Financing On-Site Sanitation for the Poor
A Six Country Comparative Review and Analysis

Sophie Trémolet with Pete Kolsky and Eddy Perez

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Acknowledgments

By Sophie Trémolet with Pete Kolsky and Eddy Perez

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This document is dedicated to the memory of Ousseynou Diop who was the chair of the WSP Sanitation GPT when this research was conceptualized and initiated.
Foreword

Promotion of household investment in sanitation is a cost-effective public health intervention, in terms of the ratio of public cost to estimated health benefits.\(^1\) Good sanitation confers on its users other important benefits: dignity, privacy, and time savings. For these reasons, the World Summit on Sustainable Development in 2002 included sanitation as part of the Millennium Development Goals (MDGs). Target 10 of Goal 7 includes a commitment to halve the fraction of the world’s population without access to improved sanitation relative to that in 1990.

Progress towards the sanitation target has been uneven. While some countries, including Bangladesh and Vietnam, are well positioned to meet the target, others, such as India and most countries in Sub-Saharan Africa, are unlikely to do so by 2015. Despite the benefits, sanitation specialists have been unable to mobilize sufficient funding, attention, and political will at the local, national, and global levels to achieve the sanitation target. Even where investments are made, they are often relatively ineffective or do not reach the rural and urban poor who have the least access to sanitation and are thus most at risk. The financial crisis and its associated impact on the global economy are putting governments’ budgets under stress, in developed and developing countries alike.

Three crucial questions in all development activities financed by the World Bank are “How much will it cost?” “How will it be paid for?” and “Who pays what?” To help answer these questions, the World Bank undertook a study of utility subsidies in water supply and electricity.\(^2\) Although sanitation was supposed to be included, the authors quickly found an almost complete lack of data on the topic. As a result, the Water and Sanitation Program (WSP) and the Water Anchor of the World Bank have collaborated in managing this study as a first step to painting a full picture of finance and costs in sanitation.

The present study offers evidence on alternative financing approaches for on-site household sanitation from case studies in six countries: Bangladesh, Ecuador, India, Mozambique, Senegal, and Vietnam. This evidence can help identify the best-performing approaches and the relevant factors and issues to consider in designing a sanitation financing strategy. The study systematically compares alternative financing approaches based on a set of common indicators, including in terms of the effectiveness in the use of public funds and targeting. The team chose to focus on those projects recognized as successes to obtain a reasonable representation of the better practices in sanitation programs. The study identified a number of useful examples and tentative lessons about finance which should help to advance the design of sanitation finance at the outset of a project. Replicating such experiences will require a better understanding of what drives household investment and what the key constraints limiting such investment are, in both financial and non-financial terms.

The sanitation challenge continues to grow with population, as does the cost of failing to meet it. We believe this study is a worthwhile contribution to addressing the challenge of how to pay for sanitation.

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1 Jamison et al. 2006.
Executive Summary

1 The problem: Sanitation, economics, and finance
Forty percent of the world’s people do not have access to a basic level of sanitation; one in five of us practices open defecation. This crisis in sanitation has clear consequences. Diarrhea kills over 1.5 million children each year, and 88 percent of these deaths are attributed to fecal contamination from inadequate sanitation, hygiene, and water supply. The lack of sanitation spreads many other diseases, pollutes both water and land, and robs the poor of basic dignity. The cost of these problems is high in economic as well as human terms. In a series of studies, the Water and Sanitation Program (WSP) estimated that inadequate sanitation costs the economies of four Southeast Asian countries the equivalent of approximately 2 percent of their GDP; these results echo similar findings elsewhere about both the costs and benefits of sanitation. Given this human and economic toll, why is progress still so slow?

Sanitation solutions are not cheap for the poor, who make up the vast majority of those without sanitation. In the six countries described in this study, the capital cost of household sanitation varied between US$17 and US$568, costs which often exceeded half the annual household income of the poor in the respective project areas. Like housing, on-site sanitation is often viewed as a private good and the basic responsibility of the beneficiaries themselves. Yet sector professionals have long argued that some public finance of sanitation can be justified by its inherent externalities; construction and use of a family latrine protects others at least as much as it reduces disease transmission within the family. However, the large number of poor households without sanitation makes it difficult for strained government budgets to contribute a large fraction of the cost. In addition, economists and sector professionals are generally skeptical of subsidy schemes, having seen how inefficient and counter-productive some poorly designed programs can be.

The challenges of finance – the practical decisions about who pays how much for what, when, and how – thus lie at the heart of the world’s efforts to promote health, dignity, and a cleaner environment through sanitation. Yet despite the importance of the topic, past efforts to gather meaningful data on sanitation finance have largely failed. A landmark report on subsidies in water and power was originally intended to include sanitation but could not do so because of the lack of readily available data. At the start of this study, few if any credible data were available to describe the numbers and experience of sanitation finance.

2 Objectives and some key questions of this study
This study aims to improve understanding of the finance of on-site household sanitation through careful analysis of practical field experience in a wide range of projects. The Sanitation and Hygiene Global Practice Team of the World Bank Water and Sanitation Program (WSP) initially conceptualized this study to offer better guidance to sector professionals developing on-site sanitation projects and programs.

Most of those without sanitation live in rural areas or on the fringes of cities beyond the reach of sewerage networks. The first step up “the sanitation ladder” for those without access will be on-site sanitation. The institutional and financial structures of sewerage and on-site sanitation are so different that it was decided to focus this first study on the issue of basic on-site sanitation.

4 Lopez et al. 2006.
5 Hutton et al. 2007.
6 Hutton and Haller 2004. Additional background information is derived from roughly 30 country reports, both published and unpublished, completed between 2004 and 2007 and made available to the authors by Bjorn Larsen.
7 Komives et al. 2005.
The study addresses such basic questions as:

- **How much does provision of access to on-site sanitation cost, that is, once all costs (hardware and software) are taken into account?**
- **Do the type and scale of sanitation subsidy affect provision and uptake? How?**
- **How can the public sector most effectively support household investment in on-site sanitation?**
- **Should it be via investment in demand stimulation, subsidies to households or suppliers, by support to credit schemes, or by other means?**
- **Should hardware subsidies be provided or should public spending be focused on supporting the supply side of the market? Where hardware subsidies are adopted, what is the best way to ensure that they reach their intended recipients and are sustainable and scalable?**
- **What innovative mechanisms (such as credit or revolving funds) can be used to promote household sanitation financing?**

**3 The approach of the study**

This study reviews on-site sanitation financing in six carefully selected case studies by examining:

- The financing sources (who pays) and
- The financing approaches:
  - What share is paid by each source, and how?
  - What public funding mechanisms are used, including hardware subsidies, software support, or facilitated access to credit?

In addition to summarizing the mechanics of each approach, all case studies were reviewed in terms of common evaluation criteria:

- **Impact on sustainable access to services**: Did the project contribute to increasing access to sanitation?
- **Costs**: Are the costs of the resulting sanitation facilities reasonable and affordable to the beneficiaries?
- **Effectiveness in the use of public funds**: Were public funds used in a way that maximized impact?
- **Poverty targeting**: Did the program seek to target the poor and was the program effective at doing so?
- **Financial sustainability**: Could the financial approach be sustained over time without external support?
- **Scalability**: Could the financial approach be scaled up to cover those who are not yet covered in the country at a reasonable cost?

The case studies were selected to reflect a range of household sanitation financing approaches and contexts; the chosen projects were located in Bangladesh, Ecuador, Maharashtra (India), Mozambique, Senegal and Vietnam.

These projects and their financing approaches are presented below in Table A in the increasing percentage of the total costs of sanitation adoption coming from public funds. At one end of the public finance spectrum, some projects (such as in Bangladesh and India) only offered subsidies for software activities and for limited and targeted hardware subsidies for poor households. Limited amounts of public funding were also used for the Sanitation Revolving Fund in Vietnam, an innovative approach to using microfinance for increased access to sanitation that yielded very high leverage of user contributions. At the other end of the spectrum, projects in Sénégal and Ecuador adopted a relatively high hardware subsidy.

Table A presents a summary of the evaluation based on the six criteria described above.
### TABLE A. CASE STUDIES OF HOUSEHOLD SANITATION AND FINANCING APPROACHES

<table>
<thead>
<tr>
<th>Project context level of service, population that adopted sanitation during the project, study period</th>
<th>Financing approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vietnam</td>
<td>• Software support for sanitation promotion and hygiene education</td>
</tr>
<tr>
<td>Sanitation Revolving Fund (SRF) - urban areas</td>
<td>• Facilitated access to credit via sanitation revolving funds</td>
</tr>
<tr>
<td>• Mostly bathrooms and septic tanks</td>
<td>• Subsidized interest rates on loans for hardware construction</td>
</tr>
<tr>
<td>• 194,000 people</td>
<td>(accounting for about 3% of hardware costs)</td>
</tr>
<tr>
<td>• 2001 to 2008</td>
<td>• Public funds = 7% of total costs of sanitation adoption</td>
</tr>
<tr>
<td>Maharashtra (India)</td>
<td>• Software support for community mobilization, including outcome-based financial rewards to villages reaching Open Defecation Free (ODF) status to be spent on sanitation investments</td>
</tr>
<tr>
<td>Total Sanitation Campaign (TSC) using CLTS approaches - rural areas</td>
<td>• Outcome-based hardware subsidies for below-poverty-line households (covering about 22% of hardware costs for beneficiaries)</td>
</tr>
<tr>
<td>• Improved latrines</td>
<td>• Access to credit in some districts only</td>
</tr>
<tr>
<td>• 21,200,000 people</td>
<td>• Public funds = 9% of total costs of sanitation adoption</td>
</tr>
<tr>
<td>• July 2000 to November 2008</td>
<td></td>
</tr>
<tr>
<td>Bangladesh</td>
<td>• Software support for community mobilization, sanitation promotion, and local government strengthening, including outcome-based financial rewards to villages that are 100% sanitized. Rewards come with no strings attached and do not necessarily need to be spent on sanitation.</td>
</tr>
<tr>
<td>DISHARI (based on Community Led Total Sanitation) - rural areas</td>
<td>• Up-front in-kind hardware subsidies targeted to the poorest (covering about 42% of hardware costs for beneficiaries)</td>
</tr>
<tr>
<td>• Basic latrines</td>
<td>• Public funds = 31% of total costs of sanitation adoption</td>
</tr>
<tr>
<td>• 1,631,000 people</td>
<td></td>
</tr>
<tr>
<td>• 2004 to 2008</td>
<td></td>
</tr>
<tr>
<td>Mozambique</td>
<td>• Software support for sanitation promotion and establishment of local workshops building slabs and latrines</td>
</tr>
<tr>
<td>Improved Latrines Program (PLM) - urban areas</td>
<td>• Output-based subsidies to local sanitation providers for each slab or latrine sold (intended to cover 40% to 60% of hardware costs)</td>
</tr>
<tr>
<td>• Improved latrines</td>
<td>• Public funds = 58 % of total costs of sanitation adoption (estimated)</td>
</tr>
<tr>
<td>• 1,888,000 people</td>
<td></td>
</tr>
<tr>
<td>• 1980 to 2007</td>
<td></td>
</tr>
<tr>
<td>Ecuador</td>
<td>• Software support to strengthen municipalities to work in sanitation, for technical designs and monitoring</td>
</tr>
<tr>
<td>PRAGUAS - rural areas</td>
<td>• Up-front fixed hardware subsidies (covering about 60% of hardware costs) provided to communities</td>
</tr>
<tr>
<td>• Sanitation units (toilet, septic tank, sink, shower)</td>
<td>• Public funds = 85% of total costs of sanitation adoption</td>
</tr>
<tr>
<td>• 143,000 people</td>
<td></td>
</tr>
<tr>
<td>• 2001 to 2006</td>
<td></td>
</tr>
<tr>
<td>Senegal</td>
<td>• Software support for sanitation promotion, including hygiene promotion and education, community organization, technical support</td>
</tr>
<tr>
<td>PAQPUD - urban areas</td>
<td>• Output-based hardware subsidies to local sanitation providers for each sanitation solution built (covering about 75% of hardware costs)</td>
</tr>
<tr>
<td>• Range of options: improved latrines to septic tanks • 411,000 people</td>
<td>• Limited schemes to facilitate access to credit</td>
</tr>
<tr>
<td>• 2002 to 2005 (not including extensions via GPOBA)</td>
<td>• Public funds = 89% of total costs of sanitation adoption</td>
</tr>
</tbody>
</table>
## TABLE B. CASE STUDIES: SUMMARY EVALUATION

<table>
<thead>
<tr>
<th>Country</th>
<th>Impact on sustainable access</th>
<th>Costs</th>
<th>Effectiveness in use of public funds</th>
<th>Poverty targeting</th>
<th>Financial sustainability</th>
<th>Scalability</th>
<th>Summary evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>Substantial and rapid increase in coverage, mostly sustained</td>
<td>Basic sanitation costs reasonable when compared to household income</td>
<td>High leverage</td>
<td>Effective targeting through community involvement</td>
<td>Sustainable as long as public sector continues to contribute</td>
<td>Scale-up achievable at a reasonable cost</td>
<td>Efficient use of public funds for rural settings with strong demand for low-cost solutions</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Substantial increases in coverage with good evidence of use</td>
<td>Comprehensive sanitation solutions: costly but meet existing demand</td>
<td>Low leverage</td>
<td>Geographical targeting reached intended recipients</td>
<td>Highly dependent on external financing</td>
<td>Scale-up could be achieved given relatively high national income</td>
<td>Only useful for countries willing and able to fund high levels of service</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>Very rapid increases in coverage (with some cases of relapse)</td>
<td>Improved sanitation, households invest based on what they can afford</td>
<td>High leverage</td>
<td>Means-tested targeting effective although some are excluded</td>
<td>Low demands on external public funds</td>
<td>Has been scaled up at federal level (coverage still needs to improve)</td>
<td>Efficient use of public funds, which are provided on an outcome basis</td>
</tr>
<tr>
<td>Mozambique</td>
<td>Rapid increases in coverage only when software support was also provided</td>
<td>Affordable basic sanitation solutions, reduced demand when incomes grow</td>
<td>Medium leverage</td>
<td>Self-selection via level of service, with limited inclusion error</td>
<td>Dependent on external financing (with a marked decline when subsidies drop)</td>
<td>Was scaled up in major urban centers but further scale-up unlikely</td>
<td>Efficient use of public funds with simple and effective targeting</td>
</tr>
<tr>
<td>Senegal</td>
<td>Speed of coverage increased when required household contribution was reduced</td>
<td>Comprehensive sanitation solutions but expensive by both national and international standards</td>
<td>Low leverage</td>
<td>Geographical targeting reached intended recipients</td>
<td>Highly dependent on external financing</td>
<td>Too expensive to scale up nationwide</td>
<td>Limited use: high demand on public funds and limited leverage</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Rapid extension of coverage</td>
<td>Costs moderate compared to other programs but high when compared to household incomes</td>
<td>Very high leverage</td>
<td>Effective targeting, although lowest income excluded</td>
<td>Financially sustainable: initial public funds have revolved many times</td>
<td>Scale-up has been achieved in country</td>
<td>Very efficient use of limited public funds but may be hard to replicate</td>
</tr>
</tbody>
</table>
4 Key findings

Taken together, the case studies make a compelling case that partial public funding can trigger significantly increased access to household sanitation. The six case studies show that public investments of varying forms enabled an absolute increase in the fraction of the target population gaining access to sanitation, which varied between 20 percent and 70 percent. Each of the six sanitation programs enabled significant numbers of people to improve their sanitation; from the largest (over 21 million gained access in the Maharashtra project alone) to the smallest (over 140,000 in Ecuador). While sanitation projects have earned a reputation as difficult and often ineffective, these projects show that government investment can yield results.

The studies show that the most relevant question is not “Are subsidies good or bad?” but rather “How best can we invest public funds?” The case studies reveal a wide range of sanitation finance options and approaches. While there has been much written on the dangers of “sanitation subsidies,” it is hard to imagine a sanitation program that does not involve some public or external investment, if only to share information or stimulate demand. (While early adopters in all countries have invested in sanitation without the need for public interventions, they are usually a small minority.) The case studies reveal a wide spectrum of options: from a minimal investment in start-up of a revolving fund, to significant community mobilization and demand stimulation, all the way to hardware subsidies of up to 75 percent of capital costs in addition to community mobilization. The choice is thus not “Subsidy or no subsidy?” but rather, “What form and level of public funding makes sense in a specific context?”

The different financing strategies adopted had a profound influence, for better or for worse, on equity, scale, sustainability, levels of service, and costs. No single case study represented a “silver bullet” approach that can be replicated globally, but different models will be more appropriate with differing project objectives. One indicator of the effectiveness of public finance use is the number of households gaining basic access per US$1,000 of public funding. This “increased access/public funding ratio,” like most indicators, by itself cannot tell the whole story, because both the levels of service offered and the costs varied between projects. Nevertheless, it is revealing that in rural Bangladesh US$1,000 of public finance yielded sanitation for 135 households, while in urban Senegal the same public funding could only serve 1.6 households.

Households are key investors in on-site sanitation, and careful project design and implementation can maximize their involvement, satisfaction, and financial investment. All of the reviewed projects assumed that the poor can contribute to their own sanitation facilities, and in several cases they paid the bulk of the hardware costs. Poor households can make substantial sanitation investments (up to 25 or 30 percent of annual income, as in Vietnam) if they can see the need and potential benefits from it. Leverage of household investment also varied; in Vietnam, the household contribution to sanitation was 20 times greater than the public investment; while in three other cases public investment exceeded the household investment. The Vietnam case study shows that limited access to credit (and thus the opportunity to spread investment over time) can be a more severe problem than basic affordability for many, if not for all.

Hardware subsidies of some form played a critical role in all six case studies. These subsidies varied from a subsidized interest rate yielding US$6 per septic tank in Vietnam to subsidies between US$200 and US$1,000 in Senegal, depending upon the technical options selected. On the one hand, subsidies targeted within communities to the very poorest have enabled the achievement of Open Defecation Free (ODF) Status by communities in the DISHARI project in Bangladesh; on the other hand, when a high proportion of substantial hardware costs are subsidized, as in Senegal and Ecuador, this may limit the potential scale of interventions to a relatively limited set of people given a restricted budget.

Subsidy targeting methods need to be tailored to country circumstances. The study found a range of targeting methods for hardware subsidies, including geographic targeting, means-tested targeting, community-based targeting, and self-selection. Community-based targeting (in which the community itself manages the identification and support of

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8 See, for example, Kar 2003.
its poorest members) and self-selection (in which only in-kind support for the most basic sanitation is offered, leading to self-selection among potential subsidy applicants) appear to be more effective than means-tested systems, which can be costly and generate perverse incentives. Community-based selection appears to be a more flexible, better targeted, and probably less costly way to identify poor households, but it requires the right type of community mobilization and solidarity. Although no precise data were available to confirm whether self-selection is an effective targeting approach, this method appeared to be the cheapest and easiest to implement. This would seem most appropriate for those countries that have limited means to introduce either means-tested or community-based targeting approaches but seek to reach a large population through a basic sanitation program; such as in Mozambique where improved latrines are subsidized.

The provision of hardware subsidies on an output basis rather than an input basis can be effective at stimulating demand and leveraging private investment. Several of the cases used an output-based method to deliver subsidies (such as Mozambique and the Total Sanitation Campaign in Maharashtra.) Providing a subsidy on an output basis can ensure that the activity that is subsidized is actually delivered. It can also give incentives to producers to reduce costs and to serve areas which they might otherwise not consider. From a donor perspective, output-based subsidies can mitigate some of the risk of low uptake of a subsidy program: If there is no demand (if the product is not appropriate or if it is incorrectly priced, etc.) then there is no output and therefore no payment. The provision of financial rewards based on outcomes acted as a strong motivator for villages in Bangladesh and Maharashtra and helped mobilize energies around the achievement of clear goals.

All of the case studies included a significant publicly funded software component (promotion and community mobilization). The Maharashtra and Bangladesh case studies invested heavily in software (with targeted hardware subsidies for the poorest) and had some of the highest leverage and basic-access-to-investment ratios of all the case studies. The Mozambique project was most effective when the government also financed community animators for demand promotion; the decline of the program was closely linked to the withdrawal of such software support following decentralization. Limited cost and monitoring data did not allow conclusions to be drawn about the relative effectiveness of different types of software support.

4.1 Operational implications

Early planning and careful design of financial arrangements for sanitation at the start can go a long way toward promoting project realism and sustainability. Financial arrangements probably shape the success or failure of sanitation projects more than any other factor. Answers to the basic questions of finance—“Who pays for what, when and how?”—determine the extent to which projects can replicate, expand sanitation, and meet household needs. Projects with financial designs that match local needs and capacities will take off, while projects with poor or unrealistic financial designs will stall at the end of the project cycle. Sanitation finance is thus a key element of project design, yet one that often lags because of the paucity of information, options, and sound analysis rooted in local conditions. In most urban WSS projects, for example, there has inevitably been some experience with water tariffs, and often some experience with sewer connection charges. With some important exceptions, utility or government policies promoting or financing on-site sanitation are often non-existent or, at best, ad hoc. In rural areas, the lack of documented examples and options has until now limited the scope to “what we’ve always done.”

In addition to designing promising financial approaches, World Bank staff need to monitor them. We need good data to help our clients improve their sanitation programs and financing approaches and to learn from experience across the Bank. This means collecting basic data on the costs of promotion, the costs of hardware subsidies, the contributions made by the household, and so on. Building in such data collection and analysis from the outset will not only serve the long-term goals of allowing comparison of approaches across countries, but will also improve project monitoring and the supervision of these crucial elements of implementation during the project’s lifetime.

Operational staff must look beyond the semantics of simplistic “subsidy vs. no subsidy” debates to define an appropriate level and form of public investment in sanitation. Many sector specialists are frustrated after decades
of unrealistic, poorly designed and administered subsidy programs. They have noted that such programs are unsustainable, and have the perverse effect of stifling the development of real sanitation markets for the poor, as both suppliers and consumers waited for the next round of subsidy before investing. This frustration has recently been expressed by some who have taken a simplistic “no subsidy” position, arguing from the correct observation that hardware subsidies can sometimes limit sustainability to the invalid conclusion that hardware subsidies are always unjustified and counterproductive.

As these case studies show, a wide spectrum of finance arrangements has been used with varying degrees of success. Experience teaches that sanitation, like other goods with significant externalities, does not “take care of itself,” especially among the poor. The case studies make a strong argument for the benefits of appropriate public investment in sanitation. The challenge is to define appropriate approaches, shares, and mechanisms to finance sanitation for the poor that match the specific local context. The documented results from the six case studies in this report, and the methodology developed for their preparation and analysis, are a useful first step.

5 Gaps and further work

This study is only a first step. There are a large number of important areas where additional work is needed to provide clients and operational staff with more options and more evidence on options for public investment in sanitation. Sanitation is still at the stage where every project should be considered a “learning project” so that the benefits of experience are not lost to the future. Areas where work appears particularly urgent include these:

- **Financing urban and collective sanitation for the poor.** This study has focused on the most basic forms of sanitation, the first step up the sanitation ladder for most of those currently without access. Urban population growth and continued migration from rural areas nevertheless mean that more of the poor will live in urban settings, the density of which may prohibit on-site options. “Conventional” sewerage finance is relatively well documented⁹ (and in the developing world usually involves a large subsidy for the relatively affluent). The specifics of sewerage finance for the urban poor (including condominial systems) are not well documented or understood globally.

- **The potential and constraints of credit (microcredit) schemes for sanitation.** The Vietnam experience marks a great success. What are the conditions under which credit support is viable and useful? Are there examples of failure, and if so, where and why?

- **OBA (Output-Based Aid) for sanitation.** This approach is conceptually attractive to donors, and with good design may be attractive to the private sector, but its practice in sanitation is poorly documented.

- **Development of better monitoring and evaluation (M&E) for sanitation.** All development activities need better M&E, but the need is particularly acute in sanitation. Financial M&E to reflect the history of costs, cost sharing, and long-term sustainability is particularly important.

- **Basic sanitation cost data and its determinants.** Despite decades of field experience, reliable estimates for the hardware and software costs of sanitation access are still scarce. Operation and maintenance costs need special attention, as they are recurrent and often neglected to the detriment of sustainability.

- **Other elements of the “value chain” of sanitation (pit emptying/desludging services, waste reuse, and so on).** How are these financed? How can they be financed? How can appropriate disposal/reuse of waste be ensured?

## Contents

Acknowledgments ......................................................................................................................... Iv

Foreword ........................................................................................................................................ v

Executive Summary ..................................................................................................................... vii

Table of Contents .......................................................................................................................... 1

List of Acronyms ............................................................................................................................ 3

1 Introduction .................................................................................................................................. 5

1.1 Methodology ........................................................................................................................... 7

1.2 Report structure ...................................................................................................................... 13

2 Overview of Case Study Financing Approaches ........................................................................... 15

2.1 Case studies’ country contexts ............................................................................................... 15

2.2 Summary of financing approaches ......................................................................................... 16

2.2.1 Bangladesh ........................................................................................................................ 16

2.2.2 Ecuador .............................................................................................................................. 18

2.2.3 Maharashtra (India) ........................................................................................................... 18

2.2.4 Mozambique ....................................................................................................................... 19

2.2.5 Senegal ............................................................................................................................... 19

2.2.6 Vietnam ............................................................................................................................. 20

2.3 Hardware subsidy design ....................................................................................................... 20

2.4 Software support .................................................................................................................... 22

3 Evaluating the Performance of Financing Approaches ................................................................. 25

3.1 Impact on sustainable access to services .............................................................................. 25

3.2 Costs ........................................................................................................................................ 27

3.3 Effectiveness in the use of public funds ................................................................................. 32

3.4 Poverty targeting .................................................................................................................... 34

3.5 Financial sustainability .......................................................................................................... 36

3.6 Scalability ............................................................................................................................... 37

3.7 Summary evaluation ............................................................................................................... 39

4 Summary of Findings ................................................................................................................ 41

4.1 What have we learned? .......................................................................................................... 41

4.2 Where next? ............................................................................................................................ 47

Indicative Bibliography ................................................................................................................ 51
List of Tables

Table A  Case studies of household sanitation and financing approaches .............................................................. ix
Table B  Case studies: summary evaluation .............................................................................................................. x
Table 1.1  Potential financing approaches for on-site sanitation .............................................................................. 8
Table 1.2  Case studies of household sanitation and financing approaches .......................................................................... 9
Table 1.3  Case studies evaluation criteria .................................................................................................................. 11
Table 2.1  Key case study country indicators .......................................................................................................... 15
Table 2.2  Overview of case studies financing approaches .......................................................................................... 17
Table 2.3  Design of hardware subsidies in the case studies ........................................................................................ 21
Table 2.4  Provision of software support in the case studies ...................................................................................... 23
Table 3.1  Number of people served during each project’s life and facilities built per year ........................................................................................................................................... 25
Table 3.2  Initial costs and operations and maintenance costs (US$) ........................................................................ 27
Table 3.3  Levels of service and financing approaches (US$ actual exchange rates) ............................................................ 29
Table 3.4  Costs of on-site sanitation and effectiveness of public funds ........................................................................ 33
Table 3.5  Targeting mechanisms and observed outcomes .......................................................................................... 35
Table 3.6  Case studies: summary evaluation ............................................................................................................. 40

List of Figures

Figure 2.1  Characterizing financing approaches to on-site household sanitation ........................................................................................................... 16
Figure 2.2  Hardware subsidy design .......................................................................................................................... 20
Figure 3.1  Total initial costs per household (actual US$ exchange rates) ........................................................................... 27
Figure 3.2  Total initial costs per household (PPP US$ exchange rates) ....................................................................... 28
Figure 3.3  Allocated initial costs per household ........................................................................................................ 31
Figure 3.4  Hardware costs and household investment as percentage of household annual income ............................................ 31
Figure 3.5  Operations and maintenance costs per sanitation solution per year (US$) ........................................................ 32
Figure 3.6  Initial cost recovery ........................................................................................................................................ 37

List of Boxes

Box 1.1  Key definitions ................................................................................................................................................. 6
Box 1.2  Examples of other studies gathering data on household sanitation .......................................................................... 12
Box 3.1  Using purchasing power parity (PPP) indicators for comparing prices across countries .............................................................................................................................. 28
List of Acronyms

APL    Above poverty line
BDT    Bangladeshi taka
BPL    Below poverty line
Capex  Capital expenditure
CBO    Community-based organization
CLTS   Community Led Total Sanitation
DISHARI Decentralized Integrated Sanitation, Hygiene and Reform Initiative
FCFA   Franc Communauté Financière Africaine
GDP    Gross Domestic Product
GPOBA  Global Partnership for Output-Based Aid
IEC    Information, education, and communication
IFIs   International Finance Institutions
JMP    Joint Monitoring Programme
M&E    Monitoring and evaluation
MDG    Millennium Development Goals
MTn    Mozambican metical
NGO    Non-governmental organization
NGP    Nirmal Gram Puraskar
O&M    Operations and maintenance
ODF    Open Defecation Free
Opex   Operating expenditure
PAQPUD Programme d’Assainissement Autonome des Quartiers Peri-Urbains de Dakar
PLM    Programa de Latrinas Melhoradas
PNSBC  Programa Nacional de Saneamento a Baixo Custo
PPP    Purchasing Power Parity
PRAGUAS Programa de Agua y Saneamiento para Comunidades Rurales y Pequeños Municipios
Rs     Indian rupees
SGBSA  Sant Gadge Baba Gram Swachayata Abhiyan
SHG    Self-help group
SRF    Sanitation Revolving Fund
TSC    Total Sanitation Campaign
UBS    Unidad Basica de Saneamiento
US$    U.S. dollar
VIP    Ventilated improved pit
VND    Vietnamese dong
WHO    World Health Organization
WSP    Water and Sanitation Program
The world is unlikely to meet the challenge of the sanitation target of the Millennium Development Goals (MDGs): To halve by 2015 the fraction of the world’s population without access to basic sanitation. The problem is particularly acute in Sub-Saharan Africa and South Asia. There has been much debate on what is needed to accelerate the pace of sanitation coverage expansion. Most agree that additional funds need to be mobilized to close the sanitation gap, but there is much debate about what to spend the money on, how to raise the money, and from whom to raise it. Additional evidence is needed about what makes sanitation strategies effective and how best to finance them so as to inform policy and program development in the sanitation field.

On-site sanitation (pit latrines, septic tanks, and other household level technologies that do not involve sewerage) must play a key role in increasing access. This is particularly true in rural and peri-urban areas where space availability and population density are not constraining factors on its adoption and where on-site sanitation can be substantially cheaper and easier to promote than extending sewerage networks. The majority of the population without access to any sanitation lives in precisely such areas. Financing on-site sanitation at the household level is a complex and under-researched area, however, one seldom dealt with in its own right, separately from the financing of water or sewerage services.

On-site sanitation has its own characteristics that make its financing different from that of networked water or sewerage services. Despite evidence of positive externalities (on public health, the environment, and general economic development), the construction of domestic on-site sanitation facilities is usually considered to be a household responsibility. When building such facilities, households face relatively high up-front investment costs, depending on the level of service they choose. Associated operating and maintenance costs vary depending on the type of facilities, but are usually fairly low. Operating and maintenance costs mostly consist of direct household expenses (rather than charges paid to cover the costs of a service provider) and periodic charges for emptying the facility when it becomes full (although households can also elect to do this themselves, as a way of keeping costs down). Utilities providing sewerage services are seldom involved in the provision of on-site sanitation services (with some notable exceptions, such as in Burkina Faso, where on-site sanitation is financed via the proceeds of a sanitation tax levied on customers receiving sewerage services). As a result, tariffs to recover the costs of providing a service are not relevant for on-site sanitation in the way they would be for water or sewerage services.

Traditionally, governments have either ignored on-site sanitation altogether (leaving households to build their own latrines and pay for their maintenance) or gone to the other extreme of supporting heavily subsidized latrine-building programs. Such top-down subsidized programs have increasingly been discredited, for a number of reasons. On the one hand, they have often built facilities that people did not want and therefore did not use. In addition, subsidies have often been captured by the wrong people; many such schemes were heavily dependent on external funding and were not sustainable when external funding stopped.

Despite this apparent lack of success, a growing body of evidence makes the case for public support to improve sanitation for all, including the poor.1

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1 For example, in Sub-Saharan Africa, where there has been limited investment from governments and donors in on-site sanitation, the Africa Infrastructure Country Diagnostic (AICD) showed that, on average, 50% of the population use unimproved traditional latrines while 34% resort to open defecation. Only the families in the top three income quintiles are likely to have improved sanitation facilities, and the majority of cases of household investment in improved sanitation were in the higher-income households.
A key objective of the present study is therefore to evaluate alternative financial approaches for governments, international donors, or NGOs to support on-site sanitation. A critical question from a public financing point of view is whether households should face the full cost of investing in on-site sanitation or whether such costs should be borne in part by the public sector. “Public support” can include taxes or international transfers intended to reflect the external benefits derived from sanitation for society as a whole.

A number of basic but relevant questions remain unanswered, such as these:

- How much does providing access via on-site sanitation really cost, that is, once all cost components are taken into consideration, including hardware and software?
- Should the public sector support household investment in on-site sanitation? If so, should it be via subsidies or by facilitating access to finance via the establishment of credit schemes?
- Should hardware subsidies be provided to households, or should public spending be focused on promoting demand and/or supporting the supply side of the market?
- If hardware subsidies are provided, what is the best way to design them to ensure that they reach their intended recipients and are sustainable and scalable?
- What innovative mechanisms (such as credit or revolving funds) can be used to promote household sanitation financing?

To start addressing these questions, the Sanitation and Hygiene Global Practice Team of the Water and Sanitation Program (WSP) and the Water Anchor of the World Bank conceptualized, designed and commissioned this global study to gain deeper understanding of current financing approaches for on-site sanitation and their effectiveness in reaching the poor. Such understanding can help sector professionals develop better, more realistic, and more sustainable on-site sanitation projects and programs.

---

**BOX 1.1. KEY DEFINITIONS**

**Defining on-site sanitation.** The word sanitation has a wide range of meanings in different contexts and languages. In conformity with the Joint Monitoring Programme (JMP) for Drinking Water Supply and Sanitation (the official monitor of the MDG sanitation target), this study defines sanitation as the methods for the safe and sustainable management of human excreta, including the collection, storage, treatment, and disposal/reuse of feces and urine. There are two main types of sanitation: on-site systems (such as latrines, cesspits, septic tanks) and off-site systems, principally sewerage networks. This study focuses exclusively on on-site sanitation systems, which are often the most cost-effective solution to meet the MDGs in many contexts, especially in rural and peri-urban areas. More specifically, the study focuses on on-site sanitation facilities at the household level and does not cover communal or school facilities, since financing approaches for the latter are different.

**Defining finance.** The study examines how increased access to sanitation infrastructure at the household level can be financed from a mix of household investments and public subsidies. This includes the financing of initial access via capital expenditure as well as the financing of operations and maintenance costs to ensure the ongoing use of the facilities. Software costs, which are the costs of “soft” activities for creating demand or mobilizing communities, are included in the total estimated costs. The study examines both the financing sources (where the funds come from) and the financing approaches (how the financing sources are combined to cover costs and what mechanisms are used to provide public support, including hardware subsidies, software support, or facilitated access to credit).
1.1 Methodology
The findings of this report rest primarily on six case studies illustrating a range of approaches to financing on-site sanitation. Case studies were selected in regions where WSP and the World Bank work and where meeting the sanitation MDGs is a challenge. (See Annex G for more details on the methodological framework.)

METHODOLOGY FOR CASE STUDY SELECTION
The first step of the study consisted of identifying the range of financing approaches that can be used to cover the costs of on-site sanitation investments, that is, how the different potential sources of finance (including household investment and public support) can be combined. These financing approaches were classified according to the mix of public and private funds used (ranging from full private financing to full public financing) and the type of mechanisms used to provide public funds. The results of this initial analysis are shown in Table 1.1 below, together with the case studies selected to illustrate these approaches.

The six case studies were selected to represent a range of approaches to financing on-site sanitation at the household level. Approaches ranged from those that combined subsidies for software activities with limited targeted hardware subsidies for poor households (such as in Bangladesh and India) to approaches with a relatively high hardware subsidy (such as in Senegal or Ecuador). Some approaches, such as the Sanitation Revolving Fund in Vietnam, are relatively innovative and therefore less widespread; they are nevertheless representative of growing efforts to use microfinance instruments to increase access to essential services, such as sanitation. The diversity in financing approaches is also reflected in different approaches to program design, with programs ranging from community-led programs for investment in basic sanitation (as in Bangladesh) to programs providing a well-defined set of improved sanitation solutions (as in Senegal).

Given the emphasis placed on evaluating the best strategies for public support, the choice was made not to review cases where household investments take place spontaneously without public involvement. Although unsupported household investments often account for the majority of investments in on-site sanitation (as reported by the UK Department for International Development in India for example), such investments are often unaffordable for the poorest or may lead to sub-standard latrines that do not yield the health benefits associated with improved latrines (as per the Joint Monitoring Programme’s definition). At the other extreme, approaches that involved only public funds without household contributions were also ruled out from the start, since they could only be contemplated in a limited set of countries that could afford them (such as South Africa).

Additional criteria for case study selection included these:
- The projects needed to be perceived as successes and to be well implemented;
- The case studies had to consist of relatively large projects or programs in terms of size of investment and number of beneficiaries, with a sufficiently long track record (about four to five years) and readily available financial information; and
- Apart from donor-supported projects, long-term government programs developed without substantial donor assistance and NGO-led projects were to be included.

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4 See Mehta 2008.
5 In the rest of this report, each case is referred to by the country name (or the state name in the case of Maharashtra).
6 Although the case studies include both projects and programs, they are all referred to as “projects” for ease of reference.
### TABLE 1.1. POTENTIAL FINANCING APPROACHES FOR ON-SITE SANITATION

<table>
<thead>
<tr>
<th>Financing approach</th>
<th>Potential advantages</th>
<th>Potential risks</th>
<th>Case studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financing sources: Purely private (households)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-financing: Households invest in their own facilities and pay for sludge-emptying services – No subsidy</td>
<td>Majority of latrines are currently financed privately this way&lt;br&gt;Reflects existing demand&lt;br&gt;No use of public funds</td>
<td>Risk of poor quality infrastructure&lt;br&gt;Does not fully consider environmental impact&lt;br&gt;Suppliers may not exist&lt;br&gt;Unaffordable for the very poor</td>
<td>Not included since the research is focused on external support</td>
</tr>
<tr>
<td>Sanitation surcharge: Cross-subsidy to finance on-site sanitation</td>
<td>Use of cross-subsidies</td>
<td>Available funds may be limited due to affordability constraints</td>
<td>Limited experiences (e.g. Burkina Faso)</td>
</tr>
<tr>
<td><strong>Financing sources: Combination of private (household) and public funds (taxpayer monies and external sources)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loans to households, including microcredit for sanitation or home improvement (e.g., revolving funds)</td>
<td>Particularly useful in cohesive communities aiming at 100% sanitation&lt;br&gt;Limits initial outlay of public funds&lt;br&gt;Subsidy linked to outcome</td>
<td>Demand for sanitation needs to be stimulated&lt;br&gt;Requires a solid institution to manage funds&lt;br&gt;May be unaffordable for the very poor</td>
<td>Vietnam (Sanitation Revolving Fund)</td>
</tr>
<tr>
<td>Software support, with low/no subsidy for hardware</td>
<td>Focuses subsidies on creating demand&lt;br&gt;Relies on community cohesion/solidarity</td>
<td>Sustainability at risk once the initial attention / champion or other motivating factor disappears</td>
<td>India (TSC in Maharashtra) Bangladesh (DISHARI)</td>
</tr>
<tr>
<td>Loans to private-sector providers</td>
<td>Lift constraints for small scale independent providers (SSIPs) to expand their services</td>
<td>Services may not reach the very poor&lt;br&gt;Not sufficient demand to keep the business running if not combined with hygiene &amp; sanitation promotion</td>
<td>Few cases currently in existence – no specific case study</td>
</tr>
<tr>
<td>Non-financial support to providers (training, demand creation)</td>
<td>Boosts private-sector development so that supply can meet demand for sanitation facilities</td>
<td>Services may not reach the very poor</td>
<td>Elements of this approach reviewed in several cases</td>
</tr>
<tr>
<td>Output-based aid: Grants to households or SSIPs based on outputs or outcomes</td>
<td>Subsidy linked to actual outputs delivered</td>
<td>Requires private sector prefinancing, which may not be forthcoming</td>
<td>Mozambique: Improved Latrines Program&lt;br&gt;India (TSC in Maharashtra)</td>
</tr>
<tr>
<td>Partial hardware subsidy: Users contribute in kind or in cash</td>
<td>Enhances ownership of facility&lt;br&gt;Improves affordability</td>
<td>May be unaffordable for the very poor&lt;br&gt;May be an unsustainable drain on resources</td>
<td>Ecuador (PRAGUAS) Senegal (PAQPUD)</td>
</tr>
<tr>
<td><strong>Financing source: Purely public (taxpayer monies and external sources)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full subsidy: Households receive facilities as a gift</td>
<td>Removes affordability constraint for the very poor (if they capture the subsidy)</td>
<td>Can crowd out household resources&lt;br&gt;No demand test, so facilities often not used</td>
<td>Not included because not deemed sustainable</td>
</tr>
</tbody>
</table>
Table 1.2 shows key characteristics of the selected cases, presented in increasing order of public financing as a percentage of total initial costs (both hardware and software).

### TABLE 1.2. CASE STUDIES OF HOUSEHOLD SANITATION AND FINANCING APPROACHES

<table>
<thead>
<tr>
<th>Country, project, areas, level of service, population that adopted sanitation, study period</th>
<th>Financing approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vietnam: Sanitation Revolving Fund (SRF) - urban areas</td>
<td>- Mostly bathrooms and septic tanks</td>
</tr>
<tr>
<td>- 194,000 people</td>
<td>- 2001 to 2008</td>
</tr>
<tr>
<td></td>
<td>• Software support for sanitation promotion and hygiene education</td>
</tr>
<tr>
<td></td>
<td>• Facilitated access to credit via sanitation revolving funds</td>
</tr>
<tr>
<td></td>
<td>• Subsidized interest rates on loans for hardware construction (accounting for about 3% of hardware costs)</td>
</tr>
<tr>
<td></td>
<td>• Public funds = 7% of total costs of sanitation adoption</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Maharashtra (India): Total Sanitation Campaign (TSC) - rural areas</td>
<td>- Improved latrines</td>
</tr>
<tr>
<td>- 21,200,000 people</td>
<td>- July 2000 to November 2008</td>
</tr>
<tr>
<td></td>
<td>• Software support for community mobilization, including outcome-based financial rewards to villages reaching Open Defecation Free (ODF) status</td>
</tr>
<tr>
<td></td>
<td>• Outcome-based hardware subsidies for below-poverty households (covering about 22% of hardware costs for beneficiaries)</td>
</tr>
<tr>
<td></td>
<td>• Access to credit in some districts only</td>
</tr>
<tr>
<td></td>
<td>• Public funds = 9% of total costs of sanitation adoption</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Bangladesh: Dishari (based on Community Led Total Sanitation) - rural areas</td>
<td>- Basic latrines</td>
</tr>
<tr>
<td>- 1,631,000 people</td>
<td>- 2004 to 2008</td>
</tr>
<tr>
<td></td>
<td>• Software support for community mobilization, sanitation promotion, local government strengthening, including outcome-based financial rewards to villages which are 100% sanitized. Rewards come with no strings attached and do not necessarily need to be spent on sanitation</td>
</tr>
<tr>
<td></td>
<td>• Up-front in-kind hardware subsidies targeted on the poorest (covering about 42% of hardware costs for beneficiaries)</td>
</tr>
<tr>
<td></td>
<td>• Public funds = 31% of total costs of sanitation adoption</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Mozambique: Improved Latrines Program (PLM) - urban areas</td>
<td>- Improved latrines</td>
</tr>
<tr>
<td>- 1,888,000 people</td>
<td>- 1980 to 2007</td>
</tr>
<tr>
<td></td>
<td>• Software support for sanitation promotion and establishment of local workshops building slabs and latrines</td>
</tr>
<tr>
<td></td>
<td>• Output-based subsidies to local sanitation providers for each slab or latrine sold (intended to cover 40% to 60% of hardware costs)</td>
</tr>
<tr>
<td></td>
<td>• Public funds = 58 % of total costs of sanitation adoption (estimated)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecuador: PRAGUAS - rural areas</td>
<td>- Sanitation units (toilet, septic tank, sink, shower)</td>
</tr>
<tr>
<td>- 143,000 people</td>
<td>- 2001 to 2006</td>
</tr>
<tr>
<td></td>
<td>• Software support to strengthen municipalities to work in sanitation, for technical designs and monitoring</td>
</tr>
<tr>
<td></td>
<td>• Up-front fixed hardware subsidies (covering about 60% of hardware costs) provided to communities</td>
</tr>
<tr>
<td></td>
<td>• Public funds = 85% of total costs of sanitation adoption</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Senegal: PAQPUD - urban areas</td>
<td>- Range of options: improved latrines to septic tanks</td>
</tr>
<tr>
<td>- 411,000 people</td>
<td>- 2002 to 2005 (not including extensions via GPOBA)</td>
</tr>
<tr>
<td></td>
<td>• Software support for sanitation promotion, including hygiene promotion and education, community organization, technical support</td>
</tr>
<tr>
<td></td>
<td>• Output-based hardware subsidies to local sanitation providers for each sanitation solution built (covering about 75% of hardware costs)</td>
</tr>
<tr>
<td></td>
<td>• Limited schemes to facilitate access to credit</td>
</tr>
<tr>
<td></td>
<td>• Public funds = 89% of total costs of sanitation adoption</td>
</tr>
</tbody>
</table>
**APPROACH TO DATA COLLECTION**

The principal investigator provided overall guidance and supervision for the preparation of the case studies based on a common methodological framework (see Annex G for more details). The methodology was based on the following two principles:

*Counting all the costs.* To assess the true cost of access provision, all the costs associated with the sanitation interventions were counted, including hardware and software costs. For hardware, both the initial capital expenditure and an estimation of the ongoing operations and maintenance costs were included. Software costs include those of such activities as demand promotion or media campaigns, as well as project management costs and the sums provided as financial rewards to villages, wherever that was applicable (Bangladesh and Maharashtra). This also required separation of the household on-site sanitation costs from those of other project components. In several cases, the on-site sanitation component for households represented only a small portion of the overall project (as little as 3 percent of total project costs in Vietnam, which also included the renovation and expansion of sewerage networks and improvement of the overall management of the utilities).

*Including all sources of funds.* On-site sanitation investments can be financed from three main sources: the households themselves, government funds, or international transfers (from IFIs, donors, or NGOs). Households are often the main source of funds, and yet few projects or studies track their contributions to the initial investment. When actual data on household investment was not available, estimates were based on the investment costs and the public sector contribution.

Each case study was conducted by local and international consultants familiar with the country context. Information for the case studies was collected via interviews with project staff, sector specialists, field visits, and, where possible, focus group discussions with project beneficiaries. In-country consultants had three to eight weeks to gather and analyze the data, depending on information availability and on the size of the program under review. This process ensured that the data were compiled and interpreted as consistently as possible, given the constraints imposed by the limited data. All numerical information was computed in a comparable spreadsheet format to ensure consistency in the way the indicators were estimated (these spreadsheets are available on request).

The availability of reliable information varied substantially from one case study to another. Available data were particularly limited for Mozambique and Ecuador, requiring additional assumptions for some calculations. Such assumptions are set out clearly in the body of the case studies, so that the methodology used for deriving key indicators can be followed.

**Case studies’ evaluation criteria**

The case studies were evaluated by a common set of indicators, grouped under six main headings, as shown in Table 1.3 below. This review has tried to maintain, as much as possible, a distinction between evaluating the success of the overall approach to sanitation provision and evaluating the financing elements. Thus the first group of indicators evaluates the overall impact the projects and programs had on extending sustainable access, while the remaining indicators focus on the costs, the effectiveness in use of public funds, the ability to target poor customers via financial support, and the potential to sustain and scale up the program based on financial considerations.
### TABLE 1.3. CASE STUDIES EVALUATION CRITERIA

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Indicators</th>
</tr>
</thead>
</table>
| 1. Impact on sustainable access to services: Did the project contribute to increasing access to sanitation? | • Number of households acquiring sanitation  
• Corresponding increase in coverage ratio  
• Number of communities reaching ODF status  
• Percentage of latrines used and maintained five years later |
| 2. Costs: Are the costs of the resulting sanitation facilities reasonable and affordable to the beneficiaries? | • Total unit costs per sanitation solution (including a breakdown between hardware and software costs)  
• Hardware costs as percentage of household income (for average and poor households)  
• Operating costs per sanitation solution  
• Operating costs as percentage of household income (for average and poor households) |
| 3. Effectiveness in the use of public funds: Were public funds used in a way that maximized impact? | • Number of sanitation solutions built for US$1,000 of public funding (“increased access / public funding ratio”)  
• Ratio of household investments over public funds provided (“leverage ratio”) |
| 4. Poverty targeting: Did the program deliberately seek to target the poor, and was the program effective at doing so? | • Available evidence on whether the program deliberately targeted the poor or not  
• Errors of exclusion (when the poor do not receive a subsidy) and inclusion (when “nonpoor” get a subsidy) |
| 5. Financial sustainability: Could the approach be sustained over time without the need for external support? | • Percentage of initial costs covered by public funds  
• Percentage of operating costs covered by public funds |
| 6. Scalability: Could the approach be scaled up to cover those who are not yet covered in the country at reasonable cost? | • Costs of scaling up approach to cover remaining uncovered households (either in rural or urban areas) compared to sanitation budget and overall state budget |

---

7 Note: a sanitation solution in this document refers to the package of hardware furnished to a household by a sanitation program, and may include a number of hardware facilities, for example it might consist only of a latrine, or it might be a latrine and washstand with soakaway. In a number of programs, the household has some say in the level or content of the sanitation solution.
THE STUDY WAS DEVELOPED AS PART OF A GROWING BODY OF RESEARCH IN THE AREA

Although the effectiveness of subsidies has been systematically evaluated in other sectors, such as water supply or electricity, this has not yet been done for sanitation. The present study was therefore designed to be a first step towards a better understanding and comparison of alternative household sanitation financing approaches.

The study has its limitations. For example, within the limited scope of the study it was not possible to carry out a comprehensive survey of sanitation investments in a large number of locations. Accordingly, we were unable to derive robust and representative data on the costs of household sanitation facilities that could be used for benchmarking purposes. Instead, for each of the six case studies reviewed, point estimates have been provided that reflect service levels, geographical location, and the dates of each project. Other parallel studies have been developing evidence on the costs of household sanitation (among other things) as shown in Box 1.2 below.

The combination of all these studies should help develop a much better understanding of the costs of providing on-site sanitation and optimal financing approaches in the next few years.

BOX 1.2. EXAMPLES OF OTHER STUDIES GATHERING DATA ON HOUSEHOLD SANITATION

- The Economics of Sanitation Initiative (ESI), undertaken by WSP. This initiative started in 2006 in the East Asia Pacific region, has since been extended to South Asia, and will soon be extended to Africa. In Phase 2 of the study, which began in 2008, a cost-benefit analysis of a range of sanitation options is being conducted for both rural and urban areas in the East Asia Pacific region as well as the Yunnan Province in the South of China, and later in 2009 in India. Costs of on- and off-site sanitation options are being estimated using surveys of households, projects, and private and municipal providers. The results will be available for all East Asia Pacific countries in early 2010.
- The WashCosts study, undertaken by IRC (www.irc.nl) with support from the Gates Foundation, researches the life-cycle costs of water, sanitation, and hygiene (WASH) services in rural and peri-urban areas in four countries (Burkina Faso, Mozambique, Ghana, and India). This action research project started in February 2008 and aims to present findings by 2012.
- A study for Plan International on the costs of Plan’s sanitation programs was initiated in order to further enhance the organization’s policies in this area. The objectives of the study included evaluating the unit costs, cost-sharing schemes, and expenditure patterns associated with Plan’s programs and comparing Plan’s program costs and cost-sharing schemes with those of other agencies operating in the same areas.
- A study for the French Ministry of Foreign Affairs evaluated sanitation financing approaches based on case studies in urban areas of Senegal, Burkina Faso, Mali, and Niger. A practical guide to help local authorities organize the financing of sanitation within their jurisdictions will be a direct output of this study.
1.2 Report structure

The rest of this report is structured as follows:

- **Section 2** introduces the main characteristics of the financing approaches used in the case studies;
- **Section 3** presents the main results of the comparative analysis of the financing approaches;
- **Section 4** identifies key findings based on the analysis and charts the way forward to improve the design of projects and programs to finance on-site sanitation at the household level.

A series of Annexes provides additional information on the case study results and the methodology used to compile them:

- **Annexes A to F** contain summary case studies presented in a common format to facilitate comparisons, including an evaluation of what seems to have worked and what has not worked;
- **Annex G** gives background information concerning on-site sanitation service levels, types of costs, and sources of funds, intended for those not familiar with the sector;
- **Annex H** contains standard Terms of Reference used for preparing the case studies; and
- **Annex I** contains an indicative bibliography.
This section places the case studies in their country context (Section 2.1) and provides a summary description of the project and financing approaches used in the six cases (Section 2.2). This is followed by a summary analysis of how external financial support has been provided in each case, mainly through hardware subsidies (Section 2.3) and software support (Section 2.4), with facilitated access to credit provided only in certain cases (included as a hardware subsidy in the Vietnam case). \(^8\)

### 2.1 Case studies’ country contexts

The financing approaches we reviewed developed in significantly different contexts, which must be considered when comparing the relative achievements and limitations of these approaches. Key data on the case study countries are shown in Table 2.1 below.

In terms of macroeconomic indicators, four of the countries are classified as low-income countries (Bangladesh, Mozambique, Senegal, and Vietnam) while Ecuador and India are both lower-middle-income countries. Bangladesh and Mozambique are the two poorest countries in the set. At the other end of the spectrum, Ecuador is the richest country, thanks to substantial natural resources (oil in particular), although this wealth is unequally distributed and 40 percent of the population is estimated to be below the poverty line, with a heavy incidence of poverty in rural areas in particular. Vietnam, Senegal and India are all in the middle range, but their relative wealth per capita varies substantially when compared on a purchasing-power-parity (PPP) basis.

Sanitation coverage varied substantially from one country to the next, especially when comparing areas where the projects and programs under review have been developed.

Sanitation coverage, in Table 2.1, is for either urban or rural areas, depending on the project service areas of the case studies. Specifically, it is shown for rural areas in Bangladesh, Ecuador and Maharashtra and for urban areas in Mozambique, Senegal, and Vietnam.

### TABLE 2.1. KEY CASE STUDY COUNTRY INDICATORS

<table>
<thead>
<tr>
<th>Country</th>
<th>Bangladesh</th>
<th>Ecuador</th>
<th>Maharashtra</th>
<th>Mozambique</th>
<th>Senegal</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (millions)</td>
<td>159</td>
<td>13.7</td>
<td>96.7</td>
<td>20.3</td>
<td>12.2</td>
<td>85.6</td>
</tr>
<tr>
<td>GDP per capita (US$)</td>
<td>$463</td>
<td>$3,335</td>
<td>$941*</td>
<td>$396</td>
<td>$914</td>
<td>$828</td>
</tr>
<tr>
<td>GDP per capita (PPP US$)(^9)</td>
<td>$1,311</td>
<td>$7,242</td>
<td>$2,563</td>
<td>$842</td>
<td>$1,692</td>
<td>$2,589</td>
</tr>
<tr>
<td>Sanitation access, urban</td>
<td>88%</td>
<td>70%</td>
<td>27%</td>
<td>44%</td>
<td>64% **</td>
<td>88%</td>
</tr>
<tr>
<td>Sanitation access, rural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source for population and GDP: International Monetary Fund – World Economic Outlook – latest data available (2007)

Source for sanitation coverage: Latest available data in each of the countries for the types of areas where the case studies are taking place. See case studies in Annexes for more details on the nature and sources of the coverage data.

* The GDP figure is for India as a whole. Note that Maharashtra is one of the richest states in the country.

** Urban coverage data for Dakar region only, as this is the project’s area. Coverage in small towns is only 39%.

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8 The term *software support* is used rather than *software subsidies* to reflect the fact that most practitioners in the sanitation field usually refer to *hardware subsidies* when talking about subsidies in general.

9 PPP (Purchasing Power Parity) exchange rates equalize the purchasing power of different currencies in their home countries for a given basket of goods.
2.2 Summary of financing approaches

Key features of the financing approaches used in the case studies are represented in Figure 2.1 below. The horizontal axis shows the level of public sector finance as a proportion of the initial hardware and software costs of sanitation, while the vertical axis reflects the percentage of such public support that was spent on hardware subsidies. Although there are important differences, the financing approaches broadly fit into three groups:

- At one end of the spectrum, Vietnam, Bangladesh, and Maharashtra primarily relied on households to invest in their own facilities. Public support was provided to promote and create demand for sanitation. Hardware subsidies were fairly limited overall, although targeted subsidies were given to poor households to address affordability issues in Bangladesh and Maharashtra;

- At the other end of the spectrum, Senegal and Ecuador provided substantial public support, primarily in the form of hardware subsidies;

- Mozambique was somewhere in the middle, as it relied on partial hardware subsidies provided to local suppliers to build improved latrines.

### FIGURE 2.1. CHARACTERIZING FINANCING APPROACHES TO ON-SITE HOUSEHOLD SANITATION

![Diagram showing public investment as % of total investment in HH sanitation and hardware subsidies as % of public investment](image)

Note: Data for Mozambique were estimated for the situation in the late 1990s (the “heyday” of the program), given that actual data were not available and could no longer be collected for that period.

#### 2.2.1 Bangladesh

The Dishari project was initiated in 2004 by a group of donors and NGOs (including WSP, WaterAid, Plan International, and the Dhaka Ahsania Mission). Its main objectives were to scale up the Community Led Total Sanitation approach (CLTS). CLTS, originally developed in Bangladesh and now being adopted more widely, emphasizes community mobilization for the eradication of open defecation. The project aimed to strengthen local governments to become the main implementers of the approach instead of NGOs. This ongoing project has been working in five districts over four years to complement the government’s national sanitation program, and it has contributed to sanitation adoption by 1.6 million people. The average hardware cost of the latrines built through the program was US$17.

The Dishari project’s financial approach relies mainly on software support for community mobilization activities and sanitation promotion, with about US$7 spent on software support per household (or 28 percent of the total costs of sanitation adoption). The households are responsible for investing in latrine construction. They use locally available materials and simple designs to build relatively cheap hygienic latrines that they can afford and which meet their needs (although they do not necessarily comply with JMP’s definition of improved sanitation).

The government provides monetary rewards to unions and subdistricts that are 100 percent sanitized (about US$2,900 per union and US$7,250 per subdistrict). These rewards come with no strings attached and can be spent on any type of local development project. Combined with the prestige they bestow and other nonmonetary benefits, these rewards have served as a strong motivator for local leaders and have introduced a competitive drive between villages to improve access to sanitation.

In addition, to lift the affordability constraint for very poor households, the government has introduced an in-kind up-front hardware subsidy (equivalent to about US$7 per subsidized household). This scheme provides construction materials to households identified on the basis of strict criteria and community meetings. (Eligible households have an estimated income of less than US$290 per household per year). About 7 percent of households in the project area benefited from this subsidy, which covered approximately 42 percent of the hardware costs associated with sanitation adoption.
Table 2.2 below provides key figures to summarize the financing approaches in each case study. Each of the case study projects and programs is summarized in sections 2.2.1 to 2.2.6. The case study annexes contain more detailed summaries of each case.

**TABLE 2.2. OVERVIEW OF CASE STUDIES FINANCING APPROACHES**

<table>
<thead>
<tr>
<th>Case Country</th>
<th>Bangladesh</th>
<th>Ecuador</th>
<th>Maharashtra</th>
<th>Mozambique</th>
<th>Senegal</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>DISHARI</td>
<td>PRAGUAS</td>
<td>Total Sanitation Campaign (TSC)</td>
<td>Programa de Latrinas Melhoradas (PLM)</td>
<td>PAQPUD</td>
<td>Sanitation Revolving Fund</td>
</tr>
<tr>
<td>Sources of public finance</td>
<td>WSP, WaterAid, Plan International, local NGO</td>
<td>Govt. of Ecuador, World Bank</td>
<td>Govt. of India &amp; Govt. of Maharashtra</td>
<td>Govt. of Mozambique, Donors (UNDP)</td>
<td>Govt. of Senegal, World Bank</td>
<td>World Bank, Govts. of Australia, Denmark and Finland</td>
</tr>
<tr>
<td>Household on-site sanitation component as % of total project costs</td>
<td>84%</td>
<td>20%</td>
<td>71%</td>
<td>100%</td>
<td>60%</td>
<td>3%</td>
</tr>
<tr>
<td>Project Size: People reached with sanitation via the project</td>
<td>1,631,000</td>
<td>141,000</td>
<td>21,200,000</td>
<td>1,888,000</td>
<td>411,000</td>
<td>194,000</td>
</tr>
<tr>
<td>Average hardware cost of sanitation solution (US$)</td>
<td>$17</td>
<td>$355</td>
<td>$208</td>
<td>$70</td>
<td>$568</td>
<td>$197</td>
</tr>
<tr>
<td>Hardware subsidy amount (only when provided) (US$)</td>
<td>$7</td>
<td>$210</td>
<td>$24</td>
<td>n.a.</td>
<td>$200 to $1,000</td>
<td>$6</td>
</tr>
<tr>
<td>Total hardware subsidies as percentage of total hardware costs</td>
<td>42%</td>
<td>59%</td>
<td>22%</td>
<td>50%</td>
<td>75%</td>
<td>3%</td>
</tr>
<tr>
<td>Percent of households in project area that received hardware subsidy</td>
<td>7%</td>
<td>100%</td>
<td>20-69%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Software support/household reached with sanitation (US$)</td>
<td>$7</td>
<td>$46</td>
<td>$15</td>
<td>n.a.</td>
<td>$144</td>
<td>$21</td>
</tr>
<tr>
<td>Software support as percentage of total sanitation costs (per household)</td>
<td>28%</td>
<td>12%</td>
<td>7%</td>
<td>n.a.</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Software support as percentage of total public funds for on-site sanitation</td>
<td>92%</td>
<td>14%</td>
<td>78%</td>
<td>30%</td>
<td>23%</td>
<td>70%</td>
</tr>
<tr>
<td>Indicative annual household income for below-poverty and/or bottom 40% income in project area (US$) *</td>
<td>$290</td>
<td>$1,652</td>
<td>$400</td>
<td>$741</td>
<td>$897</td>
<td>$574</td>
</tr>
<tr>
<td>GDP per capita (US$)</td>
<td>$463</td>
<td>$3,335</td>
<td>$941</td>
<td>$396</td>
<td>$914</td>
<td>$828</td>
</tr>
</tbody>
</table>

* This is income per household, based on 5 people per household. This had to be normalized for households in Senegal, where average household size is 9 persons.
2.2.2 Ecuador

The PRAGUAS project (Programa de Agua y Saneamiento para Comunidades Rurales y Pequeños Municipios) aimed at improving water and sanitation services in small towns and rural areas as well as the capacity of their service providers. The project was financed by the central government (with the support of a World Bank loan) together with municipalities and the beneficiary communities. The focus of the first phase of the project (2001-2006) was on small municipalities, those with cantonal capitals of fewer than 10,000 inhabitants (152 out of a total of 219 municipalities were eligible). It enabled about 140,000 people to gain access to improved sanitation over the course of 4.5 years. The average hardware cost of the solutions built was US$355, although costs could be much higher depending on the level of service chosen and the location (as transport costs can represent a substantial portion of total investment).

The PRAGUAS project had a strong up-front component to mobilize and organize communities to adopt sanitation (US$46 was spent on software support per household, which represented 12 percent of the total costs of sanitation adoption).

The project provided an up-front fixed hardware subsidy to households for the construction of on-site sanitation solutions. The subsidy provided by the Government through the project was capped at US$210 in Phase 1. This increased to US$315 in Phase 2 to reflect increases in the cost of a basic improved latrine. The level of subsidy was set to cover 70 percent of hardware costs for a basic improved sanitation solution, so as to ensure that poor families could afford improved sanitation. The remainder was to be financed by the communities in the form of labor, material, and cash. Households were free to choose a more expensive solution but had to finance all additional costs over and above this fixed subsidy. Households could choose the level of service based on a broad catalog of technical solutions, ranging from improved traditional latrines to a basic sanitation unit (or UBS, for unidad básica de saneamiento) which integrates a shower, a sink, a flush toilet, and a septic tank. A majority of households chose this higher level of service, which means that the subsidy they received covered a smaller portion of their investment (about 60 percent on average).

2.2.3 Maharashtra (India)

The Total Sanitation Campaign (TSC) is a nationwide program, primarily funded by the Government of India, whose implementation varies from state to state. The case study focuses on how the TSC has been implemented in the State of Maharashtra. The approach is based on a CLTS approach to promoting sanitation, combined with small hardware subsidies for the poorest households and monetary rewards for villages that achieve overall cleanliness objectives. Since being introduced in Maharashtra in 2000, the approach has incentivized more than 21 million people to adopt improved sanitation. On average, the hardware cost per sanitation solution built was US$208.

Under the TSC program, software activities are conducted to generate demand and village-level mobilization. Separately from the TSC, monetary rewards are provided to villages that reach ODF status. The Nirmal Gram Puraskar (NGP) is a national program which provides one-off monetary rewards from the central government to qualifying gram panchayats (village-level governments). Payments are based on a set of criteria that include, among others, 100 percent sanitation coverage of individual households and being totally free from open defecation. The payments can be anywhere from US$1,250 to US$12,500 per gram panchayat, depending on the population. Gram panchayats can use the cash incentive to improve and maintain sanitation facilities in their respective areas with a focus on solid and liquid waste disposal and maintenance of sanitation standards. In addition, the State of Maharashtra has introduced a number of state-based campaigns, such as the Clean Village campaign (Sant Gadge Baba Gram Swachayata Abhiyan or SGBSA) which takes place annually and encourages maintaining overall cleanliness in the villages. In total, approximately US$15 was spent on software support per household (including the costs of the financial reward schemes), which represented about 7 percent of total sanitation adoption costs.

Hardware subsidies are provided to below-poverty-line (BPL) households after the village has been declared ODF. Since they are outcome-based, they are referred to as “incentives” in the TSC guidelines, provided to households “in recognition of their achievements.” The initial level of subsidy was Rs
500 (US$10) per BPL household, although this was raised to Rs 1,200 (US$24) in March 2006 to reflect cost inflation. The subsidy was initially intended to cover 80 percent of the hardware costs of a basic sanitation solution for BPL households, but in practice it covers only about 20 percent of hardware costs since most BPL households chose to invest in a higher level of service than the basic minimum.

Finally, in some areas access to credit has been provided in order to speed up the process of adopting sanitation. In those districts where it was systematically introduced, it has supported stronger demand for sanitation. However, these financial products tended to be more widely available in comparatively richer districts and largely benefited APL (above-poverty-line) households in those districts.

2.2.4 Mozambique
The Improved Latrines Program (Programa de Latrinas Melhoradas, or PLM) was initiated in Mozambique in the early 1980s in difficult circumstances, including civil war and extreme poverty. Initially funded by external donors (including UNDP) and later transferred to the Government of Mozambique, the program aimed to provide low-cost sanitation solutions to households in peri-urban areas through a network of latrine and slab producers in all main cities. These producers, referred to by the program as “PLM workshops,” are neither purely public nor private. The approach to the program has evolved substantially over the years. Over the last 17 years, the program has benefited almost 2 million people in the peri-urban areas of all the major towns. The average hardware cost of the sanitation solution built under the program (the improved latrine) was around US$70.

The program initially helped to set up these production workshops through a combination of software support (such as training activities) and subsidies. In many cases, the land on which the workshops operated was provided for free by the government. In 1992, the government started providing production subsidies to the workshops based on their sales. As such, the program can be seen as an early form of providing output-based subsidies. The subsidies were intended to cover 40 to 60 percent of production costs, depending on the region, to reflect differences in input costs and poverty levels and to reduce the sale price to households. Beginning in 1994, the government (with external donor support) also financed the costs of “community animators” to carry out social marketing and sanitation promotion campaigns. It is not possible to estimate the value of such software support, however, since this system was dismantled following decentralization.10

2.2.5 Senegal
PAQPUD (Programme d’Assainissement Autonome des Quartiers Périurbains de Dakar) is a program initiated in the framework of a World Bank loan, to provide sanitation services in poor peri-urban areas around Dakar, Senegal’s capital. The program, which was developed between 2002 and 2008, offered a wide range of sanitation solutions, mostly on-site facilities as well as small-bore sewers in areas where on-site sanitation could not be considered for technical reasons. Over that period, the program benefited more than 400,000 people, although a large proportion of the facilities built were for the management of gray water rather than human excreta. The hardware costs of the sanitation solutions built through the program varied substantially depending on the solution retained, with an average of about US$568 per household covered; bearing in mind that each household received 1.56 sanitation facilities on average as they could apply for a subsidy for several facilities, ranging from latrines and septic tanks to washing facilities.11

Software support was provided to develop a catalog of services, promote sanitation and hygiene, and organize community mobilization. On average, software support represented US$144 per sanitation solution built, or 20 percent of the total costs of sanitation adoption. The entrepreneurs building the sanitation facilities were paid directly through the project for each one built based on a price schedule/facility. This is equivalent to an output-based subsidy,

10 The “community animators” were transferred to municipalities but effectively stopped promoting sanitation, which resulted in decreased interest in the product. Responsibility for paying production subsidies was transferred to the provincial governments. Some provinces stopped giving the subsidies, and others kept their level unchanged since 2000, even while production costs have increased significantly. As a result, the workshops have had to carry out other income-generating activities in order to cross-subsidize slab and latrine production costs.

11 Investments almost always included a washing facility and soakaway (Bac à Laver Puisard), which contributes to the overall cleanliness of the yard and can reduce the incidence of diseases but is not a sanitation solution by our definition (or that of the JMP) since it does not contribute to safe excreta management.
something which was later formalized through an extension of the project via the Global Partnership for Output Based Aid (GPOBA) which was ongoing as of mid-2009. The beneficiary households were required to make an up-front contribution in order to obtain access. Based on a willingness-to-pay survey, households were initially required to contribute 50 percent of hardware costs, but the hardware subsidy was subsequently increased to cover 75 percent of hardware costs given limited demand for the facilities and initially low uptake. The hardware subsidy provided by the program ranged from US$200 to US$1,000 per sanitation solution, depending on the costs of each solution. Access to credit was provided in the second phase in order to spread the burden of this contribution over time.

2.2.6 Vietnam

A Sanitation Revolving Fund (SRF) component to provide loans to low-income households for building on-site sanitation facilities was incorporated into the broader World Bank-financed Three Cities Sanitation Project. Working capital for the revolving funds was provided by the World Bank, the Governments of Australia, Finland and Denmark for three sub-projects in Danang City, Haiphong City, and Quang Ninh Province (Halong City and Campha Town). The local utilities initiated the revolving funds and placed them under the management of the Women’s Union, a pervasive organization throughout the country with long experience in managing microfinance schemes. The program benefited almost 200,000 people over the course of seven years. The average hardware cost of the sanitation facilities built through the program was US$197. These facilities included mostly septic tanks but also urine diverting/composting latrines and sewer connections.

The SRF provided small loans (US$145) over two years at partially subsidized rates to low-income and poor households for each to build a septic tank or, in fewer cases, a urine diverting/composting latrine or a sewer connection. The subsidized interest rate was equivalent to providing a US$6 subsidy on each loan. The loans covered approximately 65 percent of the average costs of a septic tank (US$225) and enabled the households to spread these costs over two years. The loans acted as a catalyst for household investment, but households needed to find other sources of finance to cover total investment costs, such as borrowing from friends and family.

The program also included significant software support for sanitation promotion, the creation of Savings and Loan groups, and hygiene promotion. Software support per household was about US$21 and represented about 10 percent of the total costs of sanitation adoption.

2.3 Hardware subsidy design

Hardware subsidies are defined as public funds provided to alter the price or costs of a particular good or service to encourage the output, supply, or use of these items. With respect to sanitation, hardware subsidies may be provided to encourage investment beyond the level that would be carried out based solely on private benefits and to reduce or eliminate the affordability constraint for poor households. Subsidies toward the costs of hardware were provided in all of the six cases reviewed; the delivery and targeting methods for these subsidies, however, varied significantly from one case to the next, as shown in Table 2.3 see page 21.

Figure 2.2 shows the extent to which the hardware subsidy covered the hardware costs as well as the amounts of hardware subsidy provided for those who received it.

FIGURE 2.2. HARDWARE SUBSIDY DESIGN

Note: For Bangladesh and Maharashtra, the figure shows the hardware subsidy for the households who qualified as poor and received a hardware subsidy. All other households received no hardware subsidy at all. As a result, the share of hardware subsidies as a percentage of public funds (as shown in Figure 2.2) is lower than the rate of hardware subsidy per eligible household.
### TABLE 2.3. DESIGN OF HARDWARE SUBSIDIES IN THE CASE STUDIES

<table>
<thead>
<tr>
<th>What is subsidized?</th>
<th>How is the subsidy provided?</th>
<th>How much is subsidized?</th>
<th>How is the subsidy targeted?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>Costs of latrine construction for poor households.</td>
<td>In-kind to households. The village provides latrine construction materials to poor households free of charge.</td>
<td>Hardware subsidy for the poorest is equivalent to about US$7 per latrine (42% of hardware costs).</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Costs of a basic sanitation solution for all households in project area.</td>
<td>In cash to the community. Paid up-front to the community organization, provided the community and municipality have paid their contribution.</td>
<td>Maximum subsidy is US$210 per sanitation solution (59% of hardware costs), independently of the level of service chosen and actual costs of adopted solution.</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>Costs of basic latrine construction for poor households.</td>
<td>In cash to BPL (below-poverty-line) households, after the village has reached ODF status (requires prefinancing).</td>
<td>Maximum subsidy is US$ 24 per toilet (about 22% of hardware costs) from the Federal government (additional support from State possible).</td>
</tr>
<tr>
<td>Mozambique</td>
<td>SanPlats and latrines for all households in project area.</td>
<td>Through transfers to PLM workshops (local producers of slabs and latrines) based on sales numbers.</td>
<td>Subsidy amounts fixed in 2000 at about US$20 per latrine (about 19% of hardware costs). Amount not updated so public subsidy as percentage of costs has decreased with inflation.</td>
</tr>
<tr>
<td>Senegal</td>
<td>Costs of a range of sanitation solutions for all households in project area.</td>
<td>In-kind to local entrepreneurs. The program finances construction of the sanitation facility following payment of the household contribution.</td>
<td>Subsidy fixed as 70% to 75% of hardware costs. Amount varies between US$200 and US$1,000 depending on the sanitation solution. These costs are set by a catalog of technical solutions.</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Interest rate on loans for sanitation for all households in project area.</td>
<td>Households benefit from a subsidized interest rate on 2-year sanitation loans as well as a 6-month grace period on repayments.</td>
<td>Interest rate is half the market interest rate (with a six-month grace period). This gives an equivalent subsidy of US$ 6 per loan (or 3% of hardware costs).</td>
</tr>
</tbody>
</table>
Senegal had the highest rate of hardware subsidy (the subsidy accounted for 75 percent of hardware costs on average), as can be seen from the figure above, and it also had the highest subsidy amount per household. In Ecuador, the subsidy amount was fixed at US$210 per sanitation solution. This amount was set so that it would be equivalent to 70 percent of the costs of a basic sanitation solution. As the beneficiaries usually selected a higher service level, the actual construction costs were higher and the subsidy represented no more than 59 percent of construction costs (and in some cases less, although comprehensive information was not available).

In Bangladesh, hardware subsidies accounted for about 43 percent of investment costs for the households that actually received the subsidy. The number of households benefiting from such financial support was kept deliberately low (7 percent of households), consistent with the underlying philosophy of the CLTS approach to trigger a community response through mobilization (software activities) with no or only limited hardware subsidies. In the project area, hardware subsidies were provided by the government from the Annual Development Program (ADP) funds, which are funds transferred directly from the Ministry of Finance to local governments in the form of annual grants, 20 percent of which are earmarked for sanitation. Most of these funds are used to finance sanitation hardware subsidies for the poorest, on the assumption that a segment of the population needs financial assistance in order for the village as a whole to reach ODF status.

In Maharashtra, hardware subsidies for BPL (Below Poverty Line) households account for about 22 percent of hardware costs for those households and were provided to between 20 percent and 59 percent of households, depending on the district (there are no hardware subsidies for above-poverty-line households). According to the TSC guidelines, BPL households were supposed to fund only 20 percent of the latrine cost, as the federal government was supposed to cover 60 percent and the state government 20 percent of the latrine cost, respectively. However, as the subsidy was capped at Rs 1,200 (US$24) and the average investment costs to BPL households in the study districts was Rs 5,500 (US$110), the actual subsidy rate was much lower. This was partly because actual costs tend to be higher than originally estimated, particularly in hilly areas and rocky terrain, but also because BPL households were willing and able to invest more than original estimates. Prefinancing support provided at the village level together with microcredit in certain districts helped make such levels of investment by BPL households possible.

In Mozambique, hardware subsidies were originally set between 42 and 57 percent, depending on the city and the relative rates of poverty, which yielded an average subsidy of 50 percent. These subsidy levels later went down as a proportion of the actual costs, since subsidy amounts have been capped since 2000 and have thus not kept up with significant inflation. In the Maputo workshop in 2008, for example, public hardware subsidies covered approximately 19 percent of actual hardware costs, although cross-subsidies from other workshop activities helped keep the price to households down.

In Vietnam, households benefited from subsidized interest rates, which were about half of market interest rates coupled with a six-month grace period (this translated into an annual interest rate of about 6.26 percent to be compared to about 12.87 percent based on market rates). In monetary terms, this built-in subsidy is equivalent to about US$6 for a two-year loan or 3 percent of the hardware costs for customers. From the point of view of the public sector, it is more difficult to estimate the “cost” in public funds this subsidy represents, as such a calculation would require estimating the public opportunity cost of capital. The seed funds were provided as a grant from donors and were revolved rather than “used up” (given the high repayment rates of the program, these initial funds could be revolved several times). This means that even though each household received a small subsidy, the grant to the program as a whole must be taken into account.

2.4 Software support
Software support is defined in a broad way, to include both what are traditionally referred to as software activities (that is, training, community mobilization, sanitation promotion, and hygiene promotion, where any or all of these are provided) and overall program management costs, such as
<table>
<thead>
<tr>
<th>Country</th>
<th>What software support is provided</th>
<th>How is software support financed</th>
</tr>
</thead>
</table>
| Bangladesh | • Support to local governments to scale up the CLTS approach  
• Sanitation promotion activities (rallies, campaigns, events, etc.)  
• Hygiene promotion  
• Project management, monitoring, and evaluation | • Dishari project funds (75%) coming from a mix of NGOs  
• Government funds: financial rewards to villages for achievement of ODF status, percentage of funds transferred from central government to local governments, local government staff costs |
| Ecuador    | • Institutional strengthening of small towns  
• Support for investment design  
• Project management, monitoring, and evaluation | • Local project teams financed by the project support implementation. For example, they sign agreements with municipalities for transferring hardware investment funds. |
| Maharashtra| • IEC (information, education and communication)  
• Training and capacity building of TSC staff, motivators, and stakeholders  
• Support to microcredit institutions  
• Start-up costs to rural sanitary marts / production centers  
• Financial rewards, campaigns, prizes  
• Program management, monitoring and evaluation | • Total Sanitation Campaign financed and managed at the central level  
• Financial rewards (NGP) paid from central government to ODF districts  
• State-level campaigns and clean village competitions transfer additional reward funds |
| Mozambique | • Originally: Training of masons, support to set up production workshops and demand promotion  
• All software activities have virtually ceased following withdrawal of donor support and decentralization | • Software support was originally provided to establish and develop PLM workshops and to finance community animators or sales people for the workshops in charge of sanitation promotion  
• Such software support was heavily financed by external donors until decentralization (2002) |
| Senegal    | • Hygiene promotion and communication  
• Community organization and supervision  
• Site supervision  
• Project management, monitoring, and evaluation | • All software support transferred by Project Management Unit, which organizes sanitation promotion activities via CBOs |
| Vietnam    | • Sanitation promotion  
• Hygiene education  
• Loan management and supervision  
• Loan management, monitoring, and evaluation | • Portion of the grant funds were set aside to cover operating costs of the SRF, on top of interest revenues  
• Loan management done on a voluntary basis by Savings and Credit group leaders |
A particular feature of the Maharashtra and the Bangladesh cases is that in both cases, the central governments provide financial rewards to the villages that have achieved ODF status or are 100 percent sanitized (depending on the definition used, the first one being more focused on outcome and the second one on latrine construction).

In Bangladesh, the reward money comes with no strings attached and may be used for any kind of development work in the village, such as road construction. An associated, non-monetary, incentive comes in the form of a certificate granted by the Local Government minister to the chairman of each village that achieves ODF in a ceremony that seems to act as a strong motivator for local politicians.

In Maharashtra, by contrast, NGP (Nirmal Gram Puraskar) awards are cash incentives, paid by the central government to the qualifying districts, that must be utilized for improving and maintaining sanitation facilities in the districts. The monitoring process is much more rigorous with independent reviews to guarantee that the villages have met all qualifying criteria (including 100 percent sanitation coverage of individual households and 100 percent school sanitation coverage, totally free from open defecation, and maintenance of an overall clean environment, including solid waste management). In addition, yearly campaigns, such as the Clean Village campaign (SGBSA), define yearly activities that help maintain cleanliness standards.

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12 See Annex G for a list of all potential software activities. In the case of Maharashtra, software support financial rewards provided to villages as a whole were included in software support rather than hardware, as they are used for general sanitation improvements (and do not benefit the households directly).
III. Evaluating the Performance of Financing Approaches

This section compares the performance of the financing approaches in the six case studies using common evaluation criteria (see Table 1.2). Only the most relevant points are highlighted in the text. For further detail and analysis, refer to Annexes A to F containing the summary country case studies. Each country annex contains a summary evaluation identifying those aspects of the financing approach that seem to have worked and those that seem not to have worked for each of the cases under review.

3.1 Impact on sustainable access to services

The first set of indicators seeks to evaluate the relative impact of the projects on sustainable access to services, based on whether access to sanitation increased and was sustained over time.

This series of indicators seeks to evaluate whether, overall, the projects have made a substantial contribution to increasing sustainable access to sanitation. This evaluation is broader than that of the financing approach per se, although it indicates whether or not the financing approach was successful at triggering investments. The impact of the projects on access to services was first evaluated in terms of the number of sanitation solutions built (the total number over the length of each project and the number per year, in order to adjust for differences in program lengths) and the attributable increases in coverage rates in the project areas. Table 3.1 shows the ability of the projects to increase coverage overall and on a yearly basis.

All projects triggered significant investment when placed in their respective country contexts.

Comparisons in terms of the number of people served are biased by the fact that the TSC program in the State of Maharashtra is a massive campaign in a densely populated state. Over the course of four years, the TSC managed to motivate more than 20 million people to gain access to sanitation throughout rural Maharashtra, which is equivalent to incentivizing the construction of more than one million sanitation facilities per year. This led to a 38 percent increase in coverage throughout the State (and more than a 60 percent increase in some of the districts reviewed).

The second best performing approach in terms of number of facilities built per year was the Dishari project in Bangladesh, where 81 percent of the villages in the project area achieved Open Defecation Free (ODF) status over the course of four years. This resulted in a 70 percent increase in coverage (measured by the Government of Bangladesh definition, which does not always qualify as access to improved sanitation as per the JMP definition). Given that some of these latrines are shared, the total population benefiting from improved access is likely to represent

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<table>
<thead>
<tr>
<th>TABLE 3.1. NUMBER OF PEOPLE SERVED DURING EACH PROJECT’S LIFE AND FACILITIES BUILT PER YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maharashtra</td>
</tr>
<tr>
<td>Population in project area</td>
</tr>
<tr>
<td>People served by project</td>
</tr>
<tr>
<td>Facilities built / year</td>
</tr>
<tr>
<td>Attributable coverage increase</td>
</tr>
</tbody>
</table>

13 Such comparisons are difficult to carry out conclusively, as many factors may determine the relative success of a project or program aside from its financing approach. For example, when software subsidies are used to generate demand for the service, the quality and the impact of such demand-promotion activities may vary widely from program to program even if the costs are the same.
Unfortunately, few of the projects had precise data with which to monitor the operation, maintenance, and use of sanitation facilities built through the projects a few years after construction, yet such data are essential to assess the sustainability of these initial investments. In addition, it was not possible to investigate all the factors affecting sustainability, so any analysis of sustainability would be unable to control for such factors.

Anecdotal evidence gathered in the case studies indicated that, for the most part, the latrines were put to good use, well-kept and, in some cases, upgraded over the years. In Bangladesh, a WSP study concluded that 82 percent of latrines in Bangladesh (including in the Dishari project area) showed physical evidence of maintenance. In Maharashtra, initially temporary superstructures have been upgraded to more permanent structures over time. Since the financing approach in Maharashtra only subsidizes a basic latrine for the poorest households, any subsequent improvements reflect a true demand from their owners to upgrade their facilities as their economic condition allows.

In Vietnam, several streams of observation concurred that all facilities built with revolving fund financing were still operating five years after construction, reflecting strong ownership of the scheme. Even in Ecuador, research showed much greater willingness by the communities to maintain the projects when they had been required to contribute their own resources compared to projects that had been fully financed through grants. This seems to support the first assumption stated above, that a higher share of household participation in covering the initial costs leads to good sustainability. In Senegal, however, high rates of maintenance were also observed, despite having the highest rate of hardware subsidy (70 percent to 75 percent). In Senegal’s case, the fact that the household’s contribution still represented a substantial portion of income meant that ownership of the facilities was also strong.

Finally, latrines built through the projects were, on the whole, observed to be well-maintained. This indicates that operating costs were sufficiently low that households could afford them without external subsidies (see Section 3.2 for information on operating costs).
In almost all cases, there was no reliable information as to whether the latrines, once full, had been emptied or moved. For all projects, it was not possible to assess whether the households that had benefited from public financial support to build a latrine were then able and willing to pay for the costs of moving the latrines several years later when they become full. In some cases, the investments were relatively recent, so the need to empty the latrines had not yet materialized.

In Mozambique, a study was carried out where the program had been running for the previous 17 years. The study found that more than 70 percent of improved latrines were still in use and that a significant number of slabs had been moved to replacement pits or that the pits had been adapted to water-flushed systems.

Overall, the dearth of data on sustainability indicates that insufficient monitoring is carried out to ensure that the latrines, once built, can be emptied or moved so as to ensure sustainable sanitation.

Concerns were expressed related to the sustainability of the investments triggered by the financing approaches in Maharashtra and Bangladesh, which both use financial rewards for incentivizing communities and villages to install latrines and eliminate open defecation. In Bangladesh, it appears that some villages were declared sanitized when in fact not all households had installed a latrine. The absence of a third-party verification system and the financial rewards associated with meeting the objectives means that over-reporting is a risk. In Maharashtra, this risk was minimized through the introduction of yearly cleanliness campaigns, which have acted as an ongoing monitoring mechanism beyond the one-off NGP assessment.

### 3.2 Costs

The second set of indicators examines whether the financing approach triggered investment at a reasonable cost, especially at a cost that is affordable when compared to household incomes.

The average costs of providing household sanitation were computed by taking account of all the costs (including software) and all the sources of finance. Results are summarized in Table 3.2 below.

Figure 3.1 shows the average initial costs of the sanitation “package” that households accessed in each of the case studies and breaks down the initial hardware costs between the hardware subsidy component and the household investment component. This figure shows substantial differences in the initial costs of accessing sanitation, reflecting a number of factors as discussed below.

**FIGURE 3.1. TOTAL INITIAL COSTS PER HOUSEHOLD (ACTUAL US$ EXCHANGE RATES)**

Note: For Senegal, the average costs were calculated by dividing the total costs of providing on-site sanitation facilities by the number of households reached, to reflect the fact that households served received 1.56 facilities on average.

**TABLE 3.2. INITIAL COSTS AND OPERATIONS AND MAINTENANCE COSTS (US$)**

<table>
<thead>
<tr>
<th></th>
<th>Senegal</th>
<th>Ecuador</th>
<th>Maharashtra</th>
<th>Vietnam</th>
<th>Mozambique</th>
<th>Bangladesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware costs / solution</td>
<td>$568</td>
<td>$355</td>
<td>$208</td>
<td>$197</td>
<td>$70</td>
<td>$17</td>
</tr>
<tr>
<td>Software support / solution</td>
<td>144</td>
<td>46</td>
<td>15</td>
<td>21</td>
<td>n.a.</td>
<td>7</td>
</tr>
<tr>
<td>Opex / solution / year</td>
<td>138</td>
<td>73</td>
<td>4</td>
<td>31</td>
<td>n.a.</td>
<td>5</td>
</tr>
</tbody>
</table>

Note: Country case study annexes include more detail on the exchange rates used.

15 Note that the initial development costs, i.e. the costs of designing and preparing the projects, are not included.
Carrying out international cost comparisons is complicated by the need to choose a common currency to express costs. On the one hand, the costs being compared have been incurred at different points in time, in countries where inflation is often significant. This was the case for Vietnam, where costs incurred in earlier periods were adjusted for inflation. In the case of Mozambique, although the program was examined over its entire life (since the late 1980s), cost information was only obtained for 2007, which means that required inflation adjustments were minimal.

Differences in costs due to exchange rate conversions can be controlled for using PPP exchange rates. Actual exchange rates can give a distorted picture, as currencies may be overvalued or under-valued against the US dollar. This issue can be partially overcome through using purchasing power parity (PPP) exchange rates to compare costs and prices across countries, as shown in Figure 3.2.

**FIGURE 3.2. TOTAL INITIAL COSTS PER HOUSEHOLD (PPP USS EXCHANGE RATES)**

Using PPP exchange rates does not alter the ranking of the cost comparisons, however. In PPP terms, Senegal still has the highest costs in the set of case studies, reflecting the fact that the local currency, the CFAF, is pegged to the Euro and tends to be overvalued compared to other local currencies in countries with similar incomes. Costs for Ecuador, Maharashtra, and Vietnam are brought closer together, while those in Mozambique and Bangladesh remain much lower than for the other cases.

**These substantial cost variations largely reflect the different levels of service provided by different projects.** Table 3.3 shows the levels of service that households obtained through each project, from highest to lowest. Ecuador is at the top of the list, as it provided the highest level of service with a basic sanitation unit comprising a toilet connected to a septic tank, a sink and a shower. Similarly, in Senegal, households received a comprehensive service (and usually more than one sanitation facility, including washing facilities). At the other extreme, only basic latrines were built in the Dishari project area of Bangladesh, some of which did not comply with JMP standards.

**Although the primary driver of cost differences is service level, the choice of financing approach also appears to have a substantial impact on cost.** As shown in Table 3.3, costs appear to be primarily driven by service levels. The choice

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**BOX 3.1. USING PURCHASING POWER PARITY (PPP) INDICATORS FOR COMPARING PRICES ACROSS COUNTRIES**

PPP exchange rates equalize the purchasing power of different currencies in their home countries for a given basket of goods. Basing cost comparisons on a PPP exchange rate rather than on a market rate is arguably more useful as it allows taking into account the relative cost of living and the inflation rates of different countries, rather than just a nominal comparison. However, estimation of purchasing power parity is complicated by the fact that prices from country to country do not differ in a uniform way. Rather, the difference in food prices may be greater than the difference in housing prices while also being less than the difference in entertainment prices. People in different countries typically consume different baskets of goods, purchasing patterns are different, and even the goods available to purchase differ across countries.

In Senegal, the average hardware costs per household were estimated at US$568, which is more than 1.5 times the costs in Ecuador and more than three times the costs everywhere else. Comparatively higher costs in Senegal may be due to a number of factors, including technical ones, as well as the choice of financing approach. These costs per household are high because, on average, each household targeted by the project received 1.56 sanitation solutions, some of which were washing facilities, although this was also the case in Ecuador with the UBS which represents, on the whole, a higher level of service. On the technical side, the water table in the Dakar area is high, which means that soil conditions are unstable and it can be more expensive to build latrines, as substantially more building material is required as a lining for the pit and a foundation for the latrine. This cannot explain all cost differences, however; other countries have other factors driving up costs. In Ecuador, for example, the costs of transporting building material are significant as the program reaches remote rural areas.

These higher costs in Senegal may also be due to the choice of financing approach. The program in Senegal is highly subsidized, with 89 percent of the total initial costs of service level is integral to the overall program design. It is driven by a number of factors that are usually independent of the financing approach, including cultural factors, expectations, acceptability, and affordability. The choice of sanitation service level is particularly dependent on the type of water services provided. In Ecuador, for instance, the expected level of service for water is a piped connection, which means that dry latrines would not be satisfactory, nor would they be accepted given that there are high expectations in terms of service level, including in poor rural areas.

As a result, it is not possible to establish a direct causality between the financing approach and the choice of service level. On the whole, the higher the level of service, the higher public subsidies are as a percentage of the total costs of sanitation adoption. There are important exceptions to that observation, however. In both Vietnam and Maharashtra, the service levels retained are relatively high, although public funds represent a small percentage of total costs (7 percent and 9 percent respectively). This may be because the financing approaches in both cases were particularly effective at leveraging household investments (see Section 3.3 for more details).
adopting sanitation coming from the public sector. This is still a reduction in subsidy from previous sanitation schemes in the country, where costs of other NGO-led programs are usually 100 percent subsidized. High subsidy levels are likely to have created some perverse incentives. Local entrepreneurs, used to generous subsidies, are less willing to bring prices down to increase their market share. Potential recipients are unlikely to invest themselves if they know large subsidies are available, and therefore do not apply pressure for price reductions.

The project proposes a catalog of prespecified technical solutions. The beneficiaries choose among those solutions (and they usually chose the cheapest options), but for each choice they have to accept the technical standard set by the project. While this may improve the robustness and durability of the installations, it does not allow households to save on costs, for example by using recycled materials, or to negotiate prices with entrepreneurs. Conscious of this risk, program designers sought to negotiate prices of the catalog of services down in several instances, as the initial costs received from local entrepreneurs were even higher. A subsequent extension, financed with GPOBA subsidies, sought to reduce the prices even further by applying competitive pressure between entrepreneurs. Despite these attempts, costs have remained high, showing the limitations of centrally procured, highly subsidized sanitation schemes.

Given that subsidies are defined as a percentage of the hardware costs, this approach has been expensive for the public sector (see Section 3.3 for more details).

Initial costs were also relatively high in Ecuador, where most households elected to invest in a UBS, with a latrine connected to a septic tank, a sink, and a shower to meet all of the household’s hygiene needs. The estimated average hardware cost of these investments was approximately US$355 (plus US$46 for software costs), which was considerably higher than the fixed hardware subsidy provided by the project (US$210). In this case, households were willing to invest in a higher level of service that clearly met a real demand. Placing a cap on the subsidy thus helped limit the impact on the public purse while allowing the level of service to vary to meet differing local demands, which households were willing to pay for.

At the other end of the spectrum, the initial hardware costs in Bangladesh were the lowest, at US$17, to which must be added US$7 (or 28 percent of the latrine cost) for the software component. In this case, the households decided on the type of latrine, depending on what they could afford. Most of the latrines built in that way were simple pour-flush latrines with three or more concrete rings to line the pit and a basic superstructure made of locally available material. One potential drawback of this approach is that latrines built cheaply may be more expensive to maintain. The focus on capital costs may encourage a false economy of building “a cheap latrine” that is more affordable to build. For example, if the pit is relatively shallow, it would inevitably fill up more quickly, necessitating either more frequent emptying or earlier relocation of the latrine. This risk is partly confirmed by comparing Bangladesh with Maharashtra. In the latter, households, including a substantial number of above-poverty-line (APL) households, built improved latrines at a much higher initial cost than in Bangladesh but with comparable or even lower operating costs. Indeed, operating costs represented 29 percent of the initial costs in Bangladesh, which was the highest percentage in the set, as opposed to 2 percent in Maharashtra and 16 percent in Vietnam. These perverse incentives for households can be reduced through the use of microfinance, as was done in some districts of Maharashtra, which allows the costs of a more expensive latrine to be spread over time, instead of building a cheap one that would not last or would be more expensive to maintain.

The second question was whether “software support” premium per household varies considerably. We did not have sufficient data to draw firm conclusions about the effectiveness of software support. Software support costs represented a varying proportion of total initial costs. Figure 3.3 shows how these costs were allocated between household investment, hardware subsidy and software support for those households that received a hardware subsidy.
When compared to household incomes, hardware costs represented anything from 2.7 percent of average income in Bangladesh to just over 30 percent of income for BPL households in Vietnam. Both the initial costs (the hardware and software support costs) and the ongoing operations and maintenance costs were estimated as a percentage of household income, for average households and poor households, based on the national poverty line in each country. Figure 3.4 shows hardware costs as a percentage of income for average and BPL households in each of the project areas. This is a more reliable way to compare financing approaches and evaluate whether the resulting costs are “reasonable” in each country, that is, whether they are affordable to the population, as it avoids differences due to exchange rate factors.

Contrary to what is commonly accepted, data from the case studies suggests there is a significant demand for sanitation, with people willing to invest a significant percentage of their income into on-site sanitation facilities, as was the case in Maharashtra, Vietnam, Ecuador and Bangladesh.

In Vietnam, for households below poverty line (who were the target group for the project), investment in a septic tank could account for up to 30 percent of their annual income. Spreading this cost over two years via the loan enabled them to make such a sizeable investment, as the loan catalyzed other forms of finance, such as loans from relatives. The total cash outlays for these households were slightly higher than the hardware costs, as they had to pay interest on the loan.
In Bangladesh and Mozambique, hardware costs represented a much lower percentage of household incomes, which partly reflects the fairly low levels of service deliberately set to enhance affordability. The subsidy provided to BPL households substantially reduced the impact on household incomes of building a latrine. As shown in Figure 3.3, the subsidy reduced household investment from 15 percent to 6 percent of income for those households.

In Senegal and Ecuador, hardware costs represented more than 20 percent of income for BPL households, i.e. for those targeted by the programs. When taking into account the substantial subsidy, however, the investment cost to the poorest household (their cash contribution) dropped to 3.4 percent and 3.7 percent respectively, which partly explains why there was such a high demand for relatively expensive and tightly defined investments. However, data from the other case study countries indicate that household investments would be possible with a lower level of subsidy, as households appear able to invest a higher percentage of their income.

There are substantial differences in operating costs per sanitation solution per year, with Senegal being the most expensive and Bangladesh the cheapest. Operations and maintenance costs per sanitation solution per year were estimated by taking account of the costs required to maintain the latrine clean, access it in a hygienic manner (incorporating the cost of sandals and cleansing material) and empty it every three to four years. These estimated costs, shown in Figure 3.5 were based on the assumption of adequate operations and maintenance. There may of course be circumstances in which households would save on such expenditures to preserve cash and thereby run the risk of deterioration of the latrine. However, evidence of good latrine maintenance (see Section 3.1) seems to indicate that households are willing and able to pay for such expenses, or that they carried out some of the basic maintenance activities themselves as a way of economizing.

In all countries, operating costs were kept below the 5 percent mark (including for the hardcore poor), which tends to indicate that the service provided was affordable to the local population. For example, latrines in Maharashtra and Bangladesh share the common characteristic that they are cheap to operate and therefore eminently affordable for households (although, in the case of Bangladesh, operating costs account for 30 percent of initial costs for poor households, which indicates that savings may be achieved by building more solid latrines in the first place, as discussed above).

3.3 Effectiveness in the use of public funds

The use of public funds was evaluated to examine how effectively it maximized impact.

The evaluation of the effectiveness in the use of public funds is based on two main indicators: the number of households that obtained access to sanitation per US$1,000 of public funds spent, referred to as the increased access/public funding ratio, and the amount of private funds invested (in US$) for each dollar of public funds used, referred to as the leverage ratio.

Table 3.4 shows the estimated total costs of on-site sanitation adoption at the household level in the project areas, as well as the breakdown between public funds and household investment. The table also shows the increased access/public funding ratio, the leverage ratio, and potential explanatory factors for these two indicators.

18 The present study did not have the means to carry out an extensive survey of operating costs.
The increased access/public funding ratio showed great variations, as US$1,000 could help serve 135 households in Bangladesh but only 1.6 in Senegal.19

The increased access/public funding ratio, as shown in Table 3.4, captures a number of parameters, including the initial costs of the facilities, the size of the hardware subsidy and the level of software support. Given the way this indicator is estimated, the lower the costs (and usually the service level) of the facilities, the higher the ratio. A comparatively rich country such as Ecuador could afford a relatively expensive approach to expanding coverage with high levels of service, and given the population’s expectations, a lower level of service would not be acceptable and would be doomed to fail. Yet, given that most countries have funding limitations, it is useful to track this indicator in order to measure the effectiveness of public interventions in the sector. For example, the approach adopted in Senegal, which is barely above Bangladesh in terms of PPP-adjusted GDP per capita appears to be too expensive when considered with regard to households’ financial means.

The ability to leverage household investment varied substantially, ranging from a leverage ratio below 1 in Ecuador, Mozambique, and Senegal to a ratio of almost 20 in the case of Vietnam. The ability to leverage private investment can be critical to maximize results from limited available public funds. It is therefore important to improve our understanding of which financing approaches can be successful at leveraging household investment. In the programs under review, a number of low hardware subsidy programs appeared capable of leveraging substantial household investments to achieve large gains in coverage.

Other important aspects include the effectiveness of the demand-creation component, financed through software support, which can influence willingness to invest in sanitation. Household income may also influence the willingness to pay. For this reason, the amount of software support and average household incomes for BPL households are shown in Table 3.4. It was difficult to identify clear relationships between those factors, however.

In Vietnam, the leverage ratio varied from one city to another and also from one type of investment to another investments included septic tanks, urine diverting/composting latrines and sewer connections. The leverage ratio was particularly high with this financing approach, because public funds were provided mostly in the form of seed money for the revolving funds, which were revolved about twice during the first phase of the project (2001 to 2004) and further in later phases. Between each phase, the funds were transferred with minimum reduction in the original capital pool, thanks to low operating

<table>
<thead>
<tr>
<th>TABLE 3.4. COSTS OF ON-SITE SANITATION AND EFFECTIVENESS OF PUBLIC FUNDS</th>
</tr>
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<tbody>
<tr>
<td>Bangladesh</td>
</tr>
<tr>
<td>Total estimated costs (public and private) of providing household sanitation (US$ million)</td>
</tr>
<tr>
<td>Total public funds spent on household on-site sanitation (US$ million)</td>
</tr>
<tr>
<td>Total household investments in sanitation (US$ million)</td>
</tr>
<tr>
<td>Increased access/public funding ratio*</td>
</tr>
<tr>
<td>Leverage ratio**</td>
</tr>
<tr>
<td>Hardware subsidy as % of hardware costs</td>
</tr>
<tr>
<td>Software costs as % costs per solution</td>
</tr>
<tr>
<td>Average income for BPL households (US$/year)</td>
</tr>
</tbody>
</table>

* Number of sanitation solutions per US$1,000 of public funds invested.
** Household investment/Public investment. A high ratio indicates the ability to leverage private funds.
Note: In Vietnam, donors initially allocated US$3 million to the revolving fund as seed money. As these funds were revolved several times with minimal reduction, Table 3.4 shows only the amounts of public funds that were “used up.”

19 If the analysis was done in terms of number of facilities built, the ratio went up to 2.5 in Senegal per US$1,000 given that households received more than one facility on average.
costs (some of which were covered by interest proceeds) and extremely high repayment rates (virtually 100 percent throughout). The sanitation component also benefited from being part of a larger sanitation project with substantial awareness-raising and demand-generation activities. The costs of these activities carried out through the broader project have not been taken into account as it was not possible to allocate them reliably to the Sanitation Revolving Fund component.

In Maharashtra, the TSC was able to leverage substantial private investment, particularly from APL households, which did not receive any hardware subsidy and invested up to almost 40 times the amount of public funds that had been spent on the campaign in their area. The study district that had the highest leverage ratio overall (27.7) was also the only district where there had been an organized initiative to link households with credit institutions. In that case, credit provision seems to have accelerated the take-up rate and leveraged additional household investment.

Leverage ratios were lowest in the two programs with high hardware subsidies provided to all households, namely Ecuador and Senegal. In Senegal, difficulties in mobilizing household investment can be attributed to a number of factors, including the relatively high cost of the sanitation solutions on offer, which represented a high share of the local population’s income, the lack of credit facilities, and a history of highly subsidized schemes, which created expectations about receiving a subsidy.

3.4 Poverty targeting

The effectiveness of the programs at targeting the poor was evaluated based on the targeting criteria used at the program design stage and available evidence on actual targeting results. Whereas the approach to targeting was usually clear, evaluating the effectiveness of these approaches proved to be very difficult given that the necessary data were usually not available at the project level.20

All the programs sought to target poor households, except the PLM in Mozambique, which did not do so explicitly. This may partly be a reflection of the Mozambique program’s relatively long history, since it started during the civil war when the country as a whole was extremely poor and the administrative system was not sufficiently developed to implement a targeting system.

The programs used a range of targeting mechanisms to achieve their pro-poor objectives, including geographical targeting (identifying poor areas where all households are considered to be poor), means-based targeting (where poor households are identified based on a number of criteria), self-selection (where the project offers a service level that would only appeal to poor customers), and community-led targeting (where members of the communities agree between themselves on who can receive a subsidy).21 On the whole, it appears that the programs were effective at reaching their target recipients, although there was significant subsidy leakage in some cases. Table 3.5 summarizes this evaluation.

Geographic targeting consists of offering the subsidy only in certain areas, where the project or program was active. This approach was used in all of the donor-financed projects, that is in Senegal, Ecuador, and Vietnam, as well as in Bangladesh to some extent (the Dishari project was mostly active in extremely poor areas as well as in one relatively affluent district, used as a comparator).

In Senegal, several targeting methods were evaluated at the design stage for water as well as sanitation services, and it was deemed that regional targeting would be most cost-effective given the costs of alternative methods. Regional targeting meant the subsidy was available to everyone within the project area, as long as they were willing and able to pay their up-front contributions. Errors of inclusion with such methods can be minimized when the selected areas are poor in a homogeneous manner, such as urban slums with no sewer connections (as in Senegal) or remote rural areas (as in Ecuador).

Means-tested targeting consists of identifying poor households based on a series of poverty indicators. Such a targeting method was used in government subsidy programs, such as in

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20 Common ways of measuring the effectiveness of poverty targeting consist of evaluating errors of inclusion (when relatively well-off people find themselves benefiting from subsidies) and errors of exclusion (when members of the target group are not captured by the eligibility criteria) associated with the targeting mechanism. See for example: Komives et al. 2005.

21 The costs of alternative targeting mechanisms are an important factor to take into account when designing the financial approach. In the case of Senegal, the costs and benefits of alternative targeting mechanisms for subsidized water connections have been extensively reviewed. In that case, it was concluded that regional targeting was the most cost-effective solution.
### TABLE 3.5. TARGETING MECHANISMS AND OBSERVED OUTCOMES

<table>
<thead>
<tr>
<th>Approach to targeting</th>
<th>Targeting results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bangladesh</strong></td>
<td></td>
</tr>
<tr>
<td>• Project areas were among the poorest in the country (except Gazipur district, selected as a “control” district).</td>
<td>• Many nonpoor benefited from the Government hardware subsidy outside of the Dishari project area (20% to 50% in some cases, although based on a limited sample).</td>
</tr>
<tr>
<td>• Government hardware subsidies were targeted to poor households, based on strict eligibility and exclusion criteria.</td>
<td>• In the Dishari project area, community involvement improved targeting significantly. Government hardware subsidies reached about 7% of households in the project area.</td>
</tr>
<tr>
<td>• Community-level mechanisms in Dishari project area were used to improve targeting, with communities deciding who could receive subsidy.</td>
<td></td>
</tr>
<tr>
<td><strong>Ecuador</strong></td>
<td></td>
</tr>
<tr>
<td>• Targeted small towns (below 10,000 inhabitants) in poor areas around the country.</td>
<td>• Poor areas were served through the project.</td>
</tr>
<tr>
<td>• All households were deemed eligible for hardware subsidy within the target area.</td>
<td>• No evaluation of errors of inclusion and exclusion was available.</td>
</tr>
<tr>
<td><strong>Maharashtra</strong></td>
<td></td>
</tr>
<tr>
<td>• TSC was active in all rural districts, not only poor ones.</td>
<td>• About 5% to 10% of people who received the subsidy were not genuinely eligible.</td>
</tr>
<tr>
<td>• Targeted hardware subsidies to BPL households were identified through national surveys.</td>
<td>• About 10% to 20% of poor families did not receive the subsidy, due to problems with the methodology for identifying the poor. Some local governments alleviated exclusion errors by providing direct support to poor families.</td>
</tr>
<tr>
<td><strong>Mozambique</strong></td>
<td></td>
</tr>
<tr>
<td>• No explicit poverty targeting.</td>
<td>• No explicit analysis of the impact of the program on poor households.</td>
</tr>
<tr>
<td>• Implicit targeting as the PLM workshops produced a simple latrine, which did not appeal to comparatively richer households.</td>
<td>• All improved latrines were deemed to have been built via the program, whereas richer households built septic tanks.</td>
</tr>
<tr>
<td><strong>Senegal</strong></td>
<td></td>
</tr>
<tr>
<td>• Targeted the poorest areas of Dakar and its surroundings,</td>
<td>• Limited error of inclusion: Few comparatively richer households benefited from the program during the pilot phase.</td>
</tr>
<tr>
<td>• CBOs helped with identifying poor households most in need.</td>
<td></td>
</tr>
<tr>
<td><strong>Vietnam</strong></td>
<td></td>
</tr>
<tr>
<td>• Targeted poor households in areas not connected to the sewers.</td>
<td>• All beneficiaries were in the bottom 20% in income level.</td>
</tr>
<tr>
<td>• Savings and Loans group leaders selected loan recipients, based on needs, reputation, and ability to repay.</td>
<td>• Those who were not deemed able to repay were excluded (mostly indigent people).</td>
</tr>
</tbody>
</table>
Bangladesh and Maharashtra, where poverty is widespread rather than contained in specific areas. In the case of Maharashtra, for example, poor households were identified through regular central government surveys for the purposes of broader poverty targeting programs. There are well-known problems with the methodology used for identifying poor households, however. In 2003, the Government of India introduced a new methodology for poverty classification which has been heavily criticized; some felt that it introduced too stringent exclusion criteria (for example, ownership of a ceiling fan is enough to exclude the household from subsidy eligibility), that the criteria did not allow for any regional variations, and that the categorization did not reflect how people move in and out of poverty and migrate between areas in search of work. The State of Maharashtra, among others, has rejected this new methodology and continues to use the 1997 survey data, which are bound to be somewhat out of date. As a result, it was estimated that about 10 to 20 percent of poor households did not receive the subsidy despite being poor. Local governments tried to compensate by providing additional subsidies to excluded households, even though such local systems are also prone to manipulation.

Community-based targeting consists of identifying poor households through community organizations (as was done in the Dishari project in Bangladesh) or via community leaders (as was done by the Savings and Loans group leaders in Vietnam). This appears to be a more flexible, better targeted and probably less costly way to identify poor households. It requires the right type of community mobilization and a spirit of solidarity between community members, so that they agree to see the subsidy paid to the poorest or even to transfer some of their own funds. In Bangladesh, community-based selection was introduced in the Dishari project to improve on the targeting of the hardware subsidy scheme run by the Government of Bangladesh, which had a high inclusion error (20 to 50 percent of subsidy recipients were not deemed eligible according to an ex-post evaluation). This was facilitated because all village residents were working together towards the achievement of a common goal, and they viewed helping the poorest get access to the subsidy as helping themselves to reach a collective goal (with financial rewards attached).

In Vietnam, the program targeted poor households with no access to sewers. Such regional targeting was combined with selection by the Savings and Loans group leader, who identified which households could receive a loan based on whether they were deemed able to repay. This worked to some extent, as all households that obtained a loan were in the bottom 20 percent in terms of income level, but it excluded the most indigent. To avoid sending confusing messages, it was deemed preferable to roll out the microcredit scheme first, before using the remaining seed capital to provide subsidies to the most indigent. One drawback of this method is that it gives a lot of power to the group leader and is not easily replicable.

Self-selection, whereby the project offers a basic level of service that only appeals to poor households, is effectively taking place in Mozambique now that income levels have risen slightly. The improved latrines provided by the project mostly appeal to poor customers because they are affordable, whereas slightly richer households would rather build septic tanks.

3.5 Financial sustainability

This set of indicators examined whether the financial approach could be sustained over time, based on the percentage of cost recovery for operating costs and initial costs (hardware and software). Rather than examining the physical sustainability of the initial investments (which is reviewed under Section 3.1), this set of indicators evaluates whether the sanitation solutions that have been built under the program could be replaced (if they were to fall into disrepair or become full) with a minimum need for external financial inputs. This is equivalent to computing capital and operating-cost recovery ratios when examining the performance of water-sector financial support policies.

Recovery of initial costs varies greatly from one approach to another, which can have a significant impact on the financial sustainability of the programs. Figure 3.6 below shows that whereas households covered 93 percent of initial costs in Vietnam, they only paid for about 11 percent of initial costs in Senegal.
In Vietnam, the seed funds initially provided to the revolving fund have been revolved several times with minimum reduction in the overall seed capital provided. After donors’ involvement stopped, the seed capital was transferred to the municipalities, which have been running the scheme successfully since through the Women’s Unions. The scheme could continue to operate until demand for the loans was exhausted, and therefore appears highly sustainable. High financial sustainability is also found in the Maharashtra TSC campaign, which has achieved substantial results using public funds in the form of output-based incentives rather than up-front subsidies.

By contrast, in Senegal the program is highly dependent on external financing. Funding allocated at the start of the program was used up within two years, well ahead of target, as demand for the sanitation facilities was high particularly after the subsidy was increased from 50 percent to 75 percent. Construction of on-site facilities had to stop for lack of funds, leaving 70,400 demands unmet as of late 2008. The program was later extended with additional funding from the World Bank and then from GPOBA. However, take-up has been slow for a number of reasons, including a deterioration in economic conditions that has reduced household willingness to make an up-front contribution. In addition, investments in demand promotion may have been partially wasted during the interim period between the end of the PAQPUD project and the start of the GPOBA-funded follow-up. Dependence on external funding was also a significant issue in the case of Mozambique, where the program lost its community animators when donor funds were withdrawn; the program slowed down substantially as a result.

Operating costs are funded by the households themselves, with adequate levels of maintenance. In all projects, households are fully responsible for meeting operations and maintenance costs, and there are no ongoing subsidies to cover those. Nevertheless, there may be some ongoing support from local NGOs or CBOs to keep the project running, as appears to be the case in many areas in Bangladesh according to a recent WaterAid report.

Anecdotal or survey evidence in most programs seemed to indicate that the latrines were kept clean and in good working order, even a few years after construction (see Section 3.1 for more details), which means that households are operating the latrines effectively. However, data on pit-emptying are difficult to obtain reliably. In some cases, such as in Maharashtra, the latrines had been built relatively recently and there were no reported cases of latrines filling up.

It is often assumed that households will access pit-emptying services when needed, but this is typically an area where households may save or postpone expenditure during tough economic times, thereby jeopardizing the long-term viability of the latrines. In Vietnam, the utility billing mechanism actually promotes regular maintenance. All households connected to the water supply network have to pay a wastewater charge, irrespective of whether or not they are connected to the sewerage system. If they are not connected (and have invested in a septic tank, for example, as they did under the project), they can get their pits emptied at no extra cost once every four years by private operators under contract with the utility.

3.6 Scalability

The last criterion examines the scalability of the case study approaches, that is, whether scaling up to cover the population not already covered could be done at a reasonable cost. Scalability is a critical element of project design. Several factors affect the scalability of a sanitation project, including the availability of trained personnel for community

22 The GPOBA-funded program was not reviewed in detail as part of the case study, which was focused on the first phase of the PAQPUD project. The GPOBA program had not been running long enough to allow assessing its impact.
23 Ross and Cumming 2009.
mobilization, training, management, supervision, or monitoring activities and the existence of an adequate institutional and policy framework. The present analysis is focused on whether the projects are scalable from a financial point of view, that is, whether the country as a whole can afford to scale up a project given overall financial constraints. This is essential when evaluating whether subsidy levels are suitable to a particular country.

To estimate the degree to which scaling-up can be afforded by the different countries, the initial costs per household were multiplied by the number of households to be covered in similar areas throughout the country. For example, if the program is active in rural areas, this consisted in estimating how much it would cost to cover the entire rural population not currently covered. These costs were then compared to the existing sanitation budget (to the extent that it could be estimated) and to the national budget. Such calculations provide a broad estimate of whether the approach would be affordable or not to the country, particularly in the context of limited donor funds. This evaluation was then combined with a review of other factors influencing the approach’s scalability, such as the robustness of the existing institutional set-up for scaling up.

In Mozambique, the PLM workshops that are still functioning are moribund, and the overall approach appears unlikely to be scaled up. 24 Although the case study examined the performance of the PLM over a long period, almost 30 years, it is important to distinguish different phases in the life of the program. From 1985 to 1992, the program received substantial donor support and was successfully scaled up, leading to the creation of PLM workshops in 16 cities throughout the national territory. The withdrawal of donor support together with a poorly managed decentralization process left many of these workshops stranded for cash and scrambling for survival by relying on other income-generating activities. At present, existing workshops cannot scale up their activities because the market in their immediate surroundings is saturated and they cannot afford to invest to serve markets further afield. Setting up new workshops would require both initial investment in software activities, especially training, and substantial government or donor funding. For planning purposes, the government has estimated that improved latrines could be built for an average of US$60, of which about US$25 would be for latrine promotion and health and hygiene education. Without a major re-evaluation of the type of financial and software support needed to keep existing workshops going and create new ones, the existing approach is unlikely to be scaled up.

In Senegal, the approach does not appear to be scalable, given its high costs and dependency on external funding. Extending the approach to cover only the 70,400 outstanding demands would require an additional US$54.5 million, which is more than five times the annual sanitation budget for the entire country and 1.42 percent of the national budget.

In Ecuador, the approach could be scaled up, especially since the country is comparatively rich and can afford to do so. Extending the PRAGUAS approach to cover the remainder of the rural population lacking access to improved sanitation (3.4 million people, or 70 percent of the rural population) would cost approximately US$231 million. Ecuador is by far the richest country in the set of case studies. Its GDP per capita in 2007 was US$3,335 at current exchange rates and US$7,242 at PPP exchange rates, since the purchasing power is much higher than its dollar-based economy would indicate. In such a context, this funding requirement does not appear out of reach and is roughly in line with budgets allocated to water and sanitation investments in secondary towns, for example.

In Bangladesh and Maharashtra, a scale-up of the financing approaches is within reach. In Bangladesh, scaling up the approach to the remaining 1,800 unions that have not been 100 percent sanitized appears to be financially feasible within two years. All communities have already been “ignited” (to use a CLTS word), throughout the country, but the key question is how to roll out support to those communities. A more significant constraint than finance is the availability of good quality facilitators, since these are critical to ensure the approach’s success. In Maharashtra, the program has already been extended to all districts in the state, and because the budget for these activities represents a tiny portion of the state’s total budget the program appears fully scalable.

24 Due to a lack of national data in Mozambique following decentralization, we could not estimate the costs of scaling up the approach and compare such costs to the national budget.
In Vietnam, scaling up the financing approach appears eminently feasible for those who can afford the loan. If the remaining 12 percent of Vietnam’s urban population without access to improved sanitation were to gain access via this approach, the financial cost would be about US$16 million. This is 1.8 times the government’s estimated annual budget for sanitation and therefore seems affordable if spread over several years. In fact, the approach has already been scaled up through a number of donor-funded projects (including World Bank projects) and through the Vietnam Bank for Social Policies, a national development bank. A change in approach, possibly using a higher rate of subsidy through a revolving fund program or direct subsidies, may be warranted for the most indigent, who cannot afford a loan at current terms.

3.7 Summary evaluation

Table 3.6 provides a summary evaluation of how the different case studies performed with respect to the six criteria: impact on sustainable access to services; costs; effectiveness in the use of public funds; poverty targeting; financial sustainability; and scalability.

Some approaches, such as in Maharashtra and Bangladesh, have done very well on all parameters and appear highly replicable. They are applicable in certain settings, such as rural settings in South Asia and probably on other continents as well, but may be less successful in areas with less community cohesion and higher expectations in terms of service levels. In rural Ecuador, for example, the rural population expects a piped water connection and a flushing toilet and would not settle for a lower-level of service such as a dry latrine. Nevertheless, the approach used in Maharashtra, where households receive a subsidy to cover a basic level of service and are encouraged to invest in higher service levels if they so wish, could potentially be adapted to circumstances where service expectations are high. The mechanisms for targeting subsidies in Maharashtra could probably be improved, however, as they suffer from a relatively high exclusion error due to disputed criteria for poverty targeting.

The sanitation revolving fund approach in Vietnam was very effective at leveraging household investments and proved highly sustainable and scalable. A potential drawback is that the most indigent are excluded, so they may need to receive direct support, as was done through a number of benefit schemes in Vietnam. This approach, based on microcredit, could be replicated in densely populated urban areas on the condition that a strong microfinance institution can be identified and that the credit scheme does not compete with high subsidies available to all.

By contrast, the financing approach in Senegal does not fare well when measured against these criteria, even though the project as a whole has been successful at putting on-site sanitation on the map in Senegal and in neighboring countries. The adopted approach has led to high costs that are not affordable to the local population without substantial external support. As a result, the financial sustainability of the scheme is very fragile. Scaling up such an approach to reach the country’s MDGs would simply be beyond Senegal’s means. Elements of this approach could nevertheless be adopted in other settings, such as the provision of output-based subsidies to local producers, which was practiced in Mozambique as well. Finally, the approach in Ecuador worked well, but given the relative wealth of the country it may prove too expensive to replicate in other countries with more limited public funds.

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25 The total working capital for sanitation microcredit in World Bank projects in Vietnam is estimated to be about US$25 million as of March 2009.
## TABLE 3.6. CASE STUDIES: SUMMARY EVALUATION

<table>
<thead>
<tr>
<th>Impact on sustainable access</th>
<th>Bangladesh</th>
<th>Ecuador</th>
<th>Maharashtra</th>
<th>Mozambique</th>
<th>Senegal</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substantial and rapid increase in coverage, mostly sustained</td>
<td>Substantial increases in coverage with good evidence of use</td>
<td>Very rapid increases in coverage (with some cases of relapse)</td>
<td>Rapid increases in coverage only when software support was also provided</td>
<td>Speed of coverage increased when required household contribution was reduced</td>
<td>Rapid extension of coverage</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Costs</th>
<th>Bangladesh</th>
<th>Ecuador</th>
<th>Maharashtra</th>
<th>Mozambique</th>
<th>Senegal</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic sanitation costs reasonable when compared to household income (3% to 4%)</td>
<td>Comprehensive sanitation solutions: costly but meet existing demand</td>
<td>Improved sanitation, households invest based on what they can afford</td>
<td>Affordable basic sanitation solutions, reduced demand when incomes grow</td>
<td>Comprehensive sanitation solutions but expensive by both national and international standards</td>
<td>Costs moderate compared to other programs but high when compared to household incomes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effectiveness in use of public funds</th>
<th>Bangladesh</th>
<th>Ecuador</th>
<th>Maharashtra</th>
<th>Mozambique</th>
<th>Senegal</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>High leverage</td>
<td>Low leverage</td>
<td>High leverage</td>
<td>Medium leverage</td>
<td>Low leverage</td>
<td>Very high leverage</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poverty targeting</th>
<th>Bangladesh</th>
<th>Ecuador</th>
<th>Maharashtra</th>
<th>Mozambique</th>
<th>Senegal</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective targeting through community involvement</td>
<td>Geographical targeting reached intended recipients</td>
<td>Means-tested targeting effective although some are excluded</td>
<td>Self-selection via level of service, with limited inclusion error</td>
<td>Geographical targeting reached intended recipients</td>
<td>Effective targeting, although lowest income excluded</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financial sustainability</th>
<th>Bangladesh</th>
<th>Ecuador</th>
<th>Maharashtra</th>
<th>Mozambique</th>
<th>Senegal</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable as long as public sector continues to contribute</td>
<td>Highly dependent on external financing</td>
<td>Low demands on external public funds</td>
<td>Dependent on external financing (with a marked decline when subsidies drop)</td>
<td>Highly dependent on external financing</td>
<td>Financially sustainable: initial public funds have revolved many times</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scalability</th>
<th>Bangladesh</th>
<th>Ecuador</th>
<th>Maharashtra</th>
<th>Mozambique</th>
<th>Senegal</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale-up achievable at a reasonable cost</td>
<td>Scale-up could be achieved given relatively high national income</td>
<td>Has been scaled up at federal level (coverage still needs to improve)</td>
<td>Was scaled up in major urban centers but further scale-up unlikely</td>
<td>Too expensive to scale up nationwide</td>
<td>Scale-up has been achieved in country</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summary evaluation</th>
<th>Bangladesh</th>
<th>Ecuador</th>
<th>Maharashtra</th>
<th>Mozambique</th>
<th>Senegal</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient use of public funds for rural settings with strong demand for low-cost solutions</td>
<td>Only useful for countries willing and able to fund high levels of service</td>
<td>Efficient use of public funds, which are provided on an outcome basis</td>
<td>Efficient use of public funds with simple and effective targeting</td>
<td>Limited use: high demand on public funds and limited leverage</td>
<td>Very efficient use of limited public funds but may be hard to replicate</td>
<td></td>
</tr>
</tbody>
</table>
IV. Summary of Findings

This section summarizes the study’s main findings, drawing implications for policy and program design wherever possible. The study also identified key data limitations in the projects’ monitoring and evaluation frameworks; such gaps are characteristic of the sector and result in inadequate data on which to base policy. The last subsection therefore identifies areas where information and knowledge need to be strengthened to improve the design of future sanitation projects and programs. Further research and innovation in finance will be essential as financial resources become more constrained in the context of the global financial and economic crisis.

4.1 What have we learned?

*Financing approaches can have a significant impact on the cost-effectiveness, equity, impact, and scalability of sanitation projects.*

Public support has a significant role to play in creating demand for sanitation, supporting the development of sanitation entrepreneurs and alleviating affordability constraints. This study has shown that the way such public support is financed can have a significant impact on the performance of sanitation projects and on their scalability.

*In all cases reviewed, public support for sanitation triggered a significant increase in household sanitation,* with an increase in coverage of at least 20 percent and sometimes as high as 70 percent. Providing public support for household sanitation can take many forms, as the diversity of approaches documented in this study shows. Software support can finance activities such as community mobilization and awareness raising that are critical to unlock demand for sanitation services. Hardware subsidies can be used to encourage investment beyond the level that would be carried out based solely on private benefits and can help lift the affordability constraints for poor people. Facilitating access to finance and providing seed financing for revolving funds can lift the liquidity constraint that many poor households face in developing countries, a constraint that is likely to grow even more acute in the context of the global economic crisis.

*The use of scarce public funds needs to be optimized in order to achieve maximum results.* Care is essential in the design of the financing approach at the outset of on-site sanitation programs, which are too often treated as small isolated components in broader water and sewerage projects. Only financially sustainable approaches have the potential to be scaled up to make a significant contribution to meeting the MDGs.

*Households are critical investors in on-site sanitation at the household level.*

The study confirmed that households are key investors in household sanitation facilities, except in highly subsidized schemes. None of the projects reviewed in the study started from the premise that the poor are too poor to pay anything for access to sanitation.

Poor households can allocate a substantial portion of their income to sanitation investments (up to 25 or 30 percent of annual income in some cases, as in Vietnam) if they can see the need and potential benefits from it and are given access to credit in order to spread the investment over a longer period. Indeed, in the majority of cases, except for the poorest, poor households seemed to face a liquidity constraint rather than an insurmountable affordability constraint, which is why access to credit appears to have a significant role to play in triggering household sanitation investments. As a result, it is important both to stimulate households’ demand for sanitation products and to leverage their capacity to invest.

*Hardware subsidies play an important role in making sanitation accessible to all.*
Some form of hardware subsidy for at least some users was present in all of the approaches reviewed, albeit in different forms. While the Sanitation Revolving Fund in Vietnam provided a subsidized interest rate on all its loans, the Dishari project in Bangladesh provided in-kind subsidies to the poorest households, which were carefully selected by the community as needing the subsidy (see Table 3.2 for a summary of the design of hardware subsidies in the case studies). While some heavily subsidized schemes covered up to 75 percent of hardware costs (as in Senegal), the Vietnam project only provided relief of about US$6 per septic tank, which was otherwise financed by the households themselves.

Choosing the appropriate service level and determining the appropriate rate of subsidy are essential to ensuring that the scheme meets demand and is affordable, from the point of view both of the households themselves and of the sanitation sector as a whole. This “affordability threshold” will vary depending on the relative income levels at the household and country level. In Vietnam, for example, BPL households were willing to invest up to 30 percent of their annual income to build a septic tank, especially when those costs were spread over two years via a loan. This may be due to the success of the demand promotion activities and the demonstrated benefits of investing in sanitation.

The choice of service level is critical for the financial sustainability of a sanitation scheme. The study has shown that the choice of service level is critical not only for the social acceptability and marketing success of the approach but also, through its impact on cost, for its financial sustainability. The choice of service level itself depends on many factors, such as expectations, technical constraints, and availability of materials and skilled masons. For example, Bangladesh has been successful because its approach consists of stimulating households to invest in a basic latrine at a cost they can afford. On the other hand, relatively high levels of service were seen as a key determinant for demand for the UBS in Ecuador. The crucial difference is that Ecuador is about seven times richer than Bangladesh in PPP-adjusted terms and the country as a whole may be able to afford a relatively high level of subsidy. In the case of Senegal, however, high cost of service meant that the approach was highly dependent on external financial support and is unlikely to be scaled up to the rest of the country for lack of resources.

High levels of hardware subsidies can dampen financial sustainability and can be significant hurdles for scaling up sanitation programs.

Projects with high levels of hardware subsidies can achieve substantial results in a short time frame and make a significant difference to the lives of poor households. However, highly subsidized hardware subsidy schemes weigh heavily on public finances and can rarely be scaled up on a sufficient scale to meet national coverage targets (as in Senegal), except in comparatively rich countries where high subsidies can be afforded (such as Ecuador). Whether or not a country can finance scaling up of a certain approach to cover the population lacking access should indeed be at the center of decision making about subsidies.

For example, Senegal’s program achieved substantial results in a short time frame but had to stop for lack of funds, wasting investments in demand promotion until the program was extended with additional financing, some of which came from GPOBA. In Ecuador, community contributions, both in cash and in-kind, and an attractive technical solution (UBS) enhanced buy-in from the local populations. However, the subsidy cost (US$210) per sanitation facility was relatively high, both as a percentage of the total cost: (60 percent) and in absolute terms, when compared to hardware subsidy schemes in the other case study countries (although Ecuador has the highest per capita GDP in the dataset).

Such schemes may also generate negative impacts beyond the project. If projects have a high percentage of subsidies and become quite well known nationally, they can create expectations that then affect the ability to successfully implement sanitation programs with lower sanitation subsidies. This was the case in Senegal, where NGO-led sanitation programs typically had 100 percent subsidies. As a result, people may become less willing to invest themselves as they wait for the subsidized latrines. This would be true of schemes where the subsidy accounts for a very high percentage of the cost of investment and is available to all in specified areas. By contrast, where the hardware subsidy is well targeted and represents a small percentage of the investment costs, as in Vietnam and India, it does not appear to dampen demand.
Hardware subsidies, when well targeted, can be critical as a safety net for the poor.

Findings from the case studies indicate that hardware subsidies should not be used as a substitute for hardware investments by households but rather as a safety net for those who face a hard affordability constraint. To achieve those aims, subsidies need to be well designed and targeted. Findings from the case study research suggest how this can be achieved.

Targeted hardware subsidies made a positive contribution to reaching the poorest in Bangladesh and Maharashtra, in programs that otherwise relied mostly on software support. This enabled lifting the affordability constraint and, consequently, reaching the goals of becoming ODF (as in the Maharashtra case) or becoming 100 percent sanitized (as in the Bangladesh case) for entire communities, rather than leaving out a fringe of the population. Such subsidies may need to be combined with microfinance schemes, however, to ensure that households can build latrines that meet minimum standards and are cheaper to maintain over time or need to be emptied / moved less frequently.

By contrast, leaving out the poorest was a potential limitation of the Sanitation Revolving Fund scheme in Vietnam, as the poorest were not deemed able to repay the loans. In that case, the possibility of offering several types of loans with different rates of subsidies in order to meet the needs of different income groups was dismissed out of hand by the Women’s Union during the project design stage; the union advised that such an offer would risk dampening demand for the main loan program. Alternatively, it was envisaged that once all households who could afford it had built a latrine, the remaining seed money could be used as a source of subsidy for the poorest households. This has yet to be implemented, as all households eligible for a loan are not yet covered.

Fixed-amount subsidies rather than percentage-based subsidies seem to be most effective at leveraging household investment while guaranteeing a minimum service level.

The rate of subsidy can be set in different ways: It can either be a percentage of the cost of the facility, as in Senegal and Bangladesh to some extent, or it can be a fixed amount to guarantee a minimum level of relief to households. The latter approach leaves households the ability to invest in different service levels according to their means, as was done in Maharashtra, Ecuador, and Mozambique, as well as indirectly in Vietnam, through interest rate subsidies.

From a policy perspective, the approach of providing a fixed amount of subsidy to cover a basic standard of service appears to be the right one, because it gives incentives to producers to keep costs down and to be responsive to demand. By contrast, in Senegal the definition of the catalog of sanitation solutions (and their respective prices) was a fairly long and detailed exercise that went through several iterations. The prices that program designers obtained at first were deemed high and technical specifications were modified to reduce the prices. However, once the catalog of services had been set, the local producers had limited incentives to reduce the costs of production since they knew that the subsidy and the household contribution would be sufficient to cover the existing production costs.

Another advantage of fixed-amount subsidies is that they are easier to control from an administrative point of view, since there is no uncertainty over the amount of subsidy needed as a factor in the demand for different options. Finally, fixed-amount subsidies are more equitable: if households want to obtain a higher level of service, they can get it, but they also need to pay for it.

Fixed-amount subsidies need to be managed actively, however, so as to keep up with inflation and other cost factors. For example, in Maharashtra, the TSC guidelines set a maximum amount of subsidy at Rs 1,500 (US$24) for BPL households when the study was conducted in 2008. Although this subsidy was intended to cover approximately 80 percent of the hardware costs, in practice the subsidy is covering only 22 percent of the costs of the latrines. This might reflect several factors: input prices have increased significantly since the subsidy level was fixed, and there are important cost differences from one village to another, which means that the same level of subsidy does not provide the same amount of relief to different households in different locations. For example, households in hilly areas or rocky terrains would need to invest much more than those in areas where digging is easier.
Transport costs can also have a significant impact. In the PRAGUAS project in Ecuador, the subsidy provided to households was a fixed amount of US$210. Households were free to choose the service level that best met their needs, and the majority of them selected a relatively high level of service, the UBS, with substantially higher costs partly due to the costs of transporting material to remote mountain areas. The analysis carried out for the design of the second phase of the PRAGUAS project in Ecuador investigated the possibility of setting different subsidy levels for different geographical areas, such as coast versus sierra, to reflect the substantial impact of transport costs on the price of materials.

In Mozambique, subsidies were given directly to the local providers supported by the program. These were based on the number of slabs and latrines sold and were fixed once in 2000, following a detailed study that ensured that differentiated levels of subsidy in each town reflected variations in economic conditions and poverty levels. This, coupled with demand promotion activities, enabled strong take-up of the improved latrines. However, these subsidies were never updated, even for inflation, and in some cases they have been discontinued following decentralization. As a result, current levels of subsidies are grossly inadequate to cover costs, and the surviving PLM workshops have to engage in other income-generating activities to cover the deficit.

Subsidy-targeting methods need to be tailored to the country circumstances.

The study has encountered alternative targeting methods for providing hardware subsidies, including geographic targeting, means-tested targeting, community-based targeting, and self-selection. Community-based targeting and self-selection appear to be more effective than means-tested systems, which can be costly and generate perverse incentives.

Means-tested systems, as practiced in Maharashtra and Bangladesh, can generate substantial inclusion or exclusion errors if not combined with additional subsidy-delivering mechanisms. When based on surveys for poverty classification, such surveys can be expensive and unwieldy and cannot be conducted at frequent enough intervals to keep up with households moving in and out of poverty.

Regional targeting can be an effective way of reaching poor households in circumstances where poverty is concentrated in certain areas, such as slums or remote rural areas, but it can raise issues of fairness when used for heavily subsidized approaches that are too expensive to scale up.

Community-based selection appears to be a more flexible, better targeted, and probably less costly way to identify poor households. It would usually need to be combined with regional targeting, so that such mechanisms are established in preselected areas. This approach requires the right type of community mobilization and a spirit of solidarity between community members, so that the better-off members accept that the subsidy is to be paid only to the poorest or may even transfer some of their own funds to make the scheme work.

Finally, no precise data were available to confirm whether or not self-selection is an effective targeting approach. This method appears to be the cheapest and easiest to implement for countries that have limited means to introduce either means-tested or community-based targeting approaches but seek to reach a large population through a basic sanitation program, such as Mozambique, where improved latrines were subsidized. This is consistent with subsidizing only a basic level of service, leaving the choice to households to invest over and above this level of service (that is, the approach used in Maharashtra and Ecuador, where subsidies were capped at a level to cover a basic service).

Providing hardware subsidies on an output basis rather than an input basis can be effective at stimulating demand and leveraging private investment.

Several of the cases used an output-based method to deliver subsidies. Providing a subsidy on an output-basis can ensure that the subsidized activity is actually delivered. It can also give incentives to producers to reduce costs and to serve areas where they would not necessarily go otherwise. From a

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26 In Senegal, the PAQPUD project was expanded via a GPOBA program, but this phase of the project was not included in the case study as it did not have a sufficiently long track-record at the time of writing.
donor perspective, output-based subsidies can mitigate some of the risk of low uptake in a subsidy program: if there is no demand, for example if the product is not appropriate or incorrectly priced, then there is no output and therefore no payment. However, this would not guarantee that latrines built with such subsidies would actually be used.

In Mozambique, for example, subsidies were provided to PLM workshops based on their sales figures, which helped consolidate the network of workshops during the heyday of the program between 1994 and the late 1990s. These output-based subsidies are interesting as they were paid to the service providers themselves rather than to households. This system was established when the civil war was still raging in Mozambique, which meant that transferring subsidies to service providers was much easier than transferring them to households directly. Combined with software support to build the capacity of the workshops, this allowed strengthening the supply chain for improved latrines and generated a sharp increase in coverage.

In Maharashtra, the method for providing hardware subsidies to BPL households was modified in 2004, when the subsidies became payable only after the village as a whole had reached ODF status. As such, the government has preferred to refer to them as “incentives” given to households after they have already invested in a latrine, “in recognition of their achievement.” Since that change was introduced, the TSC campaign in Maharashtra has gathered pace, with more than one million latrines built every year in rural areas of the state. The change in the subsidy delivery method has led to a paradigm shift in the way the project is managed, as program officers have become much more focused on creating demand and organizing community mobilization rather than on running a construction program for BPL households.

Software support can be effective at triggering demand and leveraging private investment.

Approaches that rested primarily on software support, such as in Maharashtra and Bangladesh (with targeted hardware subsidies for the poorest), had among the highest levels of leverage and most increased ratios of access/public funding in the study set (following Vietnam, where the software component through the Three Cities Sanitation project was also significant). In Mozambique, the PLM was most effective when community animators could be active in demand promotion, and the decline of the program was closely linked to the withdrawal of such software support following decentralization. Lack of information on the relative costs of different software activities meant that it was not possible to draw inferences concerning the types of software support that were most effective, however.

The software component represented a variable portion of the costs of each facility, ranging from 28 percent in Bangladesh to a mere 7 percent in Maharashtra. Those software costs are important to include in an estimation of the total costs of providing sanitation, as it is critical to evaluate software cost financing requirements in order to preserve the financial sustainability and scalability of the approach going forward. Software costs can be valuable investments, as demonstrated in Bangladesh where demand promotion, community mobilization, and capacity development were the main levers of public support and where the approach had the highest increased access/public funding ratio, so that US$1,000 was enough to help 135 households gain access to sanitation. (Note that the standard of these latrines was comparatively low, with relatively high operating and maintenance costs). The approach in Bangladesh had comparatively high software costs, however, partly because it supported the training of local governments rather than implementing the project directly.

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The provision of financial rewards based on outcomes acted as a strong motivator for villages in Bangladesh and Maharashtra and helped mobilize energies around the achievement of clear goals. These are formally counted as part of the software costs, as distinct from the hardware subsidies, since these rewards were not provided to fund specific investments. The potential risk with such approaches, however, is that the mobilization and motivation will decrease after the objectives have been achieved and the financial reward paid, and villagers will go back to open defecation or stop using the latrines. This risk is present in Bangladesh, since the evaluation is only carried out once and there appears to be a tendency to over-report results. In India as a whole, a national study commissioned by WSP reported that 35 percent of households resorted to open defecation in panchayats that had been declared NGP the
year before (that is, they had been declared free of open defecation and had also reached a number of other environmental objectives). In Maharashtra, this risk was minimized through the introduction of yearly cleanliness campaigns, which have acted as an ongoing monitoring mechanism beyond the one-off NGP assessment.

Facilitating access to finance can be effective at lifting liquidity constraints, particularly when households are willing to invest substantial amounts in household sanitation.

Financial mechanisms such as subsidies or credit can be useful to strengthen the ability to pay and, in particular, to pay more for a higher level of service. Contrary to what is commonly accepted, data from the case studies show that there seems to be a significant demand for sanitation, with people willing to invest a significant percentage of their income in on-site sanitation facilities, as was the case in Maharashtra, Vietnam, Ecuador, and Bangladesh. In a number of cases, households have a liquidity constraint rather than an insurmountable affordability constraint. Facilitating access to finance can help overcome such constraints by spreading investment costs over a number of years.

Revolving funds, as practiced in Vietnam, appear to have remarkable potential for leveraging household investment and maximizing the effectiveness of public funds. Vietnam’s Sanitation Revolving Fund leveraged substantial private investment and has proved to be a highly sustainable scheme. In this case, the public sector contributed seed financing and the funds were revolved several times, resulting in a very high leveraging of limited public funds. Building the microfinance component into the design at the outset, rather than as an add-on or an after-thought, appears to be a critical feature of the approach in Vietnam. As a result, the microfinance institution (the Women’s Union) had a strong interest in managing the scheme successfully.

It therefore seems important to incentivize microcredit institutions, which are well developed throughout the world but usually more focused on income-generation projects, to get into the sanitation market, possibly by setting up subsidized lending schemes as in Vietnam. Once these microfinance institutions have realized the potential of the sanitation market through this type of subsidized scheme, they could become more active in the market for all income brackets, including those that do not need (or are not recipients of) a subsidy.

Embedding the microfinance element into the design of the financing approach, with the provision of seed money to a private lending institution for subsidized loans, was critical to success, since it minimized interference with the scheme and gave clear incentives to the microfinance institution to provide loans for sanitation.

In Maharashtra, the performance of the districts that had organized access to credit as part of the program was greatly enhanced, as credit accelerated household adoption of sanitation and increased the leverage ratio from public funds. However, insufficient information was available to evaluate the precise impact of those microfinance products on sanitation investment.

Channeling credit for investment in household sanitation is not straightforward, however, and it is not clear at this stage whether the revolving fund approach could be replicated successfully in other countries. In Senegal, the provision of credit to help households pay their up-front contributions was tried both via formal institutions and via traditional ones, such as the tontines, particularly during the second phase of the program. This has met with limited success, partly because local microfinance institutions were more familiar with making loans for income-generation activities rather than for sanitation investments. In addition, the scheme came after previous NGO-supported on-site sanitation projects that had offered 95 percent subsidies, which meant that the local population was not used to having to invest in improved facilities.

Potential success factors for replicating similar microfinance schemes include the presence of strong microfinance institutions and traditions and the incorporation of microfinance at the core of the financing approach rather than as an add-on or an after-thought.

4.2 Where next?

This study has sought to define a framework for analyzing the performance of alternative financing approaches to on-site sanitation at the household level. Although the set of case studies reviewed is somewhat limited, it is hoped that a similar methodology can be used in order to expand the range of financing approaches under review to strengthen the evidence base for policy making. In the process, the study has helped identify gaps in our understanding of financing approaches to sanitation solutions. Going forward, it will be important to fill these gaps in order to improve the design of sanitation projects and programs, as described below.

**Monitoring and evaluation (M&E) systems will need to be further developed to provide ways of evaluating the effectiveness of public support for on-site sanitation.**

**Improved M&E frameworks will need to be defined to inform the development of policy.** Sound evidence for policy development requires accumulating meaningful and reliable indicators, which should be incorporated into the original M&E frameworks of projects and programs rather than as a late add-on for specific studies. Below are some of the key areas where additional information is needed to help the development of future policies and projects, including cost information, financing data and information on impact and outcomes. Rather than developing such efforts in isolation, the improvement of M&E frameworks for sanitation projects should be linked to the ongoing Global Framework for Action (GF4A) Initiative, which places heavy emphasis on defining a common reporting framework for the water and sanitation sectors, as demonstrated by the pilot GLAAS report.²⁸

**COST INFORMATION**

**Information on the initial costs of program or project development should be computed in a more systematic manner.** At present, this information could only be pieced together from various sources, so such a task proved too time-consuming to undertake in the limited time available for the case studies. As a result, information on the initial costs of developing a program has not been incorporated in the analysis, even though there are likely to be broad variations.

The study confirmed that it is difficult to define global benchmark indicators for household sanitation costs. The research has provided some point estimates for given programs with different levels of service, but it is difficult to generalize from these point estimates to inform program design at the country level. For example, hardware costs were much higher in Senegal than in other countries, due to a number of local factors such as the high costs of labor and materials in Senegal’s capital, the strength of the local currency, and site-specific factors such as the high water table which made latrine construction more expensive. Each program needs to assess the feasibility of the service levels it is aiming for based on local factors. Point estimates derived in this study can provide a useful basis for comparison, but it would be inappropriate to use such estimates as benchmarks.

**Detailed benchmark costs can only be obtained from a comprehensive exercise** to gather cost information from a large sample of projects, as well as information on potential explanatory factors for hardware costs. This exercise would inform potential econometric studies to evaluate whether such costs could be reduced through efficiency gains, as the result of different financing approaches or other factors, so as to minimize overall costs. Alternatively, such an analysis could also be done within a particular country where several financing approaches have been tested, to evaluate the impact of these financing approaches on actual costs. This could also be interesting for evaluating software costs. Since software is usually provided by public-sector agencies, efficiency incentives are relatively low and it is difficult to compare the relative efficiency of these alternative approaches to software provision except through an appropriate benchmarking exercise.

Spending on software support is currently poorly understood, and better records are required to track its performance. At present, proper accounting of software costs is rare, which creates the risk that they will be under-estimated in budgets for scaling up a given approach. In most sanitation programs, it is also difficult to assess what software costs have been spent on and for which results, thus making it impossible to assess the efficiency of different software approaches. It would be

²⁸ WHO 2008.
important not only to track total software costs, which are difficult to evaluate, but also to keep track of the unit costs of typical software interventions, such as a “causerie PHAST” (as referred to in Senegal) or media campaign.

*Inputs are not often recorded or valued, currently.* Such missing inputs include the time that local government officials spend on implementing sanitation programs, possibly at the expense of other programs. Numerous stakeholders, such as government officials, NGOs, and community leaders simply donate their time for the achievement of a greater good. In Vietnam, for example, Savings and Loans Group leaders fulfilled critical functions for the success of the scheme on a purely voluntary basis, drawn by the local prestige it can bestow and the desire to drive improvements for the community as a whole. Although this time is donated, it has an opportunity cost that may need to be valued for a comprehensive estimate of the costs of household sanitation adoption.

**FINANCING DATA**

*Financing data should be tracked as a key indicator in M&E frameworks.* All too often, data collection at the level of water and sanitation projects is carried out in a disjointed manner, with project performance indicators recorded in the M&E framework while financial and accounting information is recorded separately. As a result, financial information is seldom used and analyzed in order to inform project design. This is especially true for the choice of the most appropriate financing approach.

*A better understanding of all sources of finance, and household finance in particular, is critical to the design of programs,* with maximum leverage ratios and maximum effectiveness in increasing access. Assessing the potential role for microcredit relative to other funding sources such as commercial finance and family loans will require evaluating how much households currently invest and how they access the funds. Incorporating such information into the M&E frameworks of projects and programs would help estimate critical indicators, such as the leverage ratio, on a routine basis as part of program management rather than as a one-off, ex-post activity.

*We need more information on how much households are investing in on-site sanitation outside of publicly funded programs* in order to have a counter-factual and better understanding of which groups are investing (and which ones are not), the costs of their investment (whether they are more or less expensive than with public support), the key factors determining their demand, and so on.

**INFORMATION ON IMPACTS AND OUTCOMES**

Information on impacts and outcomes is currently very difficult to obtain, especially if no M&E framework is in place. This study deliberately avoided selecting health indicators as impact indicators, since reliable data of this sort would be too difficult, time-consuming, and expensive to obtain. Nevertheless, developing and using reliable and meaningful outcome indicators is the best way to evaluate whether a project and its underlying financing approach is effectively delivering the expected results and whether this is being done in a cost-effective manner. Such cost-effectiveness evaluations are routinely carried out in the health sector, at least in developed countries. If carried out in the sanitation sector, they could help build the case for sanitation promotion and its effectiveness in combating critical diseases such as diarrhea.

*The potential role of microcredit products should be explored further, through pilot projects and the scale-up of successful approaches.*

Given the success of the Sanitation Revolving Fund in Vietnam, it will be important to better understand what the critical factors for developing successful microfinance products for sanitation are in different socioeconomic environments. There are few equivalents of the Vietnamese Women’s Union in other countries, given that this is a highly effective and motivated organization that has a national presence. Common stumbling blocks encountered in other, less successful microcredit schemes for sanitation include difficulties in finding a credible institution able to handle a high volume of small loans; lack of effective enforcement and follow-up procedures; high transaction costs; prohibitive

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interest rates; inconvenient local repayment mechanisms; and lack of transparency and governance. Similar efforts to run microcredit programs in Indonesia have failed, due to cultural and societal circumstances. Replicating Vietnam’s approach beyond its borders will therefore require identifying those success factors that could be replicated abroad.

*Operational guidance should be prepared on the financial aspects of on-site sanitation projects.*

Based on the growing body of research on the topic, operational guidance should be prepared to assist policy makers and project designers with the design of the optimal financing approach suited to their country or project circumstances.

This study has shown that there is no one-size-fits-all financing approach that would work in all circumstances. Rather, principles from experience are emerging on how financing approaches can best be tailored to meet the needs of the local situation. Key factors that need to be taken into account when designing a financing approach include the latent and expressed demand of potential recipients for different levels of service, technical factors and market conditions driving the costs of provision, poverty levels and geography (that is, whether the poor live in well identified areas or are more spread out), the state of local credit markets, the institutional set-up of the sanitation sector, and existing financing practices for on-site sanitation.

Rather than prescribing set solutions, such guidance should set out options to navigate through these key factors and choices, so as to maximize the impact of public funds and accelerate progress towards the Millennium Development Goals.
Indicative Bibliography

Works Cited and General Sources


