



# WaSH Policy Research Digest

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## Detailed Review of a Recent Publication: Sanitation Subsidies in Bangladesh

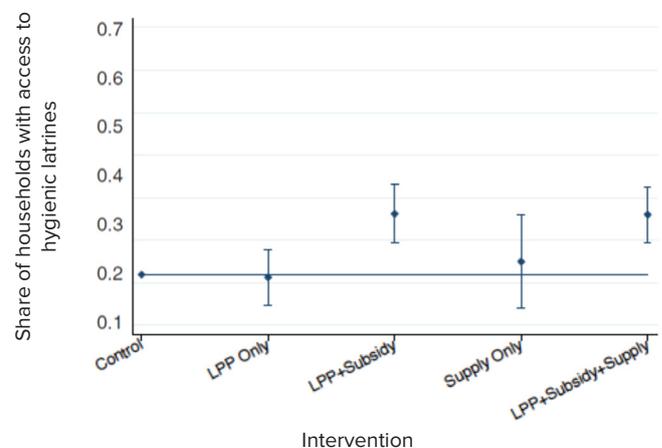
*Encouraging sanitation investment in the developing world: a cluster-randomized trial. Guiteras, R., Levinsohn, J., & Mobarak, A. M. (2015). Science, 1–6. doi:10.1126/science.aaa0491*

The debate over the role of subsidies in increasing access to sanitation has raged for some time, as our accompanying review of recent literature in this Digest shows. A recent research study in Bangladesh yielded some interesting results, which could be interpreted as putting the subsidy debate to rest. But does it?

The study in question is a large-scale study of 380 communities in an area of rural Bangladesh where open defecation is still widespread, despite the fact that in Bangladesh as a whole, open defecation is now rare. The study was a “randomized control trial,” which means that the people who participated were selected at random (by chance alone) to receive one of several interventions. Randomized control trials are considered the most robust and accurate method of assessing the impact of an intervention.

The interventions were: 1) a participatory program designed to raise awareness of the importance of sanitation, based on the principles of Community Led Total Sanitation, an approach which has been shown elsewhere to be effective in getting people to abandon open defecation – the version used in this study was called the Latrine Promotion Program

Effect of Interventions on Hygienic Latrine Access



Source: Guiteras, R, J Levinsohn, and A M Mobarak. 2015. “Encouraging Sanitation Investment in the Developing World: a Cluster-Randomized Trial.” *Science* 348 (6237): 903-6.

(“LPP”); 2) a program to provide technical knowledge and to increase market access through information on where to purchase latrine parts (“Supply”); and 3) distribution of vouchers for a 50% discount on the cost of installing a latrine (“Subsidies”). The subsidies were allocated by lottery to households in the bottom 75 percent of wealth distribution,

**About the WaSH Policy Research Digest:** The WaSH Policy Research Digest is issued quarterly by The Water Institute at UNC—problem solvers focused on the sustainable management of water for health and human development—and is comprised of a review of a recent article or report, and a short literature review on a WaSH topic. It is designed to provide unbiased, concise, and timely information to advise WaSH policy development. This issue (Issue #1) was written by Clarissa Brocklehurst, Water Institute affiliated adjunct faculty member in Environmental Sciences and Engineering, and David Fuente, doctoral student in the Department of City and Regional Planning at UNC-Chapel Hill. If you have questions or comments about this publication, please contact us at [waterinstitute@unc.edu](mailto:waterinstitute@unc.edu).

measured by amount of land owned. Villages were randomly selected to receive the LPP only, Supply interventions only, Subsidies in combination with LPP, a combination of Supply and Subsidies, or no intervention. The results show that LPP only and Supply only had little effect on latrine ownership, in comparison to the control group who received no interventions, but the addition of subsidies had a significant impact (see figure).

Furthermore, the results showed a “spillover effect”; even households that did not receive a subsidy were more likely to construct a latrine if their neighbors did. Interestingly, the results suggest that the availability of subsidies did not drive down demand among non-recipients, something that has been postulated by others.

Despite its rigorous design, the study had its limitations – for instance, the researchers relied on household self-reporting on their practice of open defecation as a proxy for latrine use, which the authors admit could lead to bias. The combination of community mobilization and better access to markets (LPP+Supply) was not tested, nor was the combination of Supply plus Subsidy. It should be noted that the researchers did not include a “subsidy only” intervention because they argue that there is evidence, particularly from India, that this is not effective.

The results could be interpreted to show that community mobilization alone does not work, but that would be an over-simplification. The fact that the “LPP only” intervention did not have any effect in these villages does not mean that the same would happen in other communities, either in Bangladesh or in other countries. Bangladesh is unusual in that it has almost eliminated open defecation (rural open defecation is practiced by only 3% of the population); communities in which it is still practiced are likely to be particularly entrenched. The limited impact of the “Supply only” intervention could also reflect the fact that understanding of and access to the market may not be the primary constraint in this area. Participants may have understood the subsidy lottery to be a “one-off” chance, reducing the effects of demand suppression. Results in a government-administered program, for instance, might be very different and households might expect another round of subsidies

if they simply wait. The study was also limited to the particular social and cultural context of this part of Bangladesh, which limits the extent to which the results can be applied to other settings. For instance, how applicable is what happens in a Muslim community in Bangladesh to the predominantly Hindu areas of India where open defecation is still widespread?

The interpretation of these findings has to be considered in the context of other studies, some of which are reviewed in the literature review in this Digest. These show that programs that rely heavily on subsidies can lead to large numbers of unused latrines, and that in some countries interventions based only on community mobilization and latrine promotion can have a great effect, not only on latrine ownership and use, but on reductions in disease and child stunting. Despite its limitations, this study shows the insights that well-designed and well-implemented research can bring. The findings suggest that it cannot be assumed that an intervention will have a particular impact because of what has happened elsewhere. It is essential to understand what combination of subsidy, mobilization and improvements to the supply side are needed to achieve desired sanitation outcomes with a particular group of people. It is also important to design subsidies well, if they are used, and to carefully track their impact. For these communities in rural Bangladesh, a combination of well-targeted subsidies, delivered through vouchers covering only a part of the cost of latrines, sequenced with community mobilization and behavior change messaging, appears to have yielded good results. The evidence on the impact of sanitation interventions is disappointingly thin, despite the policy implications, and this study is a valuable addition.

When deciding on the advisability of using sanitation subsidies, policy makers must carefully consider the global and local evidence available, plus the specific context in which interventions are to take place. Action research and pilot projects may be valuable in determining outcomes before rolling out new sanitation policy.

# Literature Review: Hardware Subsidies for Sanitation

Finance for sanitation can be used in a variety of ways, including the creation of an enabling policy environment, support to the sanitation supply chain, demand promotion, and hardware subsidies. There is now widespread consensus that programs to stimulate demand for sanitation are essential to sustainably increase the adoption of improved sanitation at scale in many contexts. However, professionals in the sector disagree on the extent to which hardware subsidies are necessary to do so. This section provides a review of recent literature on hardware subsidies for onsite sanitation.

Proponents of hardware subsidies contend that cost, particularly for low-income households, is a critical barrier to households building, and thus using, latrines. Evans et al. (2009), who provide a comprehensive overview of sanitation subsidies, note that households may not be willing to invest in a latrine due to: genuine affordability or cash-flow constraints; the positive health and environmental externalities of improved sanitation; challenges associated with collective action; and issues related to intra-household bargaining. In such circumstances hardware subsidies may incentivize households to build latrines.

In contrast, opponents of hardware subsidies argue that they are not financially viable at a meaningful scale (Mehta and Knapp 2004) and may hinder the sustained adoption and use of improved sanitation facilities. Kar and Pasteur (2005) contend, for instance, that hardware subsidies are a fundamental obstacle to eliminating open defecation because they undermine the notion of self-help and do not contribute to collective behavior change, two essential pillars of Community Led Total Sanitation (CLTS), a sustained process of social mobilization to completely eliminate open defecation in communities. They argue that although hardware subsidies may increase the construction of latrines by individual households, they do little to ensure households use them or promote the elimination of open defecation at the community level.

Pattanayak et al. (2009) examine the effectiveness of India's Total Sanitation Campaign (TSC), which includes hardware subsidies, intensive information and education campaigns, and supply-side support in the state of Orissa (40 villages 1050 households).

They found that TSC increased latrine ownership 26 percentage points (from 6% to 32%) and that one third of the impact was attributable to subsidies. Guiteras et al. (2015), the study reviewed in detail in this Digest, examined combinations of sanitation interventions in Bangladesh and found that subsidies in combination with other interventions led to an increase of 22% in latrine ownership among households who received a subsidy and a reduction of 14% in self-reported open defecation.

These findings, which come from randomized control trials, considered the "gold standard" in assessing impact, suggest that hardware subsidies can increase latrine ownership in combination with other sanitation programming. However, they do not provide insight into whether subsidies are influential in increasing actual latrine usage, or in leading to improved health outcomes; this is because randomized control trials do not shed light on the processes through which sanitation outcomes are achieved. Patil et al. (2014) examined the effectiveness of India's TSC in the state of Madhya Pradesh (80 villages, 3039 households, 5209 children) and found that the TSC increased latrine ownership by 19 percentage points, but reduced self-reported open defecation by only 10 percentage points and did not improve child health. Similarly, in a recent survey of households in five Indian states (22,787 individuals from 3,235 households) Coffey et al. (2014) found that many individuals with access to a latrine still chose to defecate in the open.

A report by WSP (2013) reviews experience implementing India's TSC in 51 districts across India, focusing specifically on identifying processes that differed across high and low-performing districts. WSP found that high performing districts led with a strategy focused on behavior change rather than toilet construction, offered households a menu of technology options reflecting a range of prices and features, used output based hardware subsidies to incentivize behavior change, and had an effective monitoring program. Tremolet et al. (2013) highlight similar lessons in their review of onsite sanitation programs in Thailand, India, and Tanzania, but found that successful programs in these countries had high-level political support, long-term financial commitment, and carefully designed and sequenced hardware and software interventions.

Tremolet et al. (2010) review experience financing onsite sanitation in six countries. Each of the cases they examine includes some form of hardware subsidies, including low cost loans for latrine construction, up front and output based hardware subsidies to households, and subsidies to local sanitation suppliers. They found that the most effective programs implemented targeting mechanisms that were carefully tailored to local the context and that output-based subsidies for hardware were more likely to stimulate demand and leverage private investment than upfront subsidies.

In addition to sanitation programs that provide hardware subsidies in conjunction with activities to stimulate demand and strengthen the sanitation supply chain, sanitation programs have been implemented without hardware subsidies in a large number of countries worldwide (Kar and Pasteur 2005, Bongartz and Chambers 2009). A recent study by Alzua et al. (2015) examined a CLTS program implemented without hardware subsidies in Mali (121 villages, 4031 households). They found that the program nearly doubled private latrine ownership in CLTS communities and reduced self-reported open defecation by 70%. They also

found that the CLTS program had positive impacts on child health, mortality, and growth. Cavill et al. (2015), who summarize the findings of evaluations of four large-scale CLTS programs, point out that despite the positive experiences of implementing CLTS without direct hardware subsidies, access to finance to operate, maintain, replace, and upgrade latrines is needed.

The literature and decades of experience suggest that hardware subsidies alone are unlikely to result in the sustained adoption of improved sanitation at scale. This outcome will require a package of carefully designed and sequenced interventions. The extent to which hardware subsidies combined with programs to stimulate demand and support the sanitation supply-chain can rapidly accelerate the adoption of improved sanitation will vary from one context to another. Global experience with well-designed and implemented sanitation programming suggests that subsidies are not necessary to dramatically reduce open defecation in many locales. However, there are other contexts in which access to finance or carefully designed, implemented, and targeted hardware subsidies may play an important role in accelerating the adoption of improved sanitation.

## References

- Alzua, Maria L, Amy J Pickering, Habiba Djebbari, Carolina Lopez, Juan C Cardenas, Maria A Lopera, Nicolas Osbert, and Massa Coulibaly. 2015. Final Report: Impact Evaluation of Community-Led Total Sanitation (CLTS) in Rural Mali.
- Bongartz, Petra and Robert Chambers. 2009. "Beyond subsidies - Triggering a revolution in rural sanitation." IDS In Focus Policy Briefing Issue 10. <http://www.ids.ac.uk/files/dmfile/IF10.pdf>
- Cavill, Sue, Robert Chambers, and Naomi Vernon. 2015. "Sustainability and CLTS: Taking Stock". Frontiers of CLTS - Innovations and Insights Issue 4. [http://www.communityledtotalsanitation.org/sites/communityledtotalsanitation.org/files/Frontiers\\_no4\\_CLTS\\_and\\_Sustainability\\_taking\\_stock.pdf](http://www.communityledtotalsanitation.org/sites/communityledtotalsanitation.org/files/Frontiers_no4_CLTS_and_Sustainability_taking_stock.pdf)
- Coffey, Diane, Aashish Gupta, Payal Hathi, Nidhi Khurana, Dean Spears, Srivastav Nikhil, and Sangita Vyas. 2014. "Revealed Preference for Open Defecation: Evidence From a New Survey in Rural North India." SQUAT Working Paper Vol. 1. <http://squatreport.in/wp-content/uploads/2014/06/SQUAT-research-paper.pdf>
- Evans, Barbara, Carolien van der Voorden, and Andy Peal. 2009. Public Funding for Sanitation: the Many Faces of Sanitation Subsidies. WSSC, Geneva.
- Guiteras, R, J Levinsohn, and A M Mobarak. 2015. "Encouraging Sanitation Investment in the Developing World: a Cluster-Randomized Trial." Science 348 (6237): 903–6.
- K. Kar and K. Pasteur. 2005. "Subsidy or self-respect?: Community led total sanitation; an update on recent developments." IDS Working Paper 257. [http://www.communityledtotalsanitation.org/sites/communityledtotalsanitation.org/files/media/wp257\\_0.pdf](http://www.communityledtotalsanitation.org/sites/communityledtotalsanitation.org/files/media/wp257_0.pdf)
- Mehta, Meera, and Andreas Knapp. 2004. The Challenge of Financing Sanitation for Meeting the Millennium Development Goals. WSP-Africa, Nairobi. [http://www.wsp.org/sites/wsp.org/files/publications/af\\_finsan\\_mdg.pdf](http://www.wsp.org/sites/wsp.org/files/publications/af_finsan_mdg.pdf)
- Patil, Sumeet R, Benjamin F Arnold, Alicia L Salvatore, Bertha Briceno, Sandipan Ganguly, John M Colford Jr, and Paul Gertler. 2014. "The Effect of India's Total Sanitation Campaign on Defecation Behaviors and Child Health in Rural Madhya Pradesh: a Cluster Randomized Controlled Trial." PLoS Med 11 (8): e10001709. Pattanayak, Subhrendu K, Jui-Chen Yang,
- Katherine L Dickinson, Christine Poulos, Sumeet R Patil, Ranjan K Mallick, Jonathan L Blitstein, and Purujit Prahara. 2009. "Shame or Subsidy Revisited: Social Mobilization for Sanitation in Orissa, India." Bulletin of the World Health Organization 87 (8): 580–87.
- Tremolet, Sophie, and Goufrane Mansour. 2013. Evaluating the Effectiveness of Public Finance for Sanitation: a Synthesis Report. WaterAid, London. [http://www.sharesearch.org/localresources/sanitationpublicfinancingsynthesisisreport\\_1.pdf](http://www.sharesearch.org/localresources/sanitationpublicfinancingsynthesisisreport_1.pdf)
- Tremolet, Sophie, Pete Kolsky, and Perez Eddy. 2010. Financing on-Site Sanitation for the Poor: a Six Country Comparative Review and Analysis. WSP, New Delhi. <http://documents.worldbank.org/curated/en/2010/01/12840650/financing-on-site-sanitation-poor-six-country-comparative-review-analysis>.
- WSP. 2013. Linking Service Delivery Processes and Outcomes in Rural Sanitation: Findings From 56 Districts in India. WSP, New Delhi. <https://www.wsp.org/sites/wsp.org/files/publications/WSP-Linking-Service-Delivery-Processes-Outcomes-Rural-Sanitation-Findings-Districts-India.pdf>