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**ENSURING AVAILABILITY AND SUSTAINABLE MANAGEMENT  
OF WATER AND SANITATION FOR ALL**

**Instituting equity and inclusion in market-based  
approaches: reaching the poor and disabled in sanitation**

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*This paper describes iDE's approach to mainstreaming equity and inclusion within its market-based approach from the beginning of a program and not as an afterthought. The paper focuses on two separate strategies aimed at increasing access and equity among different groups. The first is the use of financial tools to increase access for very poor consumers in Bangladesh and Cambodia. The second part of the paper focuses on iDE's user-centered design approach and experimentation with new construction technologies in constructing a latrine shelter for disabled users.*

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**Introduction**

Since 2011, using the market-based approach, iDE has facilitated the sale of over 285,000 unsubsidized<sup>1</sup> improved latrines globally. This market-based approach has allowed iDE to achieve scaled impact whilst minimizing market distortions of well-meaning subsidy programs. While iDE acknowledges that the market is not incentivized to reach the poorest of the poor and the marginalized, iDE remains committed to achieving public health impacts equitably and inclusively. This paper describes iDE's approach to mainstreaming equity and inclusion within the market-based approach, using two separate examples from the field. In the first part, the paper describes two of the pioneering efforts that iDE is using in Cambodia and Bangladesh to increase access for the poor using smart subsidy mechanisms. The second part of the paper describes a latrine shelter design for disabled users developed in partnership with Engineers Without Borders Australia, an example of iDE's efforts to extend its design methodologies to ensure that physically disadvantaged consumers have equitable access to products and services that meet their needs.

**The Technology Adoption Curve and iDE's approach**

The framework that has grounded iDE's efforts to develop sanitation markets is the "technology adoption curve." As shown in Figure 1, this model assumes that the sequence of customer types adopting a new product follows this pattern: innovators, early adopters, early majority, late majority, and laggards. Latrine coverage is an indicator of where in the product adoption curve a given region lies.

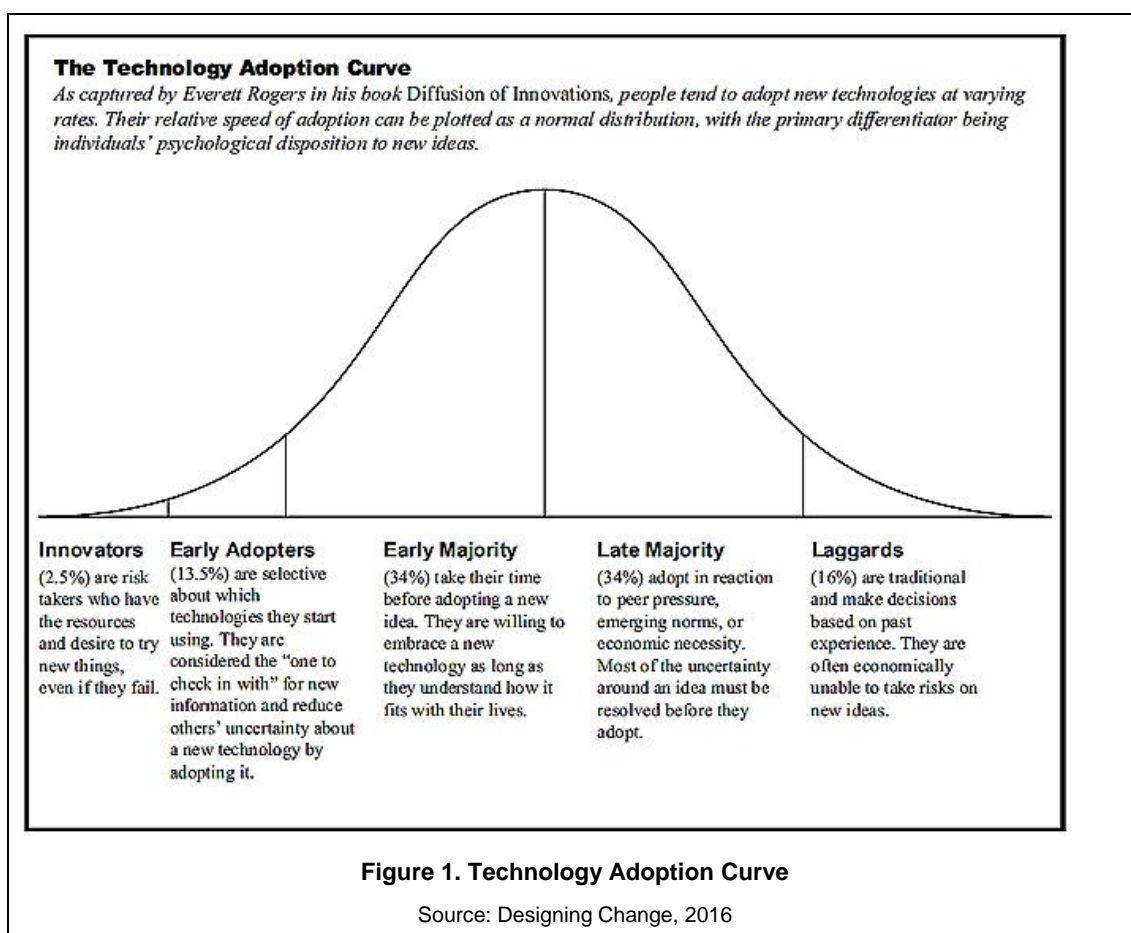
iDE envisioned that the different customer types within the technology adoption curve could be addressed through successive "sweeps":

- Sweep 1. Make appropriate latrine options available for rural households to purchase from local suppliers by i) building the capacity of local entrepreneurs to profitably manufacture, promote, and distribute latrines, and ii) stimulating demand through social marketing campaigns and sales. During the pilot project, effective Sweep 1 strategies were developed and tested in two pilot provinces to capture primarily the "early adopter" and some of the "early majority" segment of the market. Importantly, this includes primarily households that had enough available cash and were willing to risk investing in a relatively new and unfamiliar product.
- Sweep 2. Increase latrine sales and market penetration reaching the early and late majority households, including poorer households, through targeted marketing, professionalized sales, product innovations, and the use of sanitation financing. This next wave of purchasers includes households that have less cash

on hand and/or a greater need to see their neighbors using a product before they are willing to invest themselves.

- Sweep 3. Target the remaining “late majority” and “laggard” households without latrines (presumed to include the poorest households) through smart subsidies delivered in ways that minimize the negative impact on sanitation markets such as voucher systems, embedding in market channels, and effective targeting.

This approach supports many national government policies’ stated desire to use subsidy efficiently to expand access without undercutting market mechanisms.

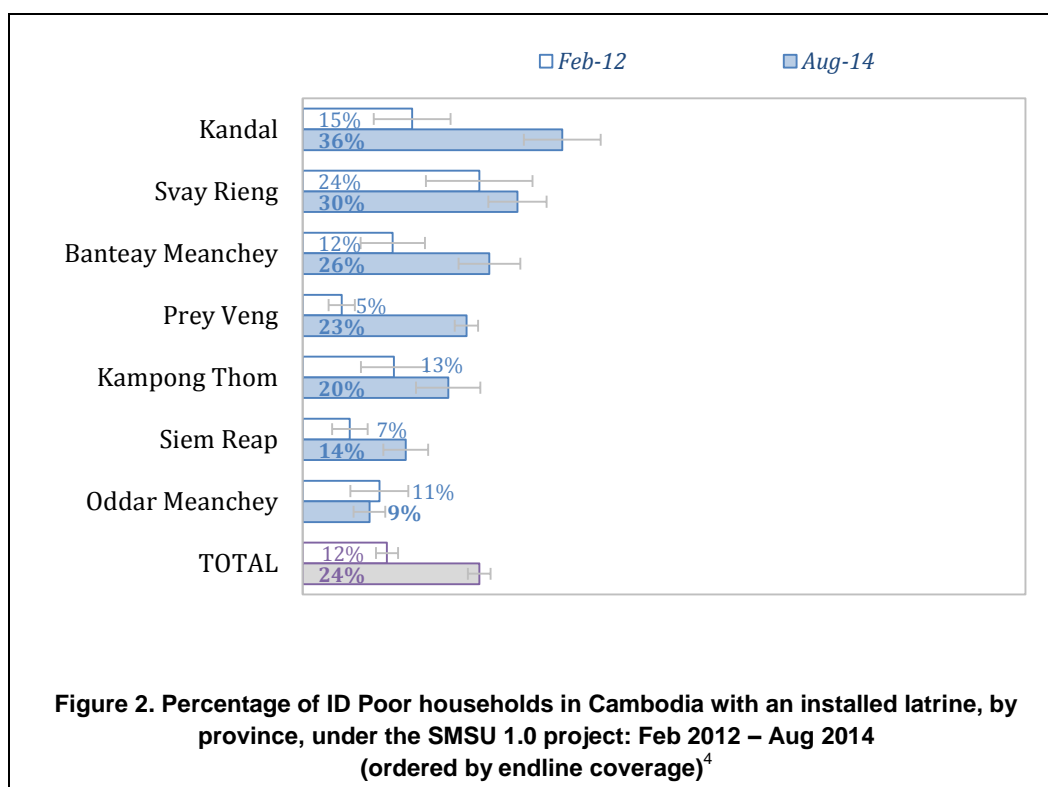


### Leveraging smart subsidies and microfinance to reach Cambodia’s rural poor

In iDE’s flagship Sanitation Marketing Scale-Up (SMSU)<sup>2</sup> program in Cambodia, baseline coverage across the seven target provinces started at about 29%, placing the market in the early adopter space; by the end of the three-year SMSU 1.0 project, coverage across the seven provinces had risen to 49%, closing in on the late majority. Results of SMSU 1.0 also showed that iDE’s market-development efforts were poor-inclusive: coverage of the government-identified poor<sup>3</sup> (ID Poor) doubled from about 12% to 24% during the project period, in line with national figures of ID Poor proportions with respect to the general population.

### Sweep 2: Sanitation financing

To achieve these results, iDE employed two “sweeps”, the first by facilitating sales on cash, and the second by facilitating sales on credit (Wei 2015) . A randomized controlled trial conducted by ID Insight showed that access to financing increases uptake of improved latrines at market price fourfold. Moreover, through two operational pilots that iDE conducted in the provinces of Kandal and Svay Rieng, results showed that the sanitation loans were able to penetrate further into the poor segments. In Kandal, 53% of loan customers were below the Cambodian National Poverty Line, and 21% were below the USAID Extreme Poverty Line. In Prey Rieng, 11% of loan customers were ID Poor, with 21% ID Poor 2. In comparison, Prey Veng as a province on the whole has 12% ID Poor 1 and 15% ID Poor 2 according to the Ministry of Planning.



### Sweep 3: Smart subsidies

In the second iteration of the program known as SMSU 2.0, iDE, in partnership with Amplify Markets, is testing a smart subsidy specifically targeted at the poor channeled through microfinance institutions (MFIs). In short, government-identified poor households are targeted through regular sales events and are able to purchase latrines at a discounted price with the option of financing. Unlike a standalone subsidy program, which can be inefficient and costly to administer, the pilot offers discounted latrines alongside market-priced latrines with the option of financing for all approved purchasers. The transfer of the latrine voucher from household to latrine business owner to microfinance institution serves as a mechanism for household self-verification of latrine delivery, latrine business owner payments, and household loan repayment (if applicable). Households designated ID Poor 1 (very poor) will receive a larger subsidy than households designated ID Poor 2 (poor). However, all households will be required to pay over half the market price of the latrine (i.e. there are no full subsidies). Through this pilot, iDE hopes to develop a scalable and sustainable strategy to effectively target the poor while ensuring long-term engagement of the private sector.

This model is intended to differ from other models of offering sanitation hardware subsidy in Cambodia in three primary ways:

- Whereas other programs offer full hardware subsidy, it is our hypothesis that asking a household to pay a significant portion of the hardware cost has positive impacts on both the continued and correct use of the latrine and on the sustainability of the sanitation market as a whole.
- Other programs offering a hardware subsidy may do so based on “output” and verification, thus requiring poor families to pay the hardware cost in cash and then seek reimbursement. If cash is a challenge to begin with, as implied by the findings of a recent willingness-to-pay RCT study in Cambodia, this model inevitably leaves families without a latrine as they cannot go out of pocket. This model offers ID Poor households the opportunity to finance the purchase of a latrine and pay for it in small, monthly, subsidized installments after the latrine is installed. Latrine businesses are paid the full market price of the latrine by the MFI partner and out of the subsidy pool at the time of installation, thus making the need to verify “output” at the household level unnecessary.
- Whereas other subsidy programs are created to market, distribute and verify installation of latrines – running in parallel with or even undermining private latrine sales – this model builds on the existing private latrine market. Sales, marketing, and even financing of latrines happen as they do under a non-

subsidized model, requiring only a small administrative cost to distribute the subsidy funding to latrine businesses at the time of installation. This approach has the potential to be highly efficient, thereby reallocating funds otherwise needed for subsidy programming to the subsidy pool itself.

To rigorously test the impact of a smart subsidy channeled through MFIs, iDE is partnering with Causal Design to conduct an RCT to determine the relative impact of the size of the subsidy on latrine uptake. The study will also look at any unintended distortionary spillover effects of the subsidy on surrounding geographies.

### **Channeling sanitation subsidies with consumer choice in rural Bangladesh**

In less than three decades, Bangladesh has progressed to an open defecation rate of only 3% in 2015 from 39% in 1990, where the success was largely driven by subsidies. As a result, Bangladesh is close to achieving nation-wide open defecation-free status. However, the vast majority of existing latrines are not hygienic by JMP standards, with contamination through disease vectors such as flies coming in contact with exposed drop holes of direct pits. To address this issue, iDE has developed the Sato Pan, a simple trap door design that forms a water seal at the bottom of a plastic pan set into a cement slab over the pit. The water seal reduces disease transmission by insects, reduces odor and reduces the volume of water needed to flush.

In a 9-month pilot, iDE has helped facilitate the sale of over 30,000 Sato Pans to households in rural Bangladesh. Although the Sato Pan itself retails for only US\$1.50, households generally purchase the pan as part of a complete latrine package, including a tin shelter, three concrete rings, and a concrete platform, retailing for about US\$66. Similar to our work in Cambodia, iDE has been testing ways to further penetrate the poorer segments in Bangladesh while minimizing market distortions. The sanitation marketing component of the “Community Development Initiative 2 WASH” project<sup>5</sup> aims to subsidize 550 household latrines to the poorest, to be installed by a Latrine Producer (LP) of their choice.



The subsidized latrines will be delivered through a categorized voucher system based on household needs and ability to pay. iDE is training local LPs to improve and maintain quality in products including best installation practices. The LPs will promote their products in communities and households will be given consumer choice on the product and supplier based on their own aspirations, quality and price. The voucher will be used like currency with LPs, who will be able to redeem the voucher at the Bangladesh Red Crescent Society (BDRC) after community volunteers and WASH committee members verify proper installation prior to clearing their payment.

To ensure LPs maintain quality in their products and workmanship, multiple project-endorsd LPs will need to actively market their products to the project community, creating both consumer choice and market

competition. The consumer will have direct linkages with the LPs, thereby holding them accountable for quality and future maintenance and upgrading.

### **A disabled-friendly latrine prototype**

In addition to exploring new financial tools for increasing equity of access to economically vulnerable people, iDE has leveraged its user-centred design methodology and new construction technologies to ensure that sanitation products and services meet the needs of other marginalized populations. In 2015, iDE Cambodia participated in a workshop led by the Australian Engineers Without Borders' Assistive Technology and Livelihoods Project. This workshop identified the limitations latrine shelters pose for disabled users and served as inspiration for WASH staff to design more accessible latrines.

Designing a disabled-friendly shelter enabled iDE to test a new construction technology for low-cost shelters called "interlocking bricks." These bricks are compressed with high precision and resemble the shape of a Lego piece. The prototype was thus the result of two independent R&D efforts: exploring the needs of disabled latrine users and testing a new construction technology. There are many advantages to using interlocking bricks:

- They are less expensive than using conventional bricks, mortar and plaster.
- They require less manpower.
- They can be assembled without skilled masons, reducing labour costs.

Interlocking bricks also allow builders to construct a latrine shelter of any shape and size. Such flexibility is particularly attractive when constructing latrine shelters to meet the differing needs of disabled latrine users. Looking forward, iDE plans to refine the design and develop a go-to marketing strategy to commercialize the design, making it available on the market for other users. The disabled-friendly latrine prototype and interlocking brick technology build on iDE's experience with supply chain engagement and a base level of user awareness of sanitation.

#### **Lessons learned – Designing a disabled-friendly latrine shelter**

iDE implemented its user-centered design methodology to design and build a prototype for a disabled-friendly latrine shelter by engaging a specific user and his family to understand how their shelter could be modified to meet the needs of disabled users. The latrine users provided the engineers feedback throughout the process and helped iDE identify necessary improvements:

- The prototype did not resolve the challenge of accessing water from a water basin, which can be difficult for disabled users. Future designs should carefully explore the placement and shape of the water basin.
- The latrine shelter design included a wide sliding door that moved on rails. The door was wide enough for a wheelchair and was built to reduce the difficulty of opening and closing the door from a sitting wheelchair position. However, field tests showed that it was unlikely to stand the test of time in outdoor conditions.
- Toilets allowing users to be in the sitting position are often more comfortable for disabled users than toilets requiring a squatting position. Contrary to design assumptions, the cost of the chamber box, slab and pan for a squatting toilet was not significantly cheaper than a sitting toilet. However, the supply of sitting toilets remains a challenge in remote areas.
- Interlocking Bricks is a flexible and sturdy material and accommodates the addition of any kind of assistive grab rails to a shelter design.

This experience illustrates the benefits of utilizing a design approach that solicits and factors in real-time input from potential consumers. It is also a promising sign that these methods can be useful in extending latrine access to marginalized populations with varying needs.

### **Conclusions and recommendations**

Although conventional thinking may suggest that a market-based approach is in tension with reaching the poor and marginalized, iDE believes that an effective market development strategy should institute equity and inclusion considerations from the start. By framing market penetration according to the technology adoption curve and the three sweeps strategy, we are able to chart out a path to reach the poor and marginalized while minimizing market distortions. Financing and voucher mechanisms can improve targeting, retain consumer choice, and maximize efficiency. As the market becomes more mature with

growing consumer awareness of latrines and improved supply chain capacities, one can introduce new technologies like interlocking bricks and new product designs such as disabled-friendly latrine shelters. As the sector gains more knowledge and experience about the effectiveness and dynamics of these new innovations and mechanisms, we hope to shorten the learning curve and transition from the respective sweeps in order to reach the poor and marginalized even sooner.

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### Notes

1. Subsidy here refers to hardware subsidy and/or consumer-facing subsidy in purchase price.
2. SMSU 1.0 was a 3-year program scaling up sanitation marketing in Cambodia funded by the Bill & Melinda Gates Foundation, the Stone Family Foundation, and technically supported by the Water and Sanitation Program (WSP) of the World Bank.
3. The Cambodian government has implemented a household poverty categorization. Households incomes within select brackets are categorized as ID Non-Poor, ID Poor 1 (very poor), and ID Poor 2 (poor). iDE uses this categorization system to track the number of poor households purchasing latrines.
4. Oddar Meanchey has actually seen a modest (although statistically insignificant) decrease. We believe that this is due to the reclassification of ID Poor households over the project period, which reduced by 25% the number of households classed as ID Poor.
5. CDI 2 WASH Programme is implemented by Bangladesh Red Crescent Society (BDRCS) and technically supported by iDE. Overall support to both organizations is provided by International Federation for Red Cross and Red Crescent Societies (IFRC).

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