Any latrine before project n = 73
Kandal (USD)	$1,166	$610	$2469	$2016
Svay Rieng (USD)	$427	$489	$860	$604

Further analysis of the estimated total cash income during the past year from all sources found that low income households were well represented in the Easy Latrine group. In Kandal, the first and second wealth quintile (poorest and second poorest) households represented 49% of Easy Latrine owners, in Svay Rieng the proportion was 42%.

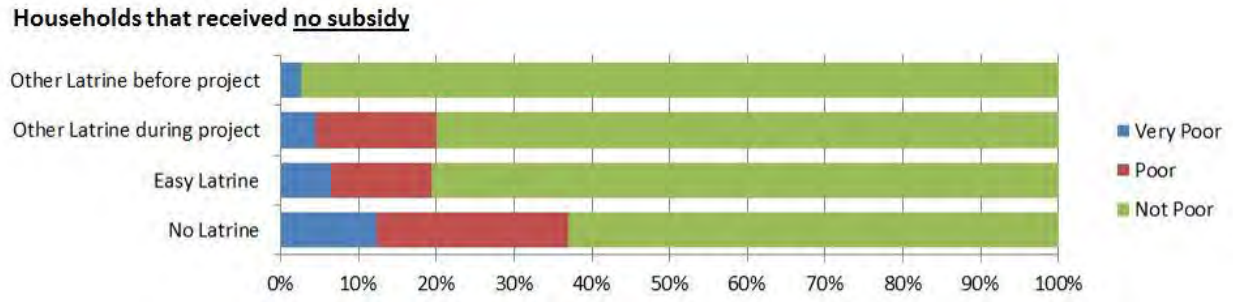
7.2.2 ID Poor indicators

A chi-square test (χ^2 (6,260) = 20.5, p<0.002) indicated an association between the type of latrine and classification by ID Poor. ID Poor data was only available in Svay Rieng. Figure 5 below shows the proportion of poor households within each of the latrine ownership groups. The data includes only those households that purchased their own latrines without subsidy.

Unsurprisingly, the greatest proportion of poor households (12% very poor; 25% poor) is found among non-latrine owners. The lowest proportion of poor households (2.6% very poor) is found among households that owned a latrine before the project began. Among households that purchased latrines during the project, about 20% were either poor or very poor, which is relatively high given that the proportion of poor in Svay Rieng's general population in is 29.4% (12.9% very poor; 16.5% poor). There is little difference between the proportions of poor among households purchasing Easy Latrines (6.5% very poor; 13% poor) versus those purchasing other latrines types during the project period (4.4% very poor; 16% poor).

The data suggest that the project encouraged greater uptake of latrines among poor households in general and that both Easy Latrines and 'other latrines' attracted poor households in equal proportions. The data also demonstrate that some very poor households were capable of purchasing latrines without support from subsidized programs. This underlines the fact that "affordability" is related to more than just cost in people's minds, even though cost is usually the first reason that people give for not having a latrine.

Figure 5: Proportion of households identified as ID Poor in Svay Rieng



7.3 Latrine Materials and Upgrades

7.3.1 Wall and roof materials

With regard to construction material, a similar pattern is seen in the tables for both wall material (Table 28) and roof material (Table 29). In Kandal, nearly all latrines shelters were built with higher-end materials (the top two rows in the tables) with little difference between the groups. In Svay Rieng, however, about 50% of shelters were built with lower-end materials (the bottom two rows in the tables) in comparison with the other two groups where only about 15% of shelters were built with lower-end materials.

Table 28: Construction materials used for latrine walls

	Easy Latrine		Other latrine during project period		Any latrine before project period	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
Concrete/bricks	83%	48%	93%	78%	89%	65%
Steel/fibrous cement/wood	14%	4%	5%	9%	11%	17%
Thatch/plastic sheet/ other	3%	36%	1%	12%	0%	17%
No walls [a]	0%	12%	0%	2%	0%	0%

[a] Latrines reported as not having any walls were likely under construction at the time of the survey (e.g., under-ground portion installed but shelter not yet erected).

Table 29: Construction materials used for latrine roof

	Easy Latrine		Any other during project		Any latrine before project	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
Concrete/tile	44%	4%	14%	6%	5%	4%
Steel/fibrous cement/wood	51%	48%	82%	78%	91%	81%
Thatch/plastic sheet/other	0%	24%	0%	7%	0%	11%
No roof	5%	22%	4%	9%	4%	2%

7.3.2 Upgrading

Previous studies have found that in some situations households do make affordable and attainable steps towards attaining improved sanitation.[7] In Kandal, households that purchased an Easy Latrine were more likely than other latrine owners to install their latrine in stages (Table 30).

[7] Shayamal, S., Kashem, M. Rafi, M. and Ryan, P. (2008). *Moving up the sanitation ladder : a participatory study of the drivers of sustainability and progress in community led total sanitation. In: Beyond construction : use by all : a collection of case studies*

Table 30: Staging of latrine construction

	Easy Latrine		Any other during project period		Any latrine before project	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
Latrine built in stages	22%	16%	5%	16%	7%	0%
Latrine built all at one time	78%	84%	95%	84%	93%	100%

In Svay Rieng, Easy Latrine owners were more likely to have upgrade plans in the next three than other groups. In Kandal, by contrast, Easy Latrine owners were less likely to have upgrade plans than households in the other two groups

Table 31: Households that reported the intention to upgrade their latrine in the next three years

	Easy Latrine (%)		Any other latrine during project (%)		Any latrine before project (%)	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
Intend to upgrade	17%	66%	33%	36%	43%	64%

The most common upgrade reported was the intention to install a second pit, a message that was promoted as part of the social marketing campaign. Svay Rieng latrine owners also identified the installation of a water reservoir and upgrading their existing shelter as high priorities.

Table 32: Type of upgrades anticipated

	Easy Latrine (%)		Any other latrine during (%)		Any latrine before project (%)	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
Install second pit	88%	100%	100%	99%	100%	100%
Install a water storage basin	5%	60%	16%	30%	15%	55%
Build a shower space	0%	28%	7%	12%	8%	22%
Install a hand washing basin	0%	20%	3%	16%	1%	17%
Build a new shelter or upgrade the existing shelter	5%	46%	9%	16%	14%	29%

from sanitation and hygiene promotion practitioners in South Asia. London, UK, WaterAid and Delft, The Netherlands, IRC International Water and Sanitation Centre. Available at: http://www.irc.nl/page/40450

7.4 Latrine Owner Satisfaction

In both pilot areas, a large majority of households that purchased any type of latrine were extremely or very satisfied with their latrine (Table 33). The largest proportion of somewhat or not satisfied respondents was from the group that had purchased their latrine prior to the project.

Focus groups conducted with Easy Latrine owners also found a high level of satisfaction. The longer a household had owned their latrine the happier with their purchase they tended to be. Interviewees were also very satisfied with the experience of purchasing the Easy Latrine as it is sold as a package of materials and delivered to their home.

In the focus groups there were a few isolated incidences where satisfaction was low due to incorrectly installed Easy Latrines resulting in needing lots of water to flush. The majority of these incorrectly installed Easy Latrines were installed by masons. Providing masons with greater knowledge about correct latrine installation, particularly the elevation of the catchment box in relation to the off-set pit, will likely decrease the number of incorrect installations. If latrines are correctly installed then user satisfaction and thus consistent use would likely increase.

Table 33: Satisfaction with latrine

	Easy Latrine		**Other latrine during project**		**Any latrine before project**	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
Extremely satisfied	19%	8%	67%	84%	52%	50%
Very satisfied	81%	92%	26%	13%	34%	38%
Somewhat satisfied	0%	0%	7%	3%	10%	9%
Not satisfied	0%	0%	0%	0%	4%	3%
Not sure	0%	0%	0%	0%	0%	0%

Personal recommendations are a demonstration of satisfaction with a new product or service. In Kandal, households that had purchased an Easy Latrine recommended a latrine to family, friends and neighbors in higher proportions than other latrine owners (Table 34). Svay Rieng exhibited high levels of personal recommendations across all latrine owner types.

Table 34: Households that reported recommending a latrine

	Easy latrine (%)		**Any other latrine during project (%)**		**Any latrine before project (%)**	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
Have recommended the latrine	81%	90%	60%	91%	66%	95%

7.4.1 Advantages and disadvantages of latrine ownership

Evaluation survey respondents were asked to identify benefits of owning a latrine and allowed to answer freely without prompting.

Table 35: Reported advantages of latrine ownership

	No latrine		Easy Latrine		Other latrine during project		Any latrine before project	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
Improved hygiene	42%	93%	68%	96%	90%	99%	86%	97%
Improved health	17%	71%	15%	72%	24%	66%	15%	64%
More privacy	8%	44%	15%	66%	26%	59%	21%	49%
More comfortable	14%	62%	32%	64%	40%	68%	49%	52%
Convenience/save time	31%	62%	41%	70%	57%	65%	51%	62%
Improved safety	11%	49%	22%	80%	41%	51%	29%	48%
Improved status/prestige	0%	8%	0%	34%	1%	21%	4%	15%
Guests can use it	17%	45%	29%	42%	29%	40%	45%	48%
No advantages	0%	0%	12%	14%	3%	7%	4%	6%
Don't know	46%	1%	7%	4%	0%	0%	1%	0%
Easy to excrete at night	0%	2%	0%	0%	0%	0%	0%	0%

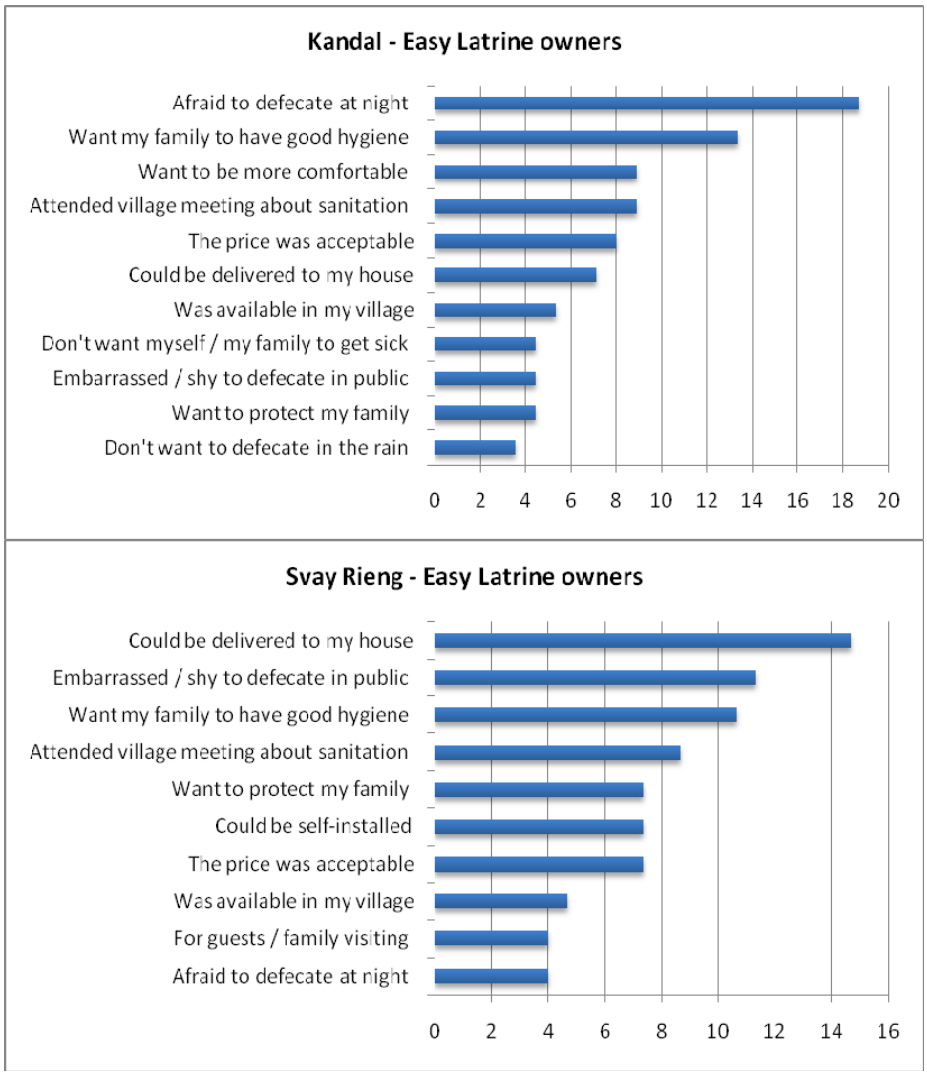
Table 36: Reported disadvantages of latrine ownership

	No latrine		Easy Latrine		Other latrine during project		Any latrine before project	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
Bad smell	6%	48%	6%	30%	8%	24%	16%	29%
Attracts flies	0%	30%	2%	14%	0%	8%	1%	17%
Cost to maintain	6%	38%	1%	44%	5%	43%	10%	44%
Work to maintain	8%	43%	5%	60%	18%	53%	18%	55%
Other people use it	5%	16%	12%	22%	4%	13%	4%	15%
Affects water quality	0%	29%	5%	26%	8%	18%	4%	19%
Overflows	5%	15%	5%	10%	7%	3%	19%	10%
No disadvantages	39%	22%	66%	16%	59%	28%	52%	19%
Don't know	55%	10%	20%	4%	4%	7%	7%	0%

7.4.2 Motivations for latrine purchase

The motivations most commonly reported for purchasing a latrine in Kandal were: 'Afraid to defecate at night', 'wanted their family to have good hygiene' and 'to be more comfortable' and 'save time'. In Svay Rieng, Easy Latrine owners reported the most common motivation for purchase of their latrine was that 'it could be delivered to their house' (Figure 6). For households with any other type of latrine, the motivation of delivery to the house was not commonly reported. Interestingly, price was not among the top three motivators for any group.

Figure 6: Easy Latrine owners' reported motivations for purchase



Note: Horizontal axes indicate percentage of total households giving the indiacted response. Only the ten most populer responses are shown

7.5 Use and Maintenance

Data on use and maintenance of latrines is given in Table 37. A high proportion of adults reported regularly using latrines (81-100%). Lower proportions of children are using latrine, particularly in Kandal (68-80%). Kandal also reported a moderate proportion of households that had insufficient water to flush their latrine during the dry season (up to 27%). The Easy Latrine owner group exhibited the highest proportion of households reporting insufficient water to flush (27%) compared to other latrine owner groups (5%). In Svay Rieng, 10% of Easy Latrine owners and households that had purchased their latrine since October 2009 reported not having enough water.

Table 37: Use and maintenance of latrines

	Kandal (%)	Svay Rieng (%)
Adults use latrine	81 - 98% Always or almost always	96 - 100% Always or almost always
Children use latrine	68 - 71% Always or almost always	74 – 80% Always or almost always
Verbally tell children to use latrine	55 - 63% Always or almost always	84 – 87% Always or almost always
Do you wash hands after latrine use	81 - 93% Always or almost always	88 - 100% Always or almost always
Have you made any repairs to your latrine	0 - 5% Have made repairs	0 – 4% Have made repairs
Is there enough water in the dry season to flush	5 – 27% Not enough water	1 – 10% Not enough water

Overall, Easy Latrine households reported more often than other latrine owners of not having enough water to flush their latrine in the dry season. This was more common in Kandal than in Svay Rieng (Table 38).

Table 38: Households that reported not having enough water to flush their latrine in the dry season

	Kandal	Svay Rieng
Easy Latrine	27%	10%
Other latrine during project period	5%	10%
Any latrine before project period	6%	1%

7.5.1 Awareness of when and how to empty pit

Table 39 and Table 40 give data on latrine owner's awareness of how and when to empty a pit.

Table 39: Reported estimated time needed before pit emptying

	Easy Latrine	Other latrine during project	Any latrine before project
How long do you think it will take to fill your pit (years)?	4.8 ± 0.4	6.7 ± 0.5	6.0 ± 0.4

Households in Kandal and Svay Rieng identified a family member using a bucket, shovel or hand pump as the most common option for emptying the pit. In Kandal, a higher proportion of households (29-45%) reported they would hire someone to empty the pit with a mechanical pump (Table 40).

Table 40: Process for emptying the latrine pit

	Easy Latrine (%)		Other latrine during project (%)		Any latrine before project (%)	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
Family member will empty with a bucket/shovel/ handpump	85%	100%	92%	100%	96%	99%
Hire someone to empty with bucket/shovel/ handpump	5%	12%	12%	9%	10%	12%
Hire someone with mechanical pump	29%	6%	45%	9%	34%	4%

Table 41 below shows that respondents in Kandal are willing to pay about twice as much as Svay Rieng respondents for pit emptying services. Easy Latrine owners are willing to pay slightly less than owners of other latrines.

Table 41: Amount willing to pay for pit emptying

	Easy Latrine		Other latrine during project		Any latrine before project	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
Average amount willing to pay (USD)	$18	$8.2	$24	$10	$22	$12

Evaluation survey respondents were asked to identify where they would put the contents of their pit after emptying and were encouraged to answer freely without prompting. Respondents were unprompted and all responses were recorded. The highest reported practice for the use of contents of

the pit was use on agricultural crops (Table 42). This suggests the majority of households regard the use of human waste as a suitable fertilizer or soil additive. In Svay Rieng, a majority of households reported they would bury the contents and reuse as a fertilizer (59-68%). Secondary treatment of pit contents is necessary to remove pathogens prior to moving pit contents upon agricultural crops[8].

Table 42: Use of pit contents

	Easy Latrine (%)		Other latrine during project (%)		Any latrine before project (%)	
	Kandal	Svay Rieng	Kandal	Svay Rieng	Kandal	Svay Rieng
On agricultural crops	97%	100%	98%	100%	100%	100%
In pond/river/lake/ other water	2%	18%	4%	3%	14%	8%
Dig a hole and bury and never use as fertilizer	5%	30%	7%	16%	15%	10%
Dig a hole and use as a fertilizer	12%	68%	20%	66%	26%	59%

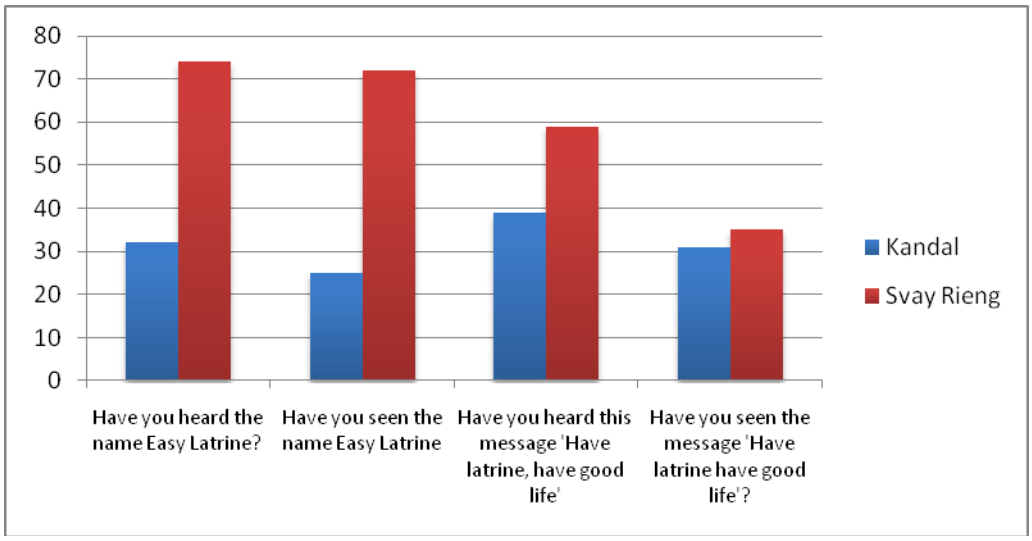
7.6 Awareness of Project Messages

Over 70% of respondents had heard or seen the Easy Latrine name, with Svay Rieng reporting the highest proportions of recall (Figure 6). This recall is a decrease compared to 82% recall reported in the mid-term evaluation conducted in August 2010. The decrease in recall is possibly due to the fact that the EOP household survey was conducted in the original target districts where project activities peaked earlier in 2010 (EOP evaluation survey conducted February 2011) meaning there was be a significant time gap between message exposure and recall.

Awareness of project messages in Kandal was consistently lower than in Svay Rieng. A possible explanation for this is that Kandal is peri-urban and a wealthier province compared to Svay Rieng. Those in Kandal are more exposed to and inundated with different marketing messages. Moreover, people in Kandal may have more choices in how to spend their earnings and more leisure opportunities. The attendance in village promotional events was approximately one-third larger in Svay Rieng than in Kandal. In Svay Rieng people have more free time to come to village meetings and invite someone into their home to discuss sanitation and latrine adoption.

[8] Tilley, E., Luthi C., Morel A., Zurbrugg C. and Schentenleib R. 2008 *Compendium of Sanitation Systems and Technologies*. Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland pp.24-25

Figure 7: Awareness of project messages



7.6.1 Sources of information

In Kandal and Svay Rieng, households identified NGO workers (44-81%) and government officers (37-75%) as the top two sources of 'very good' information about purchasing a latrine. Easy Latrine owners were more likely to identify concrete producers as 'very good' sources of information compared to the other latrine owners and households without a latrine.

Figure 7and 8 show village meetings and NGO staff were the two main sources for exposure to project messages, demonstrating the value of village level promotions compared to other, less direct channels.

Figure 8: Easy Latrine message sources

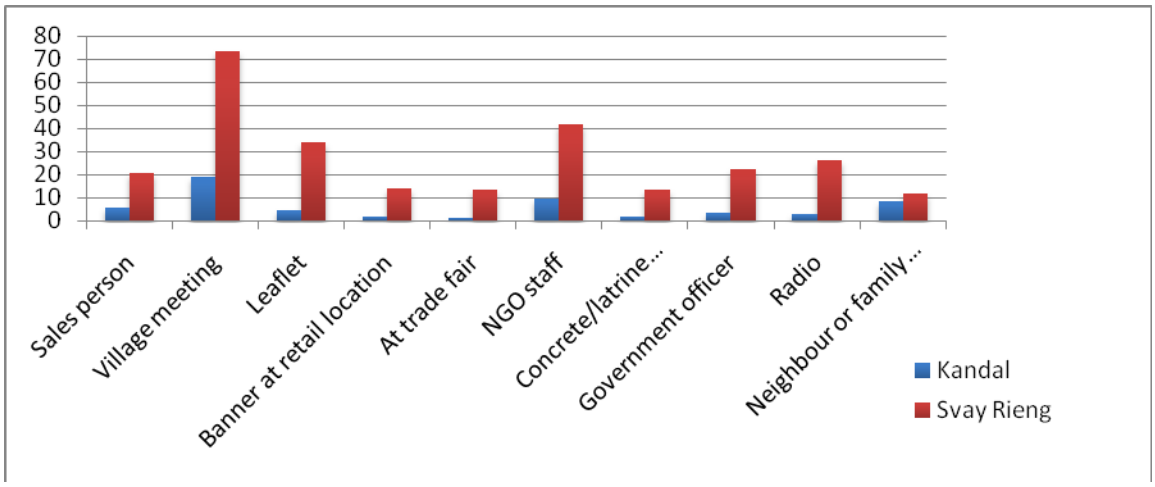
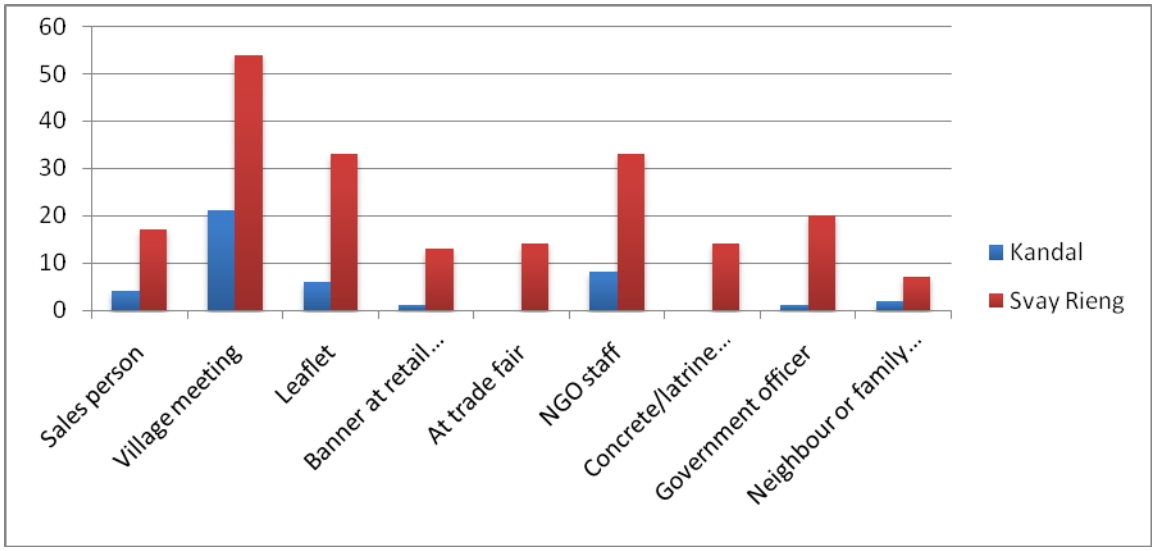


Figure 9: Social marketing messages sources



7.7 USAID attribution

Easy Latrine owners showed much higher levels of awareness of USAID and their support towards sanitation (Table 43). As with the project message awareness, the survey was conducted in the original target area where there was a significant time lag between exposure and recall.

Table 43: Awareness of USAID and their support towards sanitation

	Total	No latrine	Easy Latrine	Any other latrine since 2009	Any latrine before 2009
Have you seen the USAID logo?	27% (138 of 520)	20% (29 of 143)	46% (42 of 91)	25% (36 of 144)	22% (31 of 142)
Did you know they work in sanitation?	28% (147 of 520)	22% (31 of 143)	49% (45 of 91)	29% (42 of 144)	20% (29 of 142)

8 Cost Effectiveness

This project was implemented with co-funding from the Water and Sanitation Program of the World Bank and USAID through the DAI-implemented Cambodia MSME Project. The table below presents the project cost per latrine for various scenarios. The table includes the project costs only; it does not include the cost of the latrine itself, which was paid for by the users.

Calculations of project costs per latrine are only a rough indicator of the project effectiveness since they consider only a limited number of factors (i.e., project costs and number of latrines). They do not, for instance, take into account the value added in the latrine supply chain, the level of user satisfaction, or changes in user attitudes and behavior, all of which have important implications for sustainability of project impacts.

Table 44: Project cost per latrine for various scenarios

	Number of latrines	Current project plus preliminary research [a]	Current project only	Current project excluding 12-mo. preparation phase [b]
Project cost (USD) Oct 2009 - Apr 2011		$974,118	$944,118	$643,646
		Unit Cost per household reached (USD/household) [c]		
Installed latrines				
Target provinces	12,309	$79	$77	$52
All Provinces	14,089	$69	$67	$46
Purchased latrines				
Target provinces	15,379	$63	$61	$42
All provinces	17,424	$56	$54	$37
		Unit Cost per person reached (USD/person) [d]		
Installed latrines				
Target provinces	12,309	$17	$17	$11
All Provinces	14,089	$15	$15	$10
Purchased latrines				
Target Provinces	15,379	$14	$13	$9.1
All provinces	17,424	$12	$12	$8.0

[a] Sanitation demand and supply studies conducted between 2006 and 2009 by iDE with funding from WSP.

[b] As a pilot project, about one third of the budget went toward developing technologies, tools, and strategies during the 12-month preparation phase; costs that would not need to be replicated during scale-up.

[c] Assumes that each latrine is used by only one household.

[d] Assumes 4.6 people per rural household (2008 census)

Annexes

A – Easy Latrine Description

Easy Latrine Wins "Best in Show" at International Design Competition

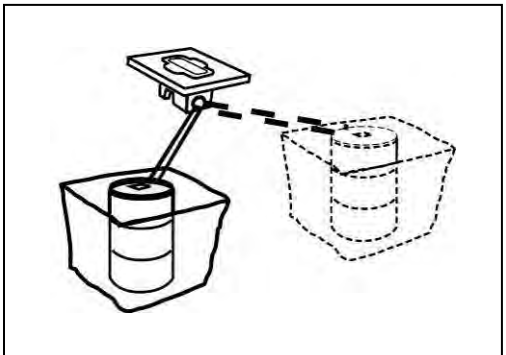
PHNOM PENH, JULY 2010 – A simple latrine designed for rural areas in developing countries was named "Best in Show" at the 2010 International Design Excellence Award competition organized by the Industrial Designers Society of America (IDSA), the oldest and largest member society in the product design industry worldwide.

The "Easy Latrine", an innovative low-cost latrine design, received one of only three "Best in Show" awards out of a field of 1,900 entries from 28 countries. The Easy Latrine was noted as being "modest on physical beauty, perhaps, but high on social responsibility."

"Selecting a humble latrine for this award may seem surprising for a competition that usually features sleek, high-tech designs," said Michael Roberts, Country Director of iDE Cambodia, "but it reflects an emerging trend in the design community toward the application of world-class design skills to problems that affect the world's poor majority."

The Easy Latrine design was developed under the expert guidance of Jeff Chapin (on sabbatical from IDEO, a leading U.S. design firm) in collaboration with iDE Cambodia staff and partner organizations including the Ministry of Rural Development, LienAid, and Rainwater Cambodia. Funding for the design process was provided by the World Bank Water and Sanitation Program and the USAID Cambodia MSME Project.

The Easy Latrine design is based on the ingenious alternating pit latrine originally developed in India by Sulabh International. In Cambodia, this type of latrine consists of a porcelain pour-flush "squat" pan connected by a drain pipe to one of two offset pits lined with concrete rings. Solid and liquid wastes are directed to the first pit where the solids are contained as the liquids seep into the surrounding soil. After about two years, when the first pit is full, the owner switches the drain pipe to begin filling the second pit. While the second pit is filling, the solid waste in the first pit is



Alternating pit latrine

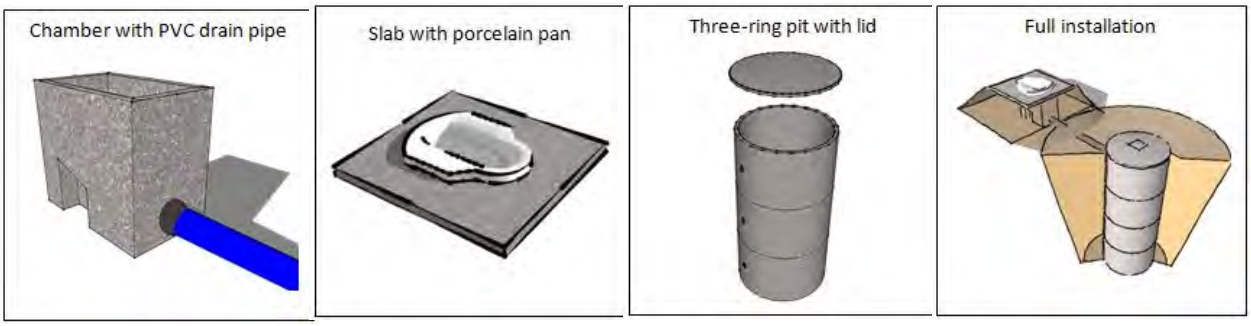
composting so that it can be safely emptied when the second pit is full. The drain pipe is then switched back to the first pit and the cycle repeats itself.

This type of latrine is suited to areas where i) it is possible to dig a 1.5-m deep pit, ii) soil is permeable enough to allow liquid waste to seep out of the pit, and iii) the seeping liquid waste will not contaminate drinking water sources.

Easy to Buy, Easy to Build, Easy to Use

Several modifications to the basic Sulabh design were made to reduce its cost and make it easier for people to purchase and install in Cambodia:

Firstly, the ***wall thickness*** of the concrete rings was reduced from the local 5 cm standard to 3 cm. To compensate for the decrease in thickness, ***rice husk ash*** is added to the concrete mix to make it stronger. The ash, which consists mainly of silica, replaces 5% of the cement resulting in a stronger, less expensive concrete mix. Reducing the wall thickness of the rings reduces the overall volume of concrete



required, which further reduces costs while also making the rings lighter and easier to transport and install.

Second, a ***prefabricated concrete chamber*** is used to capture the solid and liquid waste from the ceramic squat pan and direct it to the drain pipe. The chamber also provides support for the concrete floor slab, lifting it to the proper height above ground level to ensure good flow into the pit. Traditionally, the chamber has been constructed of brick and mortar—a time consuming and expensive task that required hiring a mason and purchasing materials from multiple locations. The prefabricated concrete chamber significantly reduces the cost and can be installed by the owner.

Third, the ***construction process*** for concrete rings was improved to make ring production faster and easier for concrete producers. Improvements include using a drier concrete mix and a removable inner mould. Immediately after pouring, the inner mould is lifted out using a portable crane (see photo at right). After about a half hour, the outer mould

Removing the inner mould during concrete ring

can also be removed. The stiff concrete mix allows the concrete to keep its shape while it hardens without the mould to support it. With one inner mould and two outer moulds, a concrete producer can make at least nine rings per day—three times more than he could make with traditional methods using one inner and outer mould set. The increased production rate reduces the production cost and results in a lower cost for the consumer.

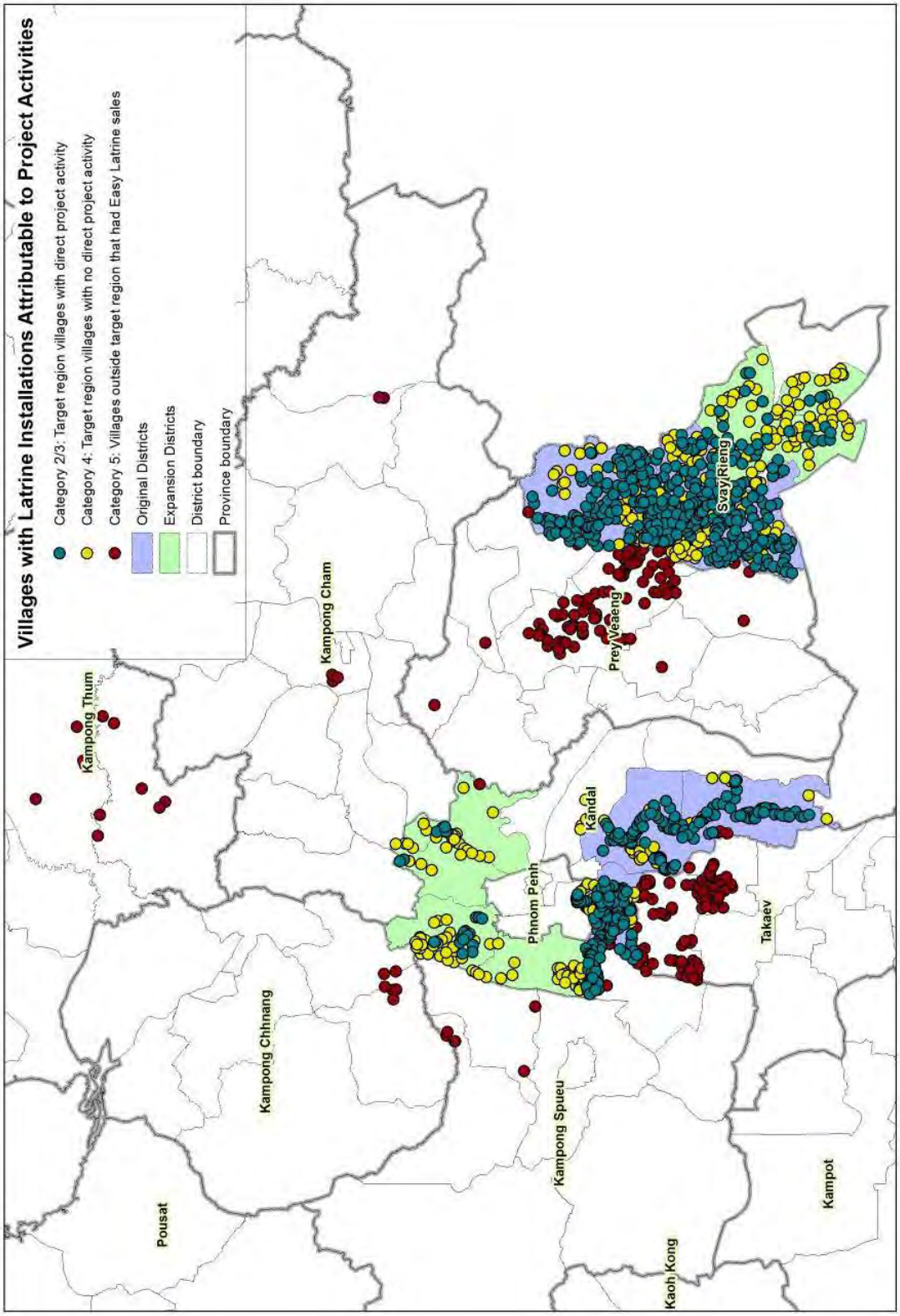
Fourth, the Easy Latrine is packaged as a ***do-it-yourself kit***. All the underground latrine components can be purchased together at one location eliminating the need to shop around for materials from numerous suppliers. The basic Easy Latrine kit, which costs about US$35, includes three rings, pit lid, chamber, slab with integrated ceramic pan, PVC drain pipe, a bag of mortar to seal the drain pipe joints, and illustrated installation instructions. The seller delivers the kit to the owner's house and the owner installs it him or herself. A shelter (not part of the kit) can then be constructed of simple thatch or more expensive materials depending on the owner's budget. The second pit, consisting of an additional three rings and lid, can be purchased at a later date when the first pit is near full.

Proud owner of a new Easy Latrine in Kandal

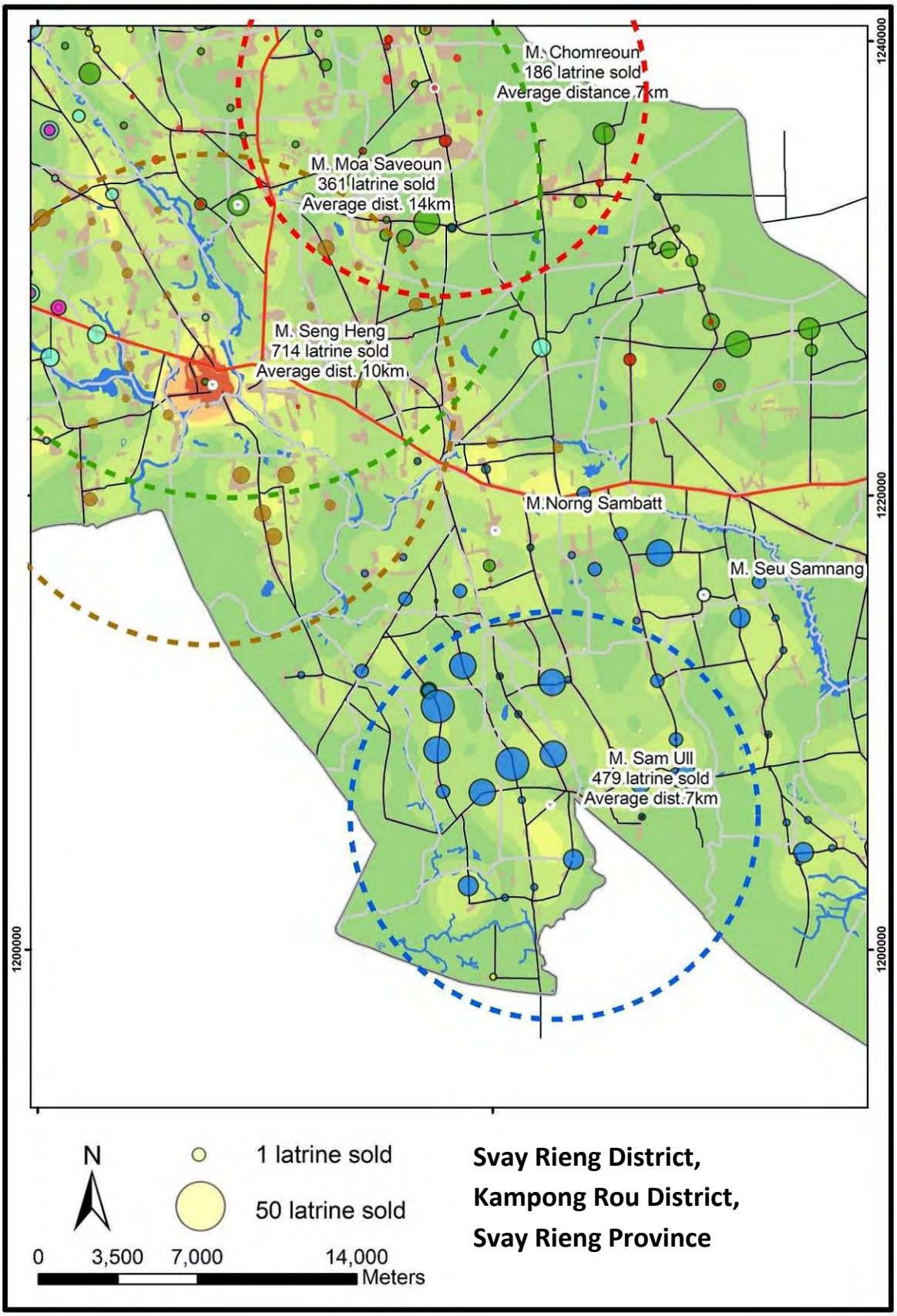
Lastly, the Easy Latrine is supported by an integrated ***sanitation marketing project*** that combines i) village-level promotional activities and mass media campaigns to generate demand for sanitary latrines, ii) training and support for supply chain actors to ensure adequate supply of sanitation products and services, and iii) collaboration with authorities at all levels to ensure that Easy latrine promotion is integrated with government sanitation and hygiene activities.

The Easy Latrine Design Team: Jeff Chapin, Ken Savath, Ros Kimsan, Ben Clouet, Tamara Baker and Cordell Jacks of iDE Cambodia; Aun Hengly of Rainwater Cambodia; Sim Sopheak of LienAid; and Chhorn Chhoeurn of the Ministry of Rural Development (Royal Government of Cambodia).

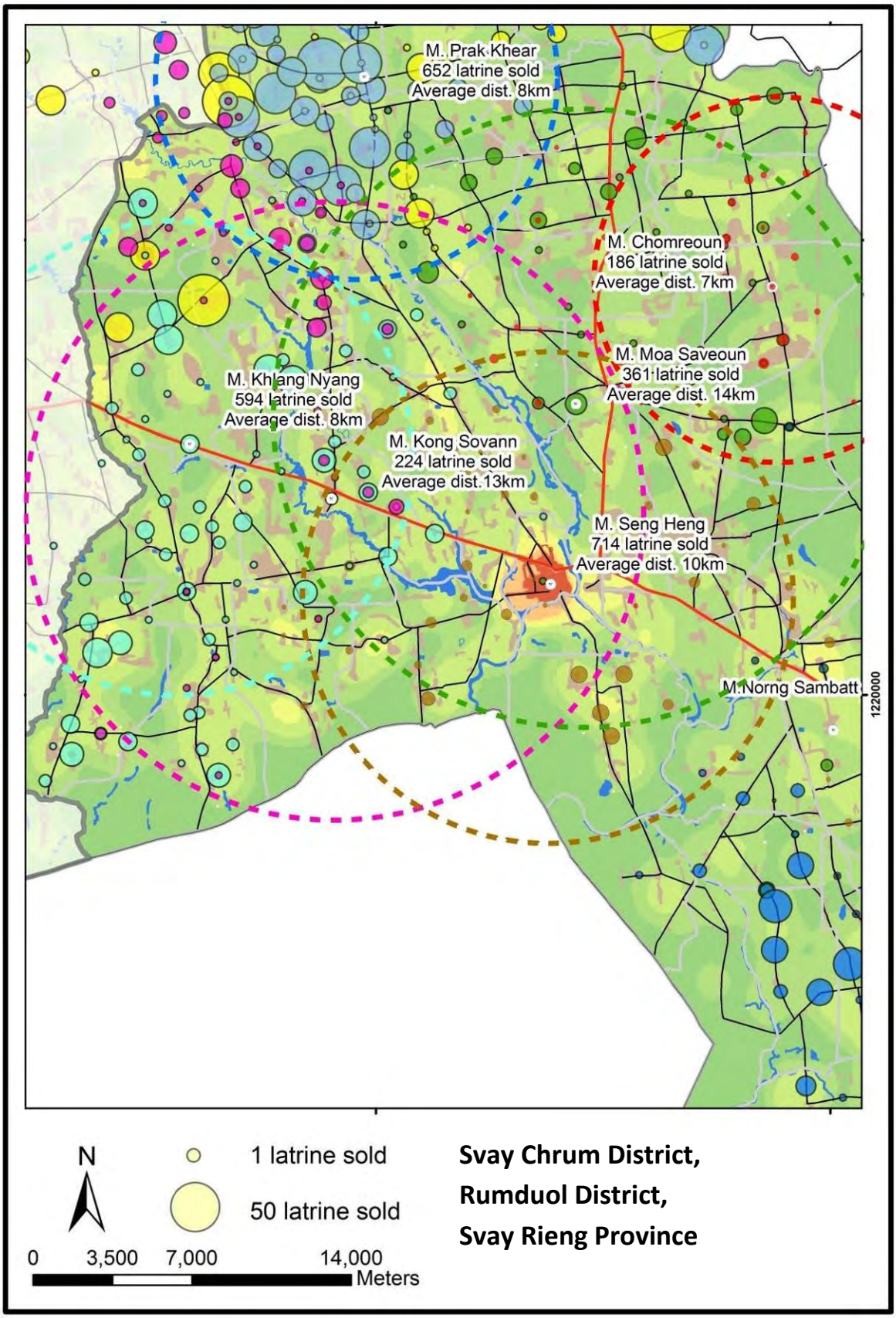
B – Map of Villages with Attributable Latrines

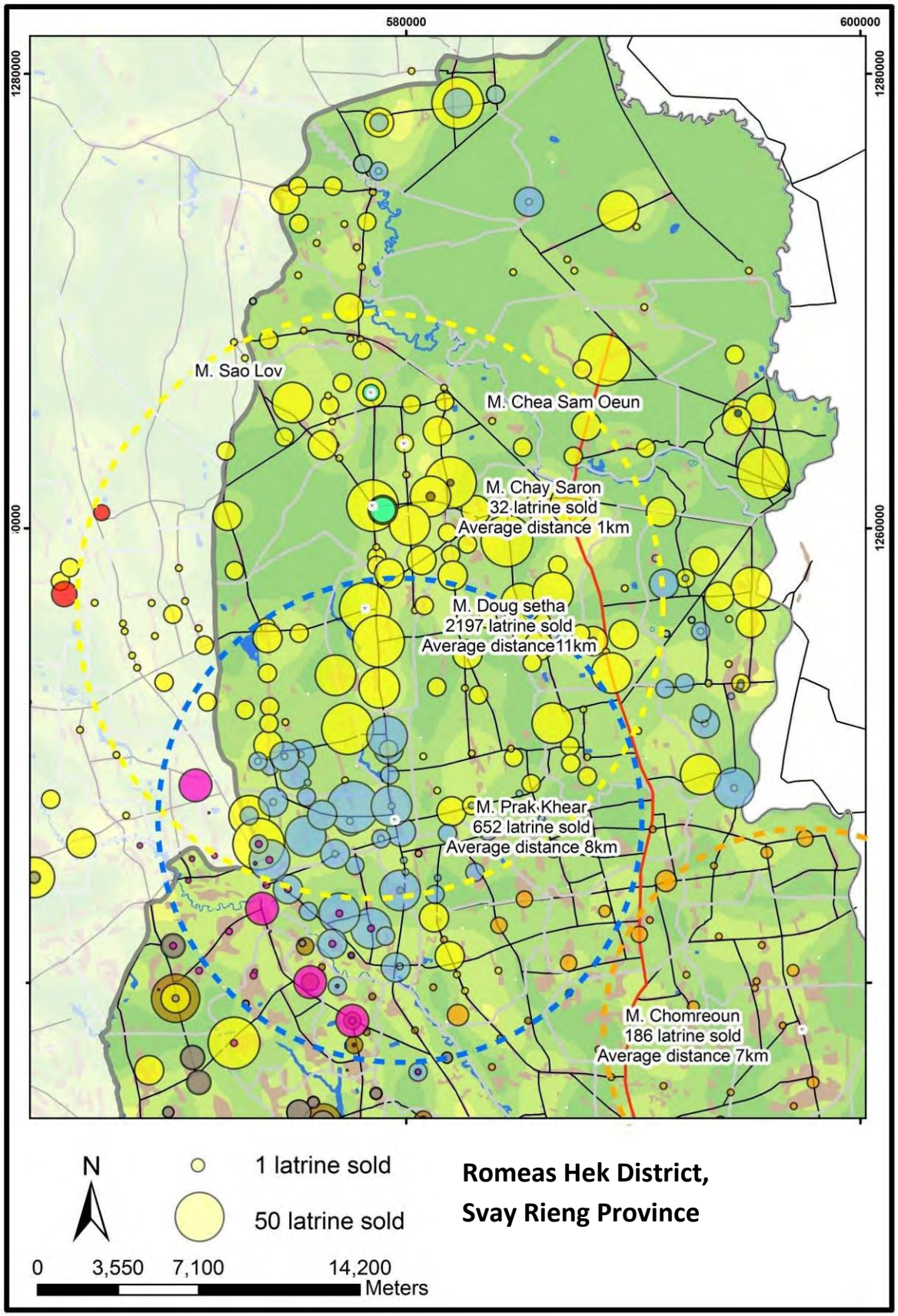


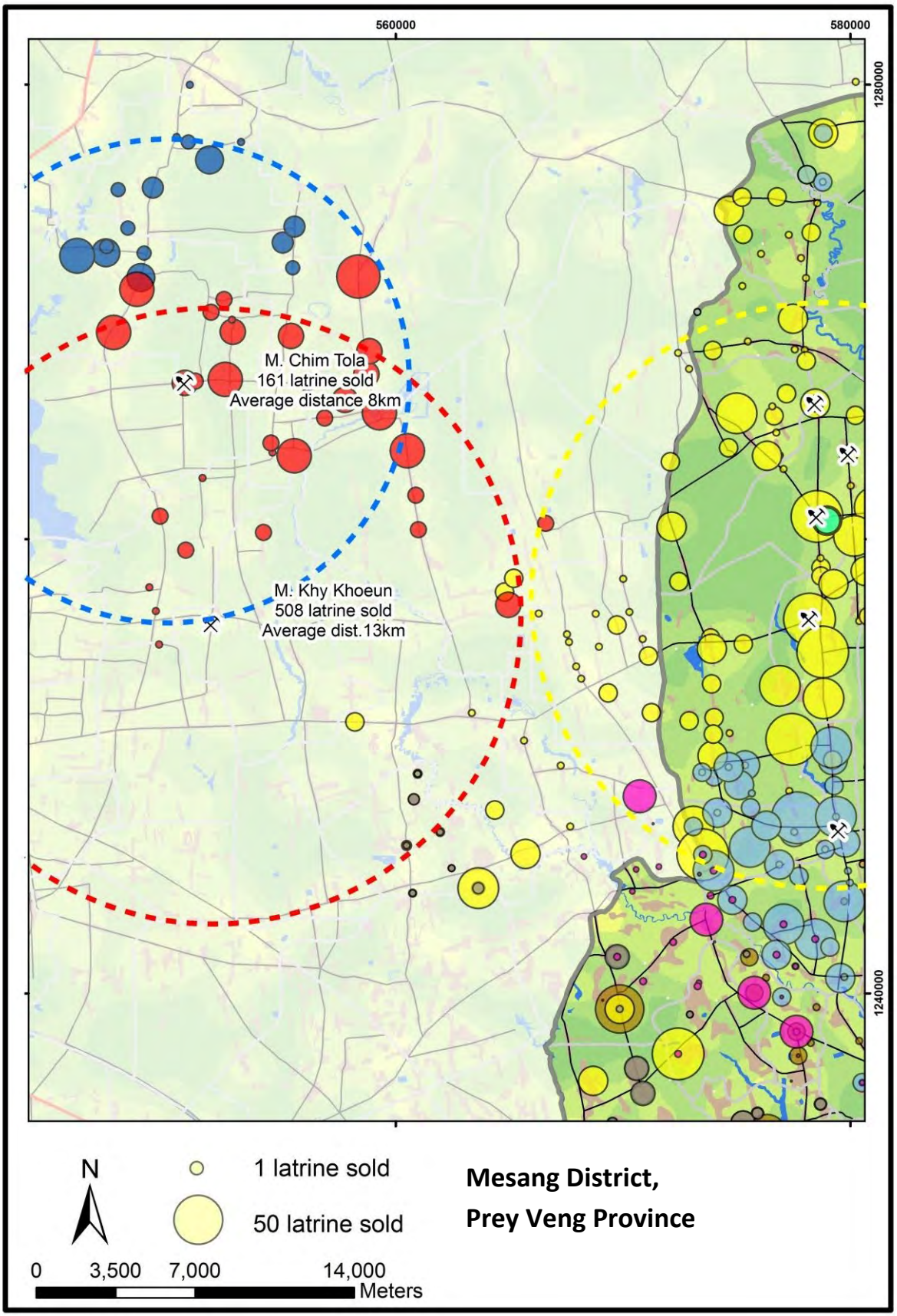
C – Maps of Latrine Sales by Village and by Producer

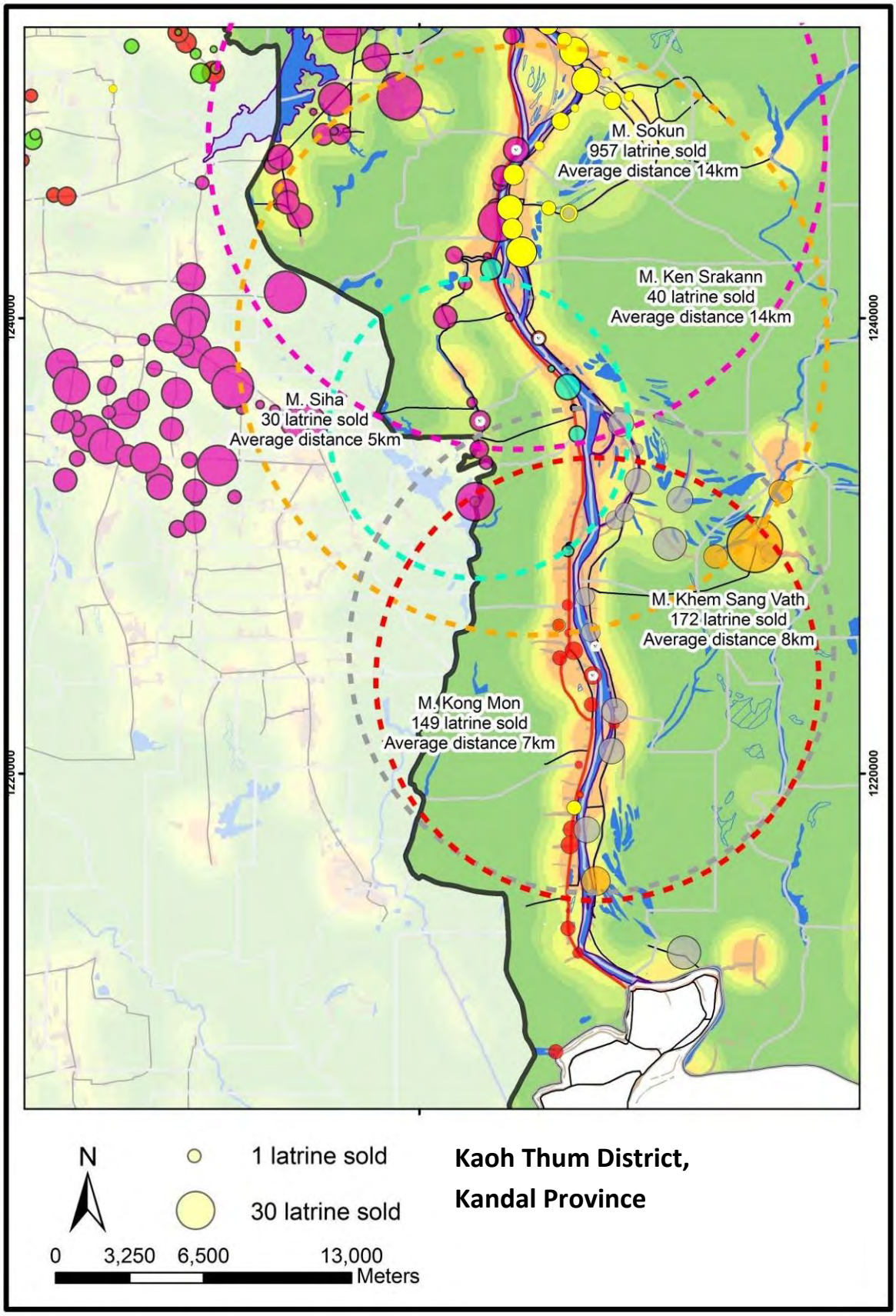


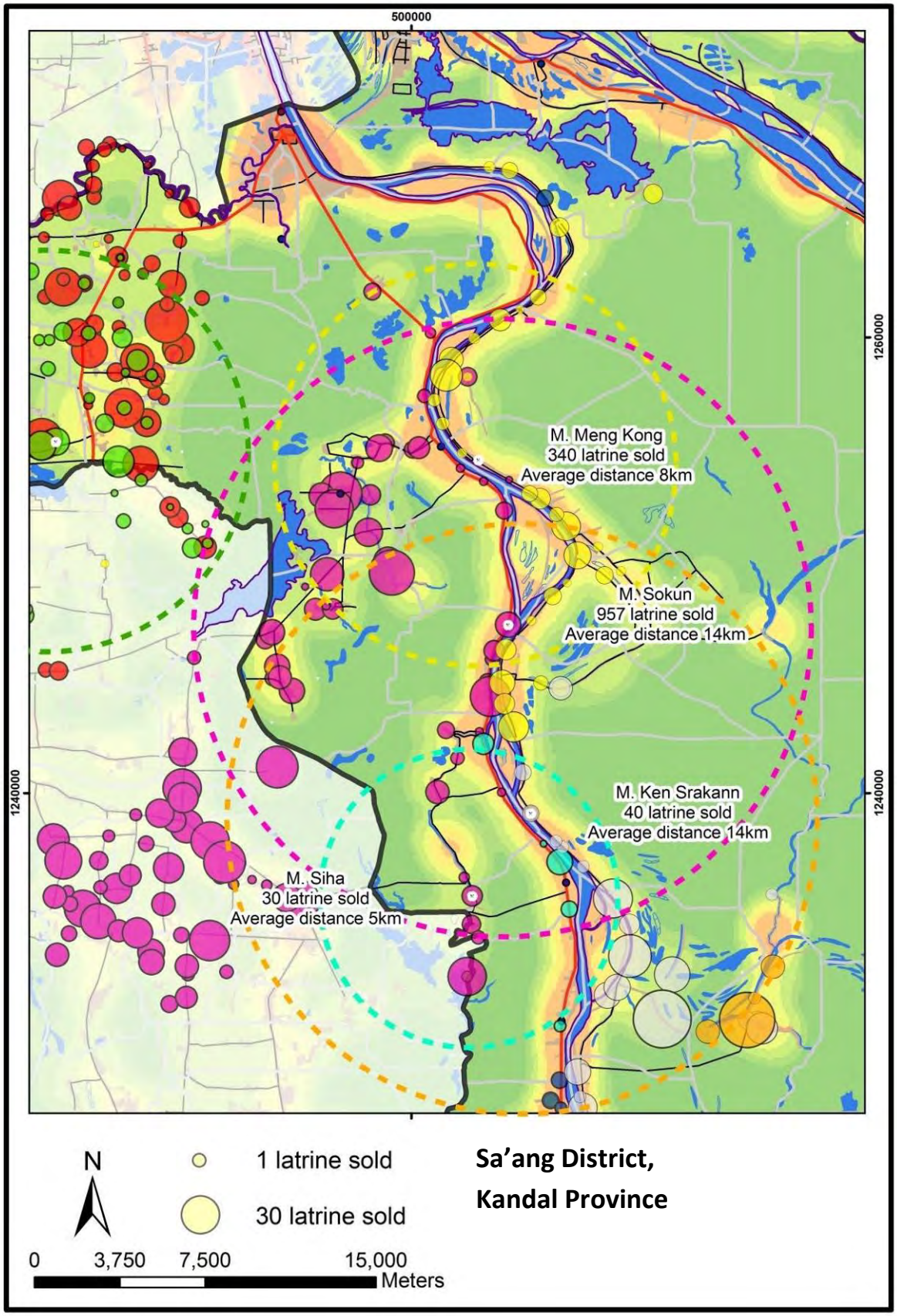
Svay Rieng District,
Kampong Rou District,
Svay Rieng Province


M. Prak Khear
652 latrine sold
Average dist. 8km
M. Chomreoun
186 latrine sold
Average dist. 7km
M. Moa Saveoun
361 latrine sold
Average dist. 14km
M. Khlang Nyang
594 latrine sold
Average dist. 8km
M. Kong Sovann
224 latrine sold
Average dist.13km
M. Seng Heng
714 latrine sold
Average dist. 10km
M.Norng Sambatt
1220000
N
1 latrine sold
50 latrine sold
0
3,500
7,000
14,000
Meters
Svay Chrum District,
Rumduol District,
Svay Rieng Province

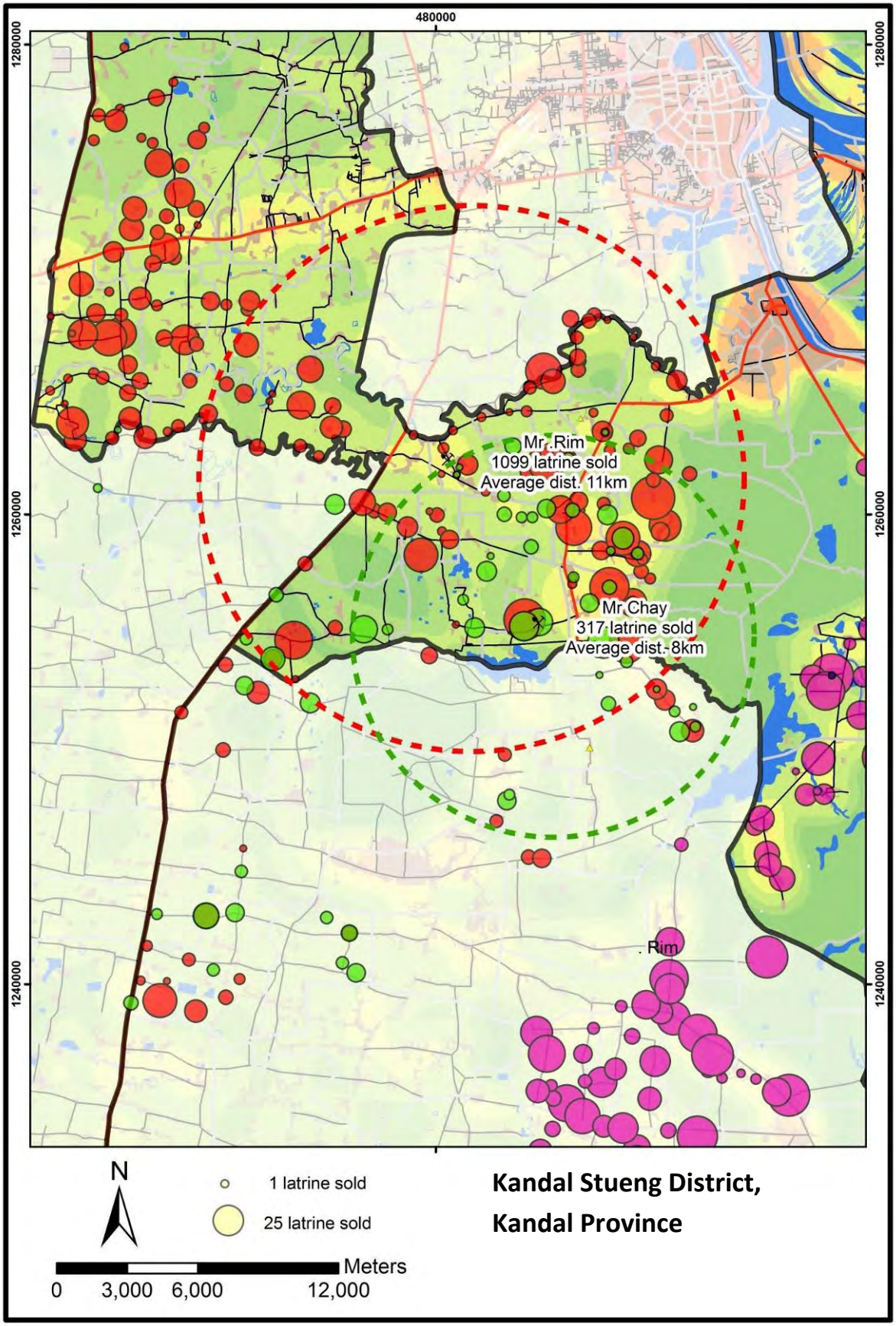

580000
600000
1280000
1260000
M. Sao Lov
M. Chea Sam Oeun
M. Chay Saron
32 latrine sold
Average distance 1km
M. Doug setha
2197 latrine sold
Average distance11km
M. Prak Khear
652 latrine sold
Average distance 8km
M. Chomreoun
186 latrine sold
Average distance 7km
N
1 latrine sold
50 latrine sold
0
3,550
7,100
14,200
Meters
Romeas Hek District,
Svay Rieng Province


560000
580000
1280000
1240000
M. Chim Tola
161 latrine sold
Average distance 8km
M. Khy Khoeun
508 latrine sold
Average dist.13km
N
1 latrine sold
50 latrine sold
0
3,500
7,000
14,000
Meters
Mesang District,
Prey Veng Province


M. Sokun
957 latrine sold
Average distance 14km
M. Ken Srakann
40 latrine sold
Average distance 14km
M. Siha
30 latrine sold
Average distance 5km
M. Khem Sang Vath
172 latrine sold
Average distance 8km
M. Kong Mon
149 latrine sold
Average distance 7km
1240000
1220000
N
1 latrine sold
30 latrine sold
0
3,250
6,500
13,000
Meters
Kaoh Thum District,
Kandal Province



Sa'ang District, Kandal Province


480000
1280000
1260000
1240000
Mr. Rim
1099 latrine sold
Average dist. 11km
Mr.Chay
317 latrine sold
Average dist. 8km
Rim
N
1 latrine sold
25 latrine sold
Meters
0
3,000
6,000
12,000
Kandal Stueng District,
Kandal Province

D – EOP Survey Questionnaires